UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended **December 31, 2020**
or
☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from ____ to ____
Commission File Number: 001-36316

AgroFresh Solutions, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**46-4007249**
(State or other jurisdiction of incorporation)	(IRS Employer Identification Number)

One Washington Square
510-530 Walnut Street, Suite 1350
Philadelphia, PA 19106
(Address of principal executive offices)

(267) 317-9139
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.0001 per share	**AGFS**	The NASDAQ Global Select Market

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. ☐ Yes ☒ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act ☐ Yes ☒ No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. ☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (Section 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). ☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company ☒ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

Indicate by check mark whether the registrant is a shell company (as defined by Rule 12b-2 of the Act). ☐ Yes ☒ No

As of June 30, 2020, the aggregate market value of the common stock held by nonaffiliates of the registrant, based on the $3.03 closing price of the registrant's common stock as reported on the NASDAQ Global Select Stock Market on that date, was approximately $66 million. For purposes of this computation, all officers, directors and 10% beneficial owners of the registrant are deemed to be affiliates. Such determination should not be deemed to be an admission that such officers, directors or 10% beneficial owners are, in fact, affiliates of the registrant.

The number of shares of the registrant's common stock outstanding as of February 24, 2021 was 52,440,782.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain of the statements contained in this annual report on Form 10-K constitute “forward-looking statements” for purposes of federal securities laws. Our forward-looking statements include, but are not limited to, statements regarding our or our management’s expectations, hopes, beliefs, intentions or strategies regarding the future. In addition, any statements that refer to projections, forecasts or other characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. The words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “might,” “plan,” “possible,” “potential,” “predict,” “project,” “should,” “would,” “will” and similar expressions may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking. Forward-looking statements in this report may include, for example, statements relating to:

- our future financial performance;
- growth plans and opportunities, including planned product and service offerings;
- our expectations regarding the impact of COVID-19 on our business;
- changes in the markets in which we compete;
- our ability to increase brand loyalty and awareness;
- our ability to enter into alliances and complete acquisitions of other businesses;
- protection of our intellectual property rights; and
- the outcome of any known and unknown litigation.

The forward-looking statements contained in this report are based on our current expectations and beliefs concerning future developments and their potential effects on us. Future developments affecting us may not be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties (some of which are beyond our control) or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described under the heading “Risk Factors” elsewhere in this report. Should one or more of these risks or uncertainties materialize, or should any of our assumptions prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws.

PART I

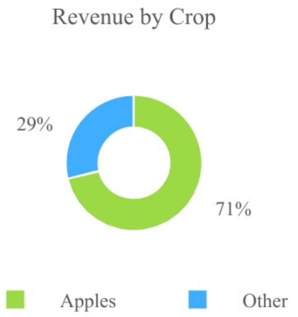
ITEM 1. BUSINESS

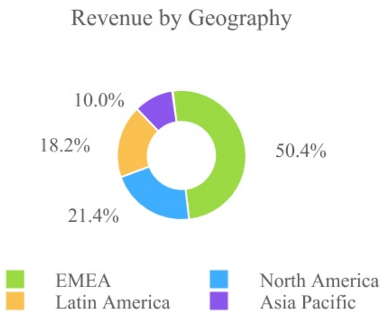
Overview

AgroFresh Solutions, Inc. (the “Company”, “AgroFresh”, “we”, “us” or “our”) is a global leader in delivering innovative solutions that extend the shelf life of fresh produce. The Company is empowering the food industry with a range of integrated solutions designed to help growers, packers and retailers improve produce freshness and quality while preventing shrinkage and reducing waste.

AgroFresh’s market leadership is underpinned by our global footprint, extensive applied scientific expertise, customer intimacy and a growing portfolio of value-added solutions and mission-critical advisory services. Our key products are sold in approximately 50 countries, and we support customers by protecting an estimated 25,000 fruit storage rooms globally. In addition, we provide in-depth plant physiology expertise and offer a comprehensive list of solutions spanning from near-harvest to post-harvest, and from storage through retail. More importantly, AgroFresh has been able to gain a high level of trust from our customers, which is built on more than 20 years of interaction and support. Our direct market approach, high touch service and science-based model best position us to address our customers’ needs. We believe that this is a key differentiator compared to other companies that offer limited service levels.

The following tables present a breakdown of our revenue based on solutions, crop and geography for the year ended December 31, 2020.





Note: “EMEA” comprises Europe, the Middle East and Africa. “Other” include revenue from pears, citrus, kiwifruit, avocados, bananas and other crops.

AgroFresh’s core business provides solutions to extend the shelf life of fresh produce for both growers and packers. SmartFresh™, our flagship solution, preserves the texture, firmness, taste and appearance of produce during storage, transportation and retail display. It allows growers and packers to deliver “just harvested” freshness on a year-round basis and enables retailers to increase customer satisfaction with fresh, high quality produce. An integral part of the SmartFresh value proposition is a direct service model providing customers with on-site applications of SmartFresh at their storage facilities together with mission-critical and value-added advisory services. Overall, the SmartFresh™ Quality System offers growers and packers an integrated freshness management solution that is highly effective and easy to deploy.

AgroFresh extended its post-harvest leadership with the acquisition in December 2017 of a controlling interest in Tecnidex Fruit Protection, S.A. (“Tecnidex”) which is based in Valencia, Spain, one of the largest citrus producing and exporting regions in the world. Tecnidex, a leading provider of fungicides, disinfectants and coatings, is primarily focused on the citrus market. Through its portfolio of post-harvest products, packinghouse technology, consulting and after-sale services, Tecnidex improves the quality and value of our customers’ fruit and vegetables while respecting the environment.

Tecnidex has a broad catalog of solutions that enhance our portfolio, including fungicides that complement our innovative ActiMist™ delivery system of foggable fungicides. The expanded offerings help diversify our revenue by expanding our ability to provide post-harvest solutions to the citrus industry. With this acquisition, AgroFresh expanded its industry-leading post-harvest presence into additional crops and increased its penetration of the produce market in southern Europe, Latin America and Africa. We continually seek opportunities to leverage this range of products across new geographies for both existing and new customers.

Complementing our post-harvest solutions, AgroFresh's Harvista™ technology is currently used for near-harvest management of pome fruit (apples and pears), blueberries and cherries (where application is made during the cherry bloom period). Just as SmartFresh revolutionized post-harvest apple storage, we believe Harvista is starting to have a similar impact in the orchard. For apples, Harvista slows ripening, reduces fruit drop and holds fruit on the tree longer to promote better color and fruit size. With maximum flexibility in application timing, it extends the harvest window by allowing growers to factor in ever-changing weather conditions and labor availability. We have found that the combination of Harvista in the orchard and SmartFresh in the storage room results in improved apple quality compared to use of either product individually. When applied to cherries, Harvista offers a minimum 10% increase in yield.

AgroFresh provides freshness solutions across the supply chain, including retail where much of the ripening process and shrinkage occurs for certain crops. This includes avocados, one of the fastest growing fruit categories. Our SmartFresh solution can help produce consistent avocado quality and enable retailers to sell ready-to-eat avocados that do not require ripening at home. As part of the same diversification efforts, SmartFresh can optimize the consumer experience for a wide range of other crops including broccoli, melon, tomato, mango and stone fruit.

Our FreshCloud™ digital technology platform is an example of how we continue to evolve and increase the value we provide to our customers. The FreshCloud platform consists of cloud-based produce monitoring and screening solutions delivering real time information to customers. FreshCloud capitalizes on our decades-long history of innovation and scientific know-how in the physiology of fruits and vegetables combined with our exclusive proprietary software. FreshCloud consists of both enhancements to our existing service offering and customer base and new solutions to reach more crops and steps in the distribution chain. Our newest service is FreshCloud™ Quality Inspection, a mobile quality management service that digitizes what was formerly a manual quality control process and captures, organizes and analyzes quality metrics in real time. We are seeing encouraging customer adoption of FreshCloud Quality Inspection, such as our recently announced agreement with Montague, one of the leading Australian Fruit Growers. We also launched in 2020 our FreshCloud™ Harvest View service, an easy-to-use digital service that complements and enhances the application of Harvista. FreshCloud Harvest View captures, organizes and presents fast and easy-to-access data insights on starch hydrolysis progression. This allows growers to make more timely decisions on when to apply Harvista, which is key to maximize quality and yields and can translate into higher profit potential. In 2021, we plan to link both FreshCloud Harvest View and Quality Inspection into a single platform that will be able to track fruit from the orchard to the retailer.

We are subject to extensive national, state and local government regulations. We have completed more than 400 comprehensive international health and environmental tests that have shown the AgroFresh family of products, including SmartFresh and Harvista, to be safe for consumers, workers and the environment. AgroFresh products have been approved by over 50 authorities, including the U.S. Environmental Protection Agency and the European Commission.

Competitive Strengths

We believe that the following strengths differentiate us from our competitors and serve as the foundation for our planned continued growth:

Leading Agricultural Innovator and Solutions Provider with Proprietary Technical Know-How. AgroFresh has been at the forefront of fresh produce preservation solutions since our inception. Our research and development team includes over 40 scientists, more than half with advanced degrees, who are leaders in the fields of plant post-harvest physiology and material science. The acquisition of Tecnidex added significant scientific capabilities to R&D. Beginning with our creation of the commercial market for 1-MCP (a plant growth regulator, or "PGR") applications under the SmartFresh brand for use in the preservation of apples and other crops, we have compiled an extensive and exclusive database of produce physiology and consumer preferences. Building on our proprietary technical knowledge, we have developed an intellectual property portfolio, including over 500 granted and pending patents, that has enabled us to provide comprehensive and innovative solutions to a global customer base. SmartFresh delivers a substantial improvement in storage solutions for apples, pears and other crops, allowing for significantly less waste and greater productivity, as well as a constant supply of high-quality fruit throughout the year. In the U.S., we estimate that 90% of stored apples are treated with 1-MCP, and our SmartFresh technology continues to enjoy a strong leadership position in this treatment protocol. Extending our record of innovation in the post-harvest market, we entered the near-harvest market with the introduction of our patented Harvista technology, which extends the ideal harvest window for apples and pears, and increases production yields for cherries and blueberries to improve harvest management and enhance fruit quality. Building on this success, we entered the fungicide market with ActiMist and subsequently enhanced our fungicide portfolio with the acquisition of Tecnidex in 2017 and by securing supply agreements with some of the world's leading fungicide companies. Our recent launch of FreshCloud is the latest milestone in our new product innovation. With the FreshCloud platform, we expect to be able to provide customers real time insights about the condition of their fruit using novel artificial intelligence and machine learning technologies.

Diversified Global Presence Across All Major Growing Regions. We have established a global footprint with key products approved in over 50 countries that supports customers with more than 25,000 storage rooms globally. Our top ten customers represent less than 15% of the Company's total revenue, a sign of the strength and resilience of our business. The Company's global commercial platform is unique in the post-harvest industry, positioned across six continents, bringing a full suite of AgroFresh solutions and high-touch advisory services to customers in every key produce-growing region. Our ability to deliver in-depth technical services and products across every major continent is a fundamental competitive advantage. We believe our global footprint provides not only a platform for growth but also greater diversification. Our participation in a wide range of markets protects the business from crop size fluctuations in any particular market. For the year ended December 31, 2020, EMEA, North America, Latin America and Asia Pacific (including China and India) represented 50.4%, 21.4%, 18.2% and 10.0% of sales, respectively. The acquisition of Tecnidex meaningfully contributed to our global diversification efforts.

Service-Oriented Business Model Creates Sustainable Competitive Advantages. AgroFresh's direct service model provides better margins than the industry average, and comprises not only product applications but also mission-critical technical advisory services. Our sales and technical support personnel maintain direct interaction with our customers in areas of product selection, product application best practices, contract negotiations and overall customer service. Furthermore, we currently have over 40 dedicated research and development scientists, about half with advanced degrees, working across seven global AgroFresh locations, numerous research institutes, and customer sites. This infrastructure has allowed us to amass a proprietary database of technical data of applied plant physiology collected throughout our 20+ year history. In 2020, we made approximately 34,000 monitored applications of SmartFresh. Our proprietary database gives us unique insights into the causes of produce spoilage for various crops varieties in different regions as well as best practices for the effective use of SmartFresh and other quality preserving solutions. As a result, our local sales and technical service teams are best positioned to provide custom advice and solutions, giving our customers confidence and peace of mind throughout the year.

We believe FreshCloud can further bolster our integrated offerings with the addition of data-backed solutions for the monitoring of produce quality across the supply chain. FreshCloud is designed to deliver timely, predictive insights that will help our customers improve efficiency and enhance produce freshness.

We believe that our direct service model, extensive technical know-how and brand loyalty differentiate us from competitors and sustain our competitive strengths.

Strong Momentum and Growth Opportunities Across the Produce Supply Chain. We believe there are significant growth opportunities to expand and diversify our business, supported by our track record of new product introductions and market penetration.

One key initiative is to increase penetration of existing technologies into current and new geographic markets. While many apple growers and packers in the U.S. and globally have adopted SmartFresh, there is potential for further growth. The market penetration of apples treated with SmartFresh has been growing internationally but remains below the levels achieved in the U.S. We have also concentrated on accelerating penetration of SmartFresh into pears, plums, kiwifruit and persimmons. Based on successful trials with customers, we are also expanding our commercial activities for SmartFresh to increase its use on avocados, bananas, melons, tomatoes, broccoli and mangos, where we believe SmartFresh can optimize the consumer experience for ripeness, color, taste and texture. Related to this effort, we repositioned RipeLock as our brand for control atmosphere packaging- based freshness technology solutions for fruits and vegetables.

Harvista is another key product where we are actively working to expand geographic and crop regulatory approvals. As of December 31, 2020, Harvista is registered in eleven countries and we are currently working to obtain registrations in more than eight additional countries including the European Union (the "EU"). In the past few years, we received regulatory approval to apply Harvista to cherries in the U.S., blueberries in Chile and apples in Australia, Brazil and New Zealand, and our team is working to achieve similar registrations in other markets. Ahead of the 2020 growing season, we also secured emergency use permits in Italy, Poland and Spain so that growers could utilize and take advantage of the benefits of Harvista ahead of final EU approval anticipated in 2022. The main limitation to accelerated growth of Harvista is the long regulatory approval cycle in important markets like the EU.

The addition of Tecnidex fungicides, disinfectants and coatings has diversified our crop exposure, reduced revenue seasonality and provided new growth opportunities via cross-pollination of Tecnidex technologies into AgroFresh core fruit categories. As a result of all these initiatives, we have successfully diversified our proportion of sales attributable to apples from nearly 90% in July 2015 down to approximately 75% as of December 31, 2020.

Building on these growth initiatives, we continuously seek opportunities to leverage our research and development ("R&D") capabilities to commercialize new products for currently unserved markets. At the same time, we are looking at mergers and acquisition ("M&A") opportunities similar to Tecnidex, as another key strategy to enhance our value proposition and drive growth.

Long-Standing Relationships with Highly Diverse Customer Base. We believe our direct service model coupled with our proprietary solutions have helped us develop deep, trusted and long-tenured relationships with a diverse array of global customers including packers, growers and retailers. For more than a decade, we have operated a large team of commercial and technical experts located in key geographies around the world to provide on-site custom advisory services. This infrastructure helps us maintain intimate and consistent interaction with our customers throughout the year to understand all aspects of harvest operations, address a variety of customer-specific issues, and ultimately improve the economics for growers, packers and retailers across the supply chain. As a result of our unique service model and comprehensive solutions, we have cultivated direct customer relationships in approximately 50 countries, and have cultivated strategic customer relationships as a way to penetrate new geographies and markets.

High Profit Margins, Strong and Consistent Cash Flow Generation. Our technical expertise, long-standing customer relationships and asset-light business model drive attractive, sustainable profit margins. For the year ended December 31, 2020, we generated gross margins and EBITDA margins of 73% and 31%, respectively[1]. In addition, we employ an “asset-light”, outsourced production model. We use a single third-party manufacturer for our key active ingredient, 1-MCP, under a long-term contract with strict confidentiality obligations, and several other suppliers to formulate products and provide packaging services. For the manufacturing of coatings, disinfectants and equipment servicing the citrus market, we employ a manufacturing plant in Spain and use several local suppliers to formulate products and assemble equipment. As a result, our manufacturing footprint requires minimal capital investment and manufacturing personnel. For the year ended December 31, 2020, capital expenditures were $2.5 million, or 1.6% of net sales. Our attractive margin profile coupled with our asset-light solutions result in free cash flow generation, which will be used to reinvest in the business and repay debt.

Strong Management Team with Deep Industry Experience. Our management team has extensive food, agricultural and chemical industry experience and a proven track record of bringing innovative, value-added solutions to customers and markets around the world. The Company’s management team boasts over 125 years of combined relevant industry experience and is led by Jordi Ferre, our chief executive officer, who has over 25 years of experience in global food operations and manufacturing.

During the past several years, our management team has effectively launched new products, established new partnerships across the supply chain and completed a successful acquisition of the majority control of Tecnidex. Supported by a deep bench of professionals and a track record of execution, we believe our management team has the vision, expertise, and experience to position us for continued success and to implement our business and growth strategies.

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[1] EBITDA margin is a non-GAAP measure. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item 7 of this Annual Report on Form 10-K for more information, and for a reconciliation of EBITDA to net (loss) income.

Industry Overview

Food Preservation and Freshness

According to the Food and Agriculture Organization of the United Nations, over 1.3 billion metric tons of food, or approximately one third of the total food produced worldwide, is lost to spoilage or waste each year. Euromonitor reports that retailers are often judged on their fresh food selection. A large percentage of food waste at the retail level is based on qualitative factors related to consumer perception of freshness. In the U.S., the Environmental Protection Agency announced in 2015 the first-ever domestic goal to reduce food loss and waste by 50 percent by 2030.

Loss or shrinkage along the food supply chain has a variety of causes, including degradation of fresh produce during storage and transportation.

AgroFresh strives to be the guardian of the world’s fresh produce and stands ready to lead the fresh produce industry into a more sustainable future. In 2019, we completed a detailed sustainability study about the influence of SmartFresh on the apple industry. From 2002 to 2018, we estimate that 259,500 metric tons of apple waste were diverted in the U.S., France and Italy alone. This reduced apple spoilage equates to more than 2.5 million metric tons of water. Improving the apple supply chain in those three countries during the same period took more than 10 million metric tons of carbon dioxide out of the air. This is equivalent to taking approximately two million cars off the road for one year or eliminating one billion smartphone charges. In other countries throughout the world, we estimate that SmartFresh reduced CO_2 emissions by approximately 342,000 metric tons during that same period. Overall, we estimate that our SmartFresh and Harvista solutions reduce an estimated 10,000 metric tons of food waste per day.

Near-Harvest Treatments

We consider applications in the orchard as “near-harvest” since they are applied right before the fruit is harvested and have synergistic effect with our post-harvest solutions. Near-harvest treatments are commonly used to increase the value of crops and reduce harvest losses. The use of Harvista helps pome fruit growers realize better quality and bigger harvest out of their orchards, while providing more control over how and when their fruit ripens. The unique mode of action provides better control of ethylene response, so fruit matures on the grower’s schedule, helping expand the harvest window for optimal color, size and firmness.

Post-Harvest Treatments

Post-harvest treatments to maximize quality and reduce loss include treatments to manage the effects of ethylene and to prevent microbial contamination. Naturally occurring ethylene triggers the acceleration of ripening in certain crops which results in a reduction of post-harvest life.

One class of post-harvest treatments enhances quality and reduces losses by controlling the environment in which produce is stored. Controlled Atmosphere ("CA") and Dynamic Controlled Atmosphere (“DCA”) systems are used to keep stored crops within their optimal ranges of temperature and levels of oxygen and carbon dioxide. Specific oxygen and carbon dioxide levels can lower respiration in fresh produce and delay ripening. CA systems have been used for many decades with fruits and vegetables to preserve freshness. DCA, a more recent innovation, seeks to adjust levels of oxygen and carbon dioxide dynamically as the produce in storage breathes and matures. CA and DCA are only effective at preserving freshness while the fruit is kept in cold storage. However, 1-MCP treatments have been found to be complementary to these technologies by helping to better maintain the quality of apples and pears during cold storage and maintaining freshness for up to 90 days after they are removed from cold storage.

Our Business

We are an agricultural technology innovator in proprietary advanced technologies that enhance the freshness, quality and value of fresh produce. We currently offer SmartFresh applications at customer sites predominately through a direct service model utilizing third-party contractors. We also provide advisory services based on our extensive knowledge on the use of 1-MCP collected through tens of thousands of monitored applications done as a part of the service model. Our pricing to customers is based on the service provided, not on the product sold. We operate in approximately 50 countries and derive the majority of our revenue working with customers to protect the value of apples, pears and other produce during storage. Harvista is approved for sale in Argentina, Australia, Azerbaijan, Brazil, Canada, Chile, Israel, South Africa, Turkey and the United States and are expanding into New Zealand for the 2020-2021 season. LandSpring is being marketed primarily in the U.S. and SmartFresh diversification efforts are being marketed mainly in the U.S., Mexico and South America. ActiMist was launched in the U.S. and is being expanded into other countries subject to regulatory approval. Line extensions and new services are planned for introduction to seek to strengthen our global position in post-harvest storage and to capitalize on adjacent growth opportunities in near-harvest markets.

AgroFresh extended its post-harvest leadership with the acquisition of Tecnidex, a leading provider of fungicides, disinfectants and coatings primarily focused on the citrus market. For over 35 years, Tecnidex has been helping fruit and vegetable producers offer clean, safe and high-quality products to customers in 18 countries with particular strength in the Mediterranean region. Tecnidex offers a broad catalog of solutions that enhance our fungicide offering, expand our R&D capabilities, and enable the Company to leverage ActiMist, an innovative delivery system of foggable fungicides. Our fungicide offerings further diversify our revenue by expanding our ability to provide solutions and service to the citrus industry.

1-MCP, the active ingredient in SmartFresh, LandSpring and Harvista, is an ethylene action inhibitor with a proven ability to maintain freshness and extend the shelf life of certain fresh produce. The 1-MCP molecule is structurally similar to ethylene, a naturally occurring plant hormone that occurs in certain fruits and vegetables. Ethylene helps produce grow and ripen, but it eventually causes over-ripening and spoilage. 1-MCP works by blocking the ethylene receptors in plant cells, which temporarily delays the ripening process, enabling the produce to better maintain the qualities associated with freshness.

Fruits and vegetables are classified as climacteric or non-climacteric, a term referring to the process of fruit maturation. Climacteric fruits can ripen after being picked and produce much more ethylene than non-climacteric fruits, which cannot ripen after harvest. The climacteric event is a stage of fruit ripening associated with higher ethylene production and changes in the fruit including pigment changes and sugar release. The climacteric event marks the peak of edible ripeness, with fruits having the best taste and texture for consumption. The role of SmartFresh is to delay the onset of the climacteric stage until the product is ready for consumption. Apples, pears, kiwifruit, plums, persimmon, bananas, melons, peaches and tomatoes are examples of climacteric fruit. The Company continues to evaluate the commercial value of 1-MCP with a range of other climacteric fruit.

SmartFresh Value Proposition

The SmartFresh™ Quality System, our flagship solution, preserves the texture, firmness, taste and appearance of produce during storage, transportation and retail display. Available in "storage room" and "on-the-move" application formats, the SmartFresh Quality System is the original, most recognizable post-harvest choice to maintain consumer-desired produce freshness and quality, and reduce waste. It allows growers and packers to deliver "just harvested" freshness on a year-round basis and enables retailers to increase customer satisfaction with fresh, high quality produce. An integral part of the SmartFresh value proposition is a direct service model providing customers with on-site applications of SmartFresh at their storage facilities together with mission-critical and value-added advisory services. AgroFresh™ Verified is our proprietary analysis and reporting service that provides confirmation of a successful SmartFresh application in storage rooms.

The value of SmartFresh with any crop is determined by both the biological efficacy with that crop and the utility value the application delivers to the customer. The biological efficacy with apples is high; apples are sensitive to ethylene, and SmartFresh is effective at delaying ripening. In addition, SmartFresh brings high utility value by helping to keep apples fresh year-round despite their limited harvest window. This has resulted in the widespread adoption of SmartFresh by apple growers and packers throughout the world. The cost of SmartFresh translates into less than one cent per pound of apples in the United States, which is small relative to both the value of the crop and the importance of maintaining the quality of that crop during storage. Retail prices of apples in the U.S. typically range from $1.30-$4.50 per pound depending on the variety. The use of SmartFresh gives growers and packers the ability to store apples from one season to the next without losing their just picked quality characteristics.

Beneficial effects of SmartFresh have been proven across numerous apple varieties throughout the world. SmartFresh is also effective with other crops that are highly sensitive to ethylene, including pears, kiwifruit, plums, persimmons, avocados, melons, tomatoes and broccoli, each of which requires a different application method and supply chain logistics beyond storage rooms. We also offer a corresponding solution for flowers, marketed under the EthylBloc brand name through two strategic partners that have a strong position in the global flower market.

AgroFresh's business historically has been highly seasonal, driven by the timing of apple and pear harvests in the northern and southern hemispheres. The first half of the year is when the southern hemisphere harvest occurs, and the second half of the year is when the northern hemisphere harvest occurs. Since the northern hemisphere harvest of our two core crops of apples and pears is typically larger, a significant portion of our sales and profits are historically generated in the second half of the year. In addition to this seasonality, factors such as weather patterns may impact the timing of the harvest within the two halves of the year. Crop diversification is an important way to achieve balanced revenues across the year, and the ability to service the citrus segment provides an opportunity for the Company to increase revenue in the fourth and first quarters, which are the two strongest quarters for citrus crops. Our acquisition of a controlling interest in Tecnidex and an increased presence in the citrus category has moderately reduced the historic concentration of sales in the second half of the year.

SmartFresh Service Model

We believe that we have developed deep, trusted relationships with our customers by combining our effective SmartFresh product with application expertise and trusted advisory services. Over the past decade we have amassed a valuable proprietary database of technical information on the best practices for the effective use of SmartFresh on a wide range of apple and pear varieties, since each fruit and fruit variety requires a different treatment protocol. The advisory services component utilizes this information to help maximize the profitability of our customers' operations.

Harvista

Complementing our post-harvest solutions, Harvista is used for near-harvest management of apples, pears, cherries and blueberries. Our Harvista product line includes proprietary 1-MCP formulations that are specifically designed to slow ripening, reduce fruit drop and hold fruit on the tree longer to promote better color and fruit size, thereby bringing new benefits to the grower. With maximum flexibility in application timing, it extends the harvest window by allowing growers to factor in ever-changing weather conditions and labor availability, providing peace of mind. We have found that the combination of Harvista in the orchard and SmartFresh in the storage room results in improved fruit quality metrics compared to use of either product individually.

Harvista extends the "ideal harvest window" for up to an additional 14 days. This added flexibility creates significant benefits both in terms of harvest logistics and crop profitability. Widening the harvest window allows for better scheduling and the optimization of limited resources, such as harvest crews and equipment. Overall, the value of the crop is enhanced by bigger average fruit size, better color and fewer defects.

We offer Harvista for apples, pears, cherries and blueberries through a pre-scheduled application service including ground and/or aerial applications depending on the crop and growing region. Typically, our technical staff designs the protocol in consultation with the customer, and either a third-party service provider or the customer makes the application.

Harvista is currently available in Argentina, Australia, Azerbaijan, Brazil, Canada, Chile, Israel, South Africa, Turkey and the United States and we are expanding into New Zealand for the 2020-2021 season. In addition to apple and pear crops, Harvista has received approval for applications to cherries in the U.S. and blueberries in Chile. Additional registrations and label expansions are expected to be pursued as new formulations and/or crop concepts are validated.

FreshCloud

We continue to evolve and expand our FreshCloud digital technology service platform of produce monitoring and screening solutions. FreshCloud Quality Inspection is a proprietary cloud-based mobile quality management service that digitizes what was formerly a manual quality control process to capture, organize and analyze quality metrics in real time. The service combines digital information from many different physical and digital sources and locations, including analytics, artificial intelligence and machine learning. This allows growers, packers, shippers and retailers to drive accuracy and consistency across their operations. FreshCloud Harvest View is an easy-to-use digital service that complements Harvista. FreshCloud Harvest View captures, organizes and presents fast and easy-to-access data insights on starch hydrolysis progression, thereby enabling growers to make timely decisions on when to apply Harvista, which is key to maximizing quality and yields and can translate into higher profit potential. FreshCloud Storage Insights combines proprietary technology and data analytics in the storage room to offer customers real-time access to unique insights into the condition of their stored fruit. FreshCloud Transit Insights combines sensor technology and proprietary algorithms to provide insights into the condition and quality of fruit during transit.

LandSpring

LandSpring technology is a PGR for use on seedlings to help them withstand transplanting and other stresses encountered in the field. LandSpring suppresses the ethylene signals that would prompt a stress event in the seedling and reduce growth. Among the number of protective benefits, this technology makes seedlings less sensitive to stresses such as heat, cold, UV radiation, drought, flooding and salinity that often occur after planting. When applied before transplanting, LandSpring results in greater plant vigor and a healthier crop that is better able to withstand adverse environmental conditions and give growers the opportunity to increase yield.

Marketing and Sales

AgroFresh's global sales teams are organized geographically across the Europe/Middle East, North America, South America and Asia Pacific regions designed to drive growth. To accelerate new business development activities, there is an additional sales leadership team for diversification.

The Company's core post-harvest business includes solutions designed to improve yields for growers and packers. These solutions include SmartFresh, Harvista, ActiMist, FreshCloud and a large range of fungicides, disinfectants, coatings and packinghouse equipment, marketed under the brands Textar, Teycer and Control-Tec™, respectively.

The technical sales support group supports the sales team and runs customer-specific trials for local crop varieties or specialized storage and distribution conditions and conducts follow-up with customers. This team works closely with customers to provide advice on appropriate protocols for SmartFresh, Harvista and other product applications depending on crop, variety, region, and climatic conditions. The technical sales support group draws on our extensive knowledge base of 1-MCP applications across all regions and conditions.

The marketing function is organized on a global and regional basis. This consists of corporate brand/image stewardship and regionally-driven marketing management including country-specific marketing strategies, plans and tactics to drive growth and customer penetration. Marketing personnel are embedded within the Company’s operating regions to provide maximum ability to collaborate with local sales teams and customers, and capitalize on business opportunities.

No single customer accounted for more than 10% of net sales in 2020, 2019 or 2018.

Competition

We estimate the size of the core post-harvest market to be approximately $500 million on a global basis. The post-harvest solutions offered include 1-MCP-based solutions, fungicides and coatings, representing approximately 36%, 20% and 24% of the total market, respectively. The market for the use of 1-MCP is evolving and we have faced growing competition since the expiration of the 1-MCP use patent in 2014. We estimate that citrus applications represent approximately 60% of the total core post-harvest market, which is why we are focused on seeking to grow in this important crop segment. The market for post-harvest solutions is fragmented with various regional suppliers. AgroFresh, Decco (UPL Limited), JBT FoodTech (JBT Corporation) and Pace (Sumitomo Chemical) are the four leading providers that account for an estimated 60% of global post-harvest sales. Other regional and local companies, mainly in citrus, account for the remaining 40% of post-harvest sales. Additional key players in the post-harvest industry include fungicide suppliers, such as Syngenta and Janssen PMP, which hold post-harvest registrations of fungicides previously approved for pre-harvest applications, and which use post-harvest companies, including AgroFresh, to distribute their products. In the near-harvest segment, ReTain™ is a competitive technology to Harvista that is offered by Valent (Sumitomo Chemical) in all regions except for the EU. We believe that the principal factors of competition in our industry include reputation, product quality, customer service and customer intimacy, product innovation, technical service and value creation. We believe that we compete favorably with competitors on the basis of these and other factors. See the subsection titled “Competitive Strengths” above.

Research and Development

Research and development plays an important role at AgroFresh in providing technical support to our customers as well as developing innovative new offerings and line extensions of existing products. Research and development is a truly global function with less than half of our R&D resources located in facilities in North America, and the remainder across our other regions. During fruit harvest times (August to November in the Northern Hemisphere and late January to early May in the Southern Hemisphere), we hire additional third-party contract scientists to assist AgroFresh in the execution of experiments involving Harvista, SmartFresh and ActiMist technologies. Most of the regional research and development facilities focus on business aligned research and development initiatives to develop line extensions and create new products. Research and development makes use of core competencies in a number of technical areas including post-harvest physiology, analytical chemistry, regulatory sciences, regulatory affairs, formulation science, formulation process development, organic chemistry and delivery systems. Initiatives focused on next generation solutions utilize expertise in material science, molecular biology, post-harvest pathology, diagnostics and sensor technology.

Intellectual Property

We are a technology-based solutions provider and, as such, rely on a combination of important intellectual property strengths, including licenses, patents, trademarks, copyrights and trade secret protection laws to protect our proprietary technology and intellectual property. We enter into confidentiality agreements with our employees, consultants, customers, service providers and vendors that generally provide that any confidential or proprietary information developed by us or on our behalf be kept confidential including, but not limited to, information related to our proprietary manufacturing process and SmartFresh service model. In the normal course of business, we provide our intellectual property and/or our products protected by our intellectual property to third parties through licensing or restricted use agreements.

Today a majority of our SmartFresh applications use SmartFresh ProTabs™, an application method patented through 2022. Harvista formulations are patent protected through at least 2027. We continue to invest in application technologies as a means to provide our customers with the most relevant, convenient and effective solutions for their specific operations. Our impressive portfolio of intellectual property underpins our global go-to-market strategy and totals more than 500 granted patents in over 30 countries.

Regulation and Compliance

We are subject to extensive national, state and local government regulation, and the Company has a regulatory team that we believe is best in class, which leverages a global network of highly-experienced regulatory consultants. Through this network, we have successfully obtained registrations for SmartFresh, Harvista and LandSpring in every country where the review process has been completed, and the registration process for Harvista continues in many additional countries. We have completed more than 400 comprehensive international health and environmental tests that have shown the AgroFresh family of products, including SmartFresh and Harvista, are safe for consumers, workers and the environment. 1-MCP, the active ingredient in the AgroFresh products, is metabolized by the natural processes in apples and other fruits and leaves no residue. The products have been approved by over 50 authorities including the U.S. Environmental Protection Agency and the European Commission. We do not anticipate any significant problems in obtaining future required licenses, permits or approvals that are necessary to expand our business. We leverage our regulatory capabilities as we expand the fungicide product lines into new countries.

For a discussion of the various risks we may face from regulation and compliance matters, see “Risk Factors” in Item 1A of this report.

Employees

As of December 31, 2020, we had approximately 300 full-time employees. None of our employees in North America are members of a union or subject to the terms of a collective bargaining agreement. In certain other countries where we operate (including Brazil, France, Germany, Italy, Netherlands and Spain), employees are members of unions or are represented by works councils. In addition, certain of our activities have been performed historically by seasonal and part-time third-party contingent staff.

Geographic Information

Please see Note 20 - Segment and Geographical Information to the audited consolidated financial statements for geographic sales information.

Available Information

Our website is at http://www.agrofresh.com. We make available free of charge, on or through our website, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports, if any, or other filings filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after electronically filing or furnishing these reports to the Securities and Exchange Commission ("SEC"). Information contained on our website is not a part of this Annual Report on Form 10-K. We have adopted a code of business conduct applicable to our employees including our principal executive, financial and accounting officers and it is available free of charge, on our website’s investor relations page.

The SEC maintains an Internet site at http://www.sec.gov that contains our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports, if any, or other filings filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, and our proxy and information statements. All reports that we file with the SEC may be read and copied at the SEC’s Public Reference Room at 100 F Street, N.E., Washington, DC, 20549. Information about the operation of the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330.

ITEM 1A. RISK FACTORS

Ownership of our securities involves a high degree of risk. Holders of our securities should carefully consider the following risk factors and the other information contained in this report, including our historical financial statements and related notes included herein. Additional risks and uncertainties not presently known to us, which we currently deem immaterial or which are similar to those faced by other companies in our industry or businesses in general, may also impair our business or operations. If any of the following risks or uncertainties actually occur, our business, financial condition and operating results could be adversely affected in a material way. This could cause the trading prices of our securities to decline, perhaps significantly, and you may lose part or all of your investment.

Risks Related to Our Business and Industry

The COVID-19 pandemic could significantly impact our business and operating results.

The COVID-19 pandemic has negatively impacted the global economy, disrupted consumer spending and global supply chains, and created significant volatility and disruption of financial markets. The extent of the impact of the COVID-19 pandemic on our business and financial performance, including our ability to execute our near-term and long-term business strategies and initiatives in the expected time frame, will depend on future developments, including the duration, severity and any resurgences of the pandemic, which are uncertain and cannot be predicted.

During 2020, global businesses faced the challenge of operating during the COVID-19 pandemic. While we managed through this unprecedented environment, our future operations could be adversely affected to the extent that coronavirus or any other epidemic harms the global economy or adversely impacts demand for fresh horticultural products. Our operations may experience disruptions in the event of a global pandemic or restriction on travel that results from a global pandemic, which may materially and adversely affect our business, financial condition and results of operations. The extent to which the coronavirus or other health epidemic may impact our results will depend on future developments, which are highly uncertain and cannot be predicted.

Increased competition in our industry can lead to pricing pressure, reduced margins or the inability of our products and services to achieve market acceptance.

Actions by new or existing competitors, including introduction of competing products or services, promotions, combinations with other products or services, or price-cutting may lower our sales or require actions to retain and attract customers which could adversely affect our profitability. Increased competition from existing or new competitors could result in price reductions, increased competition for materials, reduced margins or loss of market share, any of which could materially and adversely affect our business and our operating results and financial condition. For example, during 2017 and 2018, we decreased pricing in the U.S. to defend market share against increased competition. The situation stabilized during the 2019 season, however in 2020, we again faced significant price pressure. We may elect to take similar action in other regions, such as Europe, in the future, depending on competitive pressures.

In addition, if the prices at which our customers sell their products increase or decrease, the demand for our products or services may change. If the demand for our products or services decreases, there could be a significant impact on our business in the applicable location or region and a material adverse effect on our revenues and results of operations.

Our relationship with our employees could deteriorate, and certain key employees could leave, which could adversely affect our business, financial condition and results of operations.

Our business involves complex operations and demands a management team and workforce that is knowledgeable and expert in many areas necessary for our operations. As a company focused on both research and development and customer service in the highly-specialized horticultural pre- and post-harvest fields, we rely on our ability to attract and retain skilled employees, consultants and contractors, including our specialized research and development and sales and service personnel. As of December 31, 2020, we employed approximately 300 full-time employees, of which approximately 150 were members of our research and development and sales and service teams. The departure of a significant number of our highly skilled employees, consultants or contractors or one or more employees who hold key regional management positions could have an adverse impact on our operations, including as a result of customers choosing to follow a regional manager to one of our competitors.

In addition, to execute our growth plan we must attract and retain highly qualified personnel. Competition for these employees exists; new members of management must have significant industry expertise when they join us or engage in significant training which, in many cases, requires significant time before they achieve full productivity. If we fail to attract, train, retain and motivate our key personnel, our business and growth prospects could be severely harmed.

In addition, certain of our key full-time employees are employed outside the United States. In certain jurisdictions where we operate, labor and employment laws may grant significant job protection to employees, including rights on termination of employment. In addition, in certain countries where we operate (including Brazil, France, Germany, Italy, Netherlands and Spain), our employees are members of unions or are represented by works councils as required by law. We are often required to consult and seek the consent or advice of these unions and/or works councils. These laws, coupled with any requirement to consult with the relevant unions or works councils, could adversely affect our flexibility in managing costs and responding to market changes and could limit our ability to access the skilled employees on which our business depends.

In addition, certain activities of our business have been performed historically by seasonal and part-time third-party contingent staff. Changes in market and other conditions (including changes in applicable law) affecting employees and/or contingent staff could adversely impact the cost to our business of maintaining our employees and third-party staffing.

We are subject to risks relating to portfolio concentration.

Our business is highly dependent on one active ingredient, 1-MCP, applied to a limited number of horticultural products. In 2020, we derived approximately 75% of our revenue working with customers using SmartFresh to protect the value of apples, pears and other produce during storage. We expect these applications, products and active ingredients to continue to account for a large percentage of our profits in the near term. Our ability to continue to market and sell products containing this active ingredient in existing and new crop segments is important to our future success.

Our net sales and gross profit have historically been generated from one service platform but future growth in net sales and gross profit will likely depend on the development of new product and service platforms, geographic expansion and expansion into new applications. Net sales and gross profit may vary significantly depending on our product, service, customer, application and geographic mix for any given period, which will make it difficult to forecast future operating results.

Our net sales and gross profit vary among our products and services, customer groups and geographic markets. This variation will increase as we attempt to increase sales into new geographies and applications, and as we diversify into other crops and introduce new product and service platforms. Net sales and gross profit, therefore, may differ in future periods from historic or current periods. Overall gross profit margins in any given period are dependent in large part on the product, service, customer and geographic mix reflected in that period's net sales. Market conditions, competitive pressures, increased material or application costs, regulatory conditions and other factors may result in reductions in revenue or create pressure on the gross profit margins of our business in a given period. Given the nature of our business and expansion plans, the impact of these factors on our business and results of operations will likely vary from period to period and across products, services, applications and geographies. As a result, we may be challenged in our ability to accurately forecast our future operating results.

Acquisitions or investments may not yield the returns expected, which, in turn, could adversely affect our business, financial condition and results of operations.

A part of our growth strategy involves pursuing strategic acquisitions, as well as investments in technologies. Acquisitions present challenges, including geographical coordination, personnel integration and retention of key management personnel, systems integration, the potential disruption of each company's ongoing business, possible inconsistencies in standards, controls, procedures and policies, unanticipated costs of terminating or relocating facilities and operations, unanticipated expenses relating to such integration, contingent obligations and the reconciliation of corporate cultures. Those operations could divert management's attention from the business, cause a temporary interruption of or loss of momentum in the business and adversely affect our results of operations and financial condition. Acquisitions are an important source of new products and active ingredients, technologies, services, customers, geographies and channels to market. The inability to consummate and integrate new acquisitions on advantageous terms could adversely affect our ability to grow and compete effectively.

If any of the acquisitions or investments we have completed or may complete do not meet our expectations for any reason, we may not achieve our forecasted results. There can be no assurance that the pre-acquisition analyses and the diligence we conducted in connection with any acquisition or investment will uncover all material issues that may be present in a particular target business or investment, or that factors outside of the target business or investment and outside of our control will not later arise. In such event, we may be required to subsequently realize restructuring, impairment or other charges that could have a significant adverse effect on our business, financial condition and results of operations.

Furthermore, we might not be able to identify additional suitable acquisition or investment opportunities or obtain necessary financing on acceptable terms and might also spend time and money investigating and negotiating with potential acquisition or investment targets but not complete the transaction.

Conditions in the global economy may adversely affect our net sales, gross profit and financial condition and may result in delays or reductions in our spending that could have a material adverse effect on our business, financial condition and results of operations.

Although demand for fresh horticultural products is somewhat inelastic in developed economies, the fresh produce and flower industries that we sell to can be affected by material changes in supply, market prices, exchange rates and general economic conditions. Delays or reductions in our customers' purchasing or shifts to lower-cost alternatives that result from tighter economic market conditions would reduce demand for our products and services and could, consequently, have a material adverse effect on our business, financial condition and results of operations.

Our substantial level of indebtedness could materially and adversely affect our business, financial condition and results of operations.

We have a significant amount of indebtedness. As of December 31, 2020, our total indebtedness was approximately $276 million, including $274 million in outstanding principal under a term loan with a scheduled maturity date of December 31, 2024. This substantial level of debt could have a variety of negative effects, including:

- default and foreclosure on our assets if our operating revenues are insufficient to repay our debt obligations;
- acceleration of our obligations to repay the indebtedness even if we make all principal and interest payments when due if we breach certain covenants that require the maintenance of certain financial ratios or reserves without a waiver or renegotiation of that covenant;
- our immediate payment of all principal and accrued interest, if any, if the debt security is payable on demand;
- our inability to obtain necessary additional financing if the debt security contains covenants restricting our ability to obtain such financing while the debt security is outstanding;
- our inability to pay dividends on our common stock; and
- using a substantial portion of our cash flow to pay principal and interest on our debt, which will reduce the funds available for dividends on our common stock if declared, our ability to pay expenses, make capital expenditures and acquisitions and fund other general corporate activities.

We may not be able to generate sufficient cash to service all of our indebtedness and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments on or refinance our debt obligations and to meet our dividend obligations to our preferred stock holder depends on our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business, legislative, regulatory and other factors, some of which are beyond our control. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness and the dividend obligations attached to our preferred stock.

If our cash flows and capital resources are insufficient to fund our debt service and dividend obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to dispose of material assets or operations, seek additional debt or equity capital or restructure or refinance our indebtedness. We may not be able to effect any such alternative measures, if necessary, on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. If we are unable to make payments or otherwise default on our debt obligations, the lenders could foreclose on our assets, which would have a material adverse effect on our business, financial condition and results of operations.

Our expansion depends on further penetration in existing markets and growth into new geographic markets, products, services and applications.

Our growth depends on our ability to achieve further penetration into existing markets and expand into new geographic markets where there may be little or no knowledge of our brands or service offerings. There are significant differences in fresh produce handling practices from geographic region to region. If we cannot generate further penetration in existing markets or create brand awareness and successfully adapt our sales and distribution practices to new markets, this could have an impact on our ability to generate greater revenue. Expansion into new geographic markets will require us to establish our value proposition for local fresh produce industries and to comply with new regulatory and licensing regimes. Longer registration lead times and a relatively fragmented post-harvest infrastructure in certain jurisdictions could have a material adverse effect on our results of operations and prospects in those markets.

Our growth also depends on our ability to apply current and future technologies to an expanded range of agricultural products. If the adoption of our products and services by growers, packers and retailers of these agricultural products is slower than anticipated, or if the prices that these customers are willing to pay for our products and services are lower than anticipated, this could negatively impact our ability to increase revenue from current levels.

Failure to manage our growth effectively using our existing controls and systems could harm our business, financial condition and operating results.

Our existing management systems, financial and management controls and information systems may be inadequate to support our planned expansion. Managing any such growth effectively will require us to continue to enhance these systems, procedures and controls and to hire, train and retain management and employees and to engage new material suppliers and service providers. We may not respond quickly enough to the changing demands that our expansion will impose on our management and existing infrastructure, which could harm our business, financial condition and results of operations. Failure to appropriately manage safety, human health, product liability and environmental risks could adversely impact employees, communities, stakeholders, the environment, our reputation and our business, financial condition and results of operations.

We may be unable to respond effectively to technological changes in our industry, which could reduce the demand for our products.

Our future business success will depend upon our ability to maintain and enhance our technological capabilities and develop and market products, services and applications that meet changing customer needs and market conditions in a cost-effective and timely manner. Maintaining and enhancing technological capabilities and developing new products may also require significant investments in research and development. We may not be successful in developing new products, services and technology that successfully compete or be able to anticipate changing customer needs and preferences, and our customers may not accept one or more of our new products or services. If we fail to keep pace with evolving technological innovations or fail to modify our products and services in response to customers' needs or preferences, then our business, financial condition and results of operations could be adversely affected.

We currently rely on a limited number of suppliers to produce certain key components of our products.

We rely on unaffiliated contract manufacturers to produce certain key components of our products. There is limited available manufacturing capacity that meets our quality standards and regulatory requirements, especially for the manufacturing of the active ingredient, 1-MCP. Our 1-MCP needs are currently sourced from a single qualified supplier, although we currently have sufficient safety stock to allow us to withstand a disruption in supply from that supplier. In addition, we have qualified a second supplier to provide our active ingredient in the event of a disruption from our current supplier. However, if we are unable to arrange for sufficient production capacity among our contract manufacturers or our contract manufacturers encounter production, quality, financial, or other difficulties, including labor or geopolitical disturbances, we may encounter difficulty in meeting customer demands as we seek alternative sources of supply, or we may have to make financial accommodations to such contract manufacturers or otherwise take steps to avoid or minimize supply disruption. We may be unable to locate an additional or alternate contract manufacturer that meets our quality controls and standards and regulatory requirements in a timely manner or on commercially reasonable terms. Any such difficulties could have an adverse effect on our business, financial condition and results of operations, which could be material.

In some jurisdictions, we rely on independent distributors to distribute our products.

We rely in some jurisdictions on independent distributors to distribute our products and to assist us with the marketing, sale and servicing of certain of our products. For example, we have entered into long-term distribution relationships for our products in China, Russia, Israel, Greece, South Korea and Mexico. As a result, delivery of services and products in these jurisdictions relies on the performance of a small number of contractual counterparties, and in most of these countries we are not directly involved in sales and service provider relationships. We cannot be certain that our distributors will focus adequate resources on selling our products and services or be successful in selling them. Some of our distributors also represent or manufacture other, potentially competing, agrochemical products. If we are unable to establish or maintain successful relationships with our distributors, we will need to further develop our own sales and distribution capabilities, which would be expensive, time-consuming and possibly not as successful in achieving market penetration, which could have a material adverse effect on our results of operations, cash flows or financial condition. In addition, the distribution of our products could be disrupted by a number of factors, including labor issues, failure to meet customer standards, bankruptcy or other financial issues affecting our third-party providers, or other issues affecting any such third party's ability to meet our distribution requirements. The failure to properly perform by, switch to the competition or loss of, one or more of our distributors could have a material adverse effect on our business, financial condition and results of operations.

Our intellectual property and proprietary rights are integral to our business. Our business and results of operations could be adversely affected if we fail to protect our intellectual property and proprietary rights.

Our success depends to a significant degree upon our ability to protect and preserve our intellectual property rights, including our patent and trademark portfolio and trade secrets related to our proprietary processes, methods, formulations and other technology. Failure to protect our intellectual property rights may result in the loss of valuable technologies or impair our competitive advantage. We rely on confidentiality agreements and patent, trade secret and trademark, as well as judicial enforcement of all of the foregoing to protect such technologies and intellectual property rights. In addition, some of our technologies are not or will not be covered by any patent or patent application. With respect to our pending patent applications, we may not be successful in securing patents for these claims, which could limit our ability to protect inventions that these applications were intended to cover. In addition, the expiration of a patent can result in increased competition with consequent erosion of profit margins.

As key SmartFresh patents have expired or will expire, if we are not able to achieve further differentiation of our products and services through patented mixtures, new formulations, new delivery systems, new application methods or other means of obtaining extended patent protection, our inability to prevent competitors from developing and registering similar products could have an adverse effect on our sales of such product. Our patents also may not provide us with any competitive advantage and may be challenged by third parties. Further, our competitors may attempt to design around our patents.

In some cases, we rely upon unpatented proprietary manufacturing expertise, continuing technological innovation and other trade secrets to develop and maintain our competitive position. While we generally will enter into confidentiality agreements with our employees and third parties to protect our intellectual property, our confidentiality agreements could be breached and may not provide meaningful protection for our trade secrets or proprietary manufacturing expertise. In addition, adequate remedies may not be available in the event of unauthorized use or disclosure of our trade secrets or manufacturing expertise. Violations by others of our confidentiality agreements and the loss of employees who have specialized knowledge and expertise could harm our competitive position and cause our sales and operating results to decline as a result of increased competition.

In addition, we rely on both registered and unregistered trademarks to protect our name and brands. Our failure to adequately maintain the quality of our products and services associated with our trademarks or any loss to the distinctiveness of our trademarks may cause us to lose certain trademark protection, which could result in the loss of goodwill and brand recognition. In addition, successful third-party challenges to the use of any of our trademarks may require us to rebrand our business or certain products or services associated therewith.

We may be unable to prevent third parties from using our intellectual property and other proprietary information without our authorization or from independently developing intellectual property and other proprietary information that is similar to ours, or that has been designed around our patents, particularly in countries other than the United States. The unauthorized use of our intellectual property and other proprietary information by others could reduce or eliminate any competitive advantages we have developed, cause us to lose sales or otherwise harm our business. If it becomes necessary for us to litigate to protect these rights, any proceedings could be burdensome and costly, and we may not prevail.

We may experience claims that our products infringe the intellectual property rights of others, which may cause us to incur unexpected costs or prevent us from selling our products or services.

We continually seek to improve our business processes and develop new products and applications in a crowded patent space that we must continually monitor to avoid infringement. We cannot guarantee that we will not experience claims that our processes and products infringe issued patents (whether present or future) or other intellectual property rights belonging to others.

From time to time, we oppose patent applications that we consider overbroad or otherwise invalid in order to maintain the ability to operate freely in our various business lines without the risk of being sued for patent infringement. If, however, patents are subsequently issued on any such applications by other parties, or if patents belonging to others already exist that cover our products, processes or technologies, we could experience claims for infringement or have to take other remedial or curative actions to continue our manufacturing and sales activities with respect to one or more products. Likewise, our competitors may also already hold or have applied for patents in the United States or abroad that, if enforced or issued, could prevail over our patent rights or otherwise limit our ability to manufacture or sell one or more of our products in the United States or abroad. Any actions asserted against us could include payment of damages for infringement, stopping the use, require that we obtain licenses from these parties or substantially re-engineer our products or processes in order to avoid infringement. We may not be able to obtain the necessary licenses on acceptable terms, or at all, or be able to re-engineer our products successfully. Further, intellectual property litigation is expensive and time-consuming, regardless of the merits of any claim, and could divert our management's attention from operating our business.

We license patent rights from third parties. If we are not able to enter into future licenses on commercially reasonable terms, if such third parties do not properly maintain or enforce the patents underlying such existing or future licenses, or if we fail to comply with our obligations under such licenses, our competitive position and business prospects could be adversely affected.

We are a party to license agreements that give us rights to third-party intellectual property that may be necessary or useful for our business, and we may enter into additional licenses in the future. If we are unable to enter into licensing arrangements on favorable terms in the future, our business may be adversely affected. In addition, if the owners of the patents we license do not properly maintain or enforce the patents underlying such licenses, our competitive position and business prospects could be harmed. Without protection for the intellectual property we license, other companies might be able to offer substantially similar or identical products and/or services for sale, which could adversely affect our competitive business position and harm our business prospects.

If we fail to comply with our obligations under license agreements, our counterparties may have the right to terminate these agreements, in which event we may not be able to develop, manufacture, register, or market, or may be forced to cease developing, manufacturing, registering, or marketing, any product or service that is covered by these agreements or may face other penalties under such agreements. Such an occurrence could materially adversely affect the value of the applicable ingredient or formulated products and/or services provided by us and have an adverse effect on our business, financial condition and results of operations.

Seasonality, as well as adverse weather conditions and other natural phenomena, may cause fluctuations in our revenue and operating results.

Historically, our operations have been seasonal, with a greater portion of total net revenue and operating income occurring in the third and fourth calendar quarters. Our customers' crops are vulnerable to adverse weather conditions and natural disasters such as storms, tsunamis, hail, tornadoes, freezing conditions, extreme heat, drought and floods, which can reduce acreage planted, lead to modified crop selection by growers and affect the timing and overall yield of harvest, each of which may reduce or otherwise alter demand for our products and services and adversely affect our business and results of operations. Weather conditions and natural disasters also affect decisions of our distributors, direct customers and end-users about the types and amounts of products and services to purchase and the timing of use of such products and services. Delays by growers in harvesting can result in deferral of orders to a future quarter or decisions to forego orders altogether in a particular growing season, either of which would negatively affect our sales in the affected period. As a result of seasonality, any factors that would negatively affect our third and fourth quarter results in any year could have an adverse impact on our business, financial condition and results of operations for the entire year.

Our products are highly regulated by governmental agencies in the countries where we conduct business. Our failure to obtain regulatory approvals, to comply with registration and regulatory requirements or to maintain regulatory approvals would have an adverse impact on our ability to market and sell our products.

Our pre- and post-harvest products are subject to technical review and approval by government authorities in each country where we wish to sell our products. While there is a general international consensus on the data needed in order to evaluate the safety of agrochemical products before they can be placed on the market (as evidenced, for example, by the standards and guidelines issued by the Organization for Economic Co-operation and Development), each country has its own legislative process and specific requirements in order to determine if identified risks are acceptable and can be managed in the local context and may be subject to frequent changes as new data requirements arise in response to scientific developments.

The regulatory requirements to which we are subject are complex and vary from country to country. To obtain new registrations, it is necessary to have a local registrant, and to understand the country's regulatory requirements, both at the time an application for registration is submitted and when the registration decision is made, which may be several years later. A significant investment in registration data is required (covering all aspects from manufacturing specifications through storage and transport, use and, finally, disposal of unwanted product and used containers) to ensure that product performance (e.g., bio efficacy), intrinsic hazards and use patterns are fully characterized. Risk assessments are conducted by government regulatory authorities, who make the final decision on whether the documented risk associated with a product and active ingredient is acceptable prior to granting approval for sale. This process may be prolonged due to requirements for additional data or internal administrative processes. There is a risk that registration of a new product may not be obtained or that a product label may be severely reduced, restricting the use of the product. If these circumstances arise, there is a risk that the substantial investments made in product development will not lead to the projected sales that justified the investment, and our business, financial condition and results of operations may be adversely affected by failure to obtain new registrations.

Products that are already approved are subject to periodic review by regulatory authorities in many countries. Such reviews frequently require the provision of new data and more complex risk assessments. The outcome of reviews of existing registrations cannot be guaranteed; registrations may be modified or canceled. Since all government regulatory authorities have the right to review existing registrations at any time, the sustainability of the existing portfolio cannot be guaranteed. Existing registrations may be lost at any time, resulting in an immediate impact on sales. Furthermore, prior to expiration, it is necessary to renew registrations. The renewal period and processes vary by country and may require additional studies to support the renewal process. Failure to comply could result in cancellation of the registration, resulting in an impact on sales.

In addition, new laws and regulations may be introduced, or existing laws and regulations may be changed or may become subject to new interpretations, which could result in additional compliance costs, seizures, confiscations, recalls, monetary fines or delays that could affect us or our customers.

Compliance with the prevailing regulations in countries in which we conduct business is essential. If we fail to comply with government requirements, we could have registrations withdrawn immediately (loss of sales), suffer financial penalties (fines) and suffer reputational damage that could materially and adversely affect our business and our regulatory success in the future.

If the data we supply to registration authorities is used by other companies to obtain their own product registrations, "generic" copies of products in our portfolio could enter the market and our business position could be adversely affected.

In many countries, toxicity studies, data and other information relied upon by registration authorities in support of a product registration are granted "data protection" for a period of up to 15 years after the date upon which the data was originally submitted. In addition to the period of data compensability, there is in many geographies an exclusive use period of ten years during which other companies may not legally cite our data in support of registration submissions without our written permission. In some countries, there is also a period of time during which companies may cite another company's data upon payment of data compensation. In other countries, there is no legislation at all that effectively prevents third parties from citing our proprietary regulatory data. Furthermore, after the exclusive use period and data compensation period have expired, as was the case with respect to our data in Europe in 2016 and in the United States in 2017, any third party would be free to cite our data in support of its registration submissions. The possibility that third parties can use our registration data to obtain their own product registrations can adversely affect our business, financial condition and results of operations by facilitating the entry of "generic" copies of products in our portfolio into the market.

Negative publicity relating to our products or business could reduce sales.

Our success depends both on our customers' perception of our products' effectiveness and on end-consumers' perception of the safety of our products. We may, from time to time, be faced with negative publicity relating to public health concerns, customer complaints or litigation alleging illness or injury, negative employee, staffing and supplier relationships or other matters, regardless of whether the allegations are valid or whether we are found to be responsible. Given the global nature of the business, the negative impact of adverse publicity relating to one product or in one geographic region may extend far beyond the product or the country involved to affect other parts of our business. The risk of negative publicity is particularly great with respect to the performance of service providers because we are limited in the manner in which we can control them, especially on a real-time basis. The considerable expansion in the use of social media over recent years can further amplify any negative publicity that could be generated by such incidents.

Customer demand for our products and our brand's value could diminish significantly if we receive negative publicity or if customer confidence in us or our products is otherwise eroded, which would likely result in lower sales and could have a material adverse effect on our business, financial condition and results of operations.

New information or a change in consumer attitudes and preferences regarding diet and health could result in changes in regulations and consumer consumption habits, which could have an adverse effect on our business, financial condition and results of operations.

Public awareness of, and concern about, the use of chemicals in food production has been increasing. Concerns about issues such as chemical residues in foods, agricultural worker safety and environmental impacts of agrochemicals (such as impacts on groundwater or non-target species, such as fish, birds and bees) could result in additional scrutiny of, or adversely affect the market for, our products, even when these products have been approved by governmental authorities. For example, such concerns could result in continued pressure for more stringent regulatory intervention and potential liability relating to health concerns arising from the use of our products in food preparation or the impact our products may have on the environment. These concerns could also influence public and customer perceptions, including purchasing preferences, the viability of our products, our reputation and the cost to comply with regulations, all of which could have a material adverse impact on our business. Some types of products that we manufacture have been subject to such scrutiny in the past, and some categories of products that we produce are currently under scrutiny and others may be in the future. We may not be able to effectively respond to changes in consumer health perceptions or to modify our product offerings to reflect trends in eating habits, which could have a material adverse effect on our business, financial condition and results of operations.

Use of our current products is not compatible with “organic” labeling standards in all jurisdictions. As such, an increase in consumer preference for organic produce could negatively affect the demand for our products or services. Similarly, a shift in consumer preferences away from fresh produce in favor of frozen or processed food products, or towards “seasonal” or locally grown produce, could negatively affect the demand for our products or services.

We may be required to pay substantial damages for product liability claims or other legal proceedings.

We may become involved in lawsuits concerning crop damage and product inefficacy claims, in addition to intellectual property infringement disputes, claims by employees, former employees or contingent staff, and general commercial disputes. Our insurance may not apply to or fully cover any liabilities we may incur as a result of these lawsuits.

We may face potential product liability claims for or relating to products we have sold and products that we may sell in the future. Since our products are used in the food chain on a global basis, any such product liability claim could subject us to litigation in multiple jurisdictions. Product liability claims, regardless of their merits or their ultimate outcomes, are costly, divert management’s attention, and may adversely affect our reputation and demand for our products and may result in significant damages. We cannot predict with certainty the eventual outcome of pending or future product liability claims. Any of these negative effects could adversely affect our results of operations, cash flows, or financial condition. These risks exist even with respect to products that have received, or may in the future receive, regulatory approval, registration and clearance for commercial use. Unexpected quality or efficacy concerns can arise with respect to marketed products, whether or not scientifically justified, leading to product recalls, withdrawals, or declining sales, as well as product liability, personal injury and/or other claims.

Our results of operations are subject to exchange rate and other currency risks. A significant movement in exchange rates could adversely impact our results of operations and cash flows.

We conduct our business in many different currencies, primarily the U.S. dollar and the Euro. Accordingly, currency exchange rates affect our operating results. The effects of exchange rate fluctuations on our future operating results are unpredictable because of the number of currencies in which we conduct business and the potential volatility of exchange rates. We are also subject to the risks of currency controls and devaluations. Currency controls may limit our ability to convert currencies into U.S. dollars or other currencies, as needed, or to pay dividends or make other payments from funds held by subsidiaries in the countries imposing such controls, which could adversely affect our liquidity. Currency devaluations could also negatively affect our operating margins and cash flows. For example, if the U.S. dollar were to strengthen against a local currency, our operating margin would be adversely impacted in the country to the extent significant costs are denominated in U.S. dollars while our revenues are denominated in such local currency. We operate in countries that have experienced hyperinflation in recent years, which amplifies currency risk.

Our substantial international operations subject us to risks, including unfavorable political, regulatory, labor, tax and economic conditions in other countries that could adversely affect our business, financial condition and results of operations.

Currently, we operate, or others operate on our behalf, in approximately 50 countries, in addition to our operations in the United States. We expect sales from international markets to represent an increasing portion of our total sales mix. Accordingly, our business is subject to risks related to the different legal, political, social and regulatory requirements and economic conditions of many jurisdictions. Risks inherent in our international operations include, in addition to other risks discussed in this section, the following:

- agreements may be difficult to enforce and receivables difficult to collect through a foreign country’s legal system;
- foreign customers may have increased credit risk and different financial conditions, which may necessitate longer payment cycles or result in increased bad debt write-offs or additions to reserves related to our foreign receivables;
- foreign countries may impose additional withholding taxes or otherwise tax our foreign income, impose tariffs or adopt other restrictions on foreign trade or investment, including currency exchange controls;
- there may be delays and interruptions in transportation and importation of our products;

- general economic conditions in the countries in which we operate, including fluctuations in gross domestic product, interest rates, market demand, labor costs and other factors beyond our control, could have an adverse effect on our net sales in those countries;
- our results of operations could be affected by political or economic instability on a country-specific or global level from various causes, including the possibility of hyperinflationary conditions, natural disasters and terrorist activities and the response to such conditions and events;
- we may experience difficulties in staffing and managing multi-national operations, and face the possibility of labor disputes and unexpected adverse changes in foreign laws or regulatory requirements, including environmental, health and safety laws and laws and regulations affecting export and import duties and quotas;
- governmental policies, including farm subsidies, tariffs, tenders and commodity support programs, as well as other factors beyond our control, such as the prices of fertilizers, seeds, water, energy and other inputs, and the prices at which crops may ultimately be sold, could negatively influence the number of acres planted, the mix of crops planted and the demand for agrochemicals;
- compliance with a variety of foreign laws and regulations may be difficult; and
- we may be subject to the risks of divergent business expectations resulting from cultural incompatibility.

We generally do not have long-term contracts with our customers or service providers.

Many of our relationships with our customers are based primarily upon one-year agreements or individual sales orders. As such, our customers could cease buying products or services from us at any time, for any reason, with little or no recourse. If multiple customers or a material customer elected not to purchase products or services from us, our business prospects, financial condition and results of operations could be adversely affected.

Our traditional service model relies on short-term and long-term contracts with a large number of service providers who apply our products in most jurisdictions for our customers. Service providers’ investment in the equipment necessary to provide services to customers is also minimal. As a result, service providers with short-term contracts could cease providing services for us or provide services for a competitor upon relatively short notice. If multiple service providers or a material service provider elected not to provide services on our behalf, our business, financial condition and results of operations could be adversely affected.

Increases in costs or reductions in the supplies of raw materials we use in our manufacturing process could materially and adversely affect our results of operations.

Our operations depend upon our or our contract manufacturers' obtaining adequate supplies of raw materials on a timely basis. We typically purchase our major raw materials on a contract or as-needed basis from outside sources. The availability and prices of raw materials may be subject to curtailment or change due to, among other things, the financial stability of our suppliers, suppliers’ allocations to other purchasers, interruptions in production by suppliers, new laws or regulations, changes in exchange rates and worldwide price levels. Additionally, we cannot guarantee that, as our supply contracts expire, we will be able to renew them, or if they are terminated, that we will be able to obtain replacement supply agreements on terms favorable to us. Our results of operations could be adversely affected if the costs of raw materials used in our manufacturing process increase significantly.

Joint development, distribution, manufacturing or venture investments that we enter into could be adversely affected by our lack of sole decision-making authority, our reliance on partners’ operational capabilities, strategic decisions and financial condition, and disputes between us and our collaborating partners.

We have a limited number of joint development and distribution agreements, and may enter into new ones in the future. Investments through joint research, development, registration, manufacturing, distribution, or other joint entities (collectively “collaborations”) may, under certain circumstances, involve risks not present were a third party not involved, including the possibility that collaboration partners might be sold, become bankrupt, fail to fund their share of required investments, fail to meet collaboration milestones, elect to change strategy, make poor business decisions or block or delay necessary decisions. Collaboration partners may develop economic or other business interests or goals which could conflict and become incompatible with our business interests, and may be in a position to take actions opposed to our strategy and objectives. Disputes between us and our collaboration partners may result in arbitration or litigation that would increase our expenses and distract our management team from focusing their time and effort on the business, or subject the projects, investments or facilities owned by the partnership or collaboration to additional risk. In addition, we may in certain circumstances be liable for the actions of our collaboration partners, which could materially and adversely affect our business, financial condition and results of operations.

We might require additional capital to support business growth, and this capital might not be available.

We intend to continue to make investments to support our business growth and might require additional funds to finance our planned growth, including strategic acquisitions. Accordingly, we might need to engage in equity or debt financings to secure additional funds. If we raise additional funds through issuance of equity securities, our existing stockholders could suffer significant dilution and any new equity securities that we issue could have rights, preferences and privileges superior to those of holders of our common stock. Any debt financing secured by us in the future could involve restrictive covenants relating to our capital-raising activities and other financial and operational matters, which might make it more difficult for us to obtain additional capital and to pursue business opportunities. Moreover, if we issue new debt securities, the debt holders would have rights senior to common stockholders to make claims on our assets. In addition, we might not be able to obtain additional financing on terms favorable to us, if at all. If we are unable to obtain adequate financing or financing on terms satisfactory to us when required, our ability to continue to support our business growth and to respond to business challenges could be significantly limited.

We are subject to credit risks related to our accounts receivable, and failure to collect our accounts receivable could adversely affect our results of operations and financial condition.

The failure to collect outstanding receivables could have an adverse impact on our business, financial condition and results of operations. If the financial condition of our customers were to deteriorate, resulting in an impairment of their ability to make payments, then we might be required to make additional allowances, which would adversely affect our results of operations in the period in which the determination or allowance was made. Bad debt write offs were less than 0.5% of revenues in each of 2020, 2019 and 2018.

While we occasionally obtain letters of credit or other security for payment from customers or distributors, enforcing that security is a lengthy and expensive process, and the eventual sale of the security may not ultimately cover the underlying trade receivable balance. Accordingly, we are not protected against accounts receivable default or bankruptcy by these entities. The current economic climate and volatility in the price of the underlying agricultural commodities could increase the likelihood of such defaults and bankruptcies. If a material portion of our customers or distributors were to become insolvent or otherwise were not able to satisfy their obligations to us, we would be materially harmed.

No single customer accounted for more than 10% of our consolidated net sales in 2020, 2019 or 2018. At December 31, 2020, December 31, 2019 and December 31, 2018, no individual customer accounted for greater than 10% of our consolidated accounts receivable balance.

Failure to comply with the Foreign Corrupt Practices Act, or FCPA, and other similar anti-corruption laws, could subject us to penalties and damage our reputation.

We are subject to the FCPA, which generally prohibits U.S. companies and their intermediaries from making corrupt payments to foreign officials for the purpose of obtaining or keeping business or otherwise obtaining favorable treatment and requires companies to maintain certain policies and procedures, including maintenance of adequate record-keeping and internal accounting practices to accurately reflect transactions. Certain of the jurisdictions in which we conduct business are at a heightened risk for corruption, extortion, bribery, pay-offs, theft and other fraudulent practices. Under the FCPA, U.S. companies may be held liable for actions taken by their strategic or local partners or representatives. Other jurisdictions in which we operate have adopted similar anti-corruption, anti-bribery and anti-kickback laws to which we are subject. Our employees, distributors, dealers and agents may not always take actions that are consistent with our policies designed to ensure compliance, particularly when they are confronted by pressures from competitors and others to act in a manner that is inconsistent with such policies. If we, or our intermediaries, fail to comply with the requirements of the FCPA, or similar laws of other countries, governmental authorities in the United States or elsewhere, as applicable, could seek to impose civil and/or criminal penalties, which could damage our reputation and have a material adverse effect on our business, financial condition and results of operations.

We rely heavily on information technology, and any material failure, weakness, interruption or breach of security could prevent us from effectively operating our business.

Our operations rely heavily on information systems for management of our supply chain, payment of obligations, collection of cash, credit and debit card transactions and other processes and procedures. Our FreshCloud product offerings rely particularly heavily on information systems for monitoring, data collection and analysis. Our operations depend upon our ability to protect our information systems, many of which are located outside of our physical control, from failure, other catastrophic events, security breaches and other data loss, including cyber-attacks. The disruption or failure of these systems to operate effectively could result in delays in customer service and reduce efficiency in our operations. Breaches of our security measures or the accidental loss, inadvertent disclosure, or unapproved dissemination of proprietary information or sensitive or confidential information about us, our employees, former employees, customers or suppliers could result in legal claims or proceedings, damage to or inaccessibility of critical systems, operational disruptions and other significant costs, which could adversely affect our reputation, financial condition and results of operations.

We use hazardous materials in our business and are subject to regulation and potential liability under environmental laws.

Our business is subject to a wide range of stringent laws and regulations that relate to the raw material supply chain, environmental compliance, disposal of hazardous waste, and the manufacture, development, production, marketing and use of our products. As with any chemical manufacturing enterprise, there are inherent hazards associated with chemical manufacturing, and the storage and transportation of raw materials and our products. Exposure to hazardous materials, accidents or noncompliance with laws and regulations by us, the users of our products or our contract manufacturers, could disrupt our operations or expose us to significant losses or liabilities.

Our suppliers or contract manufacturers may use hazardous materials in connection with producing our products. We may also from time to time send wastes to third parties for disposal.

A failure to comply with the environmental, health and safety laws and regulations to which we are subject, including any permits issued thereunder, may result in environmental remediation costs, loss of permits, fines, penalties or other adverse governmental or private actions, including regulatory or judicial orders enjoining or curtailing operations or requiring corrective measures, installation of pollution control equipment or remedial measures. We could also be held liable for any and all consequences arising out of human exposure to hazardous materials or environmental damage. In the event of a lawsuit or investigation, we could be subject to claims for liability for any injury caused to persons or property by exposure to, or release of hazardous materials or wastes related to our products. We may also be subject to claims associated with failure to warn users of our products of risks associated with our products. Further, we may be required to indemnify our suppliers, contract manufacturers, or waste disposal contractors against damages and other liabilities arising out of the production, handling, or storage of our products or raw materials or the disposal of related wastes. Such indemnification obligations could have an adverse effect on our business, financial condition and results of operations.

Environmental laws and regulations are complex, change frequently, have tended to become more stringent and stringently enforced over time and may be subject to new interpretation. We cannot predict the adverse impact that new environmental regulations, or new interpretations of existing regulations, might have on the research, development, production and marketing of our products.

We may need to recognize impairment charges related to intangible assets and fixed assets.

We have recognized substantial balances of goodwill and identified intangible assets as a result of business combinations, and we may record additional goodwill and other intangible assets as a result of any acquisitions we may complete in the future. We are required to test goodwill and any other intangible asset with an indefinite life for possible impairment on the same date each year and on an interim basis if there are indicators of a possible impairment. We are also required to evaluate amortizable intangible assets and fixed assets for impairment if there are indicators of a possible impairment. There is significant judgment required in the analysis of a potential impairment of goodwill, identified intangible assets and fixed assets. If, as a result of a general economic slowdown, deterioration in one or more of the markets in which we operate or impairment in our financial performance and/or future outlook, the estimated fair value of our long-lived assets decreases, we may determine that one or more of our long-lived assets is impaired. An impairment charge would be determined based on the estimated fair value of the assets and any such impairment charge could have a material adverse effect on our financial condition and results of operations.

Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.

As of December 31, 2020, we had aggregate U.S. net operating loss carryforwards of approximately $162.8 million. These net operating loss carryforwards could expire unused and be unavailable to offset future income tax liabilities. Under the Tax Cuts and Jobs Act, federal net operating losses incurred in taxable years ending after December 31, 2017 may be carried forward indefinitely, but the deductibility of federal net operating losses generated in tax years beginning after December 31, 2017 is limited. In addition, under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended (the "IRC"), and corresponding provisions of state law, if a corporation undergoes an “ownership change” (which is generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period), the corporation’s ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change income or taxes may be limited. We experienced an ownership change as a result of the consummation of the sale of preferred stock in July 2020. Consequently, the Company recorded a valuation allowance to reflect the reduction in expected utilization of net operating losses and other tax attributes. Future ownership changes may materially limit certain U.S. tax attributes, which may harm our future operating results by effectively increasing our future tax obligations. The Company will continue to review the realizability of the net operating losses and other tax attributes and may make additional adjustments to the valuation allowance.

Risks Related to Our Securities

PSP AGFS Holdings, L.P. (“PSP”) and The Dow Chemical Company ("Dow") have significant influence over us, which could limit your ability to influence the outcome of key transactions, including a change of control.

As of December 31, 2020, PSP owned 150,000 shares of our Series B preferred stock (the “Series B Preferred Stock”), which is currently convertible into approximately 31 million shares of our outstanding common stock, representing approximately 37% of our outstanding common stock on an as-converted basis (and which votes with our common stock on an as-converted basis), and Dow owned approximately 21 million shares of our outstanding common stock. In addition, we will pay dividends-in-kind on the Series B Preferred Stock. Because of the degree of concentration of voting power (and the potential for such power to increase upon the purchase of additional stock and/or the payment of dividends-in-kind), your ability to elect members of our board of directors and influence our business and affairs, including any determinations with respect to mergers or other business combinations, the acquisition or disposition of assets, the incurrence of indebtedness, the issuance of any additional common stock or other equity securities, the repurchase or redemption of common stock and the payment of dividends, may be diminished.

In addition, PSP and Dow have representation on the Company’s board of directors and have significant control over the management and affairs of the Company. As of the date of this Annual Report, PSP has three designees on the board of directors, and commencing on July 27, 2021 (or earlier under certain circumstances) will have the right to appoint one or more additional directors to the board, such that the total number of its designees would be proportionate to its ownership of common stock, on an as-converted basis. Dow (or an affiliate) has one designee on the board of directors and would have the right to appoint an additional director in the future under certain circumstances. PSP also has class approval rights over certain specified actions that would affect the holders of the Preferred Stock, and has the right to approve certain corporate actions for so long as it continues to hold at least 10% of the shares of common stock outstanding (on an as-converted basis).

Our stock price could be extremely volatile, and, as a result, you may not be able to resell your shares at or above the price you paid for them.

In recent years the stock market in general has been highly volatile. As a result, the market price and trading volume of our common stock is likely to be similarly volatile, and investors in our common stock may experience a decrease in the value of their stock, which could be substantial, including decreases unrelated to our results of operations or prospects, and could lose part or all of their investment. The price of our common stock could be subject to wide fluctuations in response to a number of factors, including, without limitation, those described elsewhere in this report.

In the past, securities class action litigation has often been initiated against companies following periods of volatility in their stock price. This type of litigation could result in substantial costs and divert our management’s attention and resources, and could also require us to make substantial payments to satisfy judgments or to settle litigation.

Your percentage ownership in us may be diluted by future issuances of capital stock, which could reduce your influence over matters on which stockholders vote.

Our board of directors has the authority, without action or vote of our stockholders, to issue all or any part of our authorized but unissued shares of common stock, including shares issuable upon the exercise of options, or shares of our authorized but unissued preferred stock. Issuances of common stock or voting preferred stock would reduce your influence over matters on which our stockholders vote and, in the case of issuances of preferred stock, would likely result in your interest in us being subject to the prior rights of holders of that preferred stock.

There may be sales of a substantial amount of our common stock by our current stockholders, and these sales could cause the price of our common stock to fall.

As of December 31, 2020, there were 52,430,947 shares of our common stock outstanding. Substantially all of our issued and outstanding shares are freely transferable, except for any shares held by our “affiliates,” as that term is defined in Rule 144 under the Securities Act. Future sales of our common stock may cause the market price of our securities to drop significantly, even if our business is doing well.

We are party to an Investor Rights Agreement, dated July 31, 2015 (the "Investor Rights Agreement"), pursuant to which Dow and the other parties thereto are entitled to demand that we register the resale of their securities subject to certain minimum requirements. Stockholders who are party to the Investor Rights Agreement also have certain "piggyback" registration rights with respect to registration statements we may file. In addition, pursuant to a Registration Rights Agreement, dated July 27, 2020, between us and PSP (the "Registration Rights Agreement"), on the first business day after January 27, 2022, we will be required to file a shelf registration statement to permit the public resale of the shares of common stock underlying PSP's Series B Preferred Stock, and PSP will have additional demand and "piggyback" registration rights with respect to those shares.

Upon effectiveness of any registration statement we file pursuant to the Investor Rights Agreement and/or the Registration Rights Agreement, these parties may sell large amounts of our stock in the open market or in privately negotiated transactions, which could have the effect of increasing the volatility in our stock price or putting significant downward pressure on the price of our stock.

Sales of substantial amounts of our common stock in the public market, or the perception that such sales will occur, could adversely affect the market price of our common stock and make it difficult for us to raise funds through securities offerings in the future.

If securities or industry analysts do not publish or cease publishing research or reports about us, our business, or our market, or if they change their recommendations regarding our common stock adversely, the price and trading volume of our common stock could decline.

The trading market for our common stock is influenced by the research and reports that industry or securities analysts may publish about us, our business, our market, or our competitors. If securities or industry analysts do not provide coverage of us, our stock price and trading volume would likely be negatively impacted. If any of the analysts who cover or who may cover us change their recommendation regarding our stock adversely, or provide more favorable relative recommendations about our competitors, the price of our common stock would likely decline. If any analyst who covers or who may cover us were to cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Anti-takeover provisions contained in our certificate of incorporation and bylaws could impair a takeover attempt.

Our second amended and restated certificate of incorporation and bylaws contain provisions that could have the effect of delaying or preventing changes in control or changes in our management without the consent of our board of directors. These provisions include:

- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death, or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- the ability of our board of directors to determine whether to issue shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at a special meeting of our stockholders;
- the requirement that an annual meeting of stockholders may be called only by the chairman of the board of directors, the chief executive officer, or the board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors;
- limiting the liability of, and providing indemnification to, our directors and officers;
- controlling the procedures for the conduct and scheduling of stockholder meetings;
- providing that directors may be removed prior to the expiration of their terms by stockholders only for cause; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our board of directors.

These provisions, alone or together, could delay hostile takeovers and changes in control of us or changes in our management. Any provision of our second amended and restated certificate of incorporation or bylaws that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

Because we have no current plans to pay cash dividends on our common stock for the foreseeable future, you may not receive any return on investment unless you sell your common stock for a price greater than that which you paid for it.

We may retain future earnings, if any, for future operations, expansion, debt repayment, and payment of dividends to PSP, and have no current plans to pay any cash dividends for the foreseeable future. Any decision to declare and pay dividends on our common stock as a public company in the future will be made at the discretion of our board of directors and will depend on, among other things, our results of operations, financial condition, cash requirements, contractual restrictions and other factors that our board of directors may deem relevant. In addition, our ability to pay dividends may be limited by covenants of any existing and future outstanding indebtedness we or our subsidiaries incur, including our credit facility and the terms of our outstanding Series B Preferred Stock. As a result, you may not receive any return on an investment in our common stock unless you sell our common stock for a price greater than that which you paid for it.

We are a smaller reporting company and we cannot be certain if the reduced disclosure requirements applicable to smaller reporting companies will make our common stock less attractive to investors.

We are a “smaller reporting company,” as defined in Rule 12b-2 of the Exchange Act. As a smaller reporting company, we have relied on exemptions from certain disclosure requirements that are applicable to other public companies that are not smaller reporting companies. Among other things, we are subject to simplified executive compensation disclosures in their filings; are exempt from the provisions of Section 404 requiring that independent registered public accounting firms provide an attestation report on the effectiveness of internal control over financial reporting; and have certain other decreased disclosure obligations in their SEC filings, including only being required to provide two years of audited financial statements in annual reports. Decreased disclosures in our SEC filings due to our status as a smaller reporting company may make it harder for investors to analyze our results of operations and financial prospects. We cannot predict if investors will find our common stock less attractive because we will rely on the exemptions available to smaller reporting companies. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

In 2020 we identified material weaknesses in our internal controls over taxes and financial reporting, and if we are unable to maintain effective internal controls over taxes or financial reporting, this could have a material adverse effect on our business and stock price.

As a publicly traded company, we are required to comply with the SEC’s rules implementing Section 302 and 404 of the Sarbanes-Oxley Act, which require management to certify financial and other information in our quarterly and annual reports and provide an annual management report on the effectiveness of controls over financial reporting. Pursuant to the JOBS Act, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal control over financial reporting for so long as we remain a smaller reporting company.

Our management may be unable to conclude in future periods that our disclosure controls and procedures are effective due to the effects of various factors, which may, in part, include unremediated material weaknesses in internal controls over taxes and financial reporting related to the design and operation of controls over significant nonrecurring transactions and the preparation and review of our income tax provision. For further discussion of the material weaknesses, see Item 9A. Controls and Procedures. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act means controls and other procedures of a company that are designed to ensure that information required to be disclosed in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the rules and forms of the SEC. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in those reports is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

Remediation efforts place a significant burden on management and add increased pressure to our financial resources and processes. As a result, we may not be successful in making the improvements necessary to remediate the material weaknesses identified by management, be able to do so in a timely manner, or be able to identify and remediate additional control deficiencies, including material weaknesses, in the future.

If we are unable to comply with the requirements of Section 404 in a timely manner or to assert that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion as to the effectiveness of our internal control over financial reporting if and when we cease to be a smaller reporting company, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could be negatively affected, and we could become subject to investigations by NASDAQ (the exchange on which our securities are listed), the SEC or other regulatory authorities, which could require additional financial and management resources.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

We lease our current headquarter facility in Philadelphia, Pennsylvania, consisting of approximately 15,887 square feet. The lease has a 90 month term commencing in May 2016, with a five-year renewal option and an option for us to terminate the lease after 72 months. We lease a facility in Spring House, Pennsylvania consisting of 14,000 square feet. The lease has a 123 month term commencing in January 2018. We use five primary additional leased locations worldwide to deliver product and technical services: Yakima, Washington; Fresno, California; Curico, Chile; Bologna, Italy; and Llerida, Spain. In addition, the Yakima Service Center is our product distribution center to all geographic regions around the world. Tecnidex occupies a building of five units that make up their headquarters in Valencia, Spain. Tecnidex owns two of these units (consisting of approximately 24,480 square feet) and leases the three remaining units (consisting of approximately 37,245 square feet). One of the leased units had a 60 month term that commenced in October 2015 which was extended for an additional 80 months. The other two leased units have a 120 month lease term that commenced in July 2017.

ITEM 3. LEGAL PROCEEDINGS

From time to time we are named as a defendant in legal actions arising from our normal business activities. Although we cannot predict with certainty the ultimate resolution of lawsuits, investigations and claims asserted against us, we do not believe any currently pending legal proceeding to which we are a party will have a material adverse effect on our business, prospects, financial condition, cash flows or results of operations.

In August 2016, we filed a lawsuit against MirTech, Inc. (“MirTech”), Decco U.S. Post-Harvest, Inc. (“Decco”) and certain related parties in the United States District Court for the District of Delaware. Our complaint alleged, among other things, that MirTech, a former consultant to us, appropriated our confidential information and technology, in violation of agreements between MirTech and us, and that MirTech and Decco collaborated to infringe on several of our patents. Our complaint seeks, among other relief, declarations that we are the owner of a number of patents filed by MirTech, injunctive relief to stop the infringement of our patents and monetary damages. The claims in this lawsuit were bifurcated and a bench trial was held in March 2017 on certain of our contract claims., after which the Court ruled in the Company’s favor and against MirTech. In October 2019 there was a jury trial against Decco and its parent company, UPL Ltd.("UPL"), in which the jury awarded AgroFresh $31.1 million in damages, including punitive damage, and the punitive damages award was subsequently reduced by $18 million by the trial court Judge following post-trial motions.

PART II

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS, AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock trades on the Nasdaq Global Select Market under the symbols "AGFS".

Holders of Record

On February 24, 2021, there were approximately 81 holders of record of our common stock. Such numbers do not include beneficial owners holding securities through nominee names.

Dividends

We have not paid any cash dividends on our common stock to date. The payment of cash dividends in the future is within the discretion of our Board of Directors, and will be dependent upon our revenues and earnings, capital requirements and general financial condition. Our Board of Directors does not anticipate declaring any dividends in the foreseeable future. Further, our ability to declare dividends is limited by the terms of our Series B Preferred Stock, which prohibits us from paying dividends on our common stock without the written approval of holders of a majority of the outstanding shares of Series B Preferred Stock, and restrictive covenants contained in our credit facility, which includes an overall cap on the total amount of dividends we can pay, together with the total amount of shares and warrants we can repurchase, of $12.0 million per fiscal year, and imposes certain other conditions on our ability to pay dividends.

ITEM 6. SELECTED FINANCIAL DATA

As a smaller reporting company, we are not required to provide the information required by this Item.

ITEM 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of the Company’s financial condition and results of operations should be read in conjunction with the audited consolidated financial statements and the notes thereto contained elsewhere in this Report. As disclosed in Note 24 - Correction of Prior Period Errors of the audited consolidated financial statements, the Company’s consolidated financial statements as of and for the year ended December 31, 2019, and the Company’s unaudited interim condensed consolidated financial statements for each of the interim and year-to-date periods ended March 31, 2020, June 30, 2020, and September 30, 2020 have been revised to give effect to the correction of certain errors we identified during the current year-end financial reporting process. As a result, the Management’s Discussion and Analysis of the Company’s Financial Condition and Results of Operation set forth below has been revised to give effect to the correction of these accounting errors.

This Management’s Discussion and Analysis of Financial Condition and Results of Operations (“MD&A”) contains the financial measures EBITDA and Adjusted EBITDA, which are not presented in accordance with accounting principles generally accepted in the United States of America ("GAAP"). These non-GAAP financial measures are being presented because management believes that they provide readers with additional insight into the Company’s operational performance relative to earlier periods and relative to its competitors and they are key measures used by the Company to evaluate its performance. The Company does not intend for these non-GAAP financial measures to be a substitute for any GAAP financial information. Readers of this MD&A should use these non-GAAP financial measures only in conjunction with the comparable GAAP financial measures. A reconciliation of EBITDA and Adjusted EBITDA to the most comparable GAAP measure is provided in this MD&A.

Business Overview

AgroFresh is a global leader in delivering innovative food preservation and waste reduction solutions for fresh produce. The Company is empowering the food industry with a range of integrated solutions designed to help growers, packers and retailers improve produce freshness and quality while reducing waste. AgroFresh has key products registered in over 50 countries, and supports customers by protecting over 25,000 storage rooms globally. AgroFresh’s solutions range from near-harvest with Harvista™ and LandSpring™ to its flagship post-harvest SmartFresh™ Quality System. Additional post-harvest freshness solutions include fungicides that can be applied to meet various customer operational requirements, in either a foggable (ActiMist™) or liquid (ActiSeal™) delivery form. To supplement our near- and post-harvest product solutions, our FreshCloud™ digital technology platform includes analytical, diagnostic and tracking services that provide a range of value-added capabilities to help customers optimize the quality of their produce. Beyond apples, SmartFresh technology can provide ready-to-eat freshness for other fruits and vegetables including avocados, bananas, melons, tomatoes, broccoli and mangos. AgroFresh is also providing customers with packaging-based advisory services and custom packaging solutions under the RipeLock brand, which focuses on packaging-based freshness technology solutions for fruits and vegetables.

In December 2017, AgroFresh acquired a controlling interest in Tecnidex. With this acquisition, AgroFresh expanded its industry-leading post-harvest presence into additional crops and increased its penetration of the produce market in southern Europe, Latin America and Africa. For over 35 years, Tecnidex has been helping fruit and vegetable producers offer clean, safe and high-quality products to its regional customers in 18 countries. Through a portfolio of post-harvest fungicides, coatings and disinfectants, packinghouse equipment and associated consulting and after-sale services, Tecnidex improves the quality and value of our customers’ fruit and vegetables while respecting the environment. Tecnidex further diversified AgroFresh’s revenue by allowing the Company to provide solutions and service to the citrus industry.

Freshness is the most important driver of consumer satisfaction when it comes to produce and, at the same time, food waste is a major issue in the industry. About one third of the total food produced worldwide is lost or wasted each year. Nearly 45% of all fresh fruits and vegetables, 40% of apples and 20% of bananas, are lost to spoilage. AgroFresh plays a key role in the value chain by offering products and services that maintain produce freshness and reduce waste.

AgroFresh’s flagship SmartFresh Quality System regulates the post-harvest ripening effects of ethylene, the naturally occurring plant hormone that triggers ripening in certain fruits and vegetables. SmartFresh is naturally biodegradable, leaves no detectable residue and has been approved for use by many domestic and global regulatory organizations. Harvista extends the Company’s proprietary technology into the field, including treatment of cherries early in the growing season and near-harvest management of apples, pears and blueberries. FreshCloud™ is our digital technology services platform, which continues to expand. Launched in 2020, FreshCloud Quality Inspection is a proprietary cloud-based mobile quality management service that digitizes what was formerly a manual quality control process and captures, organizes and analyzes quality metrics in real time. LandSpring™ is an innovative 1-MCP technology targeted to transplanted vegetable seedlings. It is currently registered for use on tomatoes, peppers and 14 other crops in the US. It reduces transplant shock, resulting in less seedling mortality and faster crop establishment, which leads to a healthier crop and improved yields.

AgroFresh’s business is highly seasonal, driven by the timing of the apple and pear harvests in the northern and southern hemispheres. The first half of the year is when the southern hemisphere harvest occurs, and the second half of the year is when the northern hemisphere harvest occurs. Since the northern hemisphere harvest of apples and pears is typically larger, a significant portion of our sales and profits are historically generated in the second half of the year. In addition to this seasonality, factors such as weather patterns may impact the timing of the harvest within the two halves of the year.

On July 31, 2015 (the “Closing Date”), we consummated a business combination (the “Business Combination”) pursuant to a Stock Purchase Agreement, dated April 30, 2015 (the “Purchase Agreement”), with Dow, providing for the acquisition by us of the AgroFresh business from Dow. In connection with the closing of the Business Combination, we entered into a tax receivables agreement (the "TRA"), as amended in April 2017, pursuant to which Dow was entitled to receive 50% of the tax savings, if any, that the Company realized as a result of the increase in the tax basis of assets acquired pursuant to the Business Combination. The TRA was terminated in December 2019. Also in connection with the closing of the Business Combination, AgroFresh entered into a transition services agreement with Dow. Under the agreement, Dow provided AgroFresh a suite of services for a period of time ranging from six months to five years depending on the service. While most of the Dow-provided services were complete as of December 31, 2018, certain services continued through 2020.

Factors Affecting the Company’s Results of Operations

The Company’s results of operations are affected by a number of external factors. Some of the more important factors are briefly discussed below.

Impact of COVID-19

In March 2020, the COVID-19 outbreak was declared a National Public Health Emergency which continues to spread throughout the world and has adversely impacted global activity and contributed to significant declines and volatility in financial markets. The outbreak could have a continued material adverse impact on economic and market conditions and trigger a period of global economic slowdown. During the twelve months ended December 31, 2020, the COVID-19 pandemic did not have a significant adverse impact on our results of operations. However, there were numerous obstacles presented and some localized financial impacts of the pandemic, including fluctuations in foreign currency exchange rates and customer demand and spending pattern changes. While we are following the requirements of governmental authorities and taking additional preventative and protective measures to ensure the safety of our workforce, including implementing remote working arrangements and varying procedures for essential workforce, we cannot be 100% certain that there will not be any incidents across our global operations that may cause service interruptions. The rapid development and fluidity of this situation precludes any prediction as to the ultimate impact of the coronavirus outbreak, although the Company operates in an industry that thus far has not been as severely impacted as others. Nevertheless, the outbreak presents some uncertainty and risk with respect to the Company and its performance and financial results.

Demand for the Company’s Offerings

The Company sells to customers in approximately 50 countries and derives its revenue by assisting growers and packers to optimize the value of their crops primarily in the near and post-harvest periods. The Company’s products and services add value to customers by reducing food spoilage and extending the life of perishable fruits. The Food and Agriculture Organization of the United Nations has estimated that a growing global population will require a near doubling of food production in developing countries by 2050 to meet the expected demand of a worldwide population expected to reach 9 billion people.

This global trend, among others, creates demand for the Company’s solutions. The Company’s offerings are currently protected by patent filings in 51 countries.

The global produce market is a function of both the size and the yield of the crop harvested; variations in either will affect total production. Given the nature of the agricultural industry, weather patterns may impact total production and the Company's resulting commercial opportunities. The Company supports a diverse customer base whose end markets vary due to the type of fruit and quality of the product demanded in their respective markets. Such variation across end markets also affects demand for the Company’s services.

Customer Pricing

The Company's offerings are priced based on the value they provide to the Company's customers. From time to time, the Company adjusts the pricing of its offerings to address market trends. The Company does not typically price its products in relation to any underlying cost of materials or services; therefore, its margins can fluctuate with changes in these costs. The Company's pricing may include rebate arrangements with customers in exchange for mutually beneficial long-term relationships and growth.

Integrated Service Model

AgroFresh offers the Company's commercially available products, including SmartFresh and Harvista, primarily through a direct service model. Sales and sales support personnel maintain face-to-face relationships with customers year round. Technical sales and support personnel work with customers to provide value-added advisory services regarding the application of SmartFresh. The actual application of SmartFresh is performed by service providers that are typically third-party contractors. Harvista is applied through both aerial and ground application, which is administered by third-party service providers or made by our customers directly.

Most of the Company's service providers are operating under multi-year contracts. Management believes the quality and experience of its service providers deliver clear commercial benefits.

Seasonality

The Company's operations are subject to seasonal variation due to the timing of the growing seasons around the world. For our core crops of apples and pears, northern hemisphere growers harvest from August through November, and southern hemisphere growers harvest from late January to early May. For citrus crops, there are seasonal variations in this business due to the northern hemisphere citrus harvest, which spans from October to March. Since the majority of the Company's sales are in northern hemisphere countries, a proportionately greater share of its revenue is realized during the second half of the year. There are also variations in the seasonal demands from year to year depending on weather patterns and crop size. This seasonality and variations in seasonal demand could impact the ability to compare results between periods.

Foreign Currency Exchange Rates

With a global customer base and geographic footprint, the Company generates revenue and incurs costs in a number of different currencies, with the Euro comprising the most significant non-U.S. currency. Fluctuations in the value of these currencies relative to the U.S. dollar can increase or decrease the Company's overall revenue and profitability as stated in U.S. dollars, which is the Company's reporting currency. In certain instances, if sales in a given geography have been adversely impacted on a long-term basis due to foreign currency depreciation, the Company has been able to adjust its pricing so as to mitigate the impact on profitability.

Domestic and Foreign Operations

The Company has both domestic and foreign operations. Fluctuations in foreign exchange rates, regional growth-related spending in R&D and marketing expenses, and changes in local selling prices, among other factors, may impact the profitability of foreign operations in the future.

Critical Accounting Policies and Use of Estimates

Our discussion and analysis of results of operations and financial condition are based upon our financial statements. These financial statements have been prepared in accordance with U.S. GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the amounts reported in the financial statements. We base our estimates and judgments on historical experiences and assumptions believed to be reasonable under the circumstances and re-evaluate them on an ongoing basis. Actual results could differ from our estimates under different assumptions or conditions. Our significant accounting policies, which may be affected by our estimates and assumptions, are more fully described in Note 2 to the audited consolidated financial statements.

An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, and if different estimates that reasonably could have been used, or changes in the accounting estimates that are reasonably likely to occur periodically, could materially impact the financial statements. Management believes the following critical accounting policies reflect its most significant estimates and assumptions used in the preparation of the financial statements.

Goodwill

As discussed in Note 2- Basis of Presentation and Summary of Significant Accounting Policies in the audited consolidated financial statements, the Company tests goodwill and identifiable intangible assets with indefinite lives for impairment as of December 31 of each year. Intangibles are tested for impairment using a quantitative impairment model. We test goodwill for impairment by either performing a qualitative evaluation or a two-step quantitative test.

The process of evaluating the potential impairment of goodwill is subjective because it requires the use of estimates and assumptions as to our future cash flows, discount rate commensurate with the risks involved in the asset, future economic and market conditions, as well as other key assumptions. The amounts recorded in the financial statements related to goodwill are based on the best estimates and judgments of the Company's management, although actual outcomes could differ from our estimates. The Company recorded goodwill with a carrying value of $6.9 million as of December 31, 2020. The estimated fair value of the Tecnidex reporting unit as of December 31, 2020 is approximately 19% greater than the carrying value of the reporting unit. A 1% increase in the assumed discount rate would not cause an impairment of goodwill.

Other intangible assets

We conduct our annual indefinite-lived intangible assets impairment assessment as of December 31 of each year unless conditions arise that would require a more frequent evaluation. In assessing the recoverability of indefinite-lived intangible assets, projections regarding estimated discounted future cash flows and other factors are made to determine if impairment has occurred. If we conclude that there has been impairment, we will write down the carrying value of the asset to its fair value. Each year, we evaluate those intangible assets with indefinite lives to determine whether events and circumstances continue to support the indefinite useful lives. When testing indefinite-lived intangible assets for impairment, we have the option to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not (more than 50%) that the fair value of an indefinite-lived intangible asset is less than its carrying amount. Such qualitative factors may include the following:

- Macroeconomic conditions
- Industry and market considerations
- Cost factors
- Overall financial performance; and
- Other relevant entity-specific events

Based on the results of our annual impairment reviews, management recorded an impairment charge of $2.6 million on its SmartFresh trade name for the year ended December 31, 2018. In determining the fair value of the trade names, the Company applied the relief from royalty methodology, which is based on the assumption that without ownership of the assets, the user of the trade names would have to make a stream of payments to the owner of the trade names in return for the rights to use the trade names. By acquiring the trade name, the user avoids those payments. The Company has three trade name assets, AgroFresh, SmartFresh, and Tecnidex, totaling $27.3 million, which passed the impairment test as of December 31, 2020 by 13%, 41% and 21%, respectively. A 1% increase in the discount rate would not cause an impairment of any of the trade names.

Definite-lived intangible assets, such as technology, customer relationships and software are amortized over their estimated useful lives, generally for periods ranging from 4 to 24 years. We assess the reasonableness of the useful lives of these assets regularly. Our assessment is based on a number of factors including competitive environment, product history, underlying product life cycles, operating strategy and the macroeconomic environment of the countries in which the products are sold. The impairment of definite-lived intangible assets is tested annually or more frequently when factors or changes in circumstances indicate that the fair value has declined below its carrying value. If any factors that could result in future impairment charge have occurred, a recoverability test is performed in which the undiscounted cash flows of the asset or asset group are compared to the carrying value. If the cash flows are not sufficient to recover the carrying value, then a fair value estimate is made of the asset or asset group to determine the amount of impairment, if any. Once these assets are fully amortized, they are removed from the balance sheet. The Company recorded an impairment charge of $1.0 million for the year ended December 31, 2019 associated with Verigo software. In 2019, the Company recognized accelerated amortization expense of $34.0 million related to developed RipeLock technology based on the Company's change in strategy for the RipeLock product. The accelerated amortization expense is included in amortization of intangibles in the consolidated statements of (loss) income.

Revenue Recognition

The majority of our revenues are generated from the application of our products to fruits and vegetables either before or after harvesting. Revenue is recognized at the time the product is applied to the fruits or vegetables as this represents the point at which our performance obligation to the customer has been completed.

On January 1, 2018, the Company began to account for revenue in accordance with ASU 2014-09, *Revenue from Contracts with Customers* (Topic 606), which requires revenue recognized to represent the transfer of promised goods or services to customers at an amount that reflects the consideration which is expected to be received in exchange for those goods or services. To determine revenue recognition for the arrangements that the Company determines are within the scope of Topic 606, the Company performs the following 5 steps: (1) identify the contracts with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the entity satisfies a performance obligation. Revenue is presented in our consolidated statements of (loss) income, net of estimated rebates and discounts.

See Note 2 - Basis of Presentation and Summary of Significant Accounting Policies to the audited consolidated financial statements for further information.

Accounting for Business Combinations

We account for business combinations under the acquisition method of accounting. This method requires the recording of acquired assets, including separately identifiable intangible assets and assumed liabilities at their acquisition date fair values. The excess of the purchase price over the fair value of assets acquired and liabilities assumed is recorded as goodwill. Determining the fair value of assets acquired and liabilities assumed requires management's judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash inflows and outflows, discount rates, royalty rates and asset lives, among other items.

The fair values of intangible assets were estimated using an income approach, either the excess earnings method (customer relationships) or the relief from royalty method (technology and trademarks). Under the excess earnings method, an intangible asset's fair value is equal to the present value of the incremental after-tax cash flows attributable solely to the intangible asset over its remaining useful life. Under the relief from royalty method, fair value is measured by estimating future revenue associated with the intangible asset over its useful life and applying a royalty rate to the revenue estimate. These intangible assets enable us to secure markets for our products, develop new products to meet evolving business needs and competitively produce our existing products.

The fair values of property, plant and equipment, other than real properties, were based on the consideration that unless otherwise identified, they will continue to be used "as is" and as part of the ongoing business. The determination of the fair value of assets acquired and liabilities assumed involves assessing factors such as the expected future cash flows associated with individual assets and liabilities and appropriate discount rates at the date of the acquisition.

The fair values of the various contingent consideration components were measured using the following valuation models. The fair value of the tax amortization benefit contingency was measured using an income approach based on the Company's best estimate of the undiscounted cash payments to be made, tax effected and discounted to present value utilizing an appropriate market discount rate. The fair value of the earnout payment was measured using a Monte Carlo pricing model and based on the Company's best projection of the Company's revenues over the three-year period from January 1, 2018 to December 31, 2020.

See Note 3 - Business Combination to the audited consolidated financial statements for further information.

Stock-Based Compensation

We recognize stock-based compensation expense for all share-based payment awards on a straight-line basis over the requisite service period of the award. Determining the fair value of share-based payment awards requires the input of highly subjective assumptions, including the expected life of the share-based payment awards and stock price volatility. The assumptions used in calculating the fair value of share-based payment awards represent management's best estimates, but these estimates involve inherent uncertainties and the application of management judgment. As a result, if factors change and we use different assumptions, our share-based compensation expense could be materially different in the future. See Note 17 - Stock Compensation to the audited consolidated financial statements contained in this report for further detail on stock-based compensation.

Income taxes

The provision for income taxes was determined using the asset and liability approach of accounting for income taxes. Under this approach, deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid. The provision for income taxes represents income taxes paid or payable for the current year plus the change in deferred taxes during the period. Deferred taxes result from differences between the financial and tax basis of our assets and liabilities and are adjusted for changes in tax rates and tax laws when changes are enacted. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not that a tax benefit will not be realized. Deferred tax assets and liabilities are measured using enacted tax rates applicable in the years in which they are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax law is recognized in income in the period that includes the enactment date.

Income tax related penalties are included in the provision for income taxes. In evaluating the ability to realize deferred tax assets, the Company relies on taxable income in prior carryback years, the future reversals of existing taxable temporary differences, future taxable income and tax planning strategies.

The breadth of our operations and the global complexity of tax regulations require assessments of uncertainties and judgments in estimating taxes we will ultimately pay. The final taxes paid are dependent upon many factors, including negotiations with taxing authorities in various jurisdictions, outcomes of tax litigation and resolution of disputes arising from federal, state and international tax audits in the normal course of business. A liability for unrecognized tax benefits is recorded when management concludes that the likelihood of sustaining such positions upon examination by taxing authorities is less than "more likely than not."

Recently Issued Accounting Standards and Pronouncements

See Note 2 - Basis of Presentation and Summary of Significant Accounting Policies to the accompanying audited consolidated financial statements for a full description of recent accounting pronouncements and our expectations of their impact, if any, on our results of operations and financial condition.

Results of Operations

The following table summarizes the results of operations:

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Net sales	$ 157,643	$ 170,065	$ 178,786
Cost of sales (excluding amortization, shown separately below)	42,217	45,049	46,271
Gross profit	115,426	125,016	132,515
Research and development expenses	12,357	14,112	13,873
Selling, general and administrative expenses	53,860	59,446	65,770
Amortization of intangibles	43,731	81,119	45,946
Impairment of long lived assets	—	11,424	2,600
Change in fair value of contingent consideration	—	(330)	(3,018)
Grant income	(2,974)	—	—
Operating income (loss)	8,452	(40,755)	7,344
Other income	1,491	13	429
Debt modification and extinguishment expenses	(5,028)	—	—
Loss on foreign currency exchange	(2,836)	(4,127)	(1,722)
Interest expense, net	(23,669)	(33,784)	(34,451)
Loss before income taxes	(21,590)	(78,653)	(28,400)
Income taxes expense (benefit)	31,376	(24,500)	1,840
Net loss including non-controlling interest	(52,966)	(54,153)	(30,240)
Less: Net (income) loss attributable to redeemable non-controlling interest	(745)	562	180
Net loss attributable to AgroFresh Solutions, Inc.	(53,711)	(53,591)	(30,060)
Less: Dividends on convertible preferred stock	10,488	—	—
Net loss attributable to AgroFresh Solutions, Inc. common stockholders	$ (64,199)	$ (53,591)	$ (30,060)

Comparison of Results of Operations for the year ended December 31, 2020 and the year ended December 31, 2019.

Net Sales

Net sales were $157.6 million for the year ended December 31, 2020, as compared to net sales of $170.1 million for the year ended December 31, 2019. The impact of the change in foreign currency exchange rates compared to 2019 reduced revenue by $1.9 million. Excluding this impact, revenue decreased approximately 6.2%. The decrease in net sales was primarily due to lower volume of SmartFresh sales on a smaller crop size and a decrease in EthylBloc sales due to COVID-19 impacts, partially offset by growth in fungicides, Harvista and diversification strategies.

Cost of Sales

Cost of sales was $42.2 million for the year ended December 31, 2020, as compared to $45.0 million for the year ended December 31, 2019. Gross profit margin was 73.2% in 2020 versus 73.5% in 2019. Despite a decrease in sales and related fixed costs leverage impact, margin was relatively consistent due to the positive effects of supply chain cost optimization initiatives.

Research and Development Expenses

Research and development expenses were $12.4 million for the year ended December 31, 2020, as compared to $14.1 million for the year ended December 31, 2019. The decrease in research and development expenses was driven by the timing of projects.

Selling, General and Administrative Expenses

Selling, general and administrative expenses were $53.9 million for the year ended December 31, 2020, as compared to $59.4 million for the year ended December 31, 2019, a decrease of 9.4%. Included in selling, general and administrative expenses were $4.1 million in 2020 and $8.8 million in 2019 of costs associated with non-recurring items that include M&A and litigation along with severance. Excluding these items, selling general and administrative expenses decreased approximately 1.8% from 2019 to 2020, driven by ongoing cost optimization initiatives.

Amortization of Intangibles

Amortization of intangibles was $43.7 million for the year ended December 31, 2020, as compared to $81.1 million for the year ended December 31, 2019. The decrease in amortization is primarily due to accelerated RipeLock amortization of $34.0 million and software additions during 2019.

Impairment of Assets

During the year ended December 31, 2020, there was no impairment charge. During the year ended December 31, 2019, the Company recorded an impairment charge of $11.4 million, consisting of $1.0 million associated with Verigo software following a partnership agreement with a new technology provider, $10.0 million on investments and $0.4 million of other assets.

Change in fair value of contingent consideration

The Company recorded no gain or loss in the year ended December 31, 2020 related to the change in the fair value of contingent consideration, as compared to a $0.3 million gain for the year ended December 31, 2019. As discussed in Note 3 - Business Combination to the audited consolidated financial statements, pursuant to the Business Combination, the Company entered into various forms of contingent consideration, including the deferred payment and the tax amortization benefit contingency. These liabilities are measured at fair value each reporting date and any mark-to-market fluctuations are recognized in earnings.

For the year ended December 31, 2019, the Company recognized the deferred payment gain of $0.4 million and a tax amortization benefit contingency loss of $0.1 million. In 2019, the TRA was terminated, and the Company paid to Dow an aggregate of $16 million in settlement of all past and estimated future liabilities that would have been owed under the TRA.

Grant Income

The Company recorded income of $3.0 million for the year ended December 31, 2020. Pursuant to the CARES Act, the Company received a Paycheck Protection Program loan to offset eligible costs incurred during the period. As the Company believes it is in compliance with the forgiveness criteria under this loan program, the full amount was recognized as grant income.

Other Income

Other income was $1.5 million for the year ended December 31, 2020, as compared to $0.0 million of income for the year ended December 31, 2019. The Company received $1.6 million in cash from settlement of a litigation matter during 2020.

Debt Modification and Extinguishment Expenses

The Company recognized debt modification and extinguishment expenses of $5.0 million for the year ended December 31, 2020 as a result of closing the Restated Term Facility as discussed in Note 11 - Debt of the unaudited condensed consolidated financial statements below. There was no such expense recognized during the year ended December 31, 2019.

Loss on foreign currency

Loss on foreign currency was $2.8 million for the year ended December 31, 2020 as compared to a loss of $4.1 million for the year ended December 31, 2019. The losses in both years were primarily due to hyperinflationary accounting in Argentina.

Interest Expense, Net

Interest expense, net was $23.7 million for the year ended December 31, 2020, as compared to $33.8 million for the year ended December 31, 2019. The decrease was primarily due to $7.1 million lower interest on long-term debt due to a lower variable rate and principal balance and lower accretion on the TRA of $3.5 million due to settlement in December 2019.

Income Tax Provision

Our effective tax rate was (145.3)% for the year ended December 31, 2020, as compared to 31.1% for the year ended December 31, 2019. Our tax rate is affected by recurring items, such as tax rates in foreign jurisdictions and the relative amounts of income we earn in those jurisdictions.

During the year ended December 31, 2020, the Company incurred current unbenefited losses related to limitations under Section 382 of the IRC due to the July 2020 ownership change. After the annual limitation was determined in a Section 382 study completed by the Company, the Company did not have sufficient evidence to support the future taxable income to realize U.S. deferred tax assets. In addition to the income tax expense associated with the increase in U.S. valuation allowance, the Company incurred a smaller pre-tax loss in 2020, reducing the overall tax benefit.

Comparison of Results of Operations for the year ended December 31, 2019 and the year ended December 31, 2018.

Net Sales

Net sales were $170.1 million for the year ended December 31, 2019, as compared to net sales of $178.8 million for the year ended December 31, 2018. The impact of the change in foreign currency exchange rates compared to 2018 reduced revenue by $3.3 million. Excluding this impact, revenue decreased approximately 3.0%.

The remaining decrease in net sales was due to increased competition and decreased pear crop size in Europe. Tecnidex sales decreased 4.7% on an absolute basis and decreased 0.1% on a constant currency basis versus the prior year period. Offsetting these decreases was growth in SmartFresh in Latin America, sales of Harvista in North America and Latin America and new revenue associated with FreshCloud.

Cost of Sales

Cost of sales was $45.0 million for the year ended year ended December 31, 2019, as compared to $46.3 million for the year ended December 31, 2018. Gross profit margin was 73.5% in 2019 versus 74.1% in 2018. The margin was relatively stable and in line with our expectations.

Research and Development Expenses

Research and development expenses were $14.1 million for the year ended December 31, 2019, as compared to $13.9 million for the year ended December 31, 2018. The increase in research and development expenses is primarily related to $0.5 million of severance costs.

Selling, General and Administrative Expenses

Selling, general and administrative expenses were $59.4 million for the year ended December 31, 2019, as compared to $65.8 million for the year ended December 31, 2018, a decrease of 9.6%. Included in selling, general and administrative expenses were $8.8 million in 2019 and $9.0 million in 2018 of costs associated with non-recurring items that include M&A and litigation along with severance. Excluding these items, selling general and administrative expenses decreased approximately 10.7% from 2018 to 2019, driven by ongoing cost optimization initiatives.

Amortization of Intangibles

Amortization of intangibles was $81.1 million for the year ended December 31, 2019, as compared to $45.9 million for the year ended December 31, 2018. The increase in amortization is due to accelerated RipeLock amortization of $34.0 million and software additions during 2019.

Impairment of Assets

During the year ended December 31, 2019, the Company recorded an impairment charge of $1.0 million associated with Verigo software following a partnership agreement with a new technology provider and an impairment of $10.1 million on investments and $0.4 million of other assets. During the year ended December 31, 2018, the Company recorded an impairment charge of $2.6 million related to the estimated decline in the fair value of the SmartFresh trade name.

Change in Fair Value of Contingent Consideration

The Company recorded a $0.3 million gain in the year ended December 31, 2019 related to a change in the fair value of contingent consideration, as compared to a $3.0 million gain for the year ended December 31, 2018. As discussed in Note 3 - Business Combination to the audited consolidated financial statements, pursuant to the Business Combination, the Company entered into various forms of contingent consideration, including the deferred payment and the tax amortization benefit contingency. These liabilities are measured at fair value each reporting date and any mark-to-market fluctuations are recognized in earnings. For the year ended December 31, 2018, the deferred payment and the tax amortization benefit contingency mark-to-market gains were $0.3 million and $2.8 million, respectively. For the year ended December 31, 2019, the Company recognized a deferred payment gain of $0.4 million and a tax amortization benefit contingency loss of $0.1 million. In December 2019, the TRA was terminated, and the Company paid to Dow an aggregate of $16 million in settlement of all past and estimated future liabilities that would have been owed under the TRA.

Other Income

Other income was $0.0 million for the year ended December 31, 2019, as compared to $0.4 million of income for the year ended December 31, 2018.

Loss Foreign Currency

Loss on foreign currency was $4.1 million for the year ended December 31, 2019 as compared to a loss of $1.7 million for the year ended December 31, 2018. The loss was primarily due to inflation in Argentina during 2019, as compared to 2018, when translation losses were included in equity until July 1, 2018.

Interest Expense, Net

Interest expense, net was $33.8 million for the year ended December 31, 2019, as compared to $34.5 million for the year ended December 31, 2018. The decrease was primarily driven by lower accretion on the TRA of $0.3 million, increase in the recognition of the gain on hedging activity of $1.1 million and increase of interest income of $0.5 million, which was partially offset by higher interest on our credit facility of $1.5 million.

Income Tax Provision

Our effective tax rate was 31.1% for the year ended December 31, 2019, as compared to (6.5)% for the year ended December 31, 2018. Our tax rate is affected by recurring items, such as tax rates in foreign jurisdictions and the relative amounts of income we earn in those jurisdictions. It is also affected by discrete items that may occur in any given year. On December 22, 2017 the TCJA was enacted in the U.S. The TCJA significantly revised the U.S. federal corporate income tax by, among other things, lowering the corporate income tax rate to 21%, implementing a territorial tax system, imposing a limitation on tax deductibility of U.S. interest expense and the inclusion of “global intangible low-taxed income” (“GILTI”).

During the year ended December 31, 2019, certain income was recognized that did not receive a tax cost related to the elimination of intercompany profit in inventory. In addition, there was a valuation allowance increase in the U.S. offset by valuation allowance decreases in Japan, Netherlands and Turkey.

Non-GAAP Measures

The following table sets forth the non-GAAP financial measures of EBITDA and Adjusted EBITDA. The Company believes these non-GAAP financial measures provide meaningful supplemental information as they are used by the Company’s management to evaluate the Company’s performance (including incentive bonuses and for bank covenant reporting), are more indicative of future operating performance of the Company, and facilitate a better comparison among fiscal periods. These non-GAAP results are presented for supplemental informational purposes only and should not be considered a substitute for the financial information presented in accordance with GAAP.

The following is a reconciliation between the non-GAAP financial measures of EBITDA and Adjusted EBITDA to their most directly comparable GAAP financial measure, net loss:

(in thousands)		Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
GAAP net (loss) income including non-controlling interests	$	(52,966) $	(54,153) $	(30,240)
Expense (Benefit) provision for income taxes		31,376	(24,500)	1,840
Interest expense [(1)]		23,669	33,784	34,451
Depreciation and amortization		46,970	83,456	47,593
Non-GAAP EBITDA	$	49,049 $	38,587 $	53,644
Share-based compensation		3,598	2,714	2,897
Severance related costs [(2)]		885	1,086	1,453
Other non-recurring costs [(3)]		3,240	8,745	7,558
Loss on foreign currency exchange [(4)]		2,836	4,127	1,722
Debt modification and extinguishment costs		5,028	—	—
Grant income		(2,974)	—	—
Litigation recovery		(1,600)	—	—
Contingent consideration adjustments, net [(5)]		—	(330)	(3,018)
Impairment of assets [(6)]		—	11,424	2,600
Non-GAAP Adjusted EBITDA	$	60,062 $	66,353 $	66,856

(1) Interest on debt, accretion for debt discounts, debt issuance costs and contingent consideration.
(2) Severance costs related to ongoing cost optimization initiatives.
(3) Costs related to certain professional and other infrequent or non-recurring fees, including those associated with litigation and M&A related fees.
(4) Loss on foreign currency exchange relates to net losses and gains resulting from transactions denominated in a currency other than the Company's functional currency.
(5) Non-cash adjustment to the fair value of contingent consideration, including the TRA and contingent payment related to the Tecnidex acquisition.
(6) Impairment of assets related to software and investments.

The following is a reconciliation between net sales on a non-GAAP constant currency basis to GAAP net sales:

(in thousands)		Year Ended December 31, 2020	Year Ended December 31, 2019
GAAP net sales	$	157,643 $	170,065
Impact from changes in foreign currency exchange rates		1,891	—
Non-GAAP constant currency net sales[(1)]	$	159,534 $	170,065

(1) The company provides net sales on a constant currency basis to enhance investors' understanding of underlying business trends and operating performance, by removing the impact of foreign currency exchange rate fluctuations. The impact from foreign currency, calculated on a constant currency basis, is determined by applying prior period average exchange rates to current year results.

Liquidity and Capital Resources

Cash Flows

(in thousands)		Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Net cash provided by operating activities	$	26,715 $	20,059 $	3,012
Net cash used in investing activities	$	(2,395) $	(4,426) $	(5,751)
Net cash used in financing activities	$	(4,859) $	(22,047) $	(22,228)

Cash provided by operating activities was $26.7 million for the year ended December 31, 2020, as compared to $20.1 million for the year ended December 31, 2019 and $3.0 million for the year ended December 31, 2018.

For the year ended December 31, 2020, net income before non-cash items was $27.2 million. Included in this amount is depreciation and amortization of $47.0 million, deferred income taxes of $29.3 million and other non-cash items of $4.0 million. Additionally, the change in net operating assets was ($0.5) million in 2020.

For the year ended December 31, 2019, net income before non-cash items was $20.5 million. Included in this amount is the impairment of intangible assets of $11.4 million, depreciation and amortization of $83.5 million, change in the fair value of contingent consideration (including accretion) of $3.1 million, deferred income taxes of ($29.0) million and other non-cash items of $5.6 million. Additionally, the change in net operating assets was ($0.4) million in 2019.

For the year ended December 31, 2018, net income before non-cash items was $32.0 million. Included in this amount is impairment of intangible assets of $2.6 million depreciation and amortization of $47.6 million, change in the fair value of contingent consideration (including accretion) of $0.8 million, deferred income taxes of $1.2 million, cash received on interest rate swap termination of $3.7 million and other non-cash items of $6.5 million. Additionally, the change in net operating assets was ($29.0) million in 2018.

Cash used in investing activities was ($2.4) million for the year ended December 31, 2020, as compared to ($4.4) million for the year ended December 31, 2019 and ($5.8) million for the year ended December 31, 2018. Cash used in investing activities in 2020 was the purchase of fixed assets and leasehold improvements of ($2.4) million. Cash used in investing activities in 2019 was for the purchase of fixed assets and leasehold improvements of ($4.2) million and other investment of ($0.3) million. Cash used in investing activities in 2018 was for the asset acquisition of Verigo of ($1.6) million, and the purchase of fixed assets and leasehold improvements of ($4.2) million.

Cash used in financing activities was ($4.9) million for the year ended December 31, 2020, as compared to ($22.0) million for the year ended December 31, 2019 and ($22.2) million for the year ended December 31, 2018. Cash used in financing activities in 2020 was for the repayment of debt in the amount of ($132.4) million, payment of deferred financing costs of ($8.0) million, payment of preferred stock costs ($7.0) million of and payment of dividends of ($5.2) million, offset by proceeds from the issuance of convertible preferred stock of $145.5 million, proceeds from long term debt of $2.0 million and proceeds from issuance of stock of $0.3 million. Cash used in financing activities in 2019 was for the settlement the payment of the TRA of ($16.0) million and the repayment of debt in the amount of ($6.3) million, offset by proceeds from the issuance of stock of $0.2 million. Cash used in financing activities in 2018 was for the payment of Dow liabilities of ($10.0) million, repayment of debt in the amount of ($6.1) million and payment of contingent consideration of ($6.1) million.

Restated Credit Facility

On July 27, 2020, the Company completed a comprehensive refinancing (the “Refinancing”) by (i) entering into an Amended and Restated Credit Agreement (the “Restated Credit Agreement”) with the other loan parties party thereto, Bank of Montreal, as administrative agent and the lenders party thereto, and (ii) consummating the issuance and sale to PSP of 150,000 shares of convertible preferred stock pursuant to the terms of the Investment Agreement (as defined below). The Restated Credit Agreement amends and restates in its entirety the Prior Credit Facility (defined below).

The Restated Credit Agreement provides for a $25.0 million revolving credit facility (the “Restated Revolving Loan”), which matures on June 30, 2024, and a $275.0 million term credit facility (the “Restated Term Loan” and, together with the Restated Revolving Loan, the “Restated Credit Facility”), which matures on December 31, 2024. The Restated Credit Facility includes a $5.0 million swingline commitment and a $10.0 million letter of credit sub-limit. Loans under the Restated Term Loan bear interest at a rate equal to, at the Company’s option, either the Adjusted Eurodollar Rate for the interest period in effect for such borrowing plus an Applicable Rate of 6.25% per annum, or the Alternate Base Rate plus an Applicable Rate of 5.25% per annum. Loans under the Restated Revolving Loan bear interest at a rate equal to, at the Company’s option, the Adjusted Eurodollar Rate for the interest period in effect for such borrowing plus the Applicable Rate ranging from 6.25% to 6.0% per annum, based on certain ratios. The interest rate for the Restated Credit Agreement for the year ended December 31, 2020 was 7.25% The Company is also required to pay a commitment fee on the unused portion of the Restated Revolving Loan at a rate ranging from 0.5% to 0.375%, based on certain ratios. The Company is required to make mandatory prepayments of outstanding indebtedness under the Restated Credit Agreement under certain circumstances.

The obligations of AgroFresh Inc., a wholly-owned subsidiary of the Company and the borrower under the Restated Credit Facility, are initially guaranteed by the Company and the Company’s wholly-owned subsidiary, AF Solutions Holdings LLC (together with AgroFresh Inc. and the Company, the “Loan Parties”) and may in the future be guaranteed by certain other domestic subsidiaries of the Company. The obligations of the Loan Parties under the Credit Agreement and other loan documents are secured, subject to customary permitted liens and other agreed upon exceptions, by a perfected security interest in all tangible and intangible assets of the Loan Parties, except for certain excluded assets, and equity interests of certain foreign subsidiaries of the Loan Parties held by the Loan Parties (subject to certain exclusions and limitations).

At December 31, 2020, there was $274.3 million outstanding under the Restated Term Loan and no balance outstanding under the Restated Revolving Loan. At December 31, 2020, the Company evaluated the amount recorded under the Restated Term Loan and determined that the fair value was approximately $271.6 million. The fair value of the debt is based on quoted inactive market prices and is therefore classified as Level 2 within the valuation hierarchy.

Certain restrictive covenants are contained in the Restated Credit Agreement, and the Company was in compliance with these covenants as of December 31, 2020.

Tecnidex Debt

On March 23, 2020, Tecnidex entered into a €1.0 million loan agreement with Banco Santander, S.A., which provides funding through March 2023 at a 1.5% interest rate. In May 2020, Tecnidex entered into a €0.3 million loan agreement with BBVA, which provides funding through May 2025 at a 2.2% interest rate. In July 2020, Tecnidex entered into a €0.6 million loan agreement with Banco Santander, S.A., which provides funding through July 2025 at a 2.5% interest rate.

Preferred Stock Financing

On June 13, 2020, the Company entered into an Investment Agreement (the “Investment Agreement”) with PSP, an affiliate of Paine Schwartz Partners, LLC, pursuant to which, subject to certain closing conditions, PSP agreed to purchase in a private placement an aggregate of $150,000,000 of convertible preferred equity of the Company. The transaction closed on July 27, 2020, and a total of 150,000 shares of the Company’s newly-designated Series B-1 Convertible Preferred Stock, par value $0.0001 per share (the “Series B-1 Preferred Stock”) were purchased in such transaction (the “Private Placement”). On September 22, 2020, following the approval of the transactions contemplated by the Investment Agreement by the necessary regulatory body, the Company issued to PSP, for no additional consideration, a total of 150,000 shares of the Company’s newly-designated Series B-2 Convertible Preferred Stock, par value $0.0001 per share (the “Series B-2 Preferred Stock”). On September 25, 2020 (the "Exchange Date"), PSP elected to exchange the shares of the Company’s Series B-1 Convertible Preferred Stock and Series B-2 Preferred Stock held by it for a total of 150,000 shares of the Company’s newly-designated Series B Preferred Stock. Accordingly, effective as of the Exchange Date, the Company issued 150,000 shares of Series B Preferred Stock, par value $0.0001 per share, to PSP and all of the shares of Series B-1 Preferred Stock and Series B-2 Preferred Stock held by PSP were cancelled. No shares of Series B-1 Preferred Stock or Series B-2 Preferred Stock are outstanding as of December 31, 2020.

The Series B Preferred Stock ranks senior to the shares of the Company’s common stock with respect to dividend rights and rights on the distribution of assets on any voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company. The Series B Preferred Stock has a liquidation preference of $1,000 per share (the “Stated Value”). Holders of the Series B Preferred Stock are entitled to a cumulative dividend at a rate of 16% per annum, of which 50% will be payable in cash and 50% will be payable in kind until the first anniversary of the Closing Date, after which 50% will be payable in cash, 37.5% will be payable in kind, and the remaining 12.5% will be payable in cash or in kind, at the Company’s option, subject in each case to adjustment under certain circumstances. Dividends on the Series B Preferred Stock are cumulative and payable quarterly in arrears. All dividends that are paid in kind will accrete to, and increase, the Stated Value. The applicable dividend rate is subject to increase by 2% per annum during any period that the Company is in breach of certain provisions of the applicable Certificate of Designation of the Preferred Stock. The Series B Preferred Stock has been classified as temporary equity as it may be contingently redeemable in the event of a change of control, which is outside of the Company's control.

Associated with the Series B Preferred Stock, the Company paid $10.5 million of total dividends, of which $5.2 million were in additional preferred shares and $5.2 million were in cash, for the year ended December 31, 2020. For the year ended December 31, 2019, the Company paid no dividends. As of December 31, 2020 and 2019, the Company had no accrued dividends.

The Series B Preferred Stock is convertible into Common Stock at the election of the holder at any time at an initial conversion price of 5.00 (“Conversion Price”). The Conversion Price is subject to customary adjustments, including for stock splits and other reorganizations affecting the Common Stock and pursuant to certain anti-dilution provisions for below market issuances. As of December 31, 2020 and December 31, 2019, the maximum number of shares of common stock that could be issued upon conversion of the outstanding shares of Series B Preferred Stock was 31,048,800 and 0 shares, respectively.

Off-Balance Sheet Arrangements

As of December 31, 2020, we did not have any off-balance sheet arrangements as defined in Item 303(a)(4)(ii) of Regulation S-K and did not have any commitments or contractual obligations. We have not guaranteed any debt or commitments of other entities or entered into any options on non-financial assets.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

As a smaller reporting company, we are not required to provide the information required by this Item.

ITEM 8 - FINANCIAL INFORMATION

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of AgroFresh Solutions, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of AgroFresh Solutions, Inc. and subsidiaries (the "Company") as of December 31, 2020 and 2019, the related consolidated statements of operations, comprehensive (loss) income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2020, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current-period audit of the financial statements that was communicated or required to be communicated to the audit committee and that (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill and Indefinite-Lived Intangible Assets — Tecnidex Reporting Unit and Trade Names — Refer to Notes 2 and 8 to the financial statements

Critical Audit Matter Description

The Company's goodwill and trade names are not amortized but tested annually for impairment, and more frequently if events and circumstances indicate that the assets might be impaired. The Company conducts annual impairment tests on goodwill and trade names on the last day of each fiscal year or whenever an indicator of impairment exists.

The Company's evaluation of goodwill for impairment involves the comparison of the fair value of its Tecnidex reporting unit to its carrying value. The Company calculates the fair value of its Tecnidex reporting unit considering two valuation approaches: (1) the income approach and (2) the market approach. The income approach requires management to make significant estimates and assumptions related to the future cash flows of the reporting unit and the discount rate commensurate with the risks involved in the asset. The market approach requires management to estimate fair value using comparable marketplace fair value data from within a comparable industry group. Changes in assumptions of future cash flows and the selection of the discount rate or the comparable marketplace fair value data from within a comparable industry group could have a significant impact on the valuation of the Company's reporting unit and the amount of a goodwill impairment charge, if any.

The Company’s evaluation of its trade names for impairment involves the comparison of the fair value to the related asset’s carrying value. In determining the fair value of its trade names, the Company applies the relief from royalty methodology, where fair value is measured by estimating future revenue associated with the trade names over their useful lives and applying royalty rates to the revenue estimates. Changes in assumptions of future revenues and the selection of the royalty rates could have a significant impact on the valuation of the Company’s trade names and the amount of an impairment charge, if any.

The Company’s goodwill has a carrying value of $6.9 million as of December 31, 2020. The estimated fair value of the Tecnidex Reporting Unit as of December 31, 2020 is approximately 19% greater than the carrying value of the reporting unit. The Company has three trade name assets, AgroFresh, SmartFresh, and Tecnidex, totaling $27.3 million, which passed the impairment test as of December 31, 2020 by 13%, 41%, and 21%, respectively.

Given the significant judgments made by management to estimate the fair value of its Tecnidex Reporting Unit and its trade names, performing audit procedures to evaluate the reasonableness of management’s assumptions of future revenues and cash flows, the selection of the discount rate, comparable marketplace fair value data from within a comparable industry group and the selection of the royalty rates, requires a high degree of auditor judgment and an increased extent of effort, including the need to involve our fair value specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to management’s estimates of the forecasted future revenues and cash flows, the selection of the discount rate or the comparable marketplace fair value data from within a comparable industry group and the selection of the royalty rates included the following, among others:

- We evaluated management’s ability to accurately forecast future revenues and cash flows by comparing actual results to management’s historical forecast.

- We evaluated the reasonableness of management’s forecast for cash flows for the Tecnidex Reporting Unit and revenues for each of the tradenames, by comparing each forecast to:
    - Historical cash flows and revenues.
    - Internal communications to management and the Board of Directors.
    - Forecasted information included in Company press releases as well as in analyst and industry reports for the Company and certain of its peer companies.

- With the assistance of our fair value specialists, we evaluated the reasonableness of the (1) discount rate, (2) royalty rates and (3) comparable marketplace fair value data from a comparable industry group by:
    - Testing the source information underlying the determination of the discount rate, royalty rates, and comparable marketplace fair value data from a comparable industry group and the mathematical accuracy of the calculation.
    - Developing a range of independent estimates and comparing those to the discount rate selected by management.

/s/ DELOITTE & TOUCHE LLP

Philadelphia, Pennsylvania
March 15, 2021

We have served as the Company's auditor since 2014.

AgroFresh Solutions, Inc.
CONSOLIDATED BALANCE SHEETS
(In thousands, except share and per share data)

	December 31, 2020	December 31, 2019
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 50,030	$ 29,288
Accounts receivable, net of allowance for doubtful accounts of $2,061 and $2,232, respectively	63,204	68,634
Inventories	24,579	22,621
Other current assets	17,219	11,802
Total Current Assets	155,032	132,345
Property and equipment, net	12,432	13,177
Goodwill	6,925	6,323
Intangible assets, net	589,201	631,369
Deferred income tax assets	9,699	10,317
Other assets	12,494	12,161
TOTAL ASSETS	785,783	805,692
LIABILITIES, TEMPORARY EQUITY AND STOCKHOLDERS’ EQUITY		
Current Liabilities:		
Accounts payable	$ 19,634	$ 15,105
Current portion of long-term debt	3,378	4,675
Income taxes payable	3,471	5,648
Accrued expenses and other current liabilities	25,976	24,350
Total Current Liabilities	52,459	49,778
Long-term debt	264,491	398,064
Other non-current liabilities	6,432	7,246
Deferred income tax liabilities	37,834	9,217
Total Liabilities	361,216	464,305
Commitments and Contingencies (see Note 21)		
Temporary Equity:		
Series B convertible preferred stock, par value $0.0001; 150,000 shares authorized, designated and outstanding at December 31, 2020	143,728	—
Redeemable non-controlling interest	8,446	7,701
Stockholders’ Equity:		
Common stock, par value $0.0001; 400,000,000 shares authorized, 53,092,328 and 51,839,527 shares issued and 52,430,947 and 51,178,146 outstanding at December 31, 2020 and December 31, 2019, respectively	5	5
Preferred stock, par value $0.0001; 1 share authorized and outstanding at December 31, 2020 and December 31, 2019, respectively	—	—
Treasury stock, par value $0.0001; 661,381 shares at December 31, 2020 and December 31, 2019, respectively	(3,885)	(3,885)
Additional paid-in capital	552,776	560,890
Accumulated deficit	(244,836)	(192,264)
Accumulated other comprehensive loss	(31,667)	(31,060)
Total Stockholders' Equity	272,393	333,686
TOTAL LIABILITIES, TEMPORARY EQUITY AND STOCKHOLDERS' EQUITY	$ 785,783	$ 805,692

See accompanying notes to consolidated financial statements.

AgroFresh Solutions, Inc.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except share and per share data)

	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Net sales	$ 157,643	$ 170,065	$ 178,786
Cost of sales (excluding amortization, shown separately below)	42,217	45,049	46,271
Gross profit	115,426	125,016	132,515
Research and development expenses	12,357	14,112	13,873
Selling, general and administrative expenses	53,860	59,446	65,770
Amortization of intangibles	43,731	81,119	45,946
Impairment of assets	—	11,424	2,600
Change in fair value of contingent consideration	—	(330)	(3,018)
Grant income	(2,974)	—	—
Operating income (loss)	8,452	(40,755)	7,344
Other income	1,491	13	429
Debt modification and extinguishment expenses	(5,028)	—	—
Loss on foreign currency exchange	(2,836)	(4,127)	(1,722)
Interest expense, net	(23,669)	(33,784)	(34,451)
Loss before income taxes	(21,590)	(78,653)	(28,400)
Income taxes expense (benefit)	31,376	(24,500)	1,840
Net loss including non-controlling interest	(52,966)	(54,153)	(30,240)
Less: Net (income) loss attributable to redeemable non-controlling interest	(745)	562	180
Net loss attributable to AgroFresh Solutions, Inc.	(53,711)	(53,591)	(30,060)
Less: Dividends on convertible preferred stock	10,488	—	—
Net loss attributable to AgroFresh Solutions, Inc. common stockholders	$ (64,199)	$ (53,591)	$ (30,060)
Net loss per share:			
Basic	($1.26)	($1.07)	($0.60)
Diluted	($1.26)	($1.07)	($0.60)
Weighted average shares outstanding:			
Basic	50,770,429	50,123,565	49,883,739
Diluted	50,770,429	50,123,565	49,883,739

See accompanying notes to consolidated financial statements.

AgroFresh Solutions, Inc.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME
(In thousands)

	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Net loss	$ (52,966)	$ (54,153)	$ (30,240)
Other comprehensive (loss) income:			
Foreign currency translation adjustments	1,512	(1,185)	(19,340)
Gain (loss) on hedging activity, net of tax of ($21), $20 and $944, respectively	(74)	74	3,553
Recognition of gain on hedging activity reclassified to net (loss) income, net of tax ($456), ($314) and ($75), respectively	(1,802)	(1,112)	(281)
Pension and other postretirement benefit plans adjustment, net of tax of ($129), $0 and $0, respectively	(243)	—	—
Comprehensive loss, net of tax	$ (53,573)	$ (56,376)	$ (46,308)

See accompanying notes to consolidated financial statements.

AgroFresh Solutions, Inc.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands, except share and per share data)

	Preferred Stock		Common Stock		Treasury Stock	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount	Shares	Amount	Amount				
Balance at December 31, 2017	1	$ —	51,002,234	$ 5	$ (3,885)	$ 533,015	$ (108,729)	$ (12,769)	$ 407,637
Stock-based compensation	—	—	—	—	—	2,804	—	—	2,804
Issuance of stock, net of forfeitures	—	—	69,339	—	—	—	—	—	—
Net loss attributable to AgroFresh Solutions, Inc.	—	—	—	—	—	—	(30,060)	—	(30,060)
Comprehensive loss	—	—	—	—	—	—	—	(16,068)	(16,068)
Balance at December 31, 2018	1	—	51,071,573	5	(3,885)	535,819	(138,789)	(28,837)	364,313
Stock-based compensation	—	—	—	—	—	2,934	—	—	2,934
Issuance of stock, net of forfeitures	—	—	599,281	—	—	—	—	—	—
Issuance of common stock under employee stock purchase plan	—	—	168,673	—	—	241	—	—	241
Settlement of Dow liabilities	—	—	—	—	—	22,012	—	—	22,012
Adjustment of NCI to redemption value	—	—	—	—	—	(116)	116	—	—
Net loss attributable to AgroFresh Solutions, Inc.	—	—	—	—	—	—	(53,591)	—	(53,591)
Comprehensive loss	—	—	—	—	—	—	—	(2,223)	(2,223)
Balance at December 31, 2019	1	—	51,839,527	5	(3,885)	560,890	(192,264)	(31,060)	333,686
Stock-based compensation	—	—	—	—	—	3,440	—	—	3,440
Issuance of stock, net of forfeitures	—	—	1,155,510	—	—	—	—	—	—
Shares withheld for taxes	—	—	(48,153)	—	—	(243)	—	—	(243)
Issuance of common stock under employee stock purchase plan	—	—	145,444	—	—	316	—	—	316
Convertible preferred dividends	—	—	—	—	—	(10,488)	—	—	(10,488)
Adjustment of NCI to redemption value	—	—	—	—	—	(1,139)	1,139	—	—
Net loss attributable to AgroFresh Solutions, Inc.	—	—	—	—	—	—	(53,711)	—	(53,711)
Comprehensive loss	—	—	—	—	—	—	—	(607)	(607)
Balance at December 31, 2020	1	$ —	53,092,328	$ 5	$ (3,885)	$ 552,776	$ (244,836)	$ (31,667)	$ 272,393

See accompanying notes to consolidated financial statements.

AgroFresh Solutions, Inc.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Cash flows from operating activities:			
Net loss	$ (52,966)	$ (54,153)	$ (30,240)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Depreciation and amortization	46,970	83,456	47,593
Provision for bad debts	(237)	63	1,208
Stock based compensation for equity classified awards	3,440	2,934	2,804
Pension expense	—	—	17
Amortization of deferred financing cost	2,875	2,600	2,476
Cash received on interest rate swap termination, net of non-cash interest income recognized	—	—	3,684
Interest income on interest rate swap	(2,258)	—	—
Accretion of contingent consideration	—	3,459	3,781
Change in fair value of contingent consideration	—	(330)	(3,018)
Deferred income taxes	29,251	(28,988)	1,154
Impairment of assets	—	11,424	2,600
Loss (gain) on sales of property	162	4	(52)
Changes in operating assets and liabilities:			
Accounts receivable	4,989	(321)	(5,362)
Inventories	(1,745)	(388)	(1,581)
Prepaid expenses and other current assets	(6,173)	2,087	(652)
Accounts payable	4,168	6,499	(10,955)
Accrued expenses and other liabilities	878	(9,239)	(4,175)
Income taxes payable	(1,242)	1,615	(4,053)
Other assets and liabilities	(1,397)	(663)	(2,217)
Net cash provided by operating activities	26,715	20,059	3,012
Cash flows from investing activities:			
Cash paid for property and equipment	(2,395)	(4,176)	(4,164)
Other investments	—	(250)	(1,587)
Net cash used in investing activities	(2,395)	(4,426)	(5,751)
Cash flows from financing activities:			
Net proceeds from issuance of convertible preferred stock	145,490	—	—
Payment of issuance costs for convertible preferred stock	(7,006)	—	—
Payment of dividends	(5,244)	—	—
Proceeds from long term debt	2,042	—	—
Payment of deferred financing costs	(8,034)	—	—
Payment of Dow liabilities settlement	—	—	(10,000)
Repayment of long term debt	(132,423)	(6,285)	(6,096)
Payments of contingent consideration	—	—	(6,132)
Borrowings under revolving credit facility	—	4,000	11,000
Repayments of revolving credit facility	—	(4,000)	(11,000)
Settlement payment under Tax Receivables Agreement	—	(16,003)	—
Proceeds from issuance of stock under employee stock purchase plan	316	241	—
Net cash used in financing activities	(4,859)	(22,047)	(22,228)

Effect of exchange rate changes on cash and cash equivalents	752	1,379	(4,714)
Net increase (decrease) in cash and cash equivalents	20,213	(5,035)	(29,681)
Cash and cash equivalents, beginning of period	29,817	34,852	64,533
Cash and cash equivalents, end of period	$ 50,030	$ 29,817	$ 34,852
Supplemental disclosures of cash flow information:			
Cash paid for:			
Interest	$ 23,792	$ 30,144	$ 34,712
Income taxes	$ 2,722	$ 2,642	$ 6,949
Supplemental schedule of non-cash investing and financing activities:			
Accrued purchases of property and equipment	$ 141	$ 71	$ 607
Settlement of Dow liabilities not resulting from a cash payment	$ —	$ 22,012	$ —
Reconciliation of cash and cash equivalents and restricted cash:			
Cash and cash equivalents	$ 50,030	$ 29,288	$ 34,852
Restricted cash within other current assets	—	$ 529	—
Total cash and cash equivalents and restricted cash	$ 50,030	$ 29,817	$ 34,852

See accompanying notes to consolidated financial statements.

AgroFresh Solutions, Inc.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Description of Business

AgroFresh Solutions, Inc. (the “Company”) is a global leader in delivering innovative food preservation and waste prevention solutions for fresh produce. The Company is empowering the food industry with a range of integrated solutions designed to help growers, packers and retailers improve produce freshness and quality while reducing waste. The Company has an extensive portfolio of solutions to extend freshness across the produce supply chain from near-harvest up to the point-of sale. These include Harvista™ for near-harvest optimization and the SmartFresh™ Quality System, the Company's flagship post-harvest freshness solutions. Additional post-harvest freshness solutions include fungicides that can be applied to meet various customer operational requirements in both foggable (ActiMist™) and liquid (ActiSeal™) delivery options. The Company has a controlling interest in Tecnidex Fruit Protection, S.A. (“Tecnidex”), a leading regional provider of post-harvest fungicides, disinfectants, coatings and packinghouse equipment for the citrus market. Beyond apples and pears, SmartFresh technology can provide ready-to-eat freshness for other fruits and vegetables including avocados, bananas, melons, tomatoes, broccoli and mangos. Additionally, LandSpring™ eases transplant shock for higher potential yields, and RipeLock™ is the Company's modified atmosphere packaging technology for fruits and vegetables. The Company has key products registered in approximately 50 countries, and supports customers by protecting over 25,000 storage rooms globally.

The end-markets that the Company serves are seasonal and are generally aligned with the seasonal growing patterns of the Company’s customers. For those customers growing, harvesting or storing apples and pears, the Company’s core crops, the peak season in the southern hemisphere is the first and second quarters of each year, while the peak season in the northern hemisphere is the third and fourth quarters of each year. Within each half-year period (i.e., January through June for the southern hemisphere, and July through December for the northern hemisphere) the growing season has historically occurred during both quarters. A variety of factors, including weather, may affect the timing of the growing, harvesting and storing patterns of the Company’s customers and therefore shift the consumption of the Company’s services and products between the first and second quarters primarily in the southern hemisphere or between the third and fourth quarters primarily in the northern hemisphere.

2. Basis of Presentation and Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements include the accounts of the Company and entities in which the Company has a controlling voting interest. All intercompany balances and transactions have been eliminated in consolidation.

Certain prior period amounts have been reclassified to conform to the current year presentation.

Use of Estimates

The preparation of financial statements and related disclosures in conformity with accounting principles generally accepted in the United States (“U.S. GAAP”) requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Management believes that such estimates have been based on reasonable and supportable assumptions and the resulting estimates are reasonable for use in the preparation of the consolidated financial statements. Actual results could differ from these estimates. The Company’s significant estimates include the allocation of the purchase price to the fair value of assets acquired and liabilities assumed, impairment of goodwill and identifiable intangible assets, stock-based compensation, contingent liabilities and income tax valuation allowances.

The inputs into certain of our estimates, assumptions, and judgments considered the economic implications of the COVID-19 pandemic on our critical and significant accounting estimates. The actual results experienced by us may differ from our estimates. As the COVID-19 pandemic continues to develop, many of our estimates could require increased judgment and carry a higher degree of variability and volatility, and may change materially in future periods.

SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Adoption of Highly Inflationary Accounting in Argentina

GAAP requires the use of highly inflationary accounting for countries whose cumulative three-year inflation rate exceeds 100%. The Company closely monitors the inflation data and currency volatility in Argentina, where there are multiple data sources for measuring and reporting inflation. In the second quarter of 2018, the Argentine peso rapidly devalued relative to the U.S. dollar, which along with increased inflation, indicated that the three-year cumulative inflation rate in that country exceeded 100% as of June 30, 2018. As a result, the Company elected to adopt highly inflationary accounting as of July 1, 2018 for its subsidiary in Argentina. Under highly inflationary accounting, the functional currency of the Company's subsidiary in Argentina became the U.S. dollar, and its income statement and balance sheet will be measured in U.S. dollars using both current and historical rates of exchange. The effect of changes in exchange rates on Argentine peso-denominated monetary assets and liabilities will be reflected in earnings. As of December 31, 2020, the Company’s subsidiary in Argentina had net assets of ($3.0) million. Net sales attributable to Argentina were approximately 3.9% and 4.0% of the Company’s consolidated net sales for the years ended December 31, 2020 and 2019, respectively.

Revenue Recognition

On January 1, 2018, the Company began to account for revenue in accordance with Accounting Standards Codification ("ASC") 606, which requires revenue recognized to represent the transfer of promised goods or services to customers at an amount that reflects the consideration which is expected to be received in exchange for those goods or services. The Company utilized the modified retrospective method of adoption to all contracts that were not completed as of January 1, 2018. The Company has not made any significant changes to judgments in applying ASC 606 during the year ended December 31, 2020.

Performance Obligations

The Company derives revenue from the sale of products created with proprietary technology to regulate the ripening of produce and through performing post application technical services for its customers. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account in ASC 606. A contract’s transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The majority of the Company’s contracts have multiple performance obligations primarily related to product application and post application services, which the Company provides. For contracts with multiple performance obligations, the Company allocates the contract’s transaction price to each performance obligation using the best estimate of the standalone selling price of each distinct good or service in the contract. The method used to estimate standalone selling price is the expected cost plus a margin approach, under which the Company calculates the costs of satisfying a performance obligation and factors in an appropriate margin for that distinct good or service.
The transaction price is primarily fixed, as prices are governed by the terms and conditions of the Company's contracts with customers, and payment is typically made under standard terms. The Company has certain transactions that provide for variable consideration through rebate and customer loyalty programs. Depending on the program, the customer may elect to receive either a credit against its account or a cash payment. The Company recognizes an accrued provision for estimated rebates and customer loyalty program payouts at the time services are provided. The primary factors considered when estimating the provision for rebates and customer loyalty programs are the average historical experience of aggregate credits issued, the historical relationship of rebates as a percentage of total gross product sales, and the contract terms and conditions of the various rebate programs in effect at the time services are performed. The Company provides standard warranty provisions.

Performance obligations related to product application are typically satisfied at a point in time when the customer obtains control upon application. Performance obligations related to post-application services are satisfied over time and revenue is recognized using the output method, as control of the service transfers to the customer over time during and after storage of the produce. The Company believes that this method provides a faithful depiction of the transfer of value over the term of the performance obligation because the level of effort in providing these services is consistent during the service period. Performance obligations related to Tecnidex sales-type leases are satisfied at the point in time that equipment is installed at the customer site.

Disaggregation of Revenue

The Company disaggregates revenue from contracts with customers into geographic region, product and timing of transfer of goods and services. The Company determined that disaggregating revenue into these categories achieves the disclosure objective of depicting how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors.

Revenues for the year ended December 31, 2020

(in thousands)

Region		North America		EMEA		Latin America		Asia Pacific		Total Revenue
Product										
1-MCP based	$	31,658	$	61,902	$	23,710	$	15,453	$	132,723
Fungicides, disinfectants and coatings		1,066		16,442		4,082		—		21,590
Other*		1,035		1,069		939		287		3,330
Total	$	33,759	$	79,413	$	28,731	$	15,740	$	157,643
Pattern of Revenue Recognition										
Products transferred at a point in time	$	32,771	$	78,389	$	28,162	$	15,457	$	154,779
Services transferred over time		988		1,024		569		283		2,864
Total	$	33,759	$	79,413	$	28,731	$	15,740	$	157,643

Revenues for the year ended December 31, 2019

(in thousands)

Region		North America		EMEA		Latin America		Asia Pacific		Total Revenue
Product										
1-MCP based	$	40,012	$	63,109	$	28,199	$	14,513	$	145,833
Fungicides, disinfectants and coatings		712		16,803		3,172		—		20,687
Other*		1,523		1,374		447		201		3,545
Total	$	42,247	$	81,286	$	31,818	$	14,714	$	170,065
Pattern of Revenue Recognition										
Products transferred at a point in time	$	41,122	$	79,811	$	31,618	$	14,535	$	167,086
Services transferred over time		1,125		1,475		200		179		2,979
Total	$	42,247	$	81,286	$	31,818	$	14,714	$	170,065

*Other includes FreshCloud, technical services and sales-type leases related to Tecnidex.

Contract Assets and Liabilities

ASC 606 requires an entity to present a revenue contract as a contract asset when the entity performs its obligations under the contract by transferring goods or services to a customer before the customer pays consideration or before payment is due. ASC 606 also requires an entity to present a revenue contract as a contract liability in instances when a customer pays consideration, or an entity has a right to an amount of consideration that is unconditional (e.g. receivable), before the entity transfers a good or service to the customer. The following table presents changes in the Company’s contract assets and liabilities during the twelve months ended December 31, 2020:

(in thousands)	Balance at January 1, 2020	Additions	Deductions	Balance at December 31, 2020
Contract assets:				
Unbilled revenue	$ 1,666	13,624	(13,806)	$ 1,484
Contract liabilities:				
Deferred revenue	$ 1,175	5,348	(5,049)	$ 1,474

The following table presents changes in the Company’s contract assets and liabilities during the twelve months ended Balance at December 31, 2019:

(in thousands)	Balance at January 1, 2019	Additions	Deductions	Balance at December 31, 2019
Contract assets:				
Unbilled revenue	1,956	10,029	(10,319)	$ 1,666
Contract liabilities:				
Deferred revenue	$ 1,280	3,032	(3,137)	$ 1,175

The Company recognizes contract assets in the form of unbilled revenue in instances where services are performed by the Company but not billed by period end. The Company recognizes contract liabilities in the form of deferred revenue in instances where a customer pays in advance for future services to be performed by the Company. The Company generally receives payments from its customers based on standard terms and conditions. No significant changes or impairment losses occurred to contract balances during the year ended December 31, 2020. Amounts reclassified from unbilled revenue to accounts receivable for the year ended December 31, 2020 were $13.8 million. Amounts reclassified from deferred revenue to revenue were $5.0 million for the year ended December 31, 2020.

Practical Expedients Elected

The Company has elected the following practical expedients in applying ASC 606 across all reportable segments:

Unsatisfied Performance Obligations. Because all of its performance obligations relate to contracts with a duration of less than one year, the Company has elected to apply the optional exemption provided in ASC 606 and, therefore, is not required to disclose the aggregate amount of the transaction price allocated to performance obligations that are unsatisfied or partially unsatisfied at the end of the reporting period.

Contract Costs. All incremental customer contract acquisition costs are expensed as they are incurred as the amortization period of the asset that the Company otherwise would have recognized is one year or less in duration.

Significant Financing Component. The Company does not adjust the promised amount of consideration for the effects of a significant financing component as the Company expects, at contract inception, that the period between when the entity transfers a promised good or service to a customer and when the customer pays for that good or service will be one year or less.
Sales Tax Exclusion from the Transaction Price. The Company excludes from the measurement of the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by the Company from the customer.

Shipping and Handling Activities. The Company accounts for shipping and handling activities it performs after a customer obtains control of the good as activities to fulfill the promise to transfer the good, which are recognized in cost of goods sold.

Modified Retrospective Method. The Company adopted ASC 606 on January 1, 2018 utilizing the modified retrospective method, which meant the Company did not retrospectively adjust prior periods. The Company applied the modified retrospective method only to contracts that were not completed at January 1, 2018 and accounted for the aggregate effect of any contract modifications upon adoption. No cumulative adjustment to retained earnings was recorded upon adoption.

Cost of Sales

The Company's cost of sales consists of cost of materials, cost of equipment, application costs and certain supply chain costs. The Company's primary costs of sale are related to applications at customer sites through a direct service model primarily utilizing third-party service providers. Amounts recorded as cost of sales relate to direct costs incurred in connection with the purchase, delivery and application of the product. Such costs are recorded as the related revenue is recognized.

Cash and Cash Equivalents

The Company considers short-term, highly liquid investments with original maturities of three months or less when purchased to be cash equivalents.

Accounts Receivable, Net

Accounts receivable, net consists primarily of (i) outstanding amounts invoiced to end-users, re-sellers and third-party contractors and (ii) unbilled revenue in arrangements where the earnings process has been completed but invoices have not been issued as of the reporting date.

The allowance for doubtful accounts is based on forecasted losses and a review on a specific identification basis of the collectability of outstanding receivables.

Inventories

Inventories, consisting primarily of chemical products and packing, are valued at the lower of cost (under the first-in, first-out method) or net realizable value. Raw materials are valued using the weighted average moving cost method.

Property and Equipment

Property and equipment includes leasehold improvements, machinery and equipment and furniture. Property and equipment acquired in business combinations are initially recorded at their estimated fair value. Property and equipment acquired or constructed in the normal course of business are initially recorded at cost. The Company provides for depreciation and amortization based on the estimated useful lives of assets using the straight-line method.

Estimated useful lives are as follows:

Leasehold improvements	Shorter of useful life or lease term
Machinery & Equipment	1—12 years
Furniture	1—12 years

Leasehold improvements are amortized on a straight-line basis over the shorter of the estimated useful lives of the assets or the related lease term, which generally includes reasonably assured option periods expected to be exercised by the Company when the Company would suffer an economic penalty if not exercised.

Gains and losses on the disposal of assets are recorded as the difference between the net proceeds received and net carrying values of the assets disposed.

Impairment of Long-Lived Assets

Company management continually evaluates whether events or changes in circumstances might indicate that the remaining estimated useful life of long-lived assets may warrant revision, or that the remaining balance may not be recoverable. When factors indicate that long-lived assets should be evaluated for possible impairment, the Company uses an estimate of the related undiscounted cash flows in measuring whether the long-lived asset should be written down to fair value. Measurement of the amount of impairment would be based on generally accepted valuation methodologies, as deemed appropriate. As of December 31, 2020, Company management believed that no revision to the remaining useful lives or write-down of the Company’s long-lived assets was required. During 2019, the Company changed its strategy for the use of its RipeLock product. Based on this change, the Company reevaluated the useful life of RipeLock related intangible assets and recorded $34.0 million of amortization based on the change in useful life.

Leases

The Company determines whether a contract contains a lease at contract inception. A contract contains a lease if there is an identified asset and the Company has the right to control the asset. Operating lease right-of-use (“ROU”) assets represent the Company's right to use an underlying asset for the lease term, and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and lease liabilities are recognized at commencement date based on the present value of lease payments over the lease term. The Company uses the incremental borrowing rate in determining the present value of lease payments. Leases with a term of 12 months or less at the commencement date are not recognized on the balance sheet and are expensed as incurred. In the consolidated statements of income, lease expense for operating lease payments is recognized on a straight-line basis over the lease term. See Note 12 - Leases for additional information.

Selling, General and Administrative Expenses

The Company expenses selling, general and administrative costs as incurred. Selling, general and administrative expense consists primarily of compensation, benefits and other employee-related expenses for personnel in the Company’s administrative, finance, legal, business development, commercial, sales, marketing and human resource functions. Other expenses include professional fees from outside service providers.

Debt Issuance Costs

Debt issuance costs are capitalized and presented as a reduction of the principal balance of the debt and costs associated with the revolving loan are capitalized in Other Assets. All issuance costs are accreted through interest expense for the duration of the respective debt facilities.

Goodwill and Indefinite-lived Intangible Assets

The Company’s goodwill and trade names are not amortized, but tested annually for impairment, and more frequently, if events and circumstances indicate that the asset might be impaired. The Company conducts annual impairment tests on goodwill and trade names on the last day of each fiscal year or whenever an indicator of impairment exists.

The Company performs a two-step impairment test of goodwill. In the first step, the Company estimates the fair value of the reporting unit and compares it to the carrying value of the reporting unit. If the carrying value exceeds the estimated fair value of the reporting unit, the second step is performed to measure the amount of the impairment loss, if any. In the second step, the amount of the impairment loss is the excess of the carrying amount of the goodwill over its estimated implied fair value.

As part of the Company’s goodwill impairment analysis, the fair value of its reporting unit is determined considering two valuation approaches: (1) the income approach and (2) the market approach. The income approach requires management to make significant estimates and assumptions related to the future cash flows of the reporting unit and the discount rate commensurate with the risks involved in the asset. The market approach estimates fair value using comparable marketplace fair value data from within a comparable industry grouping.

The Company’s indefinite-lived intangible assets other than goodwill, which primarily relate to trade names, are not amortized, but are tested at least annually for impairment using a quantitative or qualitative impairment analysis, and more frequently if events and circumstances indicate that the asset might be impaired. The quantitative impairment analysis compares the fair value of each indefinite-lived intangible asset, based on future revenues using a relief-from-royalty methodology with the carrying value of the asset. If the carrying amount of an indefinite-lived intangible asset exceeds its fair value, an impairment loss is recognized equal to the difference between the estimated fair value of the indefinite-lived intangible asset and its carrying amount. During the year ended December 31, 2018, the Company recorded a $2.6 million impairment charge related to a decline in the estimated value of the SmartFresh trade name. During the year ended December 31, 2020, the Company did not have any impairment charges.

Definite-Lived Intangible Assets

Intangible assets subject to amortization primarily consist of acquired technology and customer relationships and are amortized on a straight-line basis over their estimated useful lives. During the year ended December 31, 2019, the Company recorded an impairment charge of $1.0 million associated with the Verigo software following the sale of Verigo assets and a partnership agreement with a new technology provider.

Stock-Based Compensation

The Company grants various stock-based compensation awards to its officers, employees and Board of Directors with time-based and/or performance-based vesting conditions. Awards without cash settlement conditions are equity-classified. The Company measures and recognizes compensation expense over the vesting period based on their estimated grant date fair values.

Phantom stock awards and stock appreciation rights either require or provide the holder of the award with the option to settle in cash. The Company's awards with cash settlement conditions are accounted for as liabilities, and the Company measures and recognizes compensation expense over the vesting period based on their estimated fair values as of the most recent reporting date.

Fair values for options and stock appreciation rights are estimated using an option pricing model. Fair values for restricted stock and phantom stock awards are based on the closing price of the Company’s common stock on the grant date and the measurement date.

Compensation expense for the Company’s stock-based compensation awards is generally recognized on a straight-line basis over the vesting period of the award. For awards with performance conditions, compensation expense is recognized only if satisfaction of the performance condition is considered probable of being achieved.

Compensation expense for the Employee Stock Purchase Plan is recognized based on the employee contributions and market price of the stock as of the grant date.

Research and Development

Expenditures for research and development costs, which primarily relate to internal compensation costs and professional service fees, are charged to expense as incurred.

Income Taxes

The Company accounts for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, the Company determines deferred tax assets and liabilities on the basis of the differences between the financial statement and tax bases of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

The Company recognizes deferred tax assets to the extent that we believe that these assets are more likely than not to be realized. In making such a determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. If the Company determines that it would be able to realize our deferred tax assets in the future in excess of their net recorded amount, it would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

The Company records uncertain tax positions in accordance with ASC 740 on the basis of a two-step process in which (1) we determine whether it is more likely than not that a tax position will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, we recognize the largest amount of tax benefit that is more than 50% likely to be realized upon ultimate settlement with the related tax authority.

Contingencies

The Company recognizes liabilities for loss contingencies when it is probable that an asset has been impaired or that a liability has been incurred and the amount of impairment or loss can be reasonably estimated. The Company’s ultimate legal and financial liability with respect to such matters cannot be estimated with certainty and requires the use of estimates. When the reasonable estimate is a range, the recorded loss will be the best estimate within the range. The Company records legal settlement costs when those costs are probable and reasonably estimable.

Redeemable Non-Controlling Interest

Non-controlling interest that is redeemable upon the occurrence of an event that is not solely within the Company's control is reported in the temporary equity section between total liabilities and shareholders' equity in the Company's consolidated balance sheets. The Company adjusts the Redeemable non-controlling interest balance to reflect the redemption amount each reporting period.

Credit Concentration Risk

Financial instruments, which potentially subject the Company to a concentration of credit risk, consist principally of cash deposits. The Company maintains cash balances at financial institutions with strong credit ratings. Generally, amounts invested with financial institutions are in excess of FDIC insurance limits.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities required or permitted to be either recorded or disclosed at fair value, the Company considers the principal or most advantageous market in which we would transact, and the Company also considers assumptions that market participants would use when pricing the asset or liability.

The accounting guidance for fair value measurement requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard establishes a fair value hierarchy based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is as follows:

Level 1 applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2 applies to assets or liabilities for which there are inputs other than quoted prices that are observable for the asset or liability such as quoted prices for similar assets or liabilities in active markets; quoted prices for identical assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets); or model-derived valuations in which significant inputs are observable or can be derived principally from, or corroborated by, observable market data. We use inputs such as actual trade data, benchmark yields, broker/dealer quotes, and other similar data, which are obtained from quoted market prices, independent pricing vendors, or other sources, to determine the ultimate fair value of assets or liabilities.

Level 3 applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities. The fair values are determined based on model-based techniques such as discounted cash flow models using inputs that we could not corroborate with market data.

Foreign Currency

An entity's functional currency is the currency of the primary economic environment in which the entity operates; normally, that is the currency of the environment in which an entity primarily generates and expends cash. Assets and liabilities are translated at period-end rates; income statement amounts are translated at average rates during the course of the period. Translation gains and losses of those operations that use local currency as the functional currency, are included in accumulated other comprehensive (loss) income in the consolidated balance sheets.

Foreign currency exchange transaction gain (loss) is the result of remeasuring transactions denominated in a currency other than our primary currency and is reported in the consolidated statements of operations as a separate line within other income (expense).

Warrants

Public Warrants

On February 19, 2014, the Company sold 21,000,000 units at a price of $10.00 per unit (the “Units”) in its initial public offering (the “Public Offering”). Each unit consisted of one share of the Company's common stock and one-half of one warrant (“Warrant”). On March 13, 2014, the Company sold an additional 1,050,000 units pursuant to the partial exercise by the underwriters for the Public Offering of their over-allotment option. Each such additional unit consisted of one share of the Company's common stock and one-half of one warrant. Each whole warrant entitled the holder thereof to purchase one share of the Company's common stock at a price of $11.50 per share. These warrants were classified in Stockholders' Equity and expired on July 31, 2020.

Private Placement Warrants

Simultaneous with the Public Offering, the Company issued 5,950,000 warrants, and upon the underwriters' partial exercise of their over-allotment option on March 13, 2014, the Company issued an additional 210,000 warrants (collectively, the “Private Placement Warrants”). On December 17, 2015, the Company amended the Warrant Purchase Agreement (see Note 3 - Business Combinations) resulting in a reclassification of the Private Placement Warrants into Stockholders' Equity as of December 31, 2015. All warrants expired on July 31, 2020.

Recently Issued Accounting Standards and Pronouncements

In January 2017, the Financial Accounting Standards Board ("FASB") issued ASU No. 2017-04, *Intangibles - Goodwill and Other*, which simplifies the test for goodwill impairment. The guidance is effective for the Company beginning in the first quarter of fiscal year 2020. Early adoption is permitted for interim or annual goodwill impairments tests after January 1, 2017. The Company adopted this standard on January 1, 2020. The adoption of this standard did not have a material impact on the consolidated financial statements of the Company.

In February 2016, the FASB issued ASU 2016-02, *Leases*. The main objective of this update is to increase transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. ASU 2016-02 was effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Effective for the quarter ended March 31, 2019, the Company adopted the guidance for leases and elected to utilize a cumulative effect adjustment to the opening balance of retained earnings for the year of adoption. Accordingly, the Company’s reporting for the comparative periods prior to adoption continue to be presented in the financial statements in accordance with previous lease accounting guidance.

The Company also elected to apply practical expedients applicable to the Company in the updated guidance for transition for leases in effect at adoption, the option to not reassess whether an existing contract is a lease or contains a lease and whether the lease is an operating or finance lease. The adoption of the updated guidance resulted in the Company recognizing a right-of-use asset of $7.3 million as part of other assets and a lease liability of $7.3 million as part of other current liabilities and other long-term liabilities in the consolidated balance sheet as of January 31, 2019. The cumulative effect adjustment to the opening balance of retained earnings was zero. The adoption of the updated guidance did not have a material effect on the Company’s results of operations or liquidity.

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments*, which introduces a new current expense credit loss model to measure impairment on certain types of financial instruments. This update requires an entity to use a forward-looking expected credit loss model for accounts receivables, loans and other financial instruments. In addition, the FASB issued various amendments during 2018 and 2019 to clarify the provisions of ASU 2016-13. The Company adopted the new guidance on January 1, 2020. The adoption of this standard did not have a material impact on the financial statements of the Company.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement*, which is part of the FASB disclosure framework project to improve the effectiveness of disclosures in the notes to the financial statements. The amendments in the new guidance remove, modify and add certain disclosure requirements related to fair value measurements covered in Topic 820, "Fair Value Measurement." The Company adopted the new guidance on January 1, 2020. The adoption of this standard did not have a material impact on the notes to consolidated financial statements of the Company.

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes.* The amendments simplify the accounting for income taxes by removing certain exceptions to the general principles of Topic 740, "Income Taxes" and also improve consistent application by clarifying and amending existing guidance. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2020. The Company will adopt the new guidance on January 1, 2021. The adoption of this standard is not expected to have a material impact on the financial statements of the Company.

In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform* on Financial Reporting. The amendments provide optional expedients and exceptions for applying generally accepted accounting principles to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The amendments are intended to ease the potential burden in accounting for, or recognizing the effects of, reference rate reform on financial reporting. The new standard is effective on a date selected by the Company between March 12, 2020 and December 31, 2022. The Company is currently evaluating the impact of adopting this guidance.

3. Business Combination

On July 31, 2015 (the "Closing Date"), the Company consummated a business combination (the “Business Combination”) pursuant to the Stock Purchase Agreement, dated April 30, 2015 (the “Purchase Agreement”), by and between the Company and Dow providing for the acquisition by the Company of the AgroFresh business from Dow, resulting in AgroFresh Inc. becoming a wholly-owned, indirect subsidiary of the Company. Pursuant to the Purchase Agreement, the Company paid the following consideration to Rohm and Haas Company (“R&H”), a subsidiary of Dow: (i) 17.5 million shares of common stock and (ii) $635 million in cash.

Pursuant to a Tax Receivables Agreement among the Company, Dow, R&H and AgroFresh Inc. entered into in connection with the consummation of the Business Combination, as amended on April 4, 2017 (as so amended, the “Tax Receivables Agreement”), the Company was required to pay to Dow 50% of the annual tax savings, if any, in U.S. federal, state and local income tax or franchise tax that the Company actually realized as a result of the increase in tax basis of the AgroFresh assets resulting from a Section 338(h)(10) election that the Company and Dow made in connection with the Business Combination. In 2019, the Tax Receivables Agreement was terminated, and the Company paid to Dow an aggregate of $16 million in settlement of all past and estimated future liabilities that would have been owed under the Tax Receivables Agreement. Based on this termination, the Company recorded a reduction of liabilities of $27.9 million. This reduction, net of deferred income taxes of $5.9 million, has been recorded to additional paid-in capital since the Tax Receivable Agreement was with a related party and is treated as a capital transaction.

Acquisition of Tecnidex

On November 7, 2017, the Company entered into a definitive agreement to acquire a controlling-interest in Tecnidex Fruit Protection, S.A.U. ("Tecnidex"). The transaction was closed on December 1, 2017. Tecnidex, a privately-held international company, is a leading provider of post-harvest fungicides, disinfectants and coatings for the citrus market, with clients in 18 countries. For over 35 years, Tecnidex has been helping fruit and vegetable producers offer clean, safe and high-quality products to their regional clients. The acquisition was accounted for as a purchase in accordance with FASB Accounting Standard Codification 805 *Business Combination*.

At the effective date of the acquisition, the Company agreed to pay holders of Tecnidex $25.0 million in cash for 75% of the outstanding capital stock, of which $20.0 million was paid on December 1, 2017. In 2018, the purchase price was finalized as $22.3 million after giving effect to working capital, net debt and other adjustments. The remaining $2.3 million was paid during 2018.

In connection with the acquisition of Tecnidex, the Company concurrently entered into option arrangements ("Option Agreement") with the Seller related to the remaining 25% equity interest. The Option Agreement permits the residual interest to be "put" by the Seller to the Company, or to allow the Company to "call" the residual interest gradually over time as outlined in the Option Agreement. The Seller's ownership of Tecnidex represents a non-controlling interest ("NCI") to the Company, which is classified outside of stockholders' equity as the option of the Seller is redeemable (see Note 15 - Redeemable non-controlling interest).

In accordance with the acquisition method of accounting, the Company allocated the purchase price to the estimated fair values of the identifiable assets acquired and liabilities assumed, with any excess allocated to goodwill. The preliminary assessment of fair value of the contingent consideration payments on the acquisition date was approximately $0.7 million and was estimated by applying a probability-based income approach utilizing an appropriate discount rate. This estimation was based on significant inputs that are not observable in the market, referred to as Level 3 inputs. During the year ended December 31, 2019, there was a final adjustment made to consideration payable to holders of Tecnidex which resulted in a fair value adjustment of $0.4 million.

4. Related Party Transactions

The Company is a party to an ongoing transition services agreement with Dow, a related party. In connection with the transition services agreement, the Company paid Dow a $5.0 million set-up fee which was amortized over the period during which the services were expected to be provided.

The Company incurred expenses for such services for the year ended December 31, 2020, December 31, 2019 and December 31, 2018 as follows:

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Ongoing costs of transition services agreement	$ 40	$ 120	$ 335
Other expenses	—	—	1,484
Total incurred expenses	$ 40	$ 120	$ 1,819

Refer to Note 3 - Business Combinations and Asset Acquisition regarding the contingent consideration owed to Dow as part of the Business Combination, as well as certain other agreements entered into in connection with the Business Combination, including the termination of the Tax Receivables Agreement in 2019.

During 2016, the Company made a minority investment in RipeLocker, LLC ("RipeLocker"), a company led by George Lobisser, a director of AgroFresh. In February 2019, the Company made a further minority investment in RipeLocker. For the years ended December 31, 2020 and December 31, 2019, there were no amounts paid and as of December 31, 2020 and December 31, 2019, there were no material amounts owed to RipeLocker.

For the years ended December 31, 2020 and December 31, 2019, there were no amounts paid and as of December 31, 2020 and December 31, 2019, there were no material amounts owed to RipeLocker for consulting services.

On June 13, 2020, in connection with the execution of the Investment Agreement (as defined in Note 16- Series B Convertible Preferred Stock and Stockholders' Equity), the Company, PSP AGFS Holdings, L.P. (the "Investor") and R&H entered into a side agreement, pursuant to which the parties agreed that if the Investor or its affiliates has the right to designate at least 50% of the total directors on the Company's board of directors pursuant to the Investment Agreement, so long as R&H or its affiliates beneficially owns at least 20% of the Company's outstanding common stock (on a fully diluted, "as converted" basis), the Company and the board of directors will increase the size of the board of directors by one member and the board will elect a designee selected by R&H to fill the newly-created vacancy. Such right is in addition to any right that R&H has to appoint a member of the board pursuant to its ownership of the Company's Series A preferred stock (see Note 16- Series B Convertible Preferred Stock and Stockholders' Equity).

5. Inventories

Inventories at December 31, 2020 and December 31, 2019, consisted of the following:

(in thousands)	December 31, 2020	December 31, 2019
Raw material	$ 3,100	$ 3,401
Work-in-process	7,079	7,278
Finished goods	13,288	10,974
Supplies	1,112	968
Total inventories	$ 24,579	$ 22,621

6. Other Current Assets

The Company's other current assets at December 31, 2020 and December 31, 2019 consisted of the following:

(in thousands)	December 31, 2020	December 31, 2019
VAT receivable	$ 9,348	$ 4,925
Prepaid income tax asset	4,716	3,616
Other	3,155	3,261
Total other current assets	$ 17,219	$ 11,802

7. Property and Equipment

Property and equipment at December 31, 2020 and December 31, 2019 consisted of the following:

(in thousands, except for useful life data)	Useful life (years)	December 31, 2020	December 31, 2019
Buildings and leasehold improvements	7 - 20	$ 6,416	$ 6,508
Machinery & equipment	1 - 12	11,981	10,954
Furniture	1 - 12	3,031	2,681
Construction in progress		1,146	902
		22,574	21,045
Less: accumulated depreciation		(10,142)	(7,868)
Total property and equipment, net		$ 12,432	$ 13,177

Depreciation expense for the year ended December 31, 2020 and 2019 was $3.2 million and $2.2 million, respectively. Depreciation expense is recorded in cost of sales, selling, general and administrative expense and research and development expense in the consolidated statements of (loss) income.

8. Goodwill and Intangible Assets

Changes in the carrying amount of goodwill for the year ended December 31, 2020 and December 31, 2019 are as follows:

(in thousands)	Amount
Balance as of December 31, 2018	$ 6,670
Foreign currency translation	(347)
Balance as of December 31, 2019	6,323
Foreign currency translation	602
Balance as of December 31, 2020	$ 6,925

The Company’s other intangible assets at December 31, 2020 and December 31, 2019 consisted of the following:

	December 31, 2020				December 31, 2019			
(in thousands)	Gross Carrying Amount	Accumulated Amortization	Impairment	Net	Gross Carrying Amount	Accumulated Amortization	Impairment	Net
Other intangible assets:								
Developed technology	$ 798,260	($254,629)	$ —	$ 543,631	$ 797,760	($214,220)	$ —	$ 583,540
Trade name	27,343	—	—	27,343	27,200	—	—	27,200
Service provider network	2,000	—	—	2,000	2,000	—	—	2,000
Customer relationships	19,072	(4,042)	—	15,030	18,058	(2,993)	—	15,065
Software	10,865	(9,693)	—	1,172	9,861	(5,347)	(992)	3,522
Other	100	(75)	—	25	100	(58)	—	42
Total intangible assets	$ 857,640	($268,439)	$ —	$ 589,201	$ 854,979	($222,618)	($992)	$ 631,369

During the Company's annual impairment testing conducted for the year ended December 31, 2019, the Company recorded an impairment charge of $1.0 million associated with its Verigo software following a partnership agreement with a new technology provider. During 2019, the Company accelerated the amortization of RipeLock developed technology based on the Company's remaining expected useful life of the technology. This resulted in an increase to amortization expense of $34.0 million.

At December 31, 2020, the weighted-average amortization periods remaining for developed technology, customer relationships, software and other was 14.4, 11.8, 1.0 and 1.5 years, respectively. At December 31, 2020, the weighted-average amortization periods remaining for these finite-lived intangible assets was 14.3 years.

Amortization expense for intangible assets was $43.7 million, $81.1 million and $45.9 million for the years ended December 31, 2020, 2019 and 2018, respectively.
Estimated annual amortization expense for finite-lived intangible assets subsequent to December 31, 2020 is as follows:

(in thousands)	Amount
2021	$ 41,793
2022	40,983
2023	40,870
2024	40,870
2025	40,870
Thereafter	354,472
Total	$ 559,858

9. Other Assets

The Company’s other assets at December 31, 2020 and December 31, 2019 consisted of the following:

(in thousands)	December 31, 2020	December 31, 2019
Right-of-use asset	$ 6,184	$ 6,599
Long term sales-type lease receivable	2,821	2,501
Other long term receivable	3,489	3,061
Total other assets	$ 12,494	$ 12,161

During the year ended December 31, 2019, the Company recorded an impairment of $10.0 million related to a cost method investment.

10. Accrued and Other Current Liabilities

The Company's accrued and other current liabilities at December 31, 2020 and December 31, 2019 consisted of the following:

(in thousands)	December 31, 2020	December 31, 2019
Accrued compensation and benefits	$ 7,778	$ 7,307
Accrued rebates payable	390	1,377
Insurance premium financing payable	695	1,000
Severance	598	444
Deferred revenue	1,474	1,175
Accrued taxes	6,649	3,017
Accrued interest	83	71
Lease liability	1,708	1,493
Other	6,601	8,466
Total accrued and other current liabilities	$ 25,976	$ 24,350

Other current liabilities include primarily professional services, litigation and research and development accruals.

11. Debt

The Company's debt, net of unamortized deferred issuance costs, at December 31, 2020 and December 31, 2019 consisted of the following:

(in thousands)	December 31, 2020	December 31, 2019
Total term loan outstanding	$ 274,313	$ 405,875
Unamortized deferred issuance costs	(8,588)	(3,886)
Tecnidex loan outstanding	2,144	750
Less: Amounts due within one year	3,378	4,675
Total long-term debt due after one year	$ 264,491	$ 398,064

Restated Credit Facility

On July 27, 2020, the Company completed a comprehensive refinancing (the "Refinancing") by (i) entering into an Amended and Restated Credit Agreement (the "Restated Credit Agreement") with the other loan parties party thereto, Bank of Montreal, as administrative agent and the lenders party thereto, and (ii) consummating the transactions contemplated by the Investment Agreement (as defined and described in Note 16 – Series B Convertible Preferred Stock and Stockholders' Equity). The Restated Credit Agreement amends and restates in its entirety the Prior Credit Facility (defined below).

The Restated Credit Agreement provides for a $25.0 million revolving credit facility (the "Restated Revolving Loan"), which matures on June 30, 2024, and a $275.0 million term credit facility (the "Restated Term Loan" and, together with the Restated Revolving Loan, the "Restated Credit Facility"), which matures on December 31, 2024. The Restated Credit Facility includes a $5.0 million swingline commitment and a $10.0 million letter of credit sub-limit. Loans under the Restated Term Loan bear interest at a rate equal to, at the Company's option, either the Adjusted Eurodollar Rate for the interest period in effect for such borrowing plus an Applicable Rate of 6.25% per annum, or the Alternate Base Rate plus an Applicable Rate of 5.25% per annum. Loans under the Restated Revolving Loan bear interest at a rate equal to, at the Company's option, the Adjusted

Eurodollar Rate for the interest period in effect for such borrowing plus the Applicable Rate ranging from 6.25% to 6.0% per annum, based on certain ratios. The interest rate was 7.25% for the year ended December 31, 2020. The Company is also required to pay a commitment fee on the unused portion of the Restated Revolving Loan at a rate ranging from 0.5% to 0.375%, based on certain ratios. The Company is required to make mandatory prepayments of outstanding indebtedness under the Restated Credit Agreement under certain circumstances.

The obligations of AgroFresh Inc., a wholly-owned subsidiary of the Company and the borrower under the Restated Credit Facility, are initially guaranteed by the Company and the Company's wholly-owned subsidiary, AF Solutions Holdings LLC (together with AgroFresh Inc. and the Company, the "Loan Parties") and may in the future be guaranteed by certain other domestic subsidiaries of the Company. The obligations of the Loan Parties under the Credit Agreement and other loan documents are secured, subject to customary permitted liens and other agreed upon exceptions, by a perfected security interest in all tangible and intangible assets of the Loan Parties, except for certain excluded assets, and equity interests of certain foreign subsidiaries of the Loan Parties held by the Loan Parties (subject to certain exclusions and limitations).

The Refinancing was deemed a partial extinguishment of the Term Loan (as defined below) under ASC Topic No. 470-50, "Debt – Modifications and Extinguishments" (Topic No. 470), whereby $107.1 million of the $403.8 million outstanding at the time of the Refinancing was deemed an extinguishment and $296.7 million was deemed a modification of debt. As such, unamortized deferred issuance costs related to the extinguishment of $0.7 million were written off in debt modification and extinguishment expenses and the remaining $1.9 million was deferred and amortized over the term of the Restated Term Loan.

In connection with the Restated Term Loan, expenses incurred related to existing lenders of $4.4 million were recognized in debt modification and extinguishment expenses. Expenses to new lenders of $1.1 million were deferred and amortized over the term of the Restated Term Loan along with $6.4 million of lender fees and issue discounts.

In total, the Company deferred debt issuance costs of $7.5 million related to the Restated Term Loan, $1.9 million related to the modification of the Term Loan and $0.5 million related to the Restated Revolving Loan. The debt issuance costs associated with the Restated Term Loan were capitalized against the principal balance of the debt, and the Restated Revolving Loan costs were capitalized in Other Assets. All issuance costs will be accreted through interest expense using the effective interest method for the duration of each respective debt facility. The interest expense related to the amortization of the Restated Credit Facility debt issuance costs during the year ended December 31, 2020 was $0.8 million. As of December 31, 2020 there were $8.6 million of unamortized deferred issuance costs.

At December 31, 2020, there was $274.3 million outstanding under the Restated Term Loan and no balance outstanding under the Restated Revolving Loan. At December 31, 2020, the Company evaluated the amount recorded under the Restated Term Loan and determined that the fair value was approximately $271.6 million. The fair value of the debt is based on quoted inactive market prices and is therefore classified as Level 2 within the valuation hierarchy.

Certain restrictive covenants are contained in the Restated Credit Agreement, and the Company was in compliance with these covenants as of December 31, 2020.

Prior Credit Facility

On July 31, 2015, in connection with the consummation of the Business Combination, AgroFresh Inc. as the borrower and AF Solutions Holdings LLC as the guarantor, entered into a Credit Agreement with Bank of Montreal, as administrative agent (as subsequently amended prior to the Refinancing, the "Prior Credit Facility"). The Prior Credit Facility consisted of a $425.0 million term loan (the "Term Loan"), with an amortization equal to 1.00% per year, and a revolving loan facility (the "Revolving Loan"). The net proceeds of the Term Loan were used to fund a portion of the purchase price payable to Dow in connection with the Business Combination.

The Revolving Loan included a $10.0 million letter-of-credit sub-facility, issuances against which reduce the available capacity for borrowing. The Term Loan had a scheduled maturity date of July 31, 2021. As discussed above, the Prior Credit Facility was refinanced on July 27, 2020, and there were no amounts outstanding as of December 31, 2020. The interest rates on borrowings under the facilities were either the alternate base rate plus 3.75% or LIBOR plus 4.75% per annum, with a 1.00% LIBOR floor (with step-downs in respect of borrowings under the Revolving Loan dependent upon the achievement of certain financial ratios).

As of the Closing Date of the Business Combination, the Company incurred approximately $12.9 million in debt issuance costs related to the Term Loan and $1.3 million in costs related to the Revolving Loan. The debt issuance costs associated with the Term Loan were capitalized against the principal balance of the debt, and the Revolving Loan costs were capitalized in Other

Assets. The interest expense related to the amortization of the Term Loan debt issuance costs during the year ended December 31, 2020 and 2019 was approximately $1.4 million and $2.5 million, respectively.

Tecnidex Debt

On March 23, 2020, Tecnidex entered into a €1.0 million loan agreement with Banco Santander, S.A., which provides funding through March 2023 at a 1.5% interest rate. In May 2020, Tecnidex entered into a €0.3 million loan agreement with BBVA, which provides funding through May 2025 at a 2.2% interest rate. In July 2020, Tecnidex entered into a €0.6 million loan agreement with Banco Santander, S.A., which provides funding through July 2025 at a 2.5% interest rate.

Scheduled principal repayments of the Company's debt subsequent to December 31, 2020 are as follows:

(in thousands)		**Amount**
2021	$	3,378
2022		3,475
2023		3,135
2024 and thereafter		266,469
Total	$	276,457

Interest Rate Swap

The Company entered into an interest rate swap contract in August 2019 to hedge interest rate risk remaining outstanding with the Restated Credit Facility. During the years ended December 31, 2020 and 2019, a realized loss of $0.1 million and an unrealized gain of $0.1 million were recognized, respectively, in connection with this swap. The interest rate swap contract matured on December 31, 2020.

The Company entered into an interest rate swap contract in January 2018 to hedge interest rate risk associated with the Term Loan. The hedge was settled in September 2018 for $4.0 million, which was amortized through December 31, 2020, the remaining period of the original hedge.

PPP Loan

As part of the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"), the Company received a Paycheck Protection Program ("PPP") loan to offset eligible costs incurred during the period. Under the terms of the PPP, PPP loans and accrued interest are forgivable after twenty-four weeks as long as the borrower uses the loan proceeds for eligible purposes, including payroll, benefits, rent and utilities and maintains its payroll levels. The amount of loan forgiveness will be reduced if the borrower terminates employees or reduces salaries during the forgiveness period.

As of December 31, 2020, the Company has used the entire loan proceeds to fund its eligible payroll expenses and mortgage interest, avoiding furlough of office employees. As a result, the Company believes that it has met the PPP eligibility criteria for forgiveness and has concluded that the loan represents, in substance, a government grant that is expected to be forgiven. As such, in accordance with IAS 20 “Accounting for Government Grants and Disclosure of Government Assistance” the Company has recognized the entire loan amount as Grant Income during the year ended December 31, 2020.

The Company does not anticipate taking any action that would cause any portion of the loan to be ineligible for forgiveness. However, to the extent that any amount is deemed unforgivable, such amount is payable over two to five years at an interest rate of 1%, with a deferral of payments for the first six months.

12. Leases

The Company enters into lease agreements for certain facilities and vehicles that are primarily used in the ordinary course of business. These leases are accounted for as operating leases, whereby lease expense is recognized on a straight-line basis over the term of the lease.

Most leases include an option to extend or renew the lease term. The exercise of the renewal option is at the Company's discretion. The operating lease liability includes lease payments related to options to extend or renew the lease term if the Company is reasonably certain of exercising those options. The Company, in determining the present value of lease payments, uses the Company’s incremental secured borrowing rate commensurate with the term of the underlying lease.

Lease expense is primarily included in general and administrative expenses in the condensed consolidated statements of operations. Additional information regarding the Company's operating leases is as follows:

(in thousands)	Year ended December 31, 2020	Year ended December 31, 2019
Operating Lease Cost		
Operating leases	$ 3,090	$ 2,409
Short-term leases [1]	218	90
Total lease expense	$ 3,308	$ 2,499

(1) Leases with an initial term of twelve months or less are not recorded on the balance sheet.

Other information on operating leases:

	Year ended December 31, 2020	Year ended December 31, 2019
Cash payments included in operating cash flows	2,466	2,312
Right-of-use assets obtained in exchange for new lease	1,810	401
Weighted average discount rate	8.71 %	9.34 %
Weighted average remaining lease term in years	4.55 years	5.40 years

The following table presents the contractual maturities of the Company's lease liabilities as of December 31, 2020:

(in thousands)	Lease Liability
2021	$ 2,219
2022	1,906
2023	1,503
2024	740
2025 and thereafter	1,745
Total undiscounted lease payments	8,113
Less: present value adjustment	1,755
Operating lease liability	$ 6,358

13. Other Noncurrent Liabilities

The Company’s other noncurrent liabilities at December 31, 2020 and December 31, 2019 consisted of the following:

(in thousands)	December 31, 2020	December 31, 2019
Lease liability	$ 4,650	$ 5,339
Other	1,782	1,907
Total other noncurrent liabilities	$ 6,432	$ 7,246

14. Severance

The Company expensed $0.9 million and $1.1 million of severance expense for the years ended December 31, 2020 and 2019, respectively. These amounts, which do not include stock compensation expense, were recorded in selling, general and administrative expenses in the consolidated statements of (loss) income. As of December 31, 2020, the Company had $0.6 million of severance liability, which will be paid out over the next year.

15. Redeemable non-controlling interest

In connection with the acquisition of Tecnidex, the Company concurrently entered into the Option Agreement with the Seller related to the remaining 25% equity interest. The Option Agreement permits the residual interest to be "put" by the Seller to the Company, or to allow the Company to "call" the residual interest gradually over time as outlined in the agreement. The Seller's ownership of Tecnidex represents a NCI to the Company, which is classified outside of stockholders' equity as the option of the Seller is redeemable. As of December 31, 2020 the carrying amount of the NCI was recorded at its redemption value of

$8.4 million in the consolidated balance sheet. Changes in the redemption value of the NCI are included as an adjustment to Additional paid-in capital on the balance sheet.

The following table summarizes the changes to the Company's Redeemable non-controlling interest.

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019
Beginning balance	$ (7,701)	$ (8,263)
Net loss attributable to redeemable non-controlling interest	394	678
Adjustment of NCI to redemption value	(1,139)	(116)
Ending balance	$ (8,446)	$ (7,701)

16. Series B Convertible Preferred Stock and Stockholders' Equity

Series B Convertible Preferred Stock

On June 13, 2020, the Company entered into an Investment Agreement (the "Investment Agreement") with the Investor, an affiliate of Paine Schwartz Partners, LLC ("PSP"), pursuant to which, subject to certain closing conditions, the Investor agreed to purchase in a private placement an aggregate of $150,000,000 of convertible preferred equity of the Company. The transaction closed on July 27, 2020, and a total of 150,000 shares of the Company's newly-designated Series B-1 Convertible Preferred Stock, par value $0.0001 per share (the "Series B-1 Preferred Stock") were purchased in such transaction (the "Private Placement"). On September 22, 2020, following the approval of the transactions contemplated by the Investment Agreement by the necessary regulatory body, the Company issued to the Investor, for no additional consideration, a total of 150,000 shares of the Company's newly-designated Series B-2 Convertible Preferred Stock, par value $0.0001 per share (the "Series B-2 Preferred Stock"). On September 25, 2020 (the "Exchange Date"), the Investor elected to exchange the shares of the Company's Series B-1 Convertible Preferred Stock and Series B-2 Preferred Stock held by it for a total of 150,000 shares of the Company's newly-designated Series B Convertible Preferred Stock, par value $0.0001 per share (the "Series B Preferred Stock"). Accordingly, effective as of the Exchange Date, the Company issued 150,000 shares of Series B Convertible Preferred Stock, par value $0.0001 per share, to the Investor and all of the shares of Series B-1 Preferred Stock and Series B-2 Preferred Stock held by the Investor were cancelled. No shares of Series B-1 Preferred Stock or Series B-2 Preferred Stock are outstanding as of December 31, 2020.

The Series B Preferred Stock ranks senior to the shares of the Company's common stock with respect to dividend rights and rights on the distribution of assets on any voluntary or involuntary liquidation, dissolution or winding up of the affairs of the Company. The Series B Preferred Stock has a liquidation preference of $1,000 per share (the "Stated Value"). Holders of the Series B Preferred Stock are entitled to a cumulative dividend at a rate of 16% per annum, of which 50% will be payable in cash and 50% will be payable in kind until the first anniversary of the Closing Date, after which 50% will be payable in cash, 37.5% will be payable in kind, and the remaining 12.5% will be payable in cash or in kind, at the Company's option, subject in each case to adjustment under certain circumstances. Dividends on the Series B Preferred Stock are cumulative and payable quarterly in arrears. All dividends that are paid in kind will accrete to, and increase, the Stated Value. The applicable dividend rate is subject to increase by 2% per annum during any period that the Company is in breach of certain provisions of the applicable Certificate of Designation of the Preferred Stock. The Series B Preferred Stock has been classified as temporary equity as it may be contingently redeemable in the event of a change of control, which is outside of the Company's control.

Associated with the Series B Preferred Stock, the Company paid $10.5 million of total dividends, of which $5.2 million were in additional preferred shares and $5.2 million were in cash, for the year ended December 31, 2020. For the year ended December 31, 2019, the Company paid no dividends. As of December 31, 2020 and 2019, the Company had no accrued dividends.

The Series B Preferred Stock is convertible into Common Stock at the election of the holder at any time at an initial conversion price of 5.00 ("Conversion Price"). The Conversion Price is subject to customary adjustments, including for stock splits and other reorganizations affecting the Common Stock and pursuant to certain anti-dilution provisions for below market issuances. As of December 31, 2020 and December 31, 2019, the maximum number of shares of common stock that could be issued upon conversion of the outstanding shares of Series B Preferred Stock was 31,048,800 and 0 shares, respectively.

The below table outlines the change in Series B Preferred Stock during the twelve months ended December 31, 2020.

(in thousands, except share)	Series B-1 Convertible Preferred Stock		Series B-2 Convertible Preferred Stock		Series B Convertible Preferred Stock	
	Shares	Amount	Shares	Amount	Shares	Amount
Balance at December 31, 2019	—	$ —	—	$ —	—	$ —
Issuance of preferred stock	150,000	150,000	150,000	—	—	—
Exchange to Series B preferred stock	(150,000)	(150,000)	(150,000)	—	150,000	150,000
Issuance related expenses	—	—	—	—	—	(11,516)
In kind dividend	—	—	—	—	—	5,244
Balance at December 31, 2020	—	$ —	—	$ —	150,000	$ 143,728

In connection with the consummation of the Investment Agreement, the Company and the Investor entered into a Registration Rights Agreement (the “Registration Rights Agreement”), dated as of July 27, 2020. The Registration Rights Agreement provides that the Company will use its commercially reasonable efforts to prepare and file a shelf registration statement with the SEC no later than the first business day following January 27, 2022, and to use its commercially reasonable efforts to cause such shelf registration statement to be declared effective as promptly as is reasonably practicable after its filing to permit the public resale of registrable securities covered by the Registration Rights Agreement. The registrable securities generally include any shares of the Company’s common stock into which the Series B Preferred Stock is convertible, and any other securities issued or issuable with respect to any such shares of common stock by way of share split, share dividend, distribution, recapitalization, merger, exchange, replacement or similar event or otherwise.

Common Stock

The authorized common stock of the Company consists of 400,000,000 shares with a par value of $0.0001 per share. Holders of the Company’s common stock are entitled to one vote for each share of common stock. As of December 31, 2020, there were 52,430,947 shares of common stock outstanding.

Warrants

On July 31, 2020, all outstanding warrants, consisting of warrants to purchase 15,983,072 shares of the Company’s common stock outstanding at a strike price of $11.50, expired. Of the 15,983,072 warrants, 9,823,072 were issued as part of the units sold in the Company's initial public offering in February 2014 (1,201,928 warrants were subsequently repurchased during 2015) and 6,160,000 warrants were sold in a private placement at the time of such public offering.

Series A Preferred Stock

In connection with and as a condition to the consummation of the Business Combination, the Company issued R&H one share of Series A Preferred Stock. R&H, voting as a separate class, is entitled to appoint one director to the Company’s board of directors for so long as R&H beneficially holds 10% or more of the aggregate amount of the outstanding shares of common stock and non-voting common stock of the Company. The Series A Preferred Stock has no other rights.

ATM Facility

In December 2018, the Company filed a shelf registration statement (File No. 333-229002) (the “Form S-3 Shelf”) with the Securities and Exchange Commission, that became effective in February 2019. On June 25, 2020, the Company established an at-the-market offering facility (the “ATM Facility”) under the Form S-3 Shelf, with Virtu Americas LLC, acting as sales agent with support from H.C. Wainwright & Co and Roth Capital Partners. The Company’s board of directors approved sales of up to $30,000,000 maximum aggregate offering of the Company’s common stock under the ATM Facility. Effective as of August 7, 2020, the Company suspended sales under its ATM Facility, in light of the Company’s recent completion of the Refinancing and current market conditions. No sales have been effected pursuant to the ATM Facility to date.

Accumulated Other Comprehensive Loss

(in thousands)	December 31, 2020	December 31, 2019
Foreign currency translation adjustments	$ (31,368)	$ (32,880)
Unrealized gain on hedging activity	—	1,876
Pension and other postretirement benefit plans	(299)	(56)
Total	$ (31,667)	$ (31,060)

17. Stock Compensation

The Company's stock-based compensation is in accordance with the amended 2015 Incentive Compensation Plan (the "Plan"), pursuant to which the Compensation Committee of the Company is authorized to grant up to 7,150,000 shares to officers and employees of the Company, in the form of equity-based awards, including time or performance based options and restricted stock. In addition, the Company may grant cash-settled awards, including stock-appreciation rights (SARs) and phantom stock awards. As of December 31, 2020, there were 2,275,197 shares available for grant under the Plan.

In June 2019, the Company's shareholders approved the 2019 Employee Stock Purchase Plan (the "ESPP"), which was effective July 1, 2019. 500,000 shares of common stock are reserved for issuance under the ESPP. The ESPP allows eligible employees to purchase shares of common stock at a discount of up to 15% through payroll deductions of their eligible compensation, subject to any plan limitations. The ESPP provides for six-month offering periods beginning January 1 and July 1 of each year, and each offering period consists of a six-month purchase period. On each purchase date, eligible employees may purchase the Company's common stock at a price per share equal to 85% of the lesser of (1) the fair market value of the common stock on the offering date or (2) the fair market value of the common stock on the purchase date. As of December 31, 2020, 314,117 shares had been issued under the ESPP.

Total stock-based compensation recorded by the Company for the year ended December 31, 2020, 2019 and 2018 for both equity and liability-classified awards was $3.6 million, $2.7 million and $2.9 million respectively.

The following table summarizes the components of stock-based compensation expense in the consolidated statements of operations for the year ended December 31, 2020, 2019 and 2018:

(in thousands)	Year Ended Year Ended December 31, 2020	Year Ended Year Ended December 31, 2019	Year Ended Year Ended December 31, 2018
Cost of sales	$ 95	$ 142	$ 191
Selling, general and administrative expenses	3,192	2,384	2,413
Research and development expenses	311	188	293
Total	$ 3,598	$ 2,714	$ 2,897

Time-Based Stock Options

During the year ended December 31, 2019, the Company's compensation committee approved time-based stock options ("Options") to be granted to officers and employees of the Company, which vest ratably over three years. No Options were granted during the year ended December 31, 2020. A summary of the status of the Company's Options for the years ended December 31, 2020 and 2019 were as follows:

	Number of Share Underlying Awards		Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (years)
Outstanding at January 1, 2019	982,324	$	9.38	7.18
Granted	324,450		3.34	9.25
Exercised	—		—	0
Forfeited or expired	(498,954)		10.17	6.27
Outstanding at December 31, 2019	807,820		6.44	7.69
Exercisable at December 31, 2019	403,831		8.66	6.48
Vested and expected to vest at December 31, 2019	807,820	$	6.44	7.69
Outstanding at January 1, 2020	807,820	$	6.44	7.69
Granted	—		—	0
Exercised	—		—	0
Forfeited or expired	(8,250)		3.34	9.43
Outstanding at December 31, 2020	799,570		6.47	6.67
Exercisable at December 31, 2020	572,858		7.43	6.11
Vested and expected to vest at December 31, 2020	799,570	$	6.47	6.67

The fair value of each Option was estimated on the date of grant using the Hull-White or Black-Scholes option pricing models with the assumptions described below. For the periods indicated, since the Company has limited historical volatility information available, the expected volatility was based on actual volatility for comparable public companies projected over the expected terms of Options and the actual volatility for the Company since the Business Combination. The Company records forfeitures as they occur. The risk-free interest rate was based on the U.S. Treasury yield curve at the time of the grant over the expected term of the Options. The expected life for the Hull-White model was calculated as the average time to achieve the 2.0x strike exercise price in the simulation. The expected life for the Black-Scholes model was estimated using the simplified method.

	Year Ended December 31, 2019
Weighted average grant date fair value	$1.72
Risk-free interest rate	2.27%
Expected life (years)	6.00
Estimated volatility factor	52.33%
Expected dividends	None

As of December 31, 2020, the Company had unrecognized compensation costs for Options totaling $0.3 million that is expected to be recognized over an average period of 1.1 years.

Time-Based Stock Appreciation Rights

During the year ended December 31, 2019, the Company's compensation committee approved time-based stock appreciation rights ("SARs") to be granted to employees of the Company outside of the United States, which vest ratably over three years. No SARs were granted during the year ended December 31, 2020. A summary of the Company's SARs as of December 31, 2020 and 2019 were as follows:

	Number of Awards		Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (years)
Outstanding at January 1, 2019	105,925	$	9.12	6.75
Granted	5,450		3.34	9.25
Exercised	—		—	0.00
Forfeited or expired	(27,500)		12.00	5.67
Outstanding at December 31, 2019	83,875		8.90	6.00
Exercisable at December 31, 2019	76,558		9.42	5.72
Vested and expected to vest at December 31, 2019	83,875	$	8.90	6.00
Outstanding at January 1, 2020	83,875	$	8.90	6.00
Granted	—		—	0.00
Exercised	—		—	0.00
Forfeited or expired	(35,750)		10.32	5.42
Outstanding at December 31, 2020	48,125		12.00	4.69
Exercisable at December 31, 2020	48,125		12.00	4.69
Vested and expected to vest at December 31, 2020	48,125	$	12.00	4.69

Holders of these SARs are entitled under the terms of the Plan to receive cash payments calculated based on the excess of the Company's stock price over the target price in their award; consequently, these awards are accounted for as liability-type awards, and the Company measures compensation cost based on their estimated fair value at each reporting date and the number of options expected to vest.

Upon issuance, the fair value of each SAR award was estimated using the Hull-White option pricing model with the assumptions described below. For the periods indicated, since the Company has limited historical volatility information available, the expected volatility was based on actual volatility for comparable public companies projected over the expected terms of SAR awards. The Company records forfeitures as they occur. The risk-free interest rate was based on the U.S. Treasury yield curve at the time of the grant over the expected term of the SAR awards. The expected life was calculated as the average time to achieve the 2.0x strike exercise price in the simulation. SARs are liability classified within Accrued expenses and other current liabilities and they are revalued at each reporting date. The assumptions used to value the SARs as of their issuance dates and as of December 31, 2020 and 2019 are presented below:

	At issuance			As of December 31, 2020	As of December 31, 2019		
Fair value of awards			$1.86	$0.03			$0.17
Risk-free interest rate	1.74	-	2.98 %	0.14 %	1.61 %	-	1.71 %
Expected life (years)	5.83	-	6.50	2.33	2.84	-	5.22
Estimated volatility factor	47.52	-	48.00 %	54.50 %	52.33 %	-	54.50 %
Expected dividends			None	None			None

As of December 31, 2020, the Company had no unrecognized compensation costs for SARs.

Restricted Stock

During the year ended December 31, 2020 and December 31, 2019, the Company's compensation committee approved equity-classified performance-based restricted stock units (RSUs) and time based restricted stock to be granted to officers and employees of the Company, which vest ratably over three years. A summary of the Company's restricted stock awards as of December 31, 2020 is as follows:

	Number of Shares		Weighted-Average Grant Date Fair Value
Non-vested Restricted Stock & RSUs at January 1, 2019	668,696	$	6.76
Granted	853,650		3.13
Vested	(267,249)		5.48
Forfeited or expired	(239,275)		4.47
Non-vested Restricted Stock & RSUs at December 31, 2019	1,015,822	$	4.26
Non-vested Restricted Stock & RSUs at January 1, 2020	1,015,822	$	4.26
Granted	1,906,745		1.65
Vested	(232,136)		5.21
Forfeited or expired	(236,809)		4.44
Non-vested Restricted Stock and RSUs at December 31, 2020	2,453,622	$	2.12

Unrecognized compensation expense for performance-based restricted stock and time-based restricted stock is $4.1 million, which is expected to be recognized over a weighted average period of 1.9 years.

Phantom Stock Awards

During the year ended December 31, 2019, the Company's compensation committee approved phantom stock awards to be awarded to employees of the Company located outside of the United States, which vest ratably over three years. These awards will be settled in cash upon vesting and are therefore liability-classified within Accrued expenses and other current liabilities, requiring re-measurement at each balance sheet date. A summary of the Company's Phantom Stock Awards as of December 31, 2020 is as follows:

	Number of Awards		Weighted-Average Grant Date Fair Value
Non-vested phantom stock awards at January 1, 2019	112,183	$	6.71
Granted	136,450		3.09
Vested	(43,219)		5.41
Forfeited or expired	(22,532)		4.51
Non-vested phantom stock awards at December 31, 2019	182,882	$	4.30
Non-vested phantom stock awards at January 1, 2020	182,882	$	4.30
Granted	247,166		1.65
Vested	(57,986)		4.49
Forfeited or expired	(46,420)		2.42
Non-vested phantom stock awards at December 31, 2020	325,642	$	2.26

Unrecognized compensation expense for the unvested time-based phantom shares is $0.3 million, which is expected to be recognized over a weighted average period of 2.0 years.

Director Shares

On January 31, 2014, 20,125 founder shares were transferred to each of three independent directors ("Director Shares") of the Company, adjusted for the effect of stock dividends in February 2014 (for a total of 60,375 founder shares). On March 13, 2014, the underwriters exercised a portion of the over-allotment option from the Public Offering, resulting in a portion of the Director Shares being forfeited. As a result, the Director Shares were adjusted ratably resulting in each director holding 18,375 Director Shares (for a total of 55,125 Director Shares) at December 31, 2020.

The Director Shares were effectively subject to achievement of two performance conditions — the Company completing its initial public offering (IPO) and a business combination within 21 months of the IPO. Additionally, 25% (13,781 shares in the aggregate) were subject to forfeiture if the Company's stock price does not trade at or above $13 for any 20 trading days within a 30 day period commencing on the Closing Date through July 31, 2020. 13,781 shares were forfeited on July 31, 2020.

The grant date fair value of the Director Shares with performance conditions was estimated as of their deemed grant date of January 31, 2014. The aggregate fair value of the Director Shares of $0.4 million was recognized as an expense upon consummation of the Business Combination, at which point the performance conditions had been achieved.

The fair value of the Director Shares was estimated using a Monte Carlo Simulation Model that used the following assumptions:

Risk-free interest rate	1.96%
Expected life (years)	6.47
Estimated volatility factor	31.16%
Expected dividends	None

There were no unrecognized compensation costs for the Director Shares as of December 31, 2020.

Board of Director Grants

Certain directors receive shares of restricted stock subject to the terms, provisions and restrictions of the 2015 Incentive Compensation Plan. The shares granted during the year ended December 31, 2020 and 2019, vest over a one year period on the one year anniversary of each holder's grant date, provided the Director is still serving as a director of the Company. Upon termination of directorship for any reason, the Director immediately forfeits any unvested shares without payment. A summary of the Company's time-based restricted stock awarded to the Board of Directors for the year ended December 31, 2020 is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value
Non-vested time-based restricted stock at January 1, 2019	64,369	$ 7.21
Granted	233,362	2.29
Vested	(90,308)	5.80
Forfeited or expired	—	—
Non-vested time-based restricted stock at December 31, 2019	207,423	$ 2.29
Non-vested time-based restricted stock at January 1, 2020	207,423	$ 2.29
Granted	214,177	2.45
Vested	(234,298)	2.28
Forfeited or expired	—	—
Non-vested time-based restricted stock at December 31, 2020	187,302	$ 2.48

As of December 31, 2020, the Company had unrecognized compensation costs for the Director shares of $0.3 million that is expected to be recognized over an average period of 0.6 years.

18. Earnings Per Share

Basic loss per share is calculated by dividing net loss by the weighted average number of common shares outstanding for the period. The Company had a loss for the year ended December 31, 2020 and December 31, 2019. Therefore, the effect of convertible preferred stock and stock-based awards including options, restricted stock, restricted stock units and warrants outstanding at December 31, 2020 and December 31, 2019, respectively, have not been included in the computation of diluted loss per share because their inclusion would have been anti-dilutive.

The following is a reconciliation of the weighted-average common shares outstanding used for the computation of basic and diluted net (loss) income per common share:

	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Basic weighted-average common shares outstanding	50,770,429	50,123,565	49,883,739
Effect of dilutive options, performance stock units and restricted stock	—	—	—
Diluted weighted-average shares outstanding	50,770,429	50,123,565	49,883,739

Securities that could potentially be dilutive are excluded from the computation of diluted earnings (loss) per share when a loss from continuing operations exists, when the exercise price exceeds the average closing price of the Company's common stock during the period, or for contingently issued shares, if such contingency is not met at the end of the reporting period, because their inclusion would result in an anti-dilutive effect on per share amounts.

The following represents the weighted average number of shares that could potentially dilute basic earnings per share in the future:

	Year Ended December 31, 2020	Year Ended December 31, 2019
Convertible preferred stock	13,064,286	—
Stock-based compensation awards [1]:		
Stock options	803,086	848,862
Restricted Stock Units	1,358,787	585,052
Warrants:		
Private placement warrants	3,584,918	6,160,000
Public warrants	5,716,706	9,823,072

(1) SARs and Phantom Options are payable in cash so will therefore have no impact on number of shares.

Warrants and options are considered anti-dilutive and excluded when the exercise price exceeds the average market value of the Company’s common stock price during the applicable period.

19. Income Taxes

Loss before income taxes consists of the following components:

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Domestic	$ (26,460)	$ (72,293)	$ (32,982)
Foreign	4,870	(6,360)	4,582
Total	$ (21,590)	$ (78,653)	$ (28,400)

Significant components of income taxes are as follows:

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Currently payable:			
Federal	$ 377	$ (296)	$ (631)
State and local	4	37	36
Foreign	1,744	4,747	1,281
Total currently payable	2,125	4,488	686
Deferred:			
Federal	27,705	(23,358)	(2,404)
State and local	305	(571)	(66)
Foreign	1,241	(5,059)	3,624
Total deferred	29,251	(28,988)	1,154
Provision (benefit) for income taxes	$ 31,376	$ (24,500)	$ 1,840

A reconciliation of income tax expense at the U.S. Federal statutory income tax rate to actual income tax provision (benefit) is as follows:

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Tax at statutory rate	$ (4,534)	$ (16,517)	$ (5,962)
State income taxes, net of federal tax benefit	364	(531)	(54)
Effect of foreign items	1,502	1,004	834
Valuation allowance and unbenefited losses	33,478	(10,654)	6,018
Deferred tax rate changes	71	281	240
Transaction costs	(131)	671	531
Tax incentives	(311)	(56)	(91)
Disallowed foreign exchange loss	1,746	573	—
Warrants	—	—	—
Other	(809)	729	324
Provision (benefit) for income taxes	$ 31,376	$ (24,500)	$ 1,840

Income tax expense (benefit) for the year ended December 31, 2020, 2019 and 2018 include certain discrete tax items for changes in valuation allowances, foreign effective rate items and other rate modifying items.

On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was enacted in the U.S. The TCJA represents sweeping changes in U.S. tax law. Among other changes in tax law, the TCJA permanently reduced the U.S. corporate income tax rate to 21% beginning in 2018, imposed a one-time repatriation tax on deferred foreign earnings, established a participation exemption system by allowing a 100% dividends received deduction on qualifying dividends paid by foreign subsidiaries, limited deductions for net interest expense under Internal Revenue Code ("IRC") Section 163(j) and expanded the U.S. taxation of foreign earned income to include "global intangible low-taxed income" ("GILTI").

The TCJA subjects a U.S. corporation to tax on its GILTI. U.S. GAAP allows companies to make an accounting policy election to either (1) treat taxes due on future GILTI inclusions in U.S. taxable income as a current-period expense when incurred ("period cost method") or (2) factor such amounts into the measurement of its deferred taxes ("deferred method"). The Company elected to use the period cost method and estimated impacts of the GILTI inclusion to be a $1.0 million tax expense in tax year 2020. The Company provided no tax provision impact related to base erosion and anti-abuse tax ("BEAT") provisions of the TCJA, as the Company's average gross receipts are under $500 million. In addition, the Company has not been eligible for a benefit for foreign derived intangible income ("FDII") due to the Company's U.S. net operating loss positions in tax year 2018, 2019 and 2020.

On March 27, 2020, the Coronavirus Aid, Relief and Economic Security ("CARES") Act was enacted in the U.S. The CARES Act includes tax changes and financial aid designed to protect the American people from the public health and economic impacts of COVID-19. The tax changes include allowing net operating losses to be carried back five years, suspending the 80% of taxable income limitation on the use of net operating losses, an increase of the EBITDA limitation on the deduction of interest expense from 30% to 50%, excluding any grant income associated with forgiven PPP loans, and the acceleration of the refund for alternative minimum tax credits granted under the TCJA. Most significant to the Company are the modifications on the limitation on business interest deduction for tax year 2020, allowing an increase for deductible interest expense in the U.S. In addition, the grant income associated with the PPP loans is non-taxable income in the U.S. for tax year 2020.

The Company's U.S. operations have incurred cumulative taxable losses through December 31, 2020. The Company's U.S. net operating loss carry forwards and carry forwards of other tax attributes are subject to review and possible adjustment by the Internal Revenue Service and state tax authorities. The utilization of the tax attributes may become restricted in the event of certain cumulative changes in the ownership interest of significant shareholders over a three-year period in excess of 50%, as defined under Section 382 and Section 383 of the IRC, as well as similar state tax provisions. This could limit the amount of the tax attributes that the Company can utilize annually to offset future taxable income or tax liabilities. The amount of the annual limitation, if any, will generally be determined based on the value of the Company immediately prior to the ownership change. Subsequent ownership changes may further affect the limitation in future years. Please refer to Note 4 - Related Party Transactions regarding the ownership change in the year ended December 31, 2020. The Company completed a Section 382 study and determined the ownership change gave rise to the restrictions that will limit the realizability of certain U.S. tax attributes and built-in losses related to future intangible amortization tax deductions.

For the year ended December 31, 2020, the Company recorded a tax expense of $33.5 million for the net increase in valuation allowances related to deferred tax assets that will no longer be able to be realized. The unrealizable deferred tax assets relate to the aforementioned Section 382 limitations on U.S. tax attributes for a tax expense of $36.3 million. After the annual limitation was determined in the Section 382 study, the Company did not have sufficient evidence to support future taxable income to realize the deferred tax assets associated with non-deductible net interest expense, U.S. and state net operating losses, and future intangible amortization tax deductions. The remaining $2.8 million tax benefit included in the net $33.5 million change in valuation allowance tax expense relates to a tax benefit of $0.3 million for decreases in foreign valuation allowances in Japan, Netherlands and Turkey, offset by immaterial increases in South Africa and Peru, and a tax benefit of $2.5 million for untaxed income related to the elimination of intercompany profit in inventory.

For the year ended December 31, 2019, the Company recorded a tax benefit of $10.7 million for the decrease in valuation allowances related to deferred tax assets that will no longer be able to be realized. The Company increased the valuation allowance in the U.S. tax jurisdiction by a $7.8 million tax expense as the Company does not have sufficient evidence to support future taxable income to realize the deferred tax assets related to non-deductible net interest expense limited under the TCJA, foreign tax credit carryforwards and outside basis differences in U.S. investments. The remaining $18.5 million tax benefit included in the net $10.7 million change in valuation allowance tax benefit relates to a $1.1 million tax benefit for decreases in foreign valuation allowances in Japan, Netherlands and Turkey, and a $17.4 million tax benefit for untaxed income related to the elimination of intercompany profit in inventory.

For the year ended December 31, 2018, the Company recorded a tax expense of $6.0 million for the increase in valuation allowances related to deferred tax assets that will no longer be able to be realized and other unbenefited losses. The unbenefited losses relate to the elimination of intercompany profit in inventory, resulting in tax expense of $1.0 million. The Company increased the valuation allowance in the U.S. tax jurisdiction by $2.8 million as the Company does not have sufficient evidence to support the future taxable income to realize the deferred tax asset related to non-deductible net interest expense limited under the TCJA. In addition to the U.S. valuation allowance increase, there was tax expense of $2.2 million recorded due to an increase in foreign valuation allowance in Japan, Netherlands, and Turkey as a result of insufficient sources of future taxable income to support certain deferred tax assets. There was also a reduction of $1.7 million in the valuation allowance recorded due to changes in certain temporary differences and foreign currency translation rates which did not have an impact on tax expense.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts for income tax purposes. Significant components of the Company’s deferred tax assets and liabilities at December 31, 2020 and December 31, 2019 are as follows:

(in thousands)	**December 31, 2020**	**December 31, 2019**
Deferred tax assets:		
Pension and other retiree obligations	$ 323	$ 91
Inventory	482	438
Other accruals and reserves	5,020	4,580
Loss and credit carryforwards	39,172	32,020
Interest expense deduction limitation carryforward	8,147	7,767
Investments	2,137	2,170
Right-of-use asset	1,410	1,505
Other	2,326	—
Valuation allowance	(55,996)	(19,587)
Deferred tax assets	$ 3,021	$ 28,984
Deferred tax liabilities:		
Intangible assets other than goodwill	(24,404)	(23,953)
Property, plant and equipment	(1,315)	(1,964)
Unrealized foreign currency gains	(3,862)	—
Lease liability	(1,575)	(1,571)
Other	—	(396)
Deferred tax liabilities	(31,156)	(27,884)
Net deferred tax (liabilities) assets	$ (28,135)	$ 1,100

The Company makes significant judgments regarding the realizability of its deferred tax assets (principally net operating losses). The carrying value of deferred tax assets is based on the Company's assessment that it is more likely than not that the Company will realize these assets after consideration of all available positive and negative evidence.

Gross operating loss carryforwards amounted to $10.2 million for foreign jurisdictions, $162.8 million for U.S. federal and $20.4 million for U.S. states at December 31, 2020. These operating loss carryforwards relate to years 2015 through current 2020 tax periods. At December 31, 2020, none of the operating loss carryforwards were subject to expiration in 2021 through 2023. The operating loss carryforwards expiring in years 2024 through 2031 make up $1.9 million of the recorded deferred tax asset. The operating loss carryforwards expiring in years 2032 through 2040 make up $9.6 million of the recorded deferred tax asset. The remaining deferred tax asset relating to operating loss carryforwards of $26.7 million have an indefinite expiration. Management assesses the available positive and negative evidence to estimate if sufficient future taxable income will be generated to use the existing deferred tax assets.

As of December 31, 2020, management determined that sufficient negative evidence exists to conclude that it is more-likely-than-not that the certain income tax assets in the U.S., Netherlands, South Africa and Peru are not realizable, and therefore, retained the valuation allowance accordingly.

The Company has recorded tax credits in the U.S. for research and development expenditures and foreign taxes that were generated in tax years 2015, through 2020 for a total amount of $1.5 million. The foreign tax credits will begin to expire beginning in 2025 and the research and development credits will begin to expire in 2035.

U.S. income and foreign withholding taxes have not been recognized for the difference between the financial reporting and tax basis of the investments in foreign subsidiaries that are indefinitely reinvested outside the U.S. This amount may be recognized upon a sale or liquidation of the subsidiary. There is not a gross temporary difference as of December 31, 2020, since the tax basis of investments in foreign subsidiaries is in excess of the financial reporting basis.

Uncertain Tax Positions

(in thousands)	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Beginning Balance	$ 2,670	$ 1,879	$ 2,884
Additions of tax positions of the current year	—	1,725	393
Additions to tax positions of the prior years	209	88	—
Reductions of tax positions of the prior years	(1,236)	—	(872)
Reductions related to prior tax positions due to foreign currency	(633)	(862)	(525)
Expiration of statutes of limitations	(151)	(160)	(1)
Ending Balance	$ 859	$ 2,670	$ 1,879

The Company and its subsidiaries file income tax returns in the U.S. federal jurisdiction and various states and foreign jurisdictions. As of December 31, 2020, and 2019, the Company had unrecognized tax benefits, defined as the aggregate tax effect of differences between tax return positions and the benefits recognized in the Company's financial statements, of $0.9 million and $2.7 million, respectively. If recognized in the fiscal years ended December 31, 2020 and 2019, $0.9 million and $2.7 million, respectively, of these benefits would have reduced income tax expense and the effective tax rate. Of these amounts, approximately $0.1 million and $0.2 million of the Company's unrecognized tax benefits at December 31, 2020 and 2019, respectively, are indemnified and the release of the indemnification asset will have an offsetting impact to the effective tax rate of the Company. Of the $0.9 million and $2.7 million benefits at December 31, 2020 and 2019, respectively, approximately $0.2 million and $0.5 million have been recorded as a reduction to the related deferred tax asset for the net operating loss in accordance with Accounting Standards Update 2013-11, *Presentation of an Unrecognized Tax Benefit When a Net Operating Loss Carryforward, a Similar Tax Loss, or a Tax Credit Carryforward Exists* for all periods. The total amount of unrecognized tax benefits is not expected to change within 12 months of the reporting date. The Company's policy is to recognize interest and penalties accrued on any unrecognized tax benefit within the provision for income taxes in the Consolidated statements of operations. The Company recorded an increase of $0.2 million of interest and penalties as part of "Provision for income taxes" in the Company's Consolidated statements of operations during the period ending December 31, 2020. Cumulative interest and penalties of $0.8 million and $0.7 million are recorded as part of Income taxes payable for December 31, 2020 and 2019, respectively.

20. Segment and Geographical Information

Segments

The authoritative guidance for disclosures about segments of an enterprise establishes standards for reporting information about segments. It defines operating segments as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision-maker in deciding how to allocate resources and in assessing performance. We currently operate and manage our business as two operating segments. Our chief operating decision-makers allocate resources and assess performance of the business for each segment. Accordingly, we consider ourselves to have two operating and reportable segments (i) AgroFresh core and (ii) Tecnidex. AgroFresh core business is providing produce preservation and waste reduction solutions for growers and packers. Its products include SmartFresh™, Harvista™ and FreshCloud. Tecnidex is a provider of fungicides, disinfectants and coatings primarily focused on the citrus market.

Our chief operating decision-makers do not evaluate operating segments using asset or liability information. The following table presents a breakdown of our revenues and gross profit based on reportable segments for the years ended December 31, 2020 and 2019.

	Year Ended December 31,	
(in thousands)	2020	2019
AgroFresh Core		
Revenues	$ 138,162	$ 150,268
Gross Profit	108,576	117,058
Tecnidex		
Revenues	19,481	19,797
Gross Profit	6,850	7,958
Total Revenues	157,643	170,065
Total Gross Profit	$ 115,426	$ 125,016

Geographic Regions

Net sales by geographic region, based on the location of the customer, were as follows:

	Year Ended Year Ended December 31,		
(in thousands)	2020	2019	2018
Net sales:			
North America [1]	$ 33,759	$ 42,247	$ 43,270
Latin America [2]	28,731	31,818	27,178
EMEA [3]	79,413	81,286	93,256
Asia Pacific [4]	15,740	14,714	15,082
Total Net sales	$ 157,643	$ 170,065	$ 178,786

(1) North America includes the United States and Canada.
(2) Latin America includes Argentina, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Mexico, Peru and Uruguay.
(3) EMEA includes Europe, the Middle East and Africa.
(4) Asia Pacific includes Australia, China, India, Japan, New Zealand, South Korea and Philippines.

Sales of SmartFresh™ accounted for approximately 75%, 76% and 80% of our total worldwide net sales for the years December 31, 2020, 2019 and 2018, respectively.

21. Commitments and Contingencies

The Company is currently involved in various claims and legal actions that arise in the ordinary course of business. The Company has recorded reserves for loss contingencies based on the specific circumstances of each case. Such reserves are recorded when it is probable that a loss has been incurred as of the balance sheet date and can be reasonably estimated. Although the results of litigation and claims can never be predicted with certainty, the Company does not believe that the ultimate resolution of these actions will have a material adverse effect on the Company’s business, financial condition or results of operations.

On October 14, 2019, the Company was awarded a verdict of $31.1 million in damages, related to, among other things, trade secret misappropriation and willful patent infringement, in its litigation against Decco Post-Harvest, Inc. ("Decco") and Decco's parent company, UPL Limited. The award was subsequently reduced by $18 million in connection with post-verdict review by the Court. The Court's post-trial opinion and judgment is subject to any appeals that may be taken by the parties in the future. The Company did not recognize any income associated with the award in the years ended December 31, 2020 and 2019.

Purchase Commitments

The Company has various purchasing contracts for contract manufacturing and research and development services which are based on the requirements of the business. Generally, the contracts are at prices not in excess of current market price and do not commit the business to obligations outside the normal customary terms for similar contracts.

22. Fair Value Measurements

Liabilities Measured at Fair Value on a Recurring Basis

The following table presents the fair value of the Company’s financial instruments that are measured at fair value on a recurring basis as of December 31, 2020:

(in thousands)	Level 1	Level 2	Level 3	Total
Liability-classified stock compensation (1)	$ —	$ —	$ 282	$ 282

The following table presents the fair value of the Company’s financial instruments that are measured at fair value on a recurring basis as of December 31, 2019:

(in thousands)	Level 1	Level 2	Level 3	Total
Interest rate swap (2)	$ —	$ (95)	$ —	$ (95)
Liability-classified stock compensation (1)	—	—	218	218
Total	$ —	$ (95)	$ 218	$ 123

(1) The fair value of the stock appreciation right was measured using a Black-Scholes pricing model during the year ended December 31, 2020 and December 31, 2019. The fair value of phantom shares is based on the fair value of the Company's common stock. The fair value of performance based phantom shares was measured using a Monte Carlo pricing model. The valuation technique used did not change during the year ended December 31, 2020 and December 31, 2019.

(2) The derivative assets and liabilities relate to an interest rate derivative that is measured at fair value using observable market inputs such as interest rates, our own credit risks as well as an evaluation of the counterpart's' credit risks.

There were no transfers between Level 1 and Level 2 and no transfers out of Level 3 of the fair value hierarchy during the year ended December 31, 2020 and December 31, 2019.

At December 31, 2020, the Company evaluated the amount recorded under the Restated Term Loan and determined that the fair value was approximately $271.6 million. The carrying amounts of cash and cash equivalents, accounts receivable and accounts payable approximate fair value.

Changes in Financial Instruments Measured at Level 3 Fair Value on a Recurring Basis

The following tables present the changes during the periods presented in our Level 3 financial instruments that are measured at fair value on a recurring basis.

(in thousands)	Interest rate contract	Liability-classified stock compensation	Total
Balance, December 31, 2019	$ (95)	$ 218	$ 123
Interest rate contract	95	—	95
Stock compensation activity	—	64	64
Balance, December 31, 2020	$ —	$ 282	$ 282

23. Quarterly Financial Data (Unaudited)

(in thousands, except per share data)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2020				
Net sales	$ 33,023	$ 19,982	$ 52,770	$ 51,868
Cost of sales	8,528	6,453	13,511	13,725
Gross profit	24,495	13,529	39,259	38,143
(Loss) income before taxes	(7,645)	(16,121)	3,476	(1,300)
Net (loss) income including NCI	(3,814)	(16,751)	(29,738)	(2,663)
Net loss attributable to AgroFresh Solutions, Inc.	(3,717)	(16,881)	(30,053)	(3,060)
Net loss attributable to AgroFresh Solutions, Inc. Common Stockholders	(3,717)	(16,881)	(34,453)	(9,148)
Net loss per share:				
Basic	($0.07)	($0.33)	($0.68)	($0.18)
Diluted	($0.07)	($0.33)	($0.68)	($0.18)

(in thousands, except per share data)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2019				
Net sales	$ 38,940	$ 21,183	$ 48,972	$ 60,970
Cost of sales	11,335	6,289	13,892	13,533
Gross profit	27,605	14,894	35,080	47,437
(Loss) income before taxes	(13,172)	(28,651)	(2,642)	(34,188)
Net (loss) income including NCI	(12,585)	(22,361)	3,011	(22,218)
Net (loss) income attributable to AgroFresh Solutions, Inc.	(12,619)	(22,269)	3,289	(21,992)
Net (loss) income per share:				
Basic	($0.25)	($0.45)	$0.06	($0.44)
Diluted	($0.25)	($0.45)	$0.06	($0.44)

24. Correction of Prior Period Errors

During the current year-end financial reporting process, we identified certain prior period accounting errors that we have concluded are not material to the Company’s previously reported consolidated financial statements and unaudited interim condensed consolidated financial statements. The accompanying consolidated financial statements and related notes hereto as of and for the year ended December 31, 2019 have been revised to give effect to the correction of these errors. A description of each error is described below.

Non-Controlling Interest

During the fourth quarter of 2020, we identified an error related to the accounting for the Company's acquisition of 75% of Tecnidex in December 2017 (see Note 3 – Business Combination). As part of the Tecnidex purchase agreement ("Agreement"), the Company entered into “call” and “put” option agreements that provide for both the purchaser and seller to acquire or sell some portion of the 25% remaining (“residual”) interest at a price based on a pre-defined formula. In the Company's initial accounting for the acquisition, the residual interest was classified as “Non-controlling interest” in the Company's previously reported consolidated statements of stockholders' equity. Upon further review and as prescribed by ASC 480, *Distinguishing Liabilities from Equity*, the Company's management concluded the residual interest should have been classified as “Redeemable non-controlling interest” within temporary equity in the Company’s previously reported consolidated balance sheets because the Company is contingently obligated to redeem the shares if the seller elects to exercise the put option, which is outside of our control.

Furthermore, as prescribed by the SEC’s redeemable equity measurement guidance, the redeemable non-controlling interest should have been adjusted for any necessary increase in carrying value whenever the amount payable to the seller under the pre-defined formula exceeded the cumulative allocation of income (loss) related to the redeemable non-controlling interest as of each reporting period end. The adjustment to increase the carrying value of the redeemable non-controlling interest should have been recognized as a charge to Additional paid-in capital in the Company's previously reported consolidated statements of stockholders' equity and applied as an adjustment to Net (loss) income attributable to AgroFresh Solutions, Inc. common stockholders in the determination of basic and fully diluted net (loss) income per share.

There were no necessary adjustments to previously reported Additional paid-in capital for the quarterly periods and years ended December 31, 2017 and 2018, or for any of the three quarterly periods ended through September 30, 2019. For the quarter ended December 31, 2019, a $0.1 million adjustment should have been recognized to previously reported Additional paid-in capital. For the three quarterly periods ended September 30, 2020, $0.1 million, $0.3 million and $0.8 million adjustments, respectively, should have been recognized to previously reported Additional paid-in capital.

Income Tax Provision

During the 2020 year-end financial reporting process, the Company identified two errors related to the amount recognized as income taxes benefit in the Company's previously reported consolidated statements of operations for the year ended December 31, 2019. The first related to an error in the calculation of pre-tax loss attributed to the Company's U.S. entity that resulted in an understatement of $9.7 million that should have been recognized as an income tax benefit during the quarter ended December 31, 2019.

The second related to an error in the classification of a $10.0 million charge related to the impairment charge on a long-term equity investment (see Note 9 - Other Assets) for U.S. income tax purposes whereby the Company initially considered the charge to be a potential deduction in the calculation of pre-tax loss attributed to the Company's U.S. entity. Upon further analysis, we concluded that the $10.0 million charge should have been classified as a capital loss and therefore only deductible against capital gains. However, since the Company has no pre-existing capital gains for U.S. income tax purposes (or the likelihood of generating any future capital gains), the $2.3 million deferred income tax benefit associated with the capital loss should have been fully reserved during the quarter ended December 31, 2019 because it was not realized, nor expected to be realized in the future.

The net impact of the two errors resulted in an understatement in income tax benefit and an overstatement in Net (loss) income including non-controlling interests of $7.4 million, respectively, in the Company's previously reported consolidated statements of net (loss) income for the year ended December 31, 2019, as well as an overstatement in Deferred income tax liabilities and Accumulated deficit, of $7.4 million, respectively, in the Company's previously reported consolidated balance sheet as of December 31, 2019.

Income Tax Valuation Allowance as of September 30, 2020

As disclosed in Note 16 – Series B Convertible Preferred Stock and Shareholders' Equity and Note 19 – Income Taxes, the Company issued Series B Convertible Stock in July 2020. The issuance of these shares was considered a change in control as defined in the U.S. Internal Revenue Code of 1986, as amended. As a result, we concluded that the Company's ability to utilize its previously existing U.S. tax attributes would be restricted and, as such, recognized deferred income tax expense of $24.7 million increase in valuation allowance during the quarter ended September 30, 2020 to fully reserve deferred income tax assets we no longer expect the Company will realize in the future. In consideration of the two income tax errors described above, the Company concluded an additional $7.4 million increase in the valuation allowance should have been recognized as a result of the net increase in deferred income tax assets that would have been recognized as of September 30, 2020 had these errors been accounted for correctly.

As summarized in the unaudited selected financial statement tables below, the net impact of all the foregoing income tax errors resulted in an understatement in Income tax expense and an understatement in Net loss including non-controlling interest, of $7.4 million, respectively, in the previously reported unaudited condensed consolidated statements of operations for the three and nine month periods ended September 2020, as well as an overstatement in Deferred income tax liabilities and Accumulated deficit of $7.4 million in the previously reported unaudited condensed consolidated balance sheet as of March 31, 2020 and June 30, 2020.

The Company assessed the quantitative and qualitative factors associated with all the foregoing errors in accordance with SEC Staff Accounting Bulletin ("SAB") No. 99 and 108, Materiality, codified in ASC 250, *Presentation of Financial Statements*, and concluded that they were not material, on an individual or aggregate basis, to any of the Company's previously reported annual or interim consolidated financial statements. Notwithstanding this conclusion, the Company further concluded it is preferable to correct the errors by revising the consolidated 2019 accompanying consolidated financial statements and related notes hereto of the Company as of and for the year ended December 31, 2019 to give effect to the correction of these errors.

The following financial statement tables present the net effect of the correction of the errors described above on the Company’s previously reported consolidated financial statements as of and for the year ended December 31, 2019:

The effect of the correction of the errors noted above on the Company's consolidated balance sheet as of December 31, 2019 is as follows:

	December 31, 2019		
(in thousands)	As Reported	Adjustment	Revised
Deferred income tax liabilities	16,574	(7,357)	9,217
Total Liabilities	471,662	(7,357)	464,305
Redeemable non-controlling interest	—	7,701	7,701
Additional paid-in capital	561,006	(116)	560,890
Accumulated deficit	(199,621)	7,357	(192,264)
Total AgroFresh Stockholders' Equity	326,445	7,241	333,686
Non-controlling interest	7,585	(7,585)	—
TOTAL STOCKHOLDERS' EQUITY	334,030	(344)	333,686

The effect of the correction of the errors noted above on the Company's consolidated statements of (loss) income for the year ended December 31, 2019 is as follows:

	Year Ended December 31, 2019		
(in thousands except per share data)	As Reported	Adjustment	Revised
Benefit for income taxes	(17,143)	(7,357)	(24,500)
Net (loss) income including non-controlling interests	(61,510)	7,357	(54,153)
Net loss (income) attributable to non-controlling interests	678	(116)	562
Net (loss) income attributable to AgroFresh Solutions, Inc.	(60,832)	7,241	(53,591)
Net loss (income) per share:			
Basic	($1.21)	$0.14	($1.07)
Diluted	($1.21)	$0.14	($1.07)

The effect of the correction of the errors noted above on the Company's consolidated statements of comprehensive loss for the year ended December 31, 2019 is as follows:

	Year Ended December 31, 2019		
(in thousands)	As Reported	Adjustment	Revised
Net loss (income)	(61,510)	7,357	(54,153)
Comprehensive loss, net of tax	(63,733)	7,357	(56,376)

The effect of the correction of the errors noted above on the Company's consolidated statements of cash flows for the year ended December 31, 2019 is as follows:

	Year Ended December 31, 2019		
(in thousands)	As Reported	Adjustment	Revised
Net loss (income)	(61,510)	7,357	(54,153)
Deferred income taxes	(21,631)	(7,357)	(28,988)

The following unaudited selected financial statement tables summarize the net effect of the correction of the errors noted above on the Company’s previously reported unaudited interim condensed consolidated financial statements as of and for the quarterly reporting interim and year-to-date periods ending March 31, 2019 and 2020, June 30, 2019 and 2020, and September 30, 2019 and 2020.

The effect of the correction of the errors noted above to the Company's previously issued unaudited condensed consolidated balance sheets as of March 31, 2019, June 30, 2019 and September 30, 2019 are as follows:

	March 31, 2019			June 30, 2019			September 30, 2019		
(in thousands)	As Reported	Adjustment	Revised	As Reported	Adjustment	Revised	As Reported	Adjustment	Revised
Redeemable non-controlling interest	—	8,297	8,297	—	8,205	8,205	—	7,927	7,927
Non-controlling Interest	8,297	(8,297)	—	8,205	(8,205)	—	7,927	(7,927)	—
Total Stockholders' Equity	355,998	(8,297)	347,701	341,434	(8,205)	333,229	341,243	(7,927)	333,316

The effect of the correction of the errors noted above had no impact on the Company's previously reported unaudited condensed consolidated statements of operations, comprehensive income or cash flows for the three months and year-to-date periods ended March 31, 2019, June 30, 2019 and September 30, 2019.

The effect of the correction of the errors noted above to the Company's previously reported unaudited condensed consolidated balance sheets as of March 31, 2020, June 30, 2020 and September 30, 2020 are as follows:

	March 31, 2020			June 30, 2020			September 30, 2020		
(in thousands)	As Reported	Adjustment	Revised	As Reported	Adjustment	Revised	As Reported	Adjustment	Revised
Deferred income tax liabilities	15,156	(7,357)	7,799	11,677	(7,357)	4,320	35,577	—	35,577
Total Liabilities	466,605	(7,357)	459,248	462,165	(7,357)	454,808	357,810	—	357,810
Redeemable non-controlling interest	—	7,604	7,604	—	7,734	7,734	—	8,049	8,049
Additional paid-in capital	561,483	(185)	561,298	562,584	(512)	562,072	559,037	(1,321)	557,716
Accumulated deficit	(203,269)	7,357	(195,912)	(219,823)	7,357	(212,466)	(241,710)	—	(241,710)
Total AgroFresh Stockholders' Equity	313,152	7,172	320,324	298,050	6,845	304,895	272,283	(1,321)	270,962
Non-controlling interest	7,419	(7,419)	—	7,222	(7,222)	—	6,728	(6,728)	—
Total Stockholders' Equity	320,571	(247)	320,324	305,272	(377)	304,895	279,011	(8,049)	270,962

The effect of the correction of the errors noted above to the Company's previously reported unaudited condensed consolidated statements of operations for the three month periods ended March 31, 2020, June 30, 2020 and September 30, 2020 are as follows:

(in thousands except per share data)	Three Months Ended March 31, 2020 As Reported	Adjustment	Revised	Three Months Ended June 30, 2020 As Reported	Adjustment	Revised	Three Months Ended September 30, 2020 As Reported	Adjustment	Revised
(Benefit) provision for income taxes	(3,831)	—	(3,831)	630	—	630	25,857	7,357	33,214
Net loss including non-controlling interest	(3,814)	—	(3,814)	(16,751)	—	(16,751)	(22,381)	(7,357)	(29,738)
Net loss (income) attributable to non-controlling interests	166	(69)	97	197	(327)	(130)	494	(809)	(315)
Net loss attributable to AgroFresh Solutions, Inc.	(3,648)	(69)	(3,717)	(16,554)	(327)	(16,881)	(21,887)	(8,166)	(30,053)
Net loss attributable to AgroFresh Solutions, Inc. Common Stockholders	(3,648)	(69)	(3,717)	(16,554)	(327)	(16,881)	(26,287)	(8,166)	(34,453)
Net loss per share:									
Basic	($0.08)	$0.01	($0.07)	($0.33)	—	($0.33)	($0.52)	($0.16)	($0.68)
Diluted	($0.08)	$0.01	($0.07)	($0.33)	—	($0.33)	($0.52)	($0.16)	($0.68)

The effect of the correction of the errors noted above to the Company's previously reported unaudited condensed consolidated statements of operations for the year-to-date periods ending March 31, 2020, June 30, 2020 and September 30, 2020 are as follows:

(in thousands except per share data)	Three Months Ended March 31, 2020 As Reported	Adjustment	Revised	Six Months Ended June 30, 2020 As Reported	Adjustment	Revised	Nine Months Ended September 30, 2020 As Reported	Adjustment	Revised
(Benefit) provision for income taxes	(3,831)	—	(3,831)	(3,201)	—	(3,201)	22,656	7,357	30,013
Net loss including non-controlling interest	(3,814)	—	(3,814)	(20,565)	—	(20,565)	(42,946)	(7,357)	(50,303)
Net loss (income) attributable to non-controlling interests	166	(69)	97	363	(396)	(33)	857	(1,205)	(348)
Net loss attributable to AgroFresh Solutions, Inc.	(3,648)	(69)	(3,717)	(20,202)	(396)	(20,598)	(42,089)	(8,562)	(50,651)
Net loss attributable to AgroFresh Solutions, Inc. Common Stockholders	(3,648)	(69)	(3,717)	(20,202)	(396)	(20,598)	(46,489)	(8,562)	(55,051)
Net loss per share:									
Basic	($0.08)	$0.01	($0.07)	($0.41)	—	($0.41)	($0.92)	($0.16)	($1.08)
Diluted	($0.08)	$0.01	($0.07)	($0.41)	—	($0.41)	($0.92)	($0.16)	($1.08)

The effect of the correction of the errors noted above had no impact on the Company's previously reported unaudited condensed consolidated statements of comprehensive loss for the three month and year-to-date periods ended March 31, 2020 and June 30, 2020. The effect of the correction of the errors noted above for the three and nine months ended September 30, 2020 are as follows:

(in thousands)	Three Months Ended September 30, 2020 As Reported	Adjustment	Revised	Nine Months Ended September 30, 2020 As Reported	Adjustment	Revised
Net loss including non-controlling interest	(22,381)	(7,357)	(29,738)	(42,946)	(7,357)	(50,303)
Comprehensive loss, net of tax	(22,714)	(7,357)	(30,071)	(53,050)	(7,357)	(60,407)

The effect of the correction of the errors noted above to the Company's previously reported unaudited condensed consolidated statements of cash flows for the year-to-date periods ended March 31, 2019, June 30, 2019 and September 30, 2019 are as follows:

	Three Months Ended March 31, 2020			Six Months Ended June 30, 2020			Nine Months Ended September 30, 2020		
(in thousands)	**As Reported**	**Adjustment**	**Revised**	**As Reported**	**Adjustment**	**Revised**	**As Reported**	**Adjustment**	**Revised**
Net loss including non-controlling interest	(3,814)	—	(3,814)	(20,565)	—	(20,565)	(42,946)	(7,357)	(50,303)
Deferred income tax liability	(5,231)	—	(5,231)	(5,668)	—	(5,668)	18,086	7,357	25,443

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

The Company maintains disclosure controls and procedures within the meaning of Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended, or the Exchange Act. The Company's disclosure controls and procedures are designed to ensure that information required to be disclosed by us in the reports we file or submit under the Exchange Act, such as this Annual Report on Form 10-K, is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms. The Company's disclosure controls and procedures are also designed to ensure that such information is accumulated and communicated to our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating our Disclosure Controls, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management necessarily applied its judgment in evaluating and implementing possible controls and procedures.

As of December 31, 2020, our management, with the participation of our CEO and CFO, has conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures. Based on that evaluation, our CEO and CFO concluded that our disclosure controls and procedures were not effective as of December 31, 2020 due to material weaknesses in the Company's internal control over financial reporting as disclosed below.

Notwithstanding the conclusion by our CEO and CFO that our disclosure controls and procedures as of December 31, 2020 were not effective, and notwithstanding the material weaknesses in our internal control over financial reporting described below, management believes that the consolidated financial statements and related financial information included in this Annual Report on Form 10-K fairly present in all material respects our financial condition, results of operations and cash flows as of the dates presented, and for the periods ended on such dates, in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”).

Management’s Report on Internal Control over Financial Reporting

The Company’s management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) and 15d-15(f) of the Exchange Act. The Company’s internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of published financial statements in accordance with generally accepted accounting principles.

Our internal control over financial reporting include those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles and that our receipts and expenditures are being made only in accordance with authorizations of the Company’s management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2020. In making this assessment, management used the criteria in *Internal Control-Integrated Framework* (2013) set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on our assessment using those criteria, management concluded that our internal control over financial reporting as of December 31, 2020 was not effective.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that a reasonable possibility exists that a material misstatement of our annual or interim financial statements would not be prevented or detected on a timely basis.

During 2020, the Company identified material weaknesses related to the design and operation of controls over significant nonrecurring transactions and the preparation and review of our income tax provision. Our controls over significant nonrecurring transactions were not sufficient to consider all accounting and disclosure ramifications nor the ongoing accounting requirements of such transactions. Our controls over the review of the income tax provision relied upon insufficient reviews over underlying information used in the preparation of the tax provision. These material weaknesses resulted in immaterial misstatements in our 2019 financial statements related to the accounting for redeemable non-controlling interest and the computation of the consolidated (benefit) provision for income taxes, which were corrected prior to issuance of the Company’s 2020 financial statements. Furthermore, a reasonable possibility exists that material misstatements in the Company’s 2020 financial statements will not be prevented or detected on a timely basis.

Because of its inherent limitations, internal controls over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Plan to Remediate Material Weaknesses

The Company is currently in the process of remediating the material weaknesses and has taken and continues to take steps that address the underlying causes of the material weaknesses including improving the sufficiency of review of the information underlying the income tax provision and enhancing the review steps associated with significant and nonrecurring transactions. The Company has also implemented quarterly evaluations of the accounting implications of current and prior period significant and nonrecurring transactions that affect the Company's consolidated financial statements. The Company has instituted enhanced controls including review processes and reconciliations related to the tax provision. The Company intends to remediate these deficiencies as soon as possible and believes these actions will be sufficient to remediate the identified material weaknesses and strengthen the Company's internal control over financial reporting; however, there can be no guarantee that such remediation will be sufficient. The Company will continue to monitor the effectiveness of its controls and will make any further changes management determines appropriate.

Changes in Internal Control over Financial Reporting

Other than the material weaknesses described above, there were no changes in our internal control over financial reporting identified in connection with the evaluation required by paragraph (d) of Rule 13a-15 or Rule 15d-15 under the Exchange Act that occurred during the Company’s most recently completed fiscal quarter, and there has been no change in our internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors

Set forth below are descriptions of the backgrounds of the directors of the Company, their principal occupations for the past five years, and the specific experience, qualifications and other attributes and skills that led the Board to determine that such persons should serve on the Board of Directors.

Robert J. Campbell, 72, has served on our Board since February 2014. Since November 2011, Mr. Campbell has served as the Chairman of the board of directors of Enstar Group Limited, an insurance run-off company, and has served as its independent director since November 2007. Mr. Campbell served as an independent director of Camden National Corporation, a public holding company, from 1999 to 2014. Mr. Campbell also served as a director of Boulevard Acquisition Corp. II, a publicly-traded special purpose acquisition company, from September 2015 until the consummation of its business combination with Estre Ambiental S.A. in December 2017. Since January 1991, Mr. Campbell has served as a partner at Beck, Mack & Oliver LLC, a private investment advisory firm. Mr. Campbell holds a Bachelor of Arts degree in Political Economy from Williams College.

The Board believes that Mr. Campbell is qualified to serve on our Board because of his private investment advisory experience and his board experience with private and public companies.

Denise L. Devine, 65, joined our Board in February 2018. Ms. Devine is the founder and since 2014 has served as the Chief Executive Officer of FNB Holdings, LLC, a company dedicated to initiatives in the health and wellness space. Ms. Devine was also founder and served for more than ten years as the Chief Executive Officer of Nutripharm, Inc., a company that has generated a portfolio of composition and process patents to create innovative natural food, beverage, pharmaceutical and nutraceutical products that facilitate nutrition and lifelong health. Ms. Devine, a certified public accountant, also previously served as Chief Financial Officer for Energy Solutions International and in financial management positions for Campbell Soup Company. Ms. Devine has served as Chair of the Pennsylvania State Board of Accountancy and on the Board of the American Institute of CPAs. Ms. Devine has served as a director of Fulton Financial Corporation (Nasdaq: FULT) (“Fulton”) since 2012, and serves as a member of Fulton’s Audit Committee, as Chair of Fulton’s Human Resources Committee, and as a member of Fulton’s Executive Committee. She has also served as a director of Cubic Corporation (NYSE: CUB) since November 2019 and serves on its Audit Committee and its Technology Strategy Committee. Since February 2020 she has also served on the Board of SelectQuote (NYSE: SLQT) and as Chair of its Compensation Committee. Ms. Devine was a member of the Board of Trustees of Villanova University from 2005 to 2015, where she was the Chair of the Audit and Risk Committee. She also served as a member of the Board of Trustees of Lourdes Health System from 2010 to 2019 until Lourdes was acquired and the Board of Trustees was disbanded. In addition, she serves on the Board of AUS, Inc. a privately-owned company, since 2016 and was appointed to the Board of Ben Franklin Technology Partners of Southeastern Pennsylvania in 2016. Ms. Devine received a Master of Business Administration degree from the Wharton School of the University of Pennsylvania, a Master of Science degree in Taxation from Villanova Law School, and a Bachelor of Science degree in Accounting from Villanova University.

The Board believes that Ms. Devine is qualified to serve on our Board because of her substantial management, business and finance experience.

Nance K. Dicciani, 73, joined our Board upon the consummation of our business combination with The Dow Chemical Company (“TDCC”) on July 31, 2015 (the “Business Combination”). She was appointed non-executive Chair of the Board on August 13, 2015. From March 2016 until October 2016, Ms. Dicciani served as a co-member of the Office of the Chair of the Company, in which capacity she assumed, with the other co-member, the duties and responsibilities of chief executive officer and president of the Company on an interim basis. Ms. Dicciani is the retired President and Chief Executive Officer of Honeywell International Specialty Materials (a diversified technology and manufacturing company), a position she held from 2001 to 2008. Ms. Dicciani has served as a director of Linde plc. since its business combination with Praxair, Inc. in 2018, where she is a member of the Audit and Compensation Committees. Ms. Dicciani has also served as a director of Halliburton Company since 2009, where she is a member of the Audit Committee and Chair of the Health, Safety and Environmental Committee. Ms. Dicciani has also served as a director of LyondellBasell Industries N.V. since 2013, where she is a member of the Finance Committee and Chair of the Compensation Committee. Additionally, Ms. Dicciani served as a director of Rockwood Holdings, Inc. from 2008 to 2014. Ms. Dicciani holds a Bachelor’s degree in Chemical Engineering from Villanova University, a Master’s degree from the University of Virginia, a Ph.D. degree from the University of Pennsylvania and a Master of Business Administration degree from the Wharton Business School of the University of Pennsylvania.

The Board believes that Ms. Dicciani is qualified to serve on our Board due to her technical expertise in the chemical industry, her international operations expertise, her executive experience as a chief executive officer of a multi-billion dollar strategic business group of a major multinational corporation and her board experience with private and public companies.

Jordi Ferre, 56, has served as our Chief Executive Officer and a member of our Board since October 2016. Mr. Ferre has more than 25 years of international experience in the global food ingredients industry, most recently serving as the Chief Operating Officer of PureCircle Limited ("PureCircle"), a global leader in natural food ingredients, including Stevia™ sweetener, from June 2014 to September 2016, and prior to that as PureCircle's President, Commercial Division from January 2009 to June 2014. Mr. Ferre's positions prior to joining PureCircle include serving as Vice President, Sales and Marketing, Splenda Sucralose with Tate & Lyle PLC, Vice President, Sales and Marketing with Wise Foods, Inc. and Vice President, Marketing/Business Development Americas with Chupa Chups Group. Mr. Ferre holds a Master of Business Administration degree from ESADE Business School in Barcelona, Spain.

The Board believes that Mr. Ferre's extensive experience serving in senior executive roles within the food ingredients industry qualifies him to serve on the Board.

Macauley Whiting, Jr., 64, joined our Board upon the consummation of the Business Combination on July 31, 2015. Mr. Whiting has served as President Emeritus of The Herbert H. and Grace A. Dow Foundation since September 2019 and served as its President from April 2014 to September 2019, as its Treasurer from 2005 to 2015 and as its Secretary from 2000 to 2005. In addition, Mr. Whiting previously served as President and Chief Executive Officer of Decker Energy International, a privately-held renewable energy company he founded in 1982 and built up until 2012, when he sold the company. Mr. Whiting holds a Bachelor of Science degree in Chemical Engineering (*cum laude*) from Princeton University.

The Board believes that Mr. Whiting is qualified to serve on our Board due to his general business acumen, knowledge of chemistry and extensive management experience.

Mr. Whiting was initially designated for nomination to our Board pursuant to the terms of the Stock Purchase Agreement, dated April 30, 2015, by and between the Company and TDCC.

Investor Directors

Pursuant to the terms of the Investment Agreement, we agreed to increase the size of the Board to ten directors upon the closing of the transactions contemplated by the Investment Agreement and to appoint two individuals designated by PSP on that date. In addition, commencing on the first anniversary of the date of such closing (or earlier under certain circumstances), PSP will have the right to appoint additional directors to the Board, such that the total number of its designees will be proportionate to its ownership of our common stock, on an as-converted basis. Accordingly, we appointed two individuals designated by PSP to the Board on July 27, 2020. In addition, in February 2021 we appointed a third individual designated by PSP to the Board.

Kevin Schwartz, 46, is Chief Executive Officer and a Founding Partner at Paine Schwartz Partners. Prior to co-founding Paine Schwartz Partners in 2006, Mr. Schwartz was a Managing Director at Fox Paine & Company, LLC, which he joined in 2002. Prior to joining Fox Paine & Company, LLC, he worked for the private equity firms Fremont Partners and American Industrial Partners. He began his professional career at Goldman, Sachs & Co. in the Investment Banking Division. He is currently a director of the following private companies: Advanced Agrilytics, FoodChain ID, Lyons Magnus, Prima Wawona, SNFL Group, and UrbanFarmer LLC. He also previously served as a director of the following private companies: AgBiTech, Costa Group Holdings Pty Ltd., Sunrise Growers, Verisem, Verdesian Life Sciences, LLC, Advanta, Icicle Seafoods, Inc., Seminis, VCST Industrial Products and United American Energy. He is a graduate of the University of Illinois (Bachelor of Science in Accountancy) and was raised in Moline, Illinois.

Alexander Corbacho, 32, is a Managing Director at Paine Schwartz Partners. Mr. Corbacho joined Paine Schwartz Partners in 2012. He began his career at UBS Investment Bank in the firm's Leveraged Finance Origination Group. While there, he worked to provide debt financing, capital structure solutions, and advisory services for a variety of companies and financial sponsors, including Paine Schwartz Partners. He currently serves as a director of the following private companies: SNFL Group, Verdesian Life Sciences, LLC, and Verisem. He is a graduate of Boston University.

Peter Berweger, 51, has served as Managing Director, Head of Portfolio Excellence Platform at Paine Schwartz Partners since October 2020, and served as Director, Portfolio Excellence at Paine Schwartz Partners from May 2017 to September 2020. Mr. Berweger has also served on the board of directors of AgBiTech LLC ("AgBiTech"), a provider of biological products for sustainable pest management and a portfolio company of Paine Schwartz Partners, since August 2017, including as Chairman of the Board since July 2020, and served as AgBiTech's Group Chief Executive Officer from July 2018 to June 2020. Prior to that, he served as Group Chief Executive Officer of Eurodrip SA, a manufacturer and supplier of integrated irrigation solutions, from August 2015 to April 2017. Mr. Berweger previously held multiple positions with Syngenta and KPMG. He is an accountant and economist by background and holds an MBA from Columbia University, New York and London Business School.

Preferred Director

In addition to the directors listed above, pursuant to the terms of the certificate of designation of the one share of our Series A preferred stock (the "Series A Preferred Stock") that was issued to TDCC, which is now a subsidiary of Dow Inc. ("Dow"), upon the consummation of the Business Combination, TDCC is entitled to appoint one director (the "Preferred Director") to the Board for so long as TDCC beneficially holds 10% or more of the aggregate amount of the outstanding shares of our Common Stock and non-voting common stock. The Series A Preferred Stock does not have any other rights.

Torsten Kraef, 54, joined our Board upon the consummation of the Business Combination on July 31, 2015. Mr. Kraef has served as Senior Vice President of Corporate Development for Dow since December 2016, where he leads the development of corporate strategy and coordinates implementation of key strategic tracks. As of September 2017, when Dow and DuPont consummated their merger transaction, he worked closely with the DowDuPont Executive Chairman and Chief Financial Officer to advance the merger and spin-off transaction which was completed with the spin-off of Dow and Corteva during the second quarter of 2019. Mr. Kraef currently leads Dow's Enterprise Risk Management, Enterprise Security Service and the incubation of strategic and innovative new business growth opportunities. He is a member of Dow's Executive Committee and Corporate Leadership Team, which is accountable for delivering against corporate strategic and operations targets. Prior to his current position, he served as Corporate Vice President of Strategy Development and New Business Development for Dow from August 2013 to December 2016, and as Corporate Vice President of Strategy Development from September 2012 to August 2013. During 2014 to 2019, Mr. Kraef served on the Dow AgroSciences LLC Members Committee and Mycogen Board of Directors, both subsidiaries of Dow. In 2012, he also served as a member of the board of MEGlobal, a joint venture between Dow and Petrochemical Industries Company (PIC) of Kuwait. From 2007 to 2012, Mr. Kraef led various businesses including a more than $8 billion revenue business group consisting of Dow's Polyurethanes, Epoxy, Formulated Systems and Dow Automotive Systems businesses. Mr. Kraef joined Dow in June 1991 and held various roles prior to being named Vice President of Dow's Building and Construction unit in February 2007. Mr. Kraef holds a degree in Banking Management from the Industry and Trade Chamber in Düsseldorf, Germany, and a masters/diploma in Business Administration from the University of Düsseldorf, specializing in Sustainable Manufacturing, International Management and Marketing.

Executive Officers

Our current executive officers are listed in the following table, and certain information concerning those officers follows the table.

Name	Age	Position
Jordi Ferre	56	Chief Executive Officer
Graham Miao	56	Executive Vice President and Chief Financial Officer
Thomas Ermi	56	Executive Vice President, Secretary and General Counsel

The biographical information with respect to Mr. Ferre included above under the caption "Directors" is incorporated herein by reference.

Graham Miao has served as our Executive Vice President and Chief Financial Officer since August 2018. Mr. Miao has over two decades of experience in global financial and business operations, capital markets, M&A and business development, and R&D for large multi-national and small to mid-market public and private companies in the healthcare, specialty chemicals and financial services industries. Mr. Miao served as President and Chief Financial Officer of Pernix Therapeutics Holdings, Inc. from July 2016 through December 2017, and served as a member of its board of directors from November 2016 to November 2017. Prior to that, Mr. Miao served as a senior advisor to Pernix's interim Chief Executive Officer and board of directors from May 2016 to July 2016. Before joining Pernix, Mr. Miao served as Executive Vice President and Chief Financial Officer of Interpace Diagnostics, Inc. (formerly known as PDI, Inc.), from October 2014 until March 2016. From September 2011 to September 2014, Mr. Miao served as Executive Vice President and Chief Financial Officer, and held the additional role as interim Co-President and interim Co-Chief Executive Officer from September 2013 to September 2014, of Delcath Systems, Inc. His career spanned financial, strategy and operational leadership positions including division CFO roles at Symrise, Schering-Plough and Pharmacia. Earlier in his career, Mr. Miao worked as a biotechnology equity analyst at JPMorgan and a research scientist at Roche. Mr. Miao earned an M.B.A. in Finance and General Management and a Ph.D. in Biological Sciences from Columbia University, an M.S. in Molecular Biology from Arizona State University, and a B.S. in Biology from Fudan University in Shanghai, China.

Thomas Ermi has served as our Executive Vice President, Secretary and General Counsel since the consummation of the Business Combination on July 31, 2015. From 2009 until joining the Company, Mr. Ermi was a Managing Attorney in the Dow Legal Department, where he served as the Commercial Legal Director and member of the Management Team for Dow's $2.2 billion global Electronic Materials Business. Mr. Ermi joined Rohm and Haas Company in 2000, serving as the Commercial Legal Director and member of the Management Team for the Electronic Materials business as well as the Powder Coatings and Automotive Coatings businesses. In the 15 years he was with Dow and Rohm and Haas, Mr. Ermi negotiated numerous M&A transactions in North America, Europe and Asia Pacific with an aggregate transaction value exceeding $4 billion. Mr. Ermi began his legal career in 1992 as an Associate at Duane Morris & Heckscher in Philadelphia, where he worked first as a commercial litigator and then as a commercial lawyer. Prior to that, Mr. Ermi was an auditor for Price Waterhouse in Philadelphia. Mr. Ermi holds a Bachelor of Science degree in Accounting from Villanova University, and a *juris doctor* degree from the University of Pennsylvania.

Corporate Governance Overview

Our Board is committed to maintaining strong corporate governance principles and practices. Our governance structure and processes are based upon a number of key governance documents, including our Corporate Governance Guidelines and policies described below. These Guidelines guide the Board and our executive management team in the execution of their responsibilities. Our Corporate Governance Guidelines are reviewed at least annually and are updated periodically in response to changing regulatory requirements, evolving practices, issues raised by our stockholders and other stakeholders and otherwise as circumstances warrant. As a result of this active engagement the Company and our Board embrace the following good-governance practices:

Board and Board Committee Practices

- Our Board is declassified, and the Company's Bylaws require a majority voting standard for the election of directors;
- We have a director resignation policy for directors who fail to obtain a majority vote;
- Eight of our nine directors are currently independent, including the Chair of the Board;
- The role of Chair of the Board is a non-executive position, and the roles of Chair of the Board and Chief Executive Officer are split;
- The Audit, Compensation and Corporate Governance and Nominating Committees are comprised solely of independent directors;
- The Board and each of its Committees have authority to retain outside advisors;
- The Compensation and Talent Committee's outside advisor does not perform any other services for the Company and confirms its independence annually;
- There are no interlocks among the Compensation and Talent Committee members; and
- The Board and each of its Committees perform annual self-assessments.

Company Policies and Practices

- The Company does not have a stockholder rights plan (a so-called "poison pill");
- The Company has adopted a code of business conduct (the "Code of Conduct"), and every employee of the Company must annually submit a certificate attesting to (i) such employee's compliance with the Code of Conduct and (ii) such employee's knowledge of compliance with the Code of Conduct by other employees;
- The Company has adopted a whistleblower policy that encourages reporting by employees of any allegations of impropriety, and the Company has set up a third party hosted hotline where employees can anonymously make such reports;
- The Board has imposed stock ownership guidelines for directors and officers (discussed below);

- The Company has an executive "clawback" policy pursuant to which the Company may seek to reclaim previously awarded incentive-based compensation from executives if the Company determines it must prepare a material accounting restatement due to fraud, misconduct or gross negligence, as discussed below; and

- The Company has adopted an insider trading policy that restricts short selling, trading in derivatives, pledges, hedges and margin account use by our executives and directors.

Board Leadership Structure and Role in Risk Oversight

The roles of Chair of the Board and Chief Executive Officer are held by separate persons. Generally, the Chair of the Board is responsible for assisting in long-term strategic planning, overseeing and advising the Chief Executive Officer and presiding over meetings of the Board, and the Chief Executive Officer is responsible for leading our day-to-day performance. While we do not have a policy with respect to the separation of the roles of Chair of the Board and Chief Executive Officer, the Board believes that the separation of these roles provides several important advantages, including enhancing the accountability of the Chief Executive Officer to the Board, assisting the Board in reaching consensus on particular strategies and policies, and facilitating robust director, Board, and executive officer evaluation processes.

Our Board, as part of its overall responsibility to oversee the management of our business, considers risks generally when reviewing our strategic plan, financial results, business development activities, legal, and regulatory matters. The Board satisfies this responsibility through regular reports directly from our officers responsible for oversight of particular risks. The Board's risk management oversight also includes full and open communications with management to review the adequacy and functionality of the risk management processes used by management. The Board's role in risk oversight has no effect on the Board's leadership structure. In addition, committees of the Board assist in its risk oversight responsibility, including:

- The Audit Committee assists the Board in its oversight of the integrity of the financial reporting and our compliance with applicable legal and regulatory requirements. It also oversees our internal controls and compliance activities, and meets privately with representatives from our independent registered public accounting firm.

- The Compensation and Talent Committee assists the Board in its oversight of risk relating to compensation policies and practices. The Compensation and Talent Committee annually reviews our compensation policies, programs, and procedures, including the incentives they create and mitigating factors that may reduce the likelihood of excessive risk taking, to determine whether they present a significant risk to our Company.

- The Corporate Governance and Nominating Committee, in addition to recommending individuals to be designated as nominees to the Board, develops and recommends to the Board our corporate governance guidelines.

Board Structure and Committee Membership

The following chart summarizes our current standing committee structure:

Name	Audit Committee	Compensation and Talent Committee	Corporate Governance and Nominating Committee
Peter Berweger		X	
Robert J. Campbell	X*		X
Alexander Corbacho			X
Denise L. Devine	X	X*	
Nance K. Dicciani	X		
Torsten Kraef		X	X*
Kevin Schwartz			
Macauley Whiting, Jr.	X	X	
Jordi Ferre			

* Chairman of applicable committee.

Independence of Directors

As a result of our securities being listed on the NASDAQ Stock Market, we adhere to the rules of that exchange in determining whether a director is independent. The NASDAQ Stock Market requires that a majority of the Board must be composed of "independent directors," which is defined generally as a person other than an officer or employee of a company or its subsidiaries or any other individual having a relationship which, in the opinion of such company's board of directors, would interfere with the director's exercise of independent judgment in carrying out the responsibilities of a director. Consistent with these considerations, our Board of Directors has affirmatively determined that each of our current directors other than Mr. Ferre are independent directors.

Audit Committee

Our Audit Committee consists of Mr. Campbell, Ms. Devine, Ms. Dicciani and Mr. Whiting. Each is an independent director and, as required by the NASDAQ Stock Market listing standards and the rules and regulations of the SEC and the Internal Revenue Service, has not participated in the preparation of our financial statements at any time during the past three years and is able to read and understand fundamental financial statements, including a company's balance sheet, income statement and cash flow statement. In addition, we must certify to NASDAQ that the Audit Committee has, and will continue to have, at least one member who has past employment experience in finance or accounting, requisite professional certification in accounting, or other comparable experience or background that results in such member's financial sophistication, including being or having been a chief executive officer, chief financial officer or other senior officer with financial oversight responsibilities. Our Board has determined that Mr. Campbell satisfies the definition of financial sophistication and also qualifies as an "audit committee financial expert," as defined under rules and regulations of the SEC. The Audit Committee operates under a written charter adopted by the Board, a copy of which is available on the investor relations section of the Company's website, www.agrofresh.com.

The Audit Committee's duties include, among other things:

- reviewing and discussing with management and the independent registered public accountant our annual and quarterly financial statements;
- discussing with management and the independent auditor significant financial reporting issues and judgments made in connection with the preparation of our financial statements;
- discussing with management major risk assessment and risk management policies;
- monitoring the independence of the independent auditor;
- verifying the rotation of the lead (or coordinating) audit partner having primary responsibility for the audit and the audit partner responsible for reviewing the audit as required by law;
- reviewing and approving all transactions between us and related persons;
- inquiring and discussing with management our compliance with applicable laws and regulations and our code of ethics;
- pre-approving all audit services and permitted non-audit services to be performed by our independent auditor, including the fees and terms of the services to be performed;
- appointing or replacing the independent auditor;
- determining the compensation and oversight of the work of the independent auditor including resolution of disagreements between management and the independent auditor regarding financial reporting for the purpose of preparing or issuing an audit report or related work;
- overseeing the internal audit function; and
- establishing procedures for the receipt, retention, and treatment of complaints received by us regarding accounting, internal accounting controls, or reports which raise material issues regarding our financial statements or accounting policies.

Code of Business Conduct

We have adopted a Code of Conduct applicable to the directors, officers and employees of the Company and its subsidiaries. We have also adopted corporate governance guidelines which address, among other things, director qualifications, responsibilities and compensation, director access to officers, employees and advisors, and determinations regarding executive officer compensation. A copy of the Code of Conduct and our corporate governance guidelines are both available in the Investor Relations section of our website, www.agrofresh.com.

Communicating with the Board

Our stockholders may send written communications directly to the Board of Directors or to specified individual directors, including the Chair of the Board or any non-management directors, by sending such communications to our corporate headquarters. Such communications will be reviewed by our legal counsel and, depending on the content, will be:

- forwarded to the addressee or distributed to the addressee at the next scheduled Board meeting;
- if they relate to financial or accounting matters, forwarded to the Audit Committee or distributed at the next scheduled Audit Committee meeting;
- if they relate to executive officer compensation matters, forwarded to the Compensation and Talent Committee or distributed at the next scheduled Compensation and Talent Committee meeting;
- if they relate to the recommendation of the nomination of an individual to our Board of Directors, forwarded to the Corporate Governance and Nominating Committee or distributed at the next scheduled Corporate Governance and Nominating Committee meeting; or
- if they relate to our operations, forwarded to the appropriate officers of our Company, and the response or other handling of such communications reported to the Board of Directors at the next scheduled Board meeting.

ITEM 11. EXECUTIVE COMPENSATION

Executive Summary

Our Performance in Fiscal 2020

Executive compensation in 2020, as in prior years, was largely tied to the overall financial performance of the Company. During 2020, the Company continued to execute on its business strategies of (i) leveraging its global footprint and service offerings to stabilize pricing and gross margins for its SmartFresh franchise, (ii) growing organically through the introduction of new products and services, and (iii) diversifying into new crops and geographic markets. Despite challenges including a smaller North American apple crop, which decreased approximately 11% creating lower storage volumes, COVID-19 related impacts that also caused delays in new diversification project rollouts, changes in customer short-term purchasing decisions, and currency fluctuations, the Company achieved the following key accomplishments in 2020:

- Net sales of approximately $157.6 million and Adjusted EBITDA[1] of approximately $60.1 million;
- Continued leverage of the Company's global reach to diversify sales of products such as Harvista into new crops and geographies and to introduce and expand sales of new products;
- Planning for the future introduction of novel technologies that the Company believes will support its long-term diversification efforts;
- Accomplished a comprehensive refinancing of its outstanding indebtedness; and
- Continued cost optimization efforts that translated into a 9.4% reduction in selling, general and administrative expense for 2020.

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[1] Adjusted EBITDA is a non-GAAP financial measure. Please see the information under "Management's Discussion and Analysis of Financial Condition and Results of Operations – Non-GAAP Measures" for more information, including a reconciliation of this Non-GAAP financial measure to GAAP results.

Linkage of 2020 Performance to 2020 Compensation Outcomes

For 2020, AgroFresh bonus payouts for its named executive officers (as defined below) were 57.1% of target based on our financial performance for the year and non-financial considerations. The Compensation and Talent Committee felt that payouts were commensurate with achievements of the Company and the performance goals set at the beginning of the year, taking into account factors such as the COVID-19 global pandemic. Total shareholder return-based awards that had a performance period ending in 2020 were not earned, in light of the company's low total shareholder return during the 3-year period ending in 2020 relative to its peer group.

Executive Compensation Objectives

AgroFresh is committed to providing a fair and market competitive executive compensation program that will attract, retain and reward high-performing employees. Our compensation package is tied to the contributions of the individual, the achievement of organizational goals, and the attainment of long-term financial results. Below are the objectives of our program:

- Attract, retain, and motivate superior executive talent;
- Provide incentives that reward the achievement of performance goals that directly correlate to the enhancement of shareholder value, as well as facilitate executive retention;
- Reinforce AgroFresh's mission of recruiting and retaining a highly motivated workforce to support the overall growth and performance of the Company; and
- Utilize transparent communication to provide employees with information necessary to make informed choices and to better understand the total rewards package.

Good Governance Practices

The Compensation and Talent Committee continuously evaluates policies and practices to ensure that they are consistent with good governance principles. Below are highlights of our governance practices:

What We Do	What We Don't Do
✓ Provide the majority of compensation in performance-based pay	x Excise tax gross-ups on a change in control
✓ Maintain stock ownership guidelines for directors and executives	x Liberal change in control definition, or excessive severance in a change in control or termination
✓ Cap incentive plan at 2x target for bonus and 1.5x for LTI, with no payouts below threshold	x Excessive perquisites
✓ Maintain a clawback policy	x Hedging transactions or pledging securities
✓ Have change in control employment agreements with double-trigger severance provisions	x Liberal share counting
✓ Adhere to an insider trading policy	x Discounted stock options or SAR
✓ Use an independent compensation consultant engaged by and reporting directly to the Compensation and Talent Committee	x Stock option repricing, reloads, or cash buyouts
✓ Reflect multi-dimensional performance using earnings, sales, non-financial and market performance with a mix of relative and absolute goals	x Automatic vesting of equity upon a change in control

Executive Officer Compensation

The following provides, under the scaled reporting rules applicable to smaller reporting companies, an overview of our compensation policies and programs and identifies the elements of compensation for 2020 with respect to our "named executive officers," which term is defined by Item 402 of the SEC's Regulation S-K to include (i) all individuals serving as our principal executive officer at any time during 2020, (ii) our two most highly compensated executive officers other than the principal executive officer who were serving as executive officers at December 31, 2020 and whose total compensation (excluding nonqualified deferred compensation earnings) exceeded $100,000, and (iii) up to two additional individuals for whom disclosure would have been provided pursuant to the foregoing item (ii) but for the fact that the individual was not serving as an executive officer of the Company at December 31, 2020. Our named executive officers for 2020 were Jordi Ferre, our Chief Executive Officer, Graham Miao, our Executive Vice President and Chief Financial Officer, and Thomas Ermi, our Executive Vice President and General Counsel.

Summary Compensation Table

The following table sets forth the total compensation earned by each of our named executive officers in 2020 and 2019.

Name and Principal Positions	Year	Salary	Bonus	Stock Awards(1)	Option Awards(1)	Non-Equity Incentive Plan Compensation	All Other Compensation(2)	Total
Jordi Ferre	2020	$611,550	-	$1,192,938	-	$336,890	$25,572	$2,166,950
Chief Executive Officer	2019	$573,469	-	$859,259	$237,704	$478,333	$15,400	$2,164,164
Graham Miao	2020	$494,433	-	$723,958	-	$209,901	$18,855	$1,447,147
Exec. V.P. and Chief Financial Officer	2019	$460,696	-	$517,760	$143,190	$295,866	$15,400	$1,433,632
Thomas Ermi	2020	$378,598	-	$258,064		$114,520	$15,530	$766,712
Executive Vice President and General Counsel	2019	$348,597	-	$158,240	$43,774	$161,426	$17,236	$729,273

(1) Amounts shown do not reflect compensation actually received by the named executive officers. Instead, the amounts shown in these columns represent the full grant date fair value of the restricted stock, performance-based restricted stock or option awards, as applicable, calculated in accordance with FASB ASC Topic 718, excluding the effect of estimated forfeitures. These amounts reflect the accounting expense that we will recognize over the vesting term for the award and does not correspond to the actual value that will be realized by the executive, if any. For a discussion of valuation assumptions and methodologies, see Note 17 of our audited financial statements included elsewhere in this annual report on Form 10-K. Amounts shown for stock awards includes the full grant date fair value of performance-based restricted stock awards made in 2020 assuming the target level of performance conditions are achieved, equal to $605,372, $367,382 and $130,958 for Messrs. Ferre, Miao and Ermi, respectively. Assuming the highest level of performance conditions are achieved, the grant date fair values for performance-based restricted stock awards made in 2020 would be $1,135,072, $688,841 and $245,546 for Messrs. Ferre, Miao and Ermi, respectively.

(2) Amounts reported for 2020 represent the Company's contributions to the named executive officers' accounts in our 401(k) plan ($13,708 for Mr. Ferre, $17,100 for Mr. Miao and $13,771 for Mr. Ermi) and financial planning assistance ($11,864 for Mr. Ferre, $1,755 for Mr. Miao and $1,559 for Mr. Ermi). Amounts reported for 2019 represent: for Mr. Ferre, the Company's contributions to his account in our 401(k) plan; for Mr. Miao, the Company's contributions to his account in our 401(k) plan; and for Mr. Ermi, the Company's contributions to his account in our 401(k) plan ($15,400) and financial planning assistance ($1,835).

Compensation Mix

Our compensation program is heavily weighted towards performance-based and shareholder aligned compensation, reflecting our philosophy of increasing our long-term value and supporting strategic initiatives. The charts below show the total target compensation mix of our CEO and our other named executive officers. These charts illustrate that a majority of named executive officers'(NEOs) total target compensation is at risk, reflecting all elements except base salary (75% for our CEO and an average of 62% for our other named executive officers).

NEOs Average 2020 Target Pay Mix

CEO 2020 Target Pay Mix

Narrative Disclosure to Summary Compensation Table

Our Compensation and Talent Committee determines, or recommends to the full Board of Directors for determination, the salaries and other compensation of our executive officers (including the named executive officers listed in the Summary Compensation Table above) and makes grants under, and administers, the 2015 Plan. The employment agreements and offer letters we have entered into with our named executive officers, discussed below, set forth minimum levels of annual base salary and annual incentive compensation. During the year ended December 31, 2020, the Compensation and Talent Committee engaged the firm of Meridian Compensation Partners, LLC (“Meridian”) to serve as compensation consultant to review our executive compensation program design and assess our executives’ compensation relative to a “peer group” of comparable companies. For purposes of our 2020 compensation decisions, our Compensation and Talent Committee used the peer group listed below, which was approved following a review that included input from Meridian, to assist with the determination of compensation for our executive officers. AgroFresh selected the peer group based on a focus on specialty chemicals (and related industries) companies with similar size (revenues < $1B) and/or business focus as AgroFresh.

Company	2019 Revenue ($M)	GICS Sub-Industry
Innophos Holdings, Inc.	$776	Specialty Chemicals
OMNOVA Solutions Inc.	$758	Specialty Chemicals
Cambrex Corporation	$574	Life Sciences Tools and Services
Hawkins, Inc.	$554	Commodity Chemicals
American Vanguard Corporation	$456	Fertilizers and Agricultural Chemicals
CVR Partners, LP	$408	Fertilizers and Agricultural Chemicals
LSB Industries, Inc.	$390	Diversified Chemicals
Oil-Dri Corporation of America	$273	Household Products
Chase Corporation	$289	Specialty Chemicals
Trecora Resources	$283	Commodity Chemicals
FutureFuel Corp.	$266	Specialty Chemicals
Intrepid Potash, Inc.	$168	Fertilizers and Agricultural Chemicals
Limoneira Company	$150	Agricultural Products
Amyris, Inc.	$80	Specialty Chemicals
Alico, Inc.	$122	Agricultural Products

Total compensation for our named executive officers primarily consist of the following elements:

Element	2020 Design / Context	Objectives
Base Salary	• Base pay changes ranged from 2% to 3% for named executive officers for 2020	• Manage fixed costs • Attract a strong, experienced talent pool • Provide a necessary element of financial stability to executives' total compensation packages • Recognize individual performance, market value of the position and the incumbent's tenure, experience, responsibilities and overall contribution • Targeted at competitive levels (range of +/- 10% around the 50^{th} percentile) of market
Bonus	• Adjusted EBITDA: 60% • Diversification Sales Growth: 25% • Non-Financial: 15% based EH&S, value realization from M&A / strategic partnerships, and working capital	• Focus executives on key annual business objectives • Recognize individual contribution to annual results • Attract, retain, motivate and reward key talent • Introduce a reliable, transparent approach for all Plan participants • Align the financial interests of senior management with AgroFresh's shareholders • Offer a competitive range of +/- 15% around the 50^{th} percentile of our peer group for short-term incentive opportunity such that target total cash compensation is highly competitive when supported by strong performance
LTI	• 50% performance-based equity (3-year performance period based on three-year net leverage improvement with relative total shareholder return applied as a modifier) • 50% restricted stock (3-year pro-rata vesting)	• Reflect shareholder value creation over a sustained period • Align the financial interests of executives with shareholders • Recognize current performance through the LTI target awards, and the expectation of future contributions through the growth of those awards' value • Provide meaningful awards to support and encourage share ownership • Retain key employees • LTI guidelines will be articulated at range of +/ 25% around 50th percentile of market; higher/lower individual awards may be based on performance, potential, retention needs and dilution constraints

In 2020, we paid base salaries of $590,000 to Mr. Ferre, $477,000 to Mr. Miao and $365,000 to Mr. Ermi.

Each year, each of our named executive officers has a target cash incentive payout amount, expressed as a percentage of that executive officer's base salary, based on the achievement of goals established each year by the Compensation and Talent Committee. For 2020, the target amounts for these cash incentives were 100% for Mr. Ferre, 70% for Mr. Miao and 50% for Mr. Ermi, in each case based on the achievement of performance metrics as described in the table above.

Each year, we grant equity awards to our named executive officers under our 2015 Plan. In 2020, the target award values of these awards were allocated among the following components: 50% of the target value delivered as performance-based equity awards, assuming target level achievement of applicable performance goals, and 50% of the target value delivered as restricted stock awards. The restricted stock awards vest in equal installments on each of the first three anniversaries of the grant date, and the performance-based equity awards cliff vest at the end of the three-year performance period, in an amount equal to a percentage of the target number of shares determined in reference to the extent to which the Company has achieved specified performance goals. The performance criteria for the performance-based equity awards granted in 2020 is based on three-year net leverage improvement with relative total shareholder return of the Common Stock, as compared to the Russell Microcap Index Materials subset, applied as a modifier, over a three full calendar year performance period, starting with the calendar year in which the grant was made.

Outstanding Equity Awards at Fiscal Year-End

The following table sets forth information regarding unexercised options and unvested restricted stock awards for each of our named executive officers that were outstanding as of December 31, 2020.

	Option Awards				Stock Awards			
Name	Number of Securities Underlying Unexercised Options – Exercisable	Number of Securities Underlying Unexercised Options - Unexercisable	Option Exercise Price	Option Expiration Date	Number of shares that have not vested	Market value of shares, units or other rights that have not vested (1)	Equity incentive plan awards: Number of unearned shares that have not vested(2)	Equity incentive plan awards: Market or payout value of unearned shares that have not vested (1)
Jordi Ferre	93,110	-(3)	$5.37	10/3/2026	-	-	-	-
	76,650	-(4)	$4.37	3/31/2027	-	-	-	-
	36,267	18,133(5)	$7.35	3/29/2028	13,600(6)	$30,872	68,050	$154,474
	46,067	92,133(8)	$3.34	3/28/2029	69,100(8)	$156,857	172,750	$392,143
	-	-	-	-	356,101(9)	$808,349	356,101	$808,349
Graham Miao	39,623	19,812(10)	$6.73	8/30/2028	19,812(11)	$44,973	-	-
	27,750	55,500(12)	$3.34	3/28/2029	41,733(13)	$94,507	104,100	$236,307
	-	-	-	-	216,107(14)	$490,563	216,107	$490,563
Thomas Ermi	82,500	-(15)	$12.00	8/13/2025	-	-	-	-
	13,150	-(16)	$4.37	3/31/2027	-	-	-	-
	5,933	2,967(17)	$7.35	3/29/2028	2,233(18)	$5,069	11,150	$25,311
	8,483	16,967(19)	$3.34	3/28/2029	5,000(20)	$11,350	-	-
	-	-	-	-	12,733 (21)	$28,904	31,800	$72,186
	-	-	-	-	77,034(22)	$174,867	77,034	$174,867

(1) The market value of these stock awards is based on the closing price of our Common Stock on the NASDAQ Global Select Market on December 31, 2020, which was $2.27.

(2) The named executive officers received grants of performance share awards under the 2015 Plan in March of each of 2017, 2018 and 2019 and in April of 2020. The number of performance shares set forth in this column represents the projected number of performance shares, as of December 31, 2019, that each named executive officer could earn at the end of the three-year performance periods ending December 31, 2019 (for the 2017 grant), December 31, 2020 (for the 2018 grant), December 31, 2021 (for the 2019 grant) and December 31, 2022 (for the 2020 grant) based on actual performance during the elapsed portion of the applicable award period. The number of performance shares actually earned by the named executive officers will be determined based on our performance over the entire three-year award period for each of the grants, and such amount may differ significantly from the amounts shown in this column.

(3) This option vested as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (October 3, 2016).

(4) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 31, 2017).

(5) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 29, 2018).

(6) This award vests as to one-third of the 40,800 shares initially subject thereto on each of the first three anniversaries of the date of grant (March 29, 2018).

(7) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 29, 2019).

(8) This award vests as to one-third of the 103,650 shares initially subject thereto on each of the first three anniversaries of the date of grant (March 29, 2019).

(9) This award vests as to one-third of the 356,101 shares initially subject thereto on each of the first three anniversaries of the date of grant (April 14, 2020).

(10) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (August 30, 2018).

(11) This award vests as to one-third of the 59,435 shares initially subject thereto on each of the first three anniversaries of the date of grant (August 30, 2018).

(12) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 29, 2019).

(13) This award vests as to one-third of the 62,450 shares initially subject thereto on each of the first three anniversaries of the date of grant (March 29, 2019).

(14) This award vests as to one-third of the 216,107 shares initially subject thereto on each of the first three anniversaries of the date of grant (April 14, 2020).

(15) This option vested as to one–third of the shares subject thereto on each of the first three anniversaries of the date of grant (August 13, 2015).

(16) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 31, 2017).

(17) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 29, 2018).

(18) This award vests as to one-third of the 6,700 shares initially subject thereto on each of the first three anniversaries of the date of grant (March 29, 2018).

(19) This option vests as to one-third of the shares subject thereto on each of the first three anniversaries of the date of grant (March 29, 2019).

(20) This award vests as to one-third of the 15,000 shares initially subject thereto on each of the first three anniversaries of the date of grant (April 23, 2018).

(21) This award vests as to one-third of the 19,100 shares initially subject thereto on each of the first three anniversaries of the date of grant (March 29, 2019).

(22) This award vests as to one-third of the 77,034 shares initially subject thereto on each of the first three anniversaries of the date of grant (April 14, 2020).

Executive Stock Ownership Guidelines

A key element of our compensation philosophy is to align the interests of our executive officers with those of our stockholders by providing appropriate long-term incentives. To further this objective, since November 2017 we have maintained stock ownership guidelines applicable to each of our executive officers. Each executive is expected to own, by a date no later than five years after the person is appointed to his or her position as an executive officer, shares of our Common Stock with a value that on that date is equal to the following multiple of his or her annual base salary:

Position	Base Salary Multiple Requirement
Chief Executive Officer	5x
Chief Financial Officer	3x
All other executive officers	2x

Until the required stock ownership level is achieved, each officer is required to retain at least 50% of the net after-tax performance equity award shares that are earned, and 50% of the net after-tax restricted shares that vest.

Clawback Policy

The Board has adopted a formal policy to recover certain incentive-based income from our executive officers if we are required to materially restate our financial statements as a result of fraud, misconduct or gross negligence, not necessarily due to actions of the particular executive officer. In the event of a restatement, the Company will seek to recover, at the direction of the Board after it has reviewed the facts and circumstances that led to the requirement for the restatement and costs and benefits of seeking recovery, the amount of incentive-based income received by an officer during the three-year period immediately preceding the date on which the Company is required to prepare the restatement. The Board will determine in its discretion the amount, if any, the Company will seek to recover from such covered officer. The Company may offset the recovery amount against current or future incentive-based income. In addition, the Board may, to the extent permitted by law, take other remedial and recovery action, as determined by the Board. The recovery of incentive-based income under this policy is in addition to any other right or remedy available to the Company.

The 2015 Plan includes a clawback provision, pursuant to which we have the right to cause the cancellation or require reimbursement of any award under the 2015 Plan, or otherwise recoup equity or other compensation provided under the 2015 Plan, in accordance with Company policies in existence from time to time (including the policy described above) and/or applicable law. Such clawback provision is applicable if the Company is required to restate its financial statements or results as a result of noncompliance by the Company with any federal securities laws.

Employment and Severance Agreements

We have entered into employment agreements or offer letters, as well as change in control executive severance agreements, with each of our executive officers, summarized below.

Jordi Ferre Employment Agreement

In connection with his appointment as our Chief Executive Officer, Jordi Ferre entered into an employment agreement, dated as of July 14, 2016 (the “Ferre Employment Agreement”), with the Company. Pursuant to the Ferre Employment Agreement, Mr. Ferre serves as Chief Executive Officer of the Company, reporting to the Board, for an initial term of three years commencing on October 3, 2016, with automatic successive one-year renewal terms thereafter unless either party gives notice of non-renewal 30 days prior to the end of the then-current term. Mr. Ferre also serves on the Board pursuant to the Ferre Employment Agreement.

Mr. Ferre is entitled to receive an initial base salary of $500,000 per year, subject to annual reviews and potential increases, in the discretion of the Compensation and Talent Committee. Mr. Ferre received a one-time bonus of $150,000 in connection with the commencement of his employment, as well as reimbursement for up to $50,000 in the aggregate of relocation, temporary living and personal travel expenses. Mr. Ferre is also entitled to an annual bonus for each full fiscal year during his employment term, with a target bonus amount equal to 100% of his annual base salary, subject to the achievement of performance objectives to be established by the Compensation and Talent Committee each year.

Pursuant to the Ferre Employment Agreement, in connection with the commencement of his employment Mr. Ferre received grants of equity awards under the 2015 Plan consisting of (i) 93,110 shares of restricted stock and (ii) nonqualified stock options to purchase 93,110 shares of the Company’s common stock, in each case subject to vesting in three equal annual installments. In addition, commencing in 2017 and in each successive year of Mr. Ferre’s employment, he is entitled to receive equity awards having a total target value of $1,000,000 on the date of grant.

If Mr. Ferre’s employment under the Ferre Employment Agreement is terminated by the Company without “Cause” or by Mr. Ferre for “Good Reason” (as such terms are defined in the Ferre Employment Agreement), or if the Company elects not to extend the term of employment under the Ferre Employment Agreement beyond the then-current term, the Company will be obligated to pay to Mr. Ferre (i) all accrued but unpaid salary and benefits, (ii) an amount equal to 1.5 times his base salary then in effect, payable in equal installments over a 12-month period, and (iii) the cost of his and his dependents’ coverage under COBRA for an 18-month period. The Company’s obligation to pay any of the foregoing severance obligations (other than salary and benefits accrued through the date of termination of employment) would be subject to Mr. Ferre’s execution of a release of all claims against the Company, and such release having become irrevocable.

The Ferre Employment Agreement contains customary confidentiality provisions, which apply both during and after the term of the Ferre Employment Agreement, and customary non-competition and non-solicitation provisions, which apply during the term of the Ferre Employment Agreement and for 18 months thereafter.

Graham Miao Offer Letter

In connection with his appointment as our Executive Vice President and Chief Financial Officer, Graham Miao entered into an offer letter, dated as of August 20, 2018 (the "Miao Offer Letter"), with the Company. Pursuant to the Miao Offer Letter, Mr. Miao is entitled to receive an initial base salary of $450,000 per year, subject to annual reviews and potential increases, in the discretion of the Compensation and Talent Committee. Mr. Miao received a signing bonus of $90,000, subject to repayment in part under certain circumstances. Mr. Miao is also entitled to an annual bonus for each full fiscal year during his employment term, with a target bonus amount equal to 70% of his annual base salary, subject to the achievement of performance objectives to be established by the Compensation and Talent Committee each year. For 2018, Mr. Miao's annual bonus was pro-rated based on the portion of the year that Mr. Miao was employed by the Company.

Pursuant to the Miao Offer Letter, in connection with the commencement of his employment, Mr. Miao received grants of equity awards under the 2015 Plan consisting of (i) 59,435 shares of restricted stock and (ii) nonqualified stock options to purchase 59,435 shares of the Company's common stock, in each case subject to vesting in three equal annual installments following the commencement of employment. In addition, commencing in 2019 and in each successive year of Mr. Miao's employment, he is entitled to receive equity awards at the level of 125% of his annual base salary, calculated in the manner described in the Miao Offer Letter.

If Mr. Miao's employment under the Miao Offer Letter is terminated by the Company without "Cause" or by Mr. Miao for "Good Reason" (as such terms are defined in the Miao Offer Letter), the Company will be obligated to pay to Mr. Miao (i) all accrued but unpaid salary and benefits, (ii) an amount equal to 1.5 times his base salary then in effect (unless termination occurs within 12 months of Mr. Miao's start date, in which case the amount would be equal to 1.0 times his base salary then in effect), payable in equal installments over a 12-month period, and (iii) if Mr. Miao elects continued "COBRA" health care coverage for himself or his eligible dependents, an amount equal to the difference between the premium paid for such COBRA coverage and the premium charged by the Company to an active employee for comparable coverage, payable over an 18-month period (or such shorter period as Mr. Miao elects to receive COBRA coverage). The Company's obligation to pay any of the foregoing severance obligations (other than salary and benefits accrued through the date of termination of employment) would be subject to (i) Mr. Miao's execution of a release of all claims against the Company, and such release having become irrevocable, and (ii) Mr. Miao's compliance with his continuing obligations (including regarding confidentiality, non-competition and non-solicitation) under the Company's standard employment agreement for U.S. employees. Those confidentiality obligations apply both during and after the term of Mr. Miao's employment, and those non-competition and non-solicitation provisions apply during the term of Mr. Miao's employment and for 18 months thereafter.

Thomas Ermi Employment Agreement

On August 30, 2019, the Company entered into an amended and restated employment agreement with Mr. Ermi (the "Ermi Employment Agreement"). Pursuant to the Ermi Employment Agreement, Mr. Ermi serves as Executive Vice President and General Counsel of the Company, reporting to the Chief Executive Officer, for an initial term of three years commencing on August 30, 2019, with automatic successive one-year renewal terms thereafter unless either party gives notice of non-renewal 30 days prior to the end of the then-current term.

Mr. Ermi is entitled to receive a base salary of not less than $354,000 per year, subject to annual reviews and potential increases, in the Compensation and Talent Committee's discretion. Mr. Ermi is also entitled to an annual bonus for each full fiscal year during his employment term, with a target bonus amount equal to 50% of his annual base salary, subject to the achievement of performance objectives to be established by the Compensation and Talent Committee each year. Mr. Ermi is also eligible to receive equity awards under the 2015 Plan pursuant to the terms of the Ermi Employment Agreement.

If Mr. Ermi's employment under the Ermi Employment Agreement is terminated by the Company without "Cause" or by Mr. Ermi for "Good Reason" (as such terms are defined in the Ermi Employment Agreement), or if the Company elects not to extend the term of employment under the Ermi Employment Agreement beyond the then-current term, the Company will be obligated to pay to Mr. Ermi (i) all accrued but unpaid salary and benefits, (ii) an amount equal to 1.5 times his base salary then in effect, payable in equal installments over a 12-month period, (iii) a portion of any annual bonus payable to him for the remainder of the calendar year in which his employment is terminated, if and when earned, pro-rated for the period of the year during which Mr. Ermi was employed by the Company, and (iv) if Mr. Ermi elects continued "COBRA" health care coverage for himself or his eligible dependents, an amount equal to the difference between the premium paid for such COBRA coverage and the premium charged by the Company to an active employee for comparable coverage, payable over a 12-month period (or such shorter period as Mr. Ermi elects to receive COBRA coverage). The Company's obligation to pay any of the foregoing severance obligations (other than salary and benefits accrued through the date of termination of employment) would be subject to Mr. Ermi's execution of a release of all claims against the Company, and such release having become irrevocable.

The Ermi Employment Agreement contains customary confidentiality provisions, which apply both during and after the term of the Employment Agreement, and customary non-competition and non-solicitation provisions, which apply during the term of the Employment Agreement and for one year thereafter.

Change in Control Severance Agreements

On August 30, 2019, the Company entered into change in control executive severance agreements with each of Mr. Ferre, Mr. Miao and Mr. Ermi (collectively, the "Change in Control Agreements"). Each Change in Control Agreement provides that in the event the applicable executive's employment is terminated other than for "cause" or if the executive resigns for "good reason" (each as defined in the applicable Change in Control Agreement) during the period commencing 60 days prior to and ending 24 months following a change in control of the Company, the executive will be entitled to certain severance benefits, consisting of the following (in addition to any accrued salary and benefits through the date of termination): (i) an amount equal to (a) two and a half times with respect to Mr. Ferre and (b) two times with respect to Messrs. Miao and Ermi the sum of (l) the executive's annual base salary then in effect and (2) the target bonus amount payable to the executive under the Company's annual performance bonus program for the fiscal year of the Company in which the date of termination occurs (the "Annual Bonus Target"); (ii) a portion of the Annual Bonus Target for the calendar year in which the executive's employment is terminated, pro-rated for the period of the year during which the executive was employed by the Company; and (iii) Company-paid continuation healthcare coverage for 18 months after the termination date. The term of each Change in Control Agreement is for a period of three years and will be automatically renewed for additional one-year periods unless either party gives notice of non-renewal 60 days prior to the end of the then-current term.

2020 Compensation Decisions and Beyond

Given the challenging circumstances that the Company faced in 2019 and a continued environment of uncertainty in 2020, the Compensation and Talent Committee approved only modest increases to compensation in 2020. Base salaries were increased by approximately 2%, 3% and 3% for the Chief Executive Officer, Chief Financial Officer and General Counsel roles, respectively.

As of the date of this Annual Report, compensation decisions for 2021, including metrics for the annual incentive plan in 2021, have not yet been finalized.

Director Compensation and Ownership Guidelines

Beginning in 2016, the Board, based on the recommendation of the Compensation and Talent Committee, approved a compensation plan for independent directors (the "Director Compensation Plan"), which sets forth the terms upon which non-employee directors (other than Mr. Kraef, who is not entitled to receive any compensation) were compensated for their service on the Board. Under the terms of the Director Compensation Plan, each participating non-employee director receives an annual cash retainer of $60,000 (or, in the Case of the Chair of the Board, $100,000), and the Chairs of the Audit Committee, Compensation and Talent Committee and Governance and Nominating Committee receive an additional cash retainer of $10,000, $7,500 and $5,000, respectively. Commencing with the third quarter of 2016, each participating non-employee director may elect to receive shares of our common stock in lieu of cash retainers. In addition, each participating non-employee director receives, effective the date of our annual meeting of stockholders, a grant, under the 2015 Plan, of shares of restricted stock having a value on the grant date equal to $75,000 (or, in the case of the Chair of the Board, $100,000), in each case subject to vesting on the first anniversary of the grant date. All such director compensation is pro-rated based on the portion of the year in which the individual served as a director. We also reimburse directors for reasonable travel and other expenses in connection with attending meetings of the Board.

The following table provides compensation information for our non-employee directors who earned compensation for service on our Board in 2020.

Name	Fees Earned or Paid in Cash	Stock Awards(1)(2)	Total
Robert J. Campbell	$70,000	$75,000	$145,000
Alexander Corbacho(3)	$25,808	$32,260(4)	$58,068
Denise L. Devine	$60,000	$75,000	$135,000
Nance K. Dicciani	$100,000	$100,000	$200,000
Gregory M. Freiwald(5)	$48,750	-	$48,750
George Lobisser	$60,000	$75,000	$135,000
Kevin Schwartz(3)	$25,808	$32,260(4)	$58,068
Macauley Whiting, Jr.	$60,000	$75,000	$135,000

(1) Amounts represent the full grant date fair value of the restricted stock awards, calculated in accordance with FASB ASC Topic 718, excluding the effect of estimated forfeitures. These amounts reflect the accounting expense that we will recognize over the vesting term for these awards and do not correspond to the actual value that will be realized by the directors, if any. For a discussion of valuation assumptions and methodologies, see Note 17 of our audited financial statements included in this Annual Report.

(2) As of December 31, 2020, the aggregate number of restricted stock awards held by each director were as follows: Mr. Campbell, Ms. Devine, Mr. Lobisser, and Mr. Whiting, 30,241 shares each; Mr. Schwarz and Mr. Corbacho, no shares each (see footnote (4) below); and Ms. Dicciani, 40,322 shares.

(3) Each of Mr. Corbacho and Mr. Schwartz was appointed to the Board effective July 27, 2020.

(4) Pursuant to an assignment agreement between Paine Schwartz Partners Fund V Management, LLC, a wholly owned subsidiary of Paine Schwartz Partners, LLC, and both Mr. Schwartz Mr. Corbacho, effective as of July 27, 2020, each of Mr. Schwartz and Mr. Corbacho has assigned to Paine Schwartz Partners, LLC all of his right, title and interest in and to any compensation, including equity awards, he receives from AgroFresh for his services as a director of AgroFresh.

(5) Mr. Freiwald decided not to stand for election at the 2020 Annual Meeting of Stockholders.

Since May 2016 we have maintained stock ownership guidelines applicable to each of our non-employee directors. Each non-employee director is expected to own, by a date no later than five years after the person is elected or appointed to serve on the Board, shares of our Common Stock with a value that on that date equal to three times his or her annual cash retainer for service as a director (and, if a non-employee director’s annual cash retainer increases, he or she has a period of one year from the date of such increase to acquire any additional shares needed to achieve the increased ownership level).

Compensation Committee Interlocks and Insider Participation

Ms. Devine, Ms. Dicciani, Mr. Freiwald and Mr. Whiting served on the Compensation and Talent Committee in 2020. No member of the committee has served as one of our officers or employees at any time, except that Ms. Dicciani served, without compensation, as a member of the Office of the Chair on an interim basis from March 10, 2016 until October 3, 2016. None of our executive officers serve, or in the past fiscal year has served, as a member of the board of directors or Compensation Committee of any entity that has one or more of its executive officers serving on our Board of Directors or Compensation and Talent Committee.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Securities Authorized for Issuance under Equity Compensation Plans

The 2015 Plan is our only equity-based compensation plan. The following table sets forth information as of December 31, 2019, concerning the 2015 Plan, which was approved by stockholders.

Plan Category	No. of Securities to be Issued Upon Exercise of Outstanding Options	Weighted Average Exercise Price per Share of Outstanding Options	No. of Securities Remaining Available for Future Issuance Under the 2015 Plan
Equity compensation plan approved by security holders	799,570	$6.47	2,275,197

Stock Ownership

The table below sets forth information known to us regarding the beneficial ownership of our Common Stock as of March 1, 2021, listing the number of shares and percentage of shares beneficially owned (based on 52,440,782 shares of Common Stock outstanding as of March 1, 2021) by:

- each stockholder, or group of affiliated stockholders, that we know owns more than 5% of our outstanding common stock;
- each of our named executive officers;
- each of our directors; and
- all of our executive officers and directors as a group.

Beneficial ownership is determined in accordance with the rules of the SEC, and generally includes voting power and/or investment power with respect to the securities held. Shares of common stock subject to options and warrants currently exercisable or exercisable within 60 days of March 1, 2021, are deemed outstanding and beneficially owned by the person holding such options or warrants for purposes of computing the number of shares and percentage beneficially owned by such person, but are not deemed outstanding for purposes of computing the percentage beneficially owned by any other person.

Except as indicated in the footnotes to this table, the persons or entities named have sole voting and investment power with respect to all shares of our common stock shown as beneficially owned by them. Except as indicated in the footnotes to this table, the address for each beneficial owner is c/o AgroFresh Solutions, Inc., One Washington Square, 510-530 Walnut St., Suite 1350, Philadelphia, Pennsylvania 19106.

Name of Beneficial Owner	Number of Shares Beneficially Owned	Approximate percentage of outstanding Shares
Dow Inc.(1)	21,001,151	40.3%
PSP AGFS Holdings, L.P.(2)	30,000,000	36.2%
T. Rowe Price Associates, Inc.(3)	8,110,295	15.2%
Nance K. Dicciani (4)	189,561	*
Peter Berweger	-	*
Robert J. Campbell	107,273	*
Alexander Corbacho	-	*
Denise L. Devine	43,842	*
Torsten Kraef	5,000	*
Kevin Schwartz(5)	30,000,000	36.2%
Macauley Whiting, Jr.	93,492	*
Jordi Ferre(6)	784,503	1.5%
Thomas Ermi(7)	210,204	*
Graham Miao(8)	253,681	*
All directors and executive officers as a group (11 individuals)(9)	31,687,556	38.2%

* Less than 1%.

(1) Based on an amendment to Schedule 13D filed on June 17, 2020, and reflects the subsequent expiration in July 2020 of warrants previously held by Dow Inc. The business address of Dow Inc. is 2211 H.H. Dow Way, Midland, MI 48674.

(2) Based on an amendment to Schedule 13D filed on November 3, 2020 by PSP, Paine Schwartz Food Chain Fund V GP, L.P. (“PSV LP”), Paine Schwartz Food Chain Fund V GP, Ltd. (“PSV LTD”), W. Dexter Paine, III and Kevin Schwartz. Beneficial ownership of the Company’s common stock has been calculated based upon the as-converted voting power of 150,000 shares of Series B Preferred Stock issued to PSP AGFS Holdings, L.P. on September 25, 2020, assuming a conversion price of $5.00. According to the Schedule 13D, PSV LP is the general partner of PSP, PSV LTD is the general partner of PSV LP, and each of Mr. Paine and Mr. Schwartz are directors of PSV LTD and, as a result each may be deemed to beneficially own, and have shared voting and dispositive power of 30,000,000 shares of common stock. The business address of each of the reporting persons is c/o Paine Schwartz Partners, LLC, 475 Fifth Avenue, 17th Floor, New York, NY 10017.

(3) Based on an amendment to Schedule 13G filed on February 16, 2021 by T. Rowe Price Associates, Inc. and T. Rowe Price Small-Cap Value Fund, Inc. The business address of each of the reporting persons is 100 E. Pratt Street, Baltimore, Maryland 21202.

(4) Includes 3,000 shares which were acquired in the name of Ms. Dicciani’s domestic partner.

(5) See footnote (2).

(6) Includes 316,293 shares of Common Stock issuable upon exercise of options that are currently exercisable.

(7) Includes 121,510 shares of Common Stock issuable upon exercise of options that are currently exercisable.

(8) Includes 44,915 shares of Common Stock issuable upon exercise of options that are currently exercisable.

(9) See footnotes (4)-(8) above.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our officers, directors, and persons who beneficially own more than 10% of our Common Stock to file reports of ownership and changes in ownership with the SEC. These reporting persons are also required to furnish us with copies of all Section 16(a) forms they file. Based solely upon a review of such forms, management believes that all of these reports were filed in a timely manner during 2020.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The Audit Committee has the responsibility to review and approve all related party transactions, as contemplated by Item 404 of the SEC’s Regulation S-K, to prevent potential conflicts of interest and to ensure that related party transactions are disclosed in the reports that the Company files with the SEC as and when required by applicable securities laws and regulations. The term “related party transaction” is generally defined as any transaction (or series of related transactions) in which the Company is a participant and the amount involved exceeds $120,000, and in which any director, director nominee or executive officer of the Company, any holder of more than 5% of the outstanding voting securities of the Company, or any immediate family member of the foregoing persons will have a direct or indirect interest. The term includes most financial transactions and arrangements, such as loans, guarantees and sales of property, and remuneration for services rendered (as an employee, consultant or otherwise) to the Company and its subsidiaries.

The Audit Committee will consider all relevant factors when determining whether to approve a related party transaction, including whether the related party transaction is on terms no less favorable than terms generally available to an unaffiliated third party under the same or similar circumstances and the extent of the related party’s interest in the transaction. No director may participate in the approval of any transaction in which he or she is a related party, but that director is required to provide the Audit Committee with all material information concerning the transaction. Additionally, we require each of our directors and executive officers to complete a directors’ and officers’ questionnaire on an annual basis that elicits information about related party transactions. These procedures are intended to determine whether any such related party transaction impairs the independence of a director or presents a conflict of interest on the part of a director, employee, or officer.

The following paragraph discusses related party transactions that occurred during 2020 and/or that are contemplated during 2021 (other than compensation paid or awarded to the Company’s directors, director nominees and executive officers that is required to be discussed, or is exempt from discussion, in the sections of this Amendment No. 1 “Executive Officer Compensation” and “Director Compensation and Ownership Guidelines”).

On June 13, 2020, in connection with the execution of the Investment Agreement, the Company, PSP and Rohm & Haas entered into a side agreement (the “Side Agreement”), pursuant to which the parties agreed that if PSP or its affiliates has the right to designate at least 50% of the total directors on the Board pursuant to the Investment Agreement, so long as Rohm & Haas beneficially owns at least 20% of the outstanding Common Stock (on a fully diluted, “as converted” basis), the Company and the Board will increase the size of the Board by one member and the Board will elect a designee selected by Rohm & Haas to fill the newly-created vacancy. Such right is in addition to any right that Rohm & Haas has to appoint a member of the Board pursuant to its ownership of the Company’s Series A Preferred Stock.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The aggregate fees billed to our Company by Deloitte & Touche LLP for the fiscal years ended December 31, 2019 and December 31, 2020 are as follows:

	2019	2020
Audit Fees[(1)]	$ 1,169,652	$ 1,100,850
Audit-Related Fees[(2)]	50,000	98,470
Tax Fees	—	—
All Other Fees	—	—
Total	$ 1,219,652	$ 1,199,320

(1) Audit Fees consist of fees incurred for the audits of our annual consolidated financial statements and internal control over financial reporting, for the review of our unaudited interim consolidated financial statements included in our quarterly reports on Form 10-Q for the first three quarters of each fiscal year, fees incurred related to other SEC filings, and fees incurred related to foreign statutory audits.

(2) Audit-Related Fees consist of fees incurred for accounting consultations, due diligence in connection with planned acquisitions and research services.

The Audit Committee’s policy is to pre-approve all audit and non-audit services provided by the independent registered public accounting firm. These services may include audit services, audit-related services, tax services, and other services. Pre-approval is generally provided for up to one year and any pre-approval is detailed as to the particular service or category of services and is generally subject to a specific budget. The committee may delegate the authority to pre-approve the retention of the independent registered public accounting firm for permitted non-audit services to one or more members of the committee, provided that such persons are required to present the pre-approval of any permitted non-audit service to the committee at the next meeting following any such pre-approval. None of the fees paid to the independent registered public accounting firm under the categories Audit-Related, Tax and All Other Fees described above were approved by the committee after services were rendered pursuant to the *de minimis* exception established by the SEC.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

All other schedules are omitted either because they are not applicable, not required, or because the required information is included in the consolidated financial statements or the notes thereto. The following documents are filed as part of this report:

		Page
(1)	Exhibits	
	The Exhibits required to be filed are set forth on the Index to Exhibits immediately preceding the signature page to this Report and are incorporated herein by reference.	108

INDEX TO EXHIBITS

Exhibit No.		Description
1.1	(19)	ATM Sales Agreement, dated June 25, 2020, between AgroFresh Solutions, Inc. and Virtu Americas LLC.
3.1	(2)	Second Amended and Restated Certificate of Incorporation, filed with the Secretary of State of the State of Delaware on July 31, 2015.
3.2	(2)	Series A Certificate of Designation.
3.3	(3)	Amended and Restated Bylaws.
3.4	(4)	Amendment to the Amended and Restated Bylaws of AgroFresh Solutions, Inc., effective as of September 3, 2015.
3.5	(16)	Certificate of Amendment to the Second Amended and Restated Certificate of Incorporation
3.6	(13)	Amendment to the Amended and Restated Bylaws of AgroFresh Solutions, Inc., effective as of November 2, 2017.
3.7	(5)	Certificate of Designation of Series B Convertible Preferred Stock.
4.1	(2)	Specimen Common Stock Certificate.
4.4	*	Description of securities.
10.1	(6)	Form of Indemnification Agreement.
10.2	(23)	Amended and Restated Credit Agreement, dated July 27, 2020
10.3	(23)	Registration Rights Agreement, dated July 27, 2020, between the Company and PSP AGFS Holdings, L.P.
10.4	(7)	Investment Agreement, dated June 13, 2020, between the Company and PSP AGFS Holdings, L.P.
10.5	(2)	Investor Rights Agreement, dated July 31, 2015, by and among AgroFresh Solutions, Inc., The Dow Chemical Company, Rohm and Haas Company, Boulevard Acquisition Sponsor, LLC, Robert J. Campbell, Joel Citron and Darren Thompson.
10.6	(2)	Tax Receivables Agreement, dated July 31, 2015, by and among AgroFresh Solutions, Inc., AgroFresh Inc., The Dow Chemical Company and Rohm and Haas Company.
10.7	(9)	AgroFresh Solutions, Inc. Incentive Compensation Plan.
10.8	(11)	Employment Agreement, dated July 14, 2016, between AgroFresh Solutions, Inc. and Jordi Ferre.
10.9	(12)	Services Agreement, dated November 29, 2016, among AgroFresh Solutions, Inc., RipeLocker LLC and George Lobisser.
10.10	(14)	Form of Stock Option Agreement used in connection with the AgroFresh Solutions, Inc. 2015 Incentive Compensation Plan
10.11	(14)	Form of Restricted Stock Agreement used in connection with the AgroFresh Solutions, Inc. 2015 Incentive Compensation Plan
10.12	(15)	Agreement dated April 4, 2017, among the registrant, The Dow Chemical Company, Rohm and Haas
10.13	(15)	First Amendment to Tax Receivables Agreement, dated April 4, 2017, among the registrant, The Dow Chemical Company, Rohm and Haas Company and AgroFresh Inc.
10.14	(15)	Letter Agreement, dated April 4, 2017, between the registrant and The Dow Chemical Company.
10.15	(15)	Letter Agreement, dated April 4, 2017, among the registrant, The Dow Chemical Company, Rohm and Haas Company and Boulevard Acquisition Sponsor, LLC.
10.16	(16)	First Amendment to 2015 Incentive Compensation Plan
10.17	(1)	Employment Agreement, dated as of September 15, 2015, between AgroFresh Solutions, Inc. and Thomas Ermi.
10.18	(8)	Offer Letter, dated August 20, 2018 between the Company and Graham Miao.
10.19	(17)	Amendment No. 2 to Credit Agreement, dated as of January 31, 2019.
10.20	(18)	Termination Agreement, dated December 20, 2019, among the registrant, The Dow Chemical Company, Rohm and Haas Company and AgroFresh Inc.
10.21	(20)	Change in Control Executive Severance Agreement, dated August 30, 2019, between the Company and Jordi Ferre.
10.22	(20)	Change in Control Executive Severance Agreement, dated August 30, 2019, between the Company and Graham Miao.

10.23	(20)	Change in Control Executive Severance Agreement, dated August 30, 2019, between the Company and Thomas Ermi.
10.24	(20)	Amended and Restated Employment Agreement, dated August 30, 2019.
10.25	(21)	Second Amendment to 2015 Incentive Compensation Plan
10.26	(22)	2019 Employee Stock Purchase Plan
14.1	(10)	AgroFresh Solutions, Inc. Code of Business Conduct.
21.1	*	List of subsidiaries.
23.1	*	Consent of Deloitte & Touche LLP.
24.1	*	Power of Attorney (included on the signature page to this report).
31.1	*	Certification of Chief Executive Officer required by Rule 13a-14(a) or Rule 15d-14(a).
31.2	*	Certification of the Chief Financial Officer required by Rule 13a-14(a) or Rule 15d-14(a).
32.1	**	Certification of Chief Executive Officer and Chief Financial Officer required by Rule 13a-14(b) or Rule 15d-14(b) and 18 U.S.C. 1350.
101.INS	*	XBRL Instance Document
101.SCH	*	XBRL Taxonomy Extension Schema
101.CAL	*	XBRL Taxonomy Calculation Linkbase
101.LAB	*	XBRL Taxonomy Label Document
101.PRE	*	XBRL Presentation Linkbase Document
101.DEF	*	XBRL Definition Linkbase Document

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* Filed herewith.
** Furnished herewith.
(1) Incorporated by reference to an exhibit to the Annual Report on Form 10-K of the Company filed with the Securities and Exchange Commission on March 22, 2018.
(2) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on August 6, 2015.
(3) Incorporated by reference to Annex A to the Company’s definitive proxy statement (File No. 001-36197) filed with the Securities and Exchange Commission on July 16, 2015.
(4) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on September 10, 2015.
(5) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on September 28, 2020
(6) Incorporated by reference to an exhibit to Amendment No. 2 to the Company’s Registration Statement on Form S-1 (File No. 333-193320) filed with the Securities and Exchange Commission on February 11, 2014.
(7) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on June 15, 2020.
(8) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on August 30, 2018.
(9) Incorporated by reference to Annex C to the Company’s definitive proxy statement (File No. 001-36197) filed with the Securities and Exchange Commission on July 16, 2015.
(10) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on August 19, 2015.
(11) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on July 19, 2016.
(12) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on December 5, 2016.
(13) Incorporated by reference to an exhibit to the Quarterly Report on Form 10-Q of the Company filed with the Securities and Exchange Commission on November 9, 2017.
(14) Incorporated by reference to an exhibit to the Annual Report on Form 10-K of the Company filed with the Securities and Exchange Commission on March 16, 2017.
(15) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on April 6, 2017.

(16) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on June 7, 2017.

(17) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on February 1, 2019.

(18) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on December 20, 2019.

(19) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on June 26, 2020.

(20) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on September 6, 2019

(21) Incorporated by reference to Appendix A to the Company's Definitive Proxy Statement filed with the Securities and Exchange Commission on April 15, 2019.

(22) Incorporated by reference to Appendix B to the Company's Definitive Proxy Statement filed with the Securities and Exchange Commission on April 15, 2019.

(23) Incorporated by reference to an exhibit to the Current Report on Form 8-K of the Company filed with the Securities and Exchange Commission on July 29, 2020.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

AgroFresh Solutions, Inc.
Date: March 15, 2021

/s/ Jordi Ferre
By: Jordi Ferre
Title: Chief Executive Officer

/s/ Graham Miao
By: Graham Miao
Title: Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Jordi Ferre and Graham Miao, jointly and severally, his or her attorney—in—fact, each with the full power of substitution, for such person, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney—in—fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might do or could do in person hereby ratifying and confirming all that each of said attorneys—in—fact and agents, or his substitute, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the date indicated.

Signature	Title	Date
/s/ Jordi Ferre Jordi Ferre	Chief Executive Officer and Director (Principal Executive Officer)	March 15, 2021
/s/ Graham Miao Graham Miao	Executive Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	March 15, 2021
/s/ Nance K. Dicciani Nance K. Dicciani	Chair of the Board	March 15, 2021
/s/ Robert J. Campbell Robert J. Campbell	Director	March 15, 2021
/s/ Torsten Kraef Torsten Kraef	Director	March 15, 2021
/s/ Denise L. Devine Denise L. Devine	Director	March 15, 2021
/s/ Macauley Whiting, Jr. Macauley Whiting, Jr.	Director	March 15, 2021
/s/ Kevin Schwartz Kevin Schwartz	Director	March 15, 2021
/s/ Alexander Corbacho Alexander Corbacho	Director	March 15, 2021
/s/ Peter Berweger Peter Berweger	Director	March 15, 2021

AGROFRESH SOLUTIONS, INC.

**DESCRIPTION OF SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934**

The following summary of the material terms of the securities of AgroFresh Solutions, Inc., a Delaware corporation ("we," "us," "our" or "the company"), is not intended to be a complete summary of the rights and preferences of such securities and is subject to and qualified by reference to our second amended and restated certificate of incorporation, as amended (the "Charter"), our amended and restated bylaws, as amended (the "Bylaws"), and the warrant agreement, dated as of February 12, 2014, between the company and Continental Stock Transfer & Trust Company (the "Warrant Agreement"), in each case incorporated by reference as exhibits to the company's Annual Report on Form 10-K for the year ended December 31, 2019 (the "Report"), and applicable Delaware law, including the Delaware General Corporation Law (the "DGCL"). We urge you to read the Charter, the Bylaws and the Warrant Agreement in their entireties for a complete description of the rights and preferences of our securities.

The capital stock authorized by the Charter consists of 400,000,000 shares of common stock, par value $0.0001 per share, 100,000,000 shares of non-voting common stock, par value $0.0001 per share, and 1,000,000 shares of preferred stock, par value $0.0001 per share.

Voting Power

Except as otherwise required by law or as otherwise provided in any certificate of designation for any series of preferred stock, the holders of common stock possess all voting power for the election of our directors and all other matters requiring stockholder action. Holders of common stock are entitled to one vote per share on matters to be voted on by stockholders. Holders of non-voting common stock will have no voting rights with respect to their shares of non-voting common stock.

Conversion

Pursuant to the terms of the Investor Rights Agreement, dated July 31, 2015, to which the company and The Dow Chemical Company ("TDCC") are parties, TDCC has the right to elect to convert all or any portion of the shares of our common stock owned by it into a like number of shares of our non-voting common stock.

The Charter provides that each share of non-voting common stock shall automatically, and without any action on the part of the company or the holder of such share, be converted into one share of common stock (1) immediately upon the transfer, sale, assignment or conveyance of a share of non-voting common stock to a person or entity other than TDCC, or a person or entity over which TDCC has control, or (2) immediately prior to the effective time of any merger or consolidation of the company with or into any other corporation or other entity pursuant to which the shares of common stock are converted into shares or other securities of the surviving or resulting corporation or other entity or cash, property, rights or securities of any other corporation or entity.

Dividends

Holders of common stock will be entitled to receive such dividends, if any, as may be declared from time to time by our board of directors in its discretion out of funds legally available therefor. In no event will any stock dividends or stock splits or combinations of stock be declared or made on common stock unless the shares of common stock at the time outstanding are treated equally and identically.

Liquidation, Dissolution and Winding Up

In the event of our voluntary or involuntary liquidation, dissolution, distribution of assets or winding-up, the holders of the common stock will be entitled to receive an equal amount per share of all of our assets of whatever kind available for distribution to stockholders, after the rights of the holders of the preferred stock have been satisfied.

Preemptive or Other Rights

Our stockholders have no preemptive or other subscription rights and there are no sinking fund or redemption provisions applicable to our common stock.

Exhibit 21.1

LIST OF SUBSIDIARIES

Entity Name	Jurisdiction of Organization
AF Solutions Holdings LLC	Delaware
AgroFresh Inc.	Illinois
AgroFresh Solutions Singapore Pte. Ltd.	Singapore
AgroFresh Chile Comercial Limitada	Chile
AgroFresh Canada ULC	Canada
AgroFresh Japan LLC	Japan
AgroFresh Netherlands B.V.	Netherlands
AgroFresh Argentina S.R.L.	Argentina
AgroFresh Agriculture Technology Consulting (Shanghai) Co., Ltd.	China
AgroFresh Australia Pty Ltd	Australia
AgroFresh South Africa (Pty) Ltd	South Africa
AgroFresh Holding France SAS	France
AgroFresh Italia srl	Italy
AgroFresh Brasil Ltda.	Brazil
AgroFresh New Zealand Limited	New Zealand
AgroFresh Korea Ltd.	Korea
AgroFresh Polska Sp. z.o.o.	Poland
AgroFresh Spain, S.L.U.	Spain
AgroFresh Turkey Tarim Ürünlerì Lìmìted Sìrketì	Turkey
AgroFresh Belgium B.V.B.A.	Belgium
AgroFresh Deutschland GmbH	Germany
AGFS Switzerland GmbH	Switzerland
AGFS Mexico, S. de R.L. de C.V.	Mexico
Tecnidex Fruit Protection, S.A.	Spain
Tecnidex Gre Fruit M.E.Π.E	Greece
AgroFresh Comercial Peru S.A.C.	Peru
Tecnidex Mar Fruit, S.A.R.L.Au	Morocco
Tecnidex Tur Fruit Tarim Urzum Hiz. San. Tic. Ltd. Sti.	Turkey
Tecnidex Sud Fruit (Pty) Ltd.	South Africa

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statements Nos. 333-232753 and 333-207105 on Form S-8 and Nos. 333-229002 and 333-207106 on Form S-3 of our report dated March 15, 2021, relating to the consolidated financial statements of AgroFresh Solutions, Inc. appearing in this Annual Report on Form 10-K of for the year ended December 31, 2020.

/s/ DELOITTE & TOUCHE LLP
Philadelphia, Pennsylvania
March 15, 2021

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Jordi Ferre, certify that:

1. I have reviewed this annual report on Form 10-K of AgroFresh Solutions, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 15, 2021

/s/ Jordi Ferre
Jordi Ferre
Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Graham Miao, certify that:

1. I have reviewed this annual report on Form 10-K of AgroFresh Solutions, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 15, 2021

/s/ Graham Miao
Graham Miao
Chief Financial Officer

Exhibit 32.1

**CERTIFICATION OF
CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of AgroFresh Solutions, Inc. (the “Company”) on Form 10-K for the year ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), Jordi Ferre, Chief Executive Officer of the Company, and Graham Miao, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to our best knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 15, 2021

/s/ Jordi Ferre
Jordi Ferre
Chief Executive Officer

/s/ Graham Miao
Graham Miao
Chief Financial Officer