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FOKUS

PROJEK ASEAN PLANTI: PERKEMBANGAN DAN KEGIATANNYA

Dr. K.G. Singh
Pengarah
ASEAN Planti
Serdang, Selangor

Latar Belakang dan tujuan

Projek Institut Latihan dan Pusat Kuarantin Tumbuh-tumbuhan ASEAN (ASEAN PLANTI) adalah satu daripada projek yang dilaksanakan oleh Jawatan-kuasa Makanan Pertanian dan Perhutanan ASEAN. Cadangan projek ini telah dikemukakan kepada Kerajaan Amerika Syarikat dan satu perjanjian telah ditandatangani oleh Kerajaan Malaysia dan Kerajaan Amerika Syarikat pada 27hb. September, 1980. Kerajaan Amerika Syarikat telah meluluskan bantuan kewangan yang berjumlah US\$5.4 juta. Manakala Kerajaan Malaysia pula menyumbangkan sebanyak \$9.2 juta ringgit.

Projek PLANTI terletak berdekatan dengan Pusat Pengeluaran Tanaman, Jabatan Pertanian, Serdang, serta hampir dengan MARDI dan UPM. Justeru itu PLANTI boleh mendapat beberapa kemudahan seperti kemudahan penyelidikan dari badan-badan tersebut. Pusat ini melibatkan lebih

kurang 20 ekar tanah dan pembinaannya telah bermula pada 22hb. Mac, 1982 dan siap pada bulan November 1982.

Tujuan-tujuan khusus ASEAN PLANTI adalah seperti berikut:-

- i) Untuk memperkuat aktiviti-aktiviti kuarantin tumbuh-tumbuhan di negara-negara ASEAN berkaitan dengan 'post-entry quarantine'. Menyelaraskan undang-undang dan memberi latihan di peringkat tinggi dalam bidang kuarantin tumbuh-tumbuhan.
- ii) Untuk membantu negara-negara ASEAN Mengeksport bahan-bahan pertanian yang utama.
- iii) Menyebarkan maklumat mengenai kuarantin tumbuh-tumbuhan melalui penerbitan PLANTI NEWS.
- iv) Menjalankan penyelidikan bagi merangkakan jadual rawatan untuk penyakit-penyakit dan makhluk perosak tanaman dan tumbuhan yang penting.

Keterangan mengenai projek

Kompleks bangunan ASEAN PLANTI mengandungi bangunan-bangunan seperti berikut:

| <u>Jenis bangunan</u> | <u>Bil Unit</u> |
|-------------------------------------|-----------------|
| a) Bangunan pentadbiran dan makmal | 2 |
| b) Pondok pengawal | 1 |
| c) Loji pengepam air | 1 |
| d) Substesyen LLN | 1 |
| e) Bangunan ladang | |
| i. Pejabat ladang dan setor | 1 |
| ii. Insektori | 3 |
| iii. Rumah tanaman | 3 |
| iv. Bangunan pembasmi kuman (tanah) | 1 |
| f. Asrama | 5 |
| g. Dewan makan | 1 |
| h. Bangunan fumigasi | 1 |

Tanggungjawab pusat ini ialah untuk menyatukan aktiviti-aktiviti kuarantin tumbuhan yang dijalankan oleh semua negara ASEAN.

MPM ialah sebuah buletin suku tahunan yang diterbitkan oleh Perpustakaan Universiti Pertanian Malaysia. Pandangan dan pendapat penyumbang tidak semestinya mencerminkan pandangan atau pendapat jemaah pengarang. Buletin ini diberi secara percuma atas permintaan. Sila alamatkan semua surat menyurat/pertanyaan kepada: Ketua Pengarang, Buletin Maklumat Pertanian Malaysia, Perpustakaan, Universiti Pertanian Malaysia, Serdang, Selangor.

Penasihat: Syed Salim Agha; Ketua Pengarang: Ibrahim Kassim.

Pengarang-pengarang: Badilah Saad; Jamaliah Ahmad; Kamariah Abdul Hamid; Nor Hajar Abu Bakar.

Program pusat ini termasuk:

- i) Mengendalikan kuarantin 'post entry' untuk institusi-institusi kebangsaan negara-negara ASEAN.
- ii) Merumuskan peraturan-peraturan pengenalan yang sama untuk mengenali dan mengawal perosak-perosak tumbuhan yang mustahak.
- iii) Menyebarkan maklumat mengenai kuarantin tumbuh-tumbuhan dan pemeliharaan tanaman di rantau ASEAN.
- iv) Memberi khidmat nasihat mengenai kuarantin penyakit dan perosak tanaman kepada negara-negara ASEAN.

Mengikut perjanjian projek, cawangan pemeliharaan tanaman merupakan agensi yang bertanggungjawab untuk melaksanakan projek ini. Walau bagaimanapun tanggungjawab pelaksanaan projek ini telah disandarkan kepada Lembaga Pengarah PLANTI. Ahli-ahli Lembaga Pengarah terdiri daripada wakil tiap-tiap negara ASEAN dan juga Pengarah PLANTI sendiri serta Ketua Setiausaha Kementerian Pertanian Malaysia yang menjadi Pengerusi Lembaga Pengarah.

Penyebaran maklumat

Pihak PLANTI bertanggungjawab untuk mencetak dan menyebarkan maklumat-maklumat berkaitan dengan kuarantin tumbuh-tumbuhan.

Di antara risalah-risalah yang telah diterbitkan ialah:

- i) Training in plant quarantine
- ii) The rice water weevil
- iii) Khapra beetle
- iv) dan lain-lain

Risalah-risalah ini diedarkan kepada beberapa pejabat kuarantin tumbuh-tumbuhan di rantau ASEAN. PLANTI juga menerbitkan PLANTI NEWS yang dikeluarkan tiga kali dalam setahun. Sebuah buku bertajuk 'Exotic Plant Quarantine Pest and Procedure for Introduction of Plant Materials' juga di dalam proses penerbitan. Maklumat mengenai pemeliharaan tanaman dan kuarantin tumbuh-tumbuhan adalah diperolehi daripada beberapa orang pakar di seluruh dunia.

Terdapat juga kemudahan alat pandang dengar

di Kompleks PLANTI ini seperti filem selit, filem-filem penerangan bagi setiap jadual rawatan untuk kemudahan masa depan.

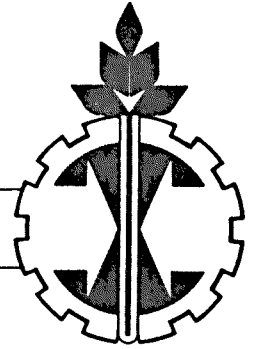
Perbincangan

Penyakit dan perosak tumbuh-tumbuhan menyebabkan kerosakan hasil pertanian sebanyak 25%. Negara kita bolehlah disifatkan bernasib baik kerana tidak terdapat penyakit dan perosak tumbuh-tumbuhan tanaman yang serius. Bagi mengelak penyakit dan makhluk perosak yang baru misalnya 'South America Leaf Blight', penyakit pokok getah dari Amerika Selatan, 'Lethal Yellowing' yang menyerang pokok kelapa, 'Cassava mosaic' dan 'Cocoa swollen shoot virus complex' yang menyerang pokok koko.

Adalah perlu pegawai kuarantin yang bertanggungjawab ke atas penguatkuasaan Akta Musuh-Musuh Pertanian 1976 dilatih untuk mengenali dan mengawasi keadaan yang tersebut di atas. Usaha positif haruslah diambil untuk mengawal perosak-perosak daripada merebak ke rantau ini.

Melalui beberapa mesyuarat teknik yang dianjurkan oleh PLANTI, musuh-musuh perosak di kawasan ini dibahagikan kepada dua kategori iaitu kumpulan A1 dan A2. Kumpulan A1 terdiri daripada makhluk perosak yang merbahaya yang tidak terdapat di Kawasan ASEAN. Kumpulan A2 pula ialah makhluk perosak yang terdapat di kawasan ini, tetapi kewujudannya tidak begitu meluas. Kedua-dua kumpulan makhluk perosak ini haruslah diawasi supaya tidak merebak. Melalui mesyuarat ini juga pihak PLANTI telah dapat menyelaraskan rawatan serta undang-undang kuarantin bagi setiap benih yang diimport ataupun yang dieksport. Di samping itu PLANTI juga melatih pegawai dan kakitangan kuarantin melalui kursus anjurannya. Kursus-kursus jangka panjang memakan masa selama 42 minggu untuk post graduan, untuk sijil kuarantin tumbuh-tumbuhan pula selama 20 minggu manakala kursus jangka pendek memakan masa selama 2 hingga 4 minggu. Di antara kursus-kursus yang dianjurkan ialah Fumigasi musuh-musuh perosak, pengenalan kumbang khapra, teknik-teknik bakteria, nematoda, rumput rampai dan lain-lain.

Selain daripada menjalankan aktiviti-aktiviti di atas PLANTI juga berfungsi sebagai pusat perkhidmatan rujukan dan khidmat nasihat, yang lebih berkesan dalam bidang kuarantin tumbuh-tumbuhan di rantau ASEAN.



Teknologi dan Penemuan Baru Pertanian

1. Kertas dari krustasea

Sebuah institut di Jepun, Shikoku Institute of the Industrial Science and Technology Agency, telah mencipta satu cara untuk membuat kertas dari kulit krustasea.

Chitin, bahan mentah untuk kertas, dikeluarkan dahulu, kemudian disejukkan hingga -20° dan dicairkan dalam air dan asid formik.

Benang halus boleh dibuat daripada chitin yang cair ini dan dijadikan kertas.

Sumber: Far Eastern Agriculture, March/April 1983: m.s. 4

2. Mengupas kacang tanah dengan mudah

Masalah utama dalam operasi lepas-tuai kacang tanah ialah mengupasnya. Cara biasa untuk mengupas kacang tanah dengan tangan memerlukan banyak tenaga dan mengambil masa yang lama. Ciptaan alat mengupas kacang tanah di University of the Philippines, Los Banos, adalah bertujuan untuk meringankan masalah mengupas bagi peladang-peladang.

Alat mengupas tersebut boleh dijalankan dengan kuasa enjin ataupun dikerjakan dengan tangan. Sungguhpun seorang boleh menjalankan alat ini tetapi untuk memudahkan kerja, dua orang adalah diperlukan iaitu seorang untuk mengisi dan seorang lagi untuk mengumpul kacang tanah yang telah dikupas.

Alat ini boleh mengupas 40-80 kg/jam kacang tanah dengan peratusan kacang tanah yang pecah tiada melebihi 5%.

Sumber: Technology Digest, Oct. 1983: m.s. 1

3. Pembakar sekam padi

Institut Piawai dan Penyelidikan Perindustrian Malaysia (SIRIM) telah mencipta satu alat pembakar sekam padi yang murah sebagai satu jalan untuk mengeringkan padi dengan mudah dan cekap. Pembakar tersebut mempunyai satu alat peniup, tiub, satu enjin minyak petrol (6.2 HP), dan sebuah relau sekam padi yang mendapat bekalan bahan api dengan secara tak langsung.

Pembakar ini dihubungkan dengan sebuah bekas yang dibuat daripada papan lapis dan dikuatkan dengan kayu. Relau pembakar tersebut adalah dibuat daripada keluli. Ia dilengkapi dengan satu alat mengawal pengisian bahan, satu pengisi sekam padi dan satu alat penggoncang untuk mengelakkan pengisi daripada tersumbat oleh sekam padi.

Dengan tarikan graviti, sekam padi jatuh dari bahagian atas relau ke dalam tempat pembakaran yang memanaskan tiub terus-menerus. Tiub ini memanaskan udara luar di sekitarnya yang kemudiannya akan menembusi padi untuk mengeringkannya. Ujian-ujian ini boleh mengeringkan 1 tan padi dalam masa 6-7 jam, bergantung kepada kelembapan asal padi berkenaan.

Sumber: Technology Digest, Oct. 1983: m.s. 2-3

SENARAI ULASAN MAKALAH (REVIEW ARTICLES) PILIHAN

Ruangan ini menyenaraikan makalah-makalah yang membuat ulasan mengenai sesuatu perkara tertentu. Dari aspek penyelidikan, ulasan makalah adalah penting kerana ia memberi gambaran keadaan semasa perkara yang diperbincangkan di samping menekankan kepentingan penyelidikan-penyelidikan sebelumnya.

Senarai ini hanya memberi butiran bibliografi makalah-makalah berkenaan. Rujukan yang bertanda * menunjukkan makalah tersebut terdapat di Perpustakaan Universiti Pertanian Malaysia. Adalah diharap agar pembaca dapat berhubung dengan Perpustakaan masing-masing untuk mendapatkan makalah yang diminati.

Pembaca adalah dipelawa untuk mencadangkan lain-lain topik yang difikirkan sesuai untuk dimuatkan dalam ruangan ini.

BIOKIMIA

1. Biological oxidation of nitrogen in organic compounds and disposition of N-oxidized products. HLAVICA, P. CRC Critical Reviews in Biochemistry. 12(1): 39-101. 1982. 440 rujukan.

BIOTEKNOLOGI

- 1.* Biotechnologi-the way ahead. HUMPHREY, A.E. Journal of Chemical Technology and Biotechnology. 32(1): 25-33. 1982. 44 rujukan.

PENCEMARAN AIR

- 1.* Water-pollution research and its application in developing countries. ISAAC, P.; PESCOD, W. Water Science and Technology. 14(1-2): 205-213. 1982. 1 rujukan.

PENGAJIAN ALAM SEKITAR

- 1.* Copper, lead and zinc pollution of soil environment. HAQUE, M.A.; SUBRAMAN, V. CRC Critical Reviews in Environmental Control. 12(1): 13-68. 1982. 256 rujukan.
- 2.* New trends in water quality management. BENEDEK, P. Water Science and Technology. 14 (1-2): 47-72. 79 rujukan.

PENYAKIT TERNAKAN

- 1.* Chicken major histocompatibility complex and disease. HALA, A.K.; BOYD, R.; WICK, G. Scandinavian Journal of Immunology. 14(6): 607-616. 1981 rujukan.
- 2.* Epidemiology of bovine malignant catarrhal fevers - a review. MUSHI, E.Z; RURANGIR, F.R. Veterinary Research Communications. 5(2): 127-142. 1981. 47 rujukan.

PENGAWASAN PEROSAK

- 1.* Endocrine strategies for insect control. BOWERS, W.S. Entomologia Experimentalis et Applicata. 31(1): 3-14. 1982. 65 rujukan.
- 2.* New concepts and trends in pesticide chemistry. HEDIN, P.A. Journal of Agricultural and Food Chemistry. 30(2): 201-215. 1982. 97 rujukan.

- 3.* Recent advances in mode of action of insecticides. BEEMAN, R.W. Annual Review of Entomology. 27:253-281. 1982. 199 rujukan.

PENGELUARAN TANAMAN

- 1.* Cardamom production, technology, chemistry and quality. GOVINDARAJAN, V.S.; NARASIMH, S.; RAGHUVEE, L.G.; LEWIS, Y.S. CRC Critical Reviews in Food Science and Nutrition. 16(3): 229-326. 1982. 148 rujukan.
2. Conservation and duplication of isozymes in plants. GOTTLIEB, L.D. Science. 216(4544):373-379. 1982. 117 rujukan.
3. Development variation in plant-tissue culture. BINNS, A.N. Environmental and Experimental Botany. 21(3-4): 325-332. 1981. 65 rujukan.
- 4.* Gibberellin metabolism in plants. RAILTON, I.D. Cell Biology International Reports. 6(4):319-337. 1982. 80 rujukan.
- 5.* How much nitrogen do legumes fix. LARUE, T.A.; PATTERSON, T.G. Advances in Agronomy. 34: 15-38. 1981. 84 rujukan.
- 6.* Molybdenum in soils, plants, and animals. GUPTA, U.C.; LIPSETT, J. Advances in Agronomy. 34: 73-115. 1981. 232 rujukan.

PERIKANAN

- 1.* Applications of endocrinology to fish culture. LAM, T.J. Canadian Journal of Fisheries and Aquatic Science. 39(1): 111-137. 1982 258 rujukan.
- 2.* Energetics of locomotion in warm-bodied fish. STEVENS, E.D.; DIZON, A.E. Annual Review of Physiology. 44: 121-131. 1982. 27 rujukan.
- 3.* An overview of some methods of fish stock assessment. SISSEWINE, M.P. Fisheries. 6(6): 31-35. 1981. 4 rujukan.

SUMBER KUASA

1. Renewable energy-sources and rural development in developing countries. RAMKUMAR, R.; HUGHES, W.L. IEEE Transactions on Education. 24(3):242-251. 1981. 55 rujukan.

TEKNOLOGI MAKANAN

- 1.* Improved chilling systems for poultry. LILLARD, H.S. Food Technology. 36(2): 58. 1982. 106 rujukan.

BIBLIOGRAFI PERTANIAN MALAYSIA

Bibliografi ini mengandungi bahan-bahan terbitan mengenai pertanian Malaysia yang telah diindeks dari Julai 1983 - September 1983 oleh Pusat Kebangsaan AGRIS dengan kerjasama Perpustakaan Institut Penyelidikan Minyak Kelapa Sawit Malaysia, Perpustakaan Negara Malaysia dan Perpustakaan Institut Penyelidikan Getah Malaysia untuk keperluan AGRIS dan AGRISIA.

Format AGRIS telah digunakan untuk mengindeks dan penyusunan bibliografi ini dibuat mengikut Pengkelasan AGRIS seperti di bawah ini.

Kod Perkara

- | | | | |
|------------|---|------------|---|
| A00 | - PERTANIAN (AGRICULTURE) | F05 | - Sains Tumbuhan (Plant Science) |
| A50 | - Penyelidikan (Research) | F10 | - Kajiucua dan Kajiiklim (Meteorology and Climatology) |
| B00 | - GEOGRAFI DAN SEJARAH (GEOGRAPHY AND HISTORY) | F20 | - Sains Tanah (Soil Science) |
| B10 | - Geografi (Geography) | F21 | - Biology Tanah (Soil Biology) |
| B50 | - Sejarah (History) | F22 | - Fizik dan Kimia Tanah (Soil Chemistry and Physics) |
| C00 | - PENDIDIKAN, PENGEMBANGAN DAN KHIDMAT NASIHAT (EDUCATION, EXTENSION AND ADVISORY WORK) | F23 | - Pengelasan dan Genesis Tanah (soil Classification and Genesis) |
| D00 | - PENTADBIRAN DAN PERUNDANGAN (ADMINISTRATION AND LEGISLATION) | F24 | - Penyiasatan dan Pemetaan Tanah (soil Surveying and Mapping) |
| D10 | - Pentadbiran (Administration) | F25 | - Kesuburan Tanah; Baja (soil Fertility; Fertilizers) |
| D50 | - Perundangan (Legislation) | F26 | - Pengurusan dan Sumber Tanah (Soil Resources and Management) |
| E00 | - EKONOMI, PEMBANGUNAN DAN SOSIOLOGI DESA (ECONOMICS, DEVELOPMENT AND RURAL SOCIOLOGY) | F27 | - Penyuburan Tanah dan Sistem Tanaman (Soil Cultivation dan Cropping Systems) |
| E10 | - Ekonomi (Economics) | F28 | - Memulihguna dan Hakisan Tanah (Soil erosion and Reclamation) |
| E15 | - Pengurusan dan Pengeloaan Ladang (Farm Organization and Management) | F30 | - Pembiakbaikan Tanaman (Plant Breeding) |
| E30 | - Tujuan Pembangunan, Dasar, Program (Development Aims, Policies, Programmes) | F40 | - Ekologi Tumbuhan (Plant Ecology) |
| E50 | - Sosiologi Desa (Rural Sociology) | F50 | - Struktur Tumbuhan (Plant Ecology) |
| E70 | - Pengedaran dan Pemasaran (Distribution and Marketing) | F60 | - Biokimia dan Fisiologi Tumbuhan (Plant Physiology and Biochemistry) |
| F00 | - PENGELUARAN TUMBUHAN (PLANT PRODUCTION) | F70 | - Taksonomi dan Geografi Tumbuhan (Plant Taxonomy and Geography) |
| | | H00 | - PERLINDUNGAN TUMBUHAN DAN HASIL SIMPANAN (PROTECTION OF PLANTS AND STORED PRODUCTS) |
| | | H10 | - Perosak Tumbuhan (Pests of Plants) |
| | | H20 | - Penyakit-Penyakit Tumbuhan (Plant Diseases) |
| | | H50 | - Pelbagai Penyakit Tumbuhan (Miscellaneous Plant Disorders) |
| | | H60 | - Rumpai (Weeds) |
| | | H70 | - Perlindungan Hasil Simpanan Tanaman dan Ternakan (Protection of Stored Products of Plant and Animal Origin) |

- K00** - PERHUTANAN (FORESTRY)
- K10** - Pengeluaran Perhutanan (Forestry Production)
- K20** - Pengurusan Perhutanan (Forest Management)
- K50** - Perindustrian dan Teknologi Kayu (Wood Technology and Industries)
- K70** - Kerosakan dan Perlindungan Hutan (Forest Injuries and Protection)
- L00** - PENGELUARAN TERNAKAN (ANIMAL PRODUCTION)
- L05** - Sains Peternakan (Animal Science)
- L10** - Pembiakbaik Ternakan (Animal Breeding)
- L20** - Ekologi Haiwan (Animal Ecology)
- L30** - Pemakanan Ternakan (Animal Nutrition)
- L32** - Memproses Makanan Ternakan (Feed Processing)
- L34** - Mikrobiologi dan Toksikologi Makanan (Feed Microbiology and Toxicology)
- L36** - Kandungan Makanan (Feed Composition)
- L40** - Struktur Haiwan (Animal Structure)
- L50** - Biokimia dan Fisiologi Haiwan (Animal Physiology and Biochemistry)
- L60** - Taksonomi dan Geografi Haiwan (Animal Taxonomy and Geography)
- L70** - Sains Veterinar dan Kesihatan (Veterinary Science and Hygiene)
- L72** - Perosak Haiwan (Pest of Animals)
- L73** - Penyakit-Penyakit Haiwan (animal Diseases)
- L74** - Pelbagai Penyakit Haiwan (Miscellaneous disorders of Animals)
- M00** - SAINS AKUATIK DAN PERIKANAN (AQUATIC SCIENCES AND FISHERIES)
- M10** - Pengeluaran Perikanan (Fisheries Production)
- M20** - Sains Samudra (Oceanography)
- M30** - Limnologi (Limnology)
- M40** - Biology Akuatik (Aquatic Biology)
- N00** - JENTERA DAN BANGUNAN (MACHINERY AND BUILDINGS)
- N10** - Peralatan dan Struktur Kejuruteraan Pertanian (Agricultural Engineering, Structures, and Equipment)
- N20** - Peralatan Ladang (Farm Equipment)
- P00** - SUMBER ALAM (NATURAL RESOURCES)
- P05** - Sumber Tenaga (Energy Resources)
- P10** - Sumber Air dan Pengurusan (Water Resources and Management)
- P12** - Saliran dan Pengairan (Drainage and Irrigation)
- P20** - Sumber Tanah (Land Resources)
- Q00** - SAINS MAKANAN (FOOD SCIENCE)
- Q10** - Memproses Makanan (Food Processing)
- Q20** - Mikrobiologi dan Toksikologi Makanan (Food Microbiology and Toxicology)
- Q30** - Pembungkusan Makanan (Food Packaging)
- Q40** - Makanan Penampung (Food Additives)
- R00** - EKONOMI RUMAHTANGGA, PERINDUSTRIAN DAN KERJATANGAN (HOME ECONOMICS, INDUSTRIES AND CRAFTS)
- S00** - PEMAKANAN MANUSIA (HUMAN NUTRITION)
- S10** - Kandungan Makanan (Food Composition)
- S20** - Fisiologi Pemakanan Manusia (Physiology of Human Nutrition)
- S30** - Makanan (Feeding)
- T00** - PENCEMARAN (POLLUTION)
- U00** - BIDANG ILMU TAMBAHAN (AUXILIARY DISCIPLINES)
- U10** - Matematik dan Statistik (Mathematics and Statistics)
- U20** - Dokumentasi (Documentation)

ADD: PERTANIAN

PRIME MINISTER'S DEPT., Kuala Lumpur (Malaysia). Socio-Economic Research Unit. An annotated bibliography of research reports and papers by researchers registered with SERU [Malaysia; Agriculture; Economics, Development and Rural Sociology; Education] (En). Kuala Lumpur (Malaysia). 1982. 50 p.

A50: Struktur Tumbuhan

Serangga Pencedera (4020)

NAPOMPETH, B. Biological control research and development in Thailand [insect pests, weeds] (En).

HEONG, K.L.; LEE, B. S.; LIM, T.M.; TEOH, C.H.; YUSOF IBRAHIM (eds.). Proceedings of the International Conference on Plant Protection in the Tropics. Kuala Lumpur (Malaysia) Malaysian Plant Protection Society. 1982. p. 301-323 3 tables; 80 ref. Summary (En). [International Conference on Plant Protection in Tropics. Kuala Lumpur (Malaysia) 1-4 Mar 1982]

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JAINUDEEN, M.R.; OMAR, A. R. (eds.) Animal production and health in the tropics. [Proceedings of a Congress] Serdang, Selangor (Malaysia). Universiti Pertanian Malaysia Press. 1982. p. 123-125. Summary (En). [1. Asian-Australasian Animal Science Congress. Serdang, Selangor (Malaysia) 2-5 Sep 1980].

Minyak kelapa sawit (9538)

KHEIRI, M.S.A.; TEAH, Y. K.; MOHAMMED SURIA AFFANDI BIN YUSOFF. PORIM's [Palm Oil Research Institute of Malaysia] pilot plant facilities. (En). *PORIM Bulletin (Malaysia)* Palm Oil Research Institute of Malaysia Bulletin. ISSN 0127-0249. (May 1983) (no. 6) p. 29-43. 17 ill., Summary (Malay).

COO: PENDIDIKAN, PENGEMBANGAN DAN KHIDMAT NASIHAT

OMAR, A. R. Manpower development and utilization in the livestock industry [Malaysia]. (En).

JAINUDEEN, M. R.; OMAR, A. R. (eds.) animal production and health in the tropics. [Proceedings of a congress] Serdang, Selangor (Malaysia). Universiti Pertanian Malaysia Press. 1982. p.

127-130. 3 tables; 4 ref. [1. Asian-Australasian Animal Science Congress. Serdang, Selangor (Malaysia) 2-5 Sep 1980.

DOO: PENTADBIRAN DAN PERUNDANGAN

D10: Pentadbiran

Tembakau (2760)

RAMLI BIN HJ. MOHAMED. National Tobacco Board of Malaysia (LTN): An introduction. Lembaga Tembakau Negara Malaysia (LTN): Satu pengenalan. (Malay). *Buletin Maklumat Pertanian Malaysia (Malaysia)*. ISSN 0127-0578. (Apr 1983). v. 3(2) p. 1-2.

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E10: Ekonomi

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L20: Ekologi Haiwan

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L30: Pemakanan Ternakan

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L32: Memproses Makanan Ternakan

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L36: Kandungan Makanan

Mamalia ternakan - Umum (5000)

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Ayam (6100)

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L60: Taksonomi dan Geografi Haiwan

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L72: Perosak Haiwan

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Babi (5300)

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Istilah Pertanian Pilihan



| Bahasa Malaysia | Bahasa Inggeris | | |
|----------------------|---|-------------------|------------------------------|
| | | adularia | - adularia |
| | | aerate | - mengudara; mengudarakan |
| a | | aeration, zone of | - zon pengudaraan |
| | | aerobic bacteria | - bakterium aerobik |
| | | agglucone | - aglukon |
| | | agglutinate | - aglutinat |
| | | aggregation | - agregasi |
| | | agitator | - penggugat/penggoncang |
| | | agonic line | - garis agonik |
| | | alar septum | - septum alar |
| | | albedo | - albedo |
| | | albitite | - albitit |
| | | alcohol | - alkohol |
| | | alcohol acid | - asid alkohol |
| | | align | - jajar |
| | | alignment | - penjejaran |
| | | alkali | - alkali |
| | | alkali rocks | - batuan alkali |
| | | alkali, vegetable | - alkali sayuran |
| | | alkalic | - alkalik |
| | | alkaline salts | - garam alkali |
| | | alogamy | - alogami |
| | | allophane | - alofan |
| | | alloy | - aloi |
| | | altitude | - altitud |
| | | aluminium | - aluminium |
| | | aluminium bormide | - aluminium bromid |
| | | alvelar | - alveolar; alveolus |
| | | amalgam | - amalgam |
| | | ammonified | - diamoniakan |
| | | ammonium alum | - tawas amonium |
| | | amnion | - amnion |
| | | amorphous | - amorfus |
| | | amorphous carbon | - karbon amorfus |
| | | amphibia | - amfibia |
| | | anabolic | - anabolik |
| | | anabolic change | - pertukaran anabolik |
| | | anaerobic | - anaerobik |
| | | anal cerci | - conet dubur |
| | | anal fin | - sirip dubur |
| | | angle | - sudut |
| | | angle bisector | - pembahagi dua sudut |
| | | angle notation | - tata-tanda sudut |
| | | angle of repose | - sudut diam |
| | | angle of rest | - sudut rehat |
| | | angle of triangle | - sudut segitiga |
| abacus | - abakus | | |
| abdominal sternite | - sternit abdomen | | |
| abdominal tergite | - tergit abdomen | | |
| abiogenesis | - abiogenesis | | |
| absolute | - mutlak | | |
| absolute alcohol | - alkohol mutlak | | |
| absolute density | - ketumpatan mutlak | | |
| absorption cell | - sel serapan | | |
| absorption edge | - pinggir serapan | | |
| absorption layer | - lapisan penyerapan | | |
| absorption of heat | - penyerapan haba | | |
| abyssal hill | - bukit abisal | | |
| abyssal plain | - dataran abisal | | |
| acauline plant | - tumbuhan (tak berbatang) /akaulin | | |
| accelerate | - memecut: pecut | | |
| acceleration | - pecutan | | |
| accretion vein | - vein tokokan | | |
| acephalous | - akefalus | | |
| acerose | - aseros | | |
| acetate | - asetat | | |
| acetins | - asetin | | |
| acid, mineral | - asid mineral | | |
| acid, normal | - asid normal | | |
| acid reaction | - tindakbalas asid | | |
| acid value | - nilai asid | | |
| acrylic rubber | - getah akrilik | | |
| actinic | - aktinik | | |
| action of water | - tindakan air | | |
| activated | - diaktifkan | | |
| activated state | - keadaan diaktifkan | | |
| adamantine | - adamantin | | |
| adaxial leaf | - daun adaksial | | |
| addition of fraction | - penambahan pecahan | | |
| additive | - penambahan; menambah; bertambahan; bahan tambah; terhadap | | |
| additive derivative | - terbitan bahan tambah | | |
| adductor | - aduktor | | |
| adductor muscles | - otot-otot aduktor | | |
| adsorption isotherm | - isoterm jerapan | | |

angular momentum - momentum sudut (an)

b

bacillus - basilus
backwater - haf
bacterin - bakterin
bacterium - bakteria
baffle - sesekat
baking - panggang; bakar; masak
balance -imbangan; imbang; neraca
balance lever - tuil neraca
balanced load - beban berimbang
balancer - pengimbang
bar, stand - beting pasir
bare wire - dawai tanpa salut
bark - kulit kayu
bark slip - kulit mengelupas
barn - barn
basic dye - pencelup asas
basic energy - tenaga asas
basin - lembangan
basin, drainage - lembangan saliran
basin, rock - lembangan batuan
beam - alur; rasuk
beam of light - alur cahaya
bearing - alas; bearing
beat - rentak; detik
beeswax - lilin lebah
beet sugar - gula bit
biaxial - dwipaksian
biceps - biseps
bichotomy principles - prinsip bikotomi
biconcave - dwicekung
biconvex - dwicembung
biochemical action - tindakan biokimia
biochemical analysis - analisis biokimia
biomass - biojisim

c

cacao butter - mentega koko
cacao syrup - sirap koko
caffeine - kafein
calamine - kalamina
calcareous algae - algae berkapur
calciform - bentuk kelopak
calcite - kalsit
camphor - kapur barus
camphorated opium - candu berkapur barus
Canada balsam - balsam Kanada
canal - terusan; saluran
casein - kasein
casserol - kaserol
catalase - katalase

caustic - kaustik
cave/cavern - gua
cavity - rongga
cellulose - selulosa
cement - semen
cementite - sementit
chemical symbol - simbol kimia
chemical technology - teknologi kimia
chemical theory of - teori kimia pencelupan
dying - kimia analisis
chemistry, analytical - kimia makanan
chemistry, food - lipatan pucuk rebung
chevron fold

d

dam - empangan
damaging stimulus - rangsangan merosak
decay - reput; reputan
decay factor - faktor reputan
decay heat - haba reputan
decimal - perpuluhan/desimal
decimal portion - bahagian perpuluhan
decision - kataputus
decision function - fungsi kataputus
decision theory - teori kataputus
decomposer organism - organisma pengurai
decomposition - penguraian
decomposition method - kaedah penguraian
defect - cacat
deficiency - kekurangan/
ketakcukupan
define - takrif
deflagration - deflagrasi
deform - cangga
degenerate - merosot
degeneration - pemerosotan;
penyahjanaan
dehydrated food - makanan ternyashair
delta - delta
denature - nyahasli
dendrite - dendrit
density - ketumpatan; kepadatan
density gradient - cerun ketumpatan
density, liquid - ketumpatan cecair
dependence - pergantungan;
persandaran
dependent vector - vektor bersandar
deposit - endapan
deposition - pengendapan
depressor - penurun; pelekuk
depth - dalam
depth, critical - dalam genting
derive - terbit
derived constant - pemalar diterbit

| | | | | | |
|---------------------|---|---|------------------------|---|--------------------------------|
| e | | | fennel | - | fenol |
| earth flow | - | aliran bumi | Fermat principle | - | prinsip Fermat |
| earth temperature | - | suhu bumi | fermentatation | - | penapaian/fermentasi |
| earthenware | - | tembikar | fermentatation, | - | fermentasi/penapaian |
| earthquake | - | gempa bumi | amylolytic | - | amilolisis |
| echo | - | gema | fermentation chemistry | - | kimia penapaian/ fermentasi |
| echometer | - | meter gema | ferox process | - | proses ferox |
| ecosystem | - | ekosistem | fertile material | - | bahan subur |
| edge | - | tepi/pinggir | fertilization membrane | - | membran persenyawaan |
| edge of solid | - | tepi bungkah/pepejal | fibrinogen | - | fibrinogen |
| eel | - | belut | filament | - | filamen |
| effluent | - | alirankeluar | filament lamp | - | lampu filamen |
| effusive rock | - | batu efusi | fill | - | timbus, kambus, isi |
| egg shell | - | cangkang/kulit telur | filler | - | pengisi |
| elastic | - | kenyal | | | |
| elastic glue | - | perekat/glu kenyal | g | | |
| elastic limit | - | had kenyal | gamma ray | - | sinar gama |
| electrode | - | elektrod | ganglion | - | ganglion |
| electrometer | - | elektrometer | garlic oil | - | minyak bawang putih |
| electron | - | elektron | garnet | - | garnet |
| electroplate | - | sadur elektrik | gas cap | - | proses emparan gas |
| electrosol | - | elektrosol | gas cylinder | - | silinder gas |
| electrum | - | elektrum | gauze | - | kasa |
| elementary | - | permulaan | gear | - | gear |
| elementary event | - | peristiwa permulaan | gel | - | gel |
| elementary particle | - | zarah permulaan | gelatine | - | gelatin |
| elevation | - | dongakan | gelatine culture | - | kultur gelatin |
| elevation of soild | - | dongakan pepejal | genetics | - | (ilmu) genetik |
| embryonic membrane | - | membran embrio | genetic equilibrium | - | keseimbangan genetik |
| emerald | - | zamrud | genital | - | genital |
| emery | - | emeri | genotype | - | genotip |
| emetic | - | emetik | geobotany | - | geobotani |
| emulsifier | - | pengemulsi | germ | - | kuman; germa |
| emulsion | - | emulsi | germ tube | - | tiub germa |
| | | | germanite | - | germanit |
| f | | | germination | - | percambahan |
| fabric | - | fabrik | germinative energy | - | tenaga percambahan |
| factitious | - | dibuat-buat | geyser | - | pancutan air panas |
| faeces | - | tahi | gill | - | insang |
| fallacy | - | falasi | gill fungi | - | kulat insang |
| false berry | - | berri palsu | gill plate | - | plat/kepingan insang |
| falsehood | - | kepalsuan | gitoxin | - | gitoksin |
| fast | - | tahan pudar; tahan luntur; cepat | glass cutter | - | pemotong kaca |
| fast colour | - | warna tahan luntur/pudar | glass filter | - | turas kaca |
| fast reactor | - | reaktor cepat | glass tubing | - | tiub kaca |
| fat, soluble | - | lemak (boleh. larut)/ terlarut (kan) | globulin | - | globulin |
| | | | globulin serum | - | serum globulin |
| fatigue | - | kepenatan | globulus | - | globulus |
| fatty oil | - | minyak lemak | | | |
| fauna | - | fauna | h | | |
| feed material | - | bahan suapan | haem | - | hem |
| feeder channel | - | saluran penyuap | haematin | - | hematin |

haematite - hamatit
 hail - hujan batu
 hailstone - batu hujan
 halogen - halogen
 halogen family - famili halogen
 haploid - haploid
 hard fiber - serabut/gentian keras
 hard metal - logam keras
 hard ray - sinar keras
 hatch - bari ; menetas
 haze - kabus
 health physics - (ilmu) fizik kesihatan
 heat absorption - penyerapan haba
 heat of activation - haba pengaktifan
 heat capacity - muatan haba
 heat flow - aliran haba
 heat loss - kehilangan haba
 heater - pemanas
 heave - gerak-sesar mendatar
 heavy alloy - aloi berat
 hektare - hektar
 hectogram - hektogram
 hectoliter - hektoliter
 helium - helium
 helium liquefier - pencecair helium
 hemisphere - hemisfera
 hemisphere, land - hemisfera daratan
 herbivorous - herbivor

i

imaginary - khayalan
 imaginary axis - paksi khayalan
 imaginary root - punca khayalan
 imaginary unit - unit khayalan
 immune - mangli/imun
 implicit - tersirat
 in vitro - in vitro
 in vivo - in vivo
 inaccuracy - ketakjituan
 inaccurate - takjitu
 inch - inci
 incise - toreh ; kacip
 include - rangkum; termasuk;
 terkandung
 inclusion - rangkuman
 incompetent bed - lapisan lunak
 index - indeks
 index fossil - fosil indeks
 index mineral - mineral indeks
 index number - nombor indeks
 index zone - zon indeks
 indicator - penunjuk
 indicator lamp - lampu penunjuk
 indigenous - asal

l

labdanam oil - minyak labdanam
 label - label
 labelled - berlabel; dilabel
 labial - labial
 labile acid - asid labil
 lability - kelabilan
 laboratory - makmal
 labyrinth - labirint
 lac - lak
 lactase - laktase
 lactate - laktat
 lactone - lakton
 lactyl - laktil
 lagoon - lagun
 lake - tasek
 lamellar - lamela
 larva - larva
 Laser - Laser
 latch - selak
 literal - sisi
 laterite - laterit
 latosol - latosol/laterit
 lava - lava (lahar)
 lava field - padang lava/lahar
 lava flow - aliran lava/lahar
 lava plateau - plateau lava/lahar
 lavender - lavender
 lavender oil - minyak lavender
 leaf blade - lai daun
 leaf injections - suntikan daun
 leaf scar - parut daun

m

mantissa - mantisa
 margaric acid - asid margarik
 margarine - marjerin
 margarine, oil - minyak marjerin
 marine fish - ikan samudera
 marine glue - glu samudera
 mark - tanda
 masked radical - radikal tertopeng
 masking - penopengan
 mass - jisim; keseluruhan
 mass curve - lengkungan jisim
 mass defect - cacat jisim
 mass effect - kesan jisim
 mass movement - pergerakan jisim
 master fracture - retakan induk
 master river - sungai induk
 masticaton - pengunyahan
 maturation - pematangan/pendewasaan
 mature - matang/dewasa

mature river - sungai dewasa/dewasa
 mature soil - tanah dewasa/dewasa
 maximum - maksimum
 meander - meander/liku
 meander core - teras meander/liku
 meander neck - leher meander/liku
 meander scar - parut/kesan meander
 mechanic - mekanik
 mechanical efficiency - kecekapan mekanik
 mechanical property - sifat mekanik

n

narcosis - narkosis
 narcotic drug - dadah narkotik
 nasal - hidung
 nasal cavity - rongga hidung
 natural density - ketumpatan semulajadi
 natural dye - pencelup asli
 natural oil - minyak semulajadi
 nausea - nausea
 nebula - nebula
 neck channel - saluran leher
 neck, volcanic - turus volkano
 nectar - madu
 needle - batu jarum; jarum
 negative gradient - kecerunan negatif
 negative ion - ion negatif
 neolithic - neolitik
 neolithic period - kala neolitik
 nerve - saraf
 nerve cell - sel saraf
 nerve root - akar saraf
 net - jaring ; bersih
 net charge - cas bersih

o

obese - gemuk/obes
 obesity - keobesian/kegemukan
 objective - objektif; matlamat; objek
 oblong - lonjong
 obtuse angle - sudut cakah
 ocean - lautan
 ocean basin - lembangan lautan
 oceanic - lautan; laut dalam
 octave - oktaf
 odour - bau
 odour permanency - kekekalan bau
 oil analysis - analisis minyak
 oil bath - takung/bekas minyak
 oil of camphor - minyak kapur barus
 olive - zaitun
 olive oil - minyak zaitun

opal - baiduri
 opaque - legap
 open base - asas terbuka
 open bay - teluk terbuka
 open flow - aliran bebas
 open hole - lubang terbuka
 open system - sistem terbuka
 ophidite - ofidit
 ophitic - ofitik
 opium - candu

s

salicyl - salisil
 salicyl alcohol - salisil alkohol
 saline - salina
 salt - garam
 salt-and-pepper sand - pasir hitam putih
 salt bath - takung/bekas garam
 salt-water encroachment - terombosan air masin
 intrusion
 saltpeter - kalium nitrat
 saltation - lompatan
 sand - pasir
 sand bank - kukup
 sand filter - turas pasir
 sap - sap
 saturate - menepu; tepukan
 saturated solution - larutan tepu
 saturated vapour - wap tepu
 saw dust - serbuk papan
 saw tooth - gigi gergaji
 scale (map) - skala
 scale of unit - skala unit
 sea breeze - bayu laut
 sea slide - runtuh laut
 sea stack - turus laut
 seasonal movement - pergerakan bermusim
 sebaceous gland - kelenjar minyak
 secretion - perembesan
 secretory structure - struktur merembes
 sedentary animal - haiwan sedenter
 sediment - enapan
 sedimentation potential - keupayaan pegenapan
 seed coat - kulit biji
 seed (and blanket) core - teras benih (dan selimut)
 seed dispersal - sibaran biji
 segmentation - temberang garis
 segregation - penemberengan
 sense - deria; erti kata
 sinsitiveneses - kepekaan
 separate - pisah
 separation - pemisahan
 separation axion - aksiom pemisahan

separation factor - faktor pemisahan
 separator - pemisah
 sequence - jujukan
 sequential analysis - analisis berjujukan
 sequential decision - kataputus berjujukan
 serous gland - kelenjar serus
 serpentine - serpentin
 serum - serum
 serum sickness - penyakit serum
 serum-albumin - albumin serum

t

table, water - aras air tanah
 tachometer - takometer
 tadpole - berudu
 tank (storage) - tangki
 tank furnace - relau tangki
 tape worm - cacing pita
 taxis - taksis
 taxonomy - taksonomi
 tellurate - telurat
 tendon - tendon
 tentacle - tentakel
 term - sebutan
 term symbol - simbol sebutan
 terminal - terminal
 terminal ganglion - ganglion terminal
 terminal point - titik terminal
 terrigenous - enapan dari darat
 textile - tekstil
 texture - tekstur; jalinan
 thaw - mencair (ais)
 thaw depression - limbangan cairan
 theoretical chemistry - kimia teori
 thermal - terma
 thermal radiation - sinaran terma
 thermal reactor - reaktor terma
 thermochemistry - termokimia
 thermocouple - termogandingan
 thermodynamic process - proses termodinamik
 thermodynamics - (ilmu) termodinamik
 thermometry - termometri
 thermoplastic - termoplastik
 thermostat - termostat
 thorax - toraks

u

ultimate - muktamad
 ultimate analysis - analisis muktamad
 ultimate strength - kekuatan muktamad
 ultra - ultra
 ultra centrifugation - (pengemparan ultra)/
 ultra-pengemparan

ultramarine - ultra-samudra
 ultraviolet - ultralembayung
 ultraviolet ray - sinaran ultralembayung
 umbra - umbra
 unary system - sistem uner
 under clay - lapisan berakar
 undersaturated - kurang tepu
 underthrust - tujuh bawah
 undertow - seretan bawah
 unification - penyatuan/unifikasi
 uniform velocity - halaju seragam
 unique - unik
 unit - unit
 unit operation - operasi unit
 unit process - proses unit
 unitary method - kaedah perunitan
 unsaturated - tak tepu
 unsaturated hydrocarbon - hidrokarbon tak tepu
 uranium - uranium
 urea - urea
 ureter - ureter
 uric acid - asid urik
 urine - air kencing

v

vacuole - lompong
 vacuole, food - lompong makanan
 vacuum - vakum
 vacuum drier - pengering vakum
 vacuum flask - kelalang vakum
 vagina - faraj
 valley, glaciated - lurah glasier
 valley, longitudinal - lurah longitudinal
 valley, mountain - lurah gunung
 valley profile - profil lembah; profil
 lurah
 valley, river - lembah
 vanilla - vanilla
 vapour - wap
 vapour density - ketumpatan wap
 vapourimeter - meter wap
 vapourization, heat of - haba pewapan
 vegetable casein - kasein sayuran
 vegetable milk - susu sayuran
 vegetable remains - sisa tumbuhan
 vegetation - tumbuhan-tumbuhan

w

wall map - peta dinding
 wall rock - batuan tebing
 wallow - kubang
 wastage - susutan glaster;
 buangan

waste land - tanah tandus
waste radioactive - buangan radioaktif
water, barometer - barometer air
water, brackish - air payau
water cycle - kitar air
water gauge - tolok air
water level - paras air
water manometer - manometer air
water mark, high - tikas air tinggi
water mark, low - tikas air rendah
wave - gelombang; ombak
wave, amplitude - amplitud gelombang
wave, compression - gelombang mampatan
wave energy - tenaga gelombang
wave guide - pemandu gelombang

y

yard, dock - limbungan
yard, enclosed - lapang kepungan/
dilingkungi
yeast - yis, ragi
yellow phosphorous - fosforus kuning
youthful landscape - rupa dataran peringkat muda
youthful river - sungai peringkat muda

z

zero - sifar; pensifar
zero, absolute - sifar mutlak
zero potential - potensi/keupayaan sifar

Ikhsan dari:

**Cawangan Istilah
Bahagian Pembinaan dan
Pengembangan Bahasa
Dewan Bahasa dan Pustaka
Kuala Lumpur**

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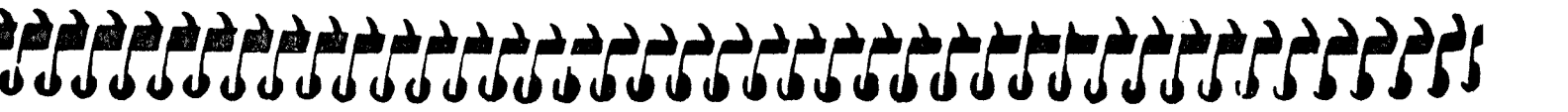
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Kalendar Kongres Pertanian

Kalendar ini menyenaraikan seminar, konferens, simposium dan bengkel peringkat kebangsaan dan antarabangsa mengenai pertanian dan perkara-perkara berkaitan dengannya yang akan diadakan dari bulan Oktober hingga bulan Disember 1983. Untuk melengkapkan lagi senarai ini, anda adalah dipelawa untuk melaporkan apa juga maklumat mengenai lain-lain seminar, konferens dan bengkel pertanian yang tidak termasuk di dalam senarai ini.

Oktober 4-5

Judul: Seminar Sains Rumpai
Tempat: UPM, Serdang
Anjuran: Jabatan Agronomi dan Kulturakebunan

Oktober 5-6

Judul: Pengeringan dan Penyahairan Makanan
Tempat: Serdang
Anjuran: Bahagian Teknologi Makanan, MARDI.

Oktober 9-15

Judul: Kursus Asas Pengembangan Lembaga Kemajuan Negeri Pahang
Tempat: UPM, Serdang.
Anjuran: Lembaga Kemajuan Negeri Pahang/UPM

Oktober 17-22

Judul: Kursus Asas Pengembangan untuk Pelatih-Pelatih dari Institut-Institut Latihan Haiwan.
Tempat: UPM, Serdang
Anjuran: Pusat Pengembangan & Pendidikan Lanjutan, UPM, Serdang

Oktober 18-22

Judul: Kursus Kedua Teknologi Penggunaan Racun Perosak.
Tempat: UPM, Serdang
Anjuran: UPM/MAPPS

Oktober 23-26

Judul: Latihan Perkilangan Memproses Buah-buahan.
Tempat: Tampoi, Johor
Anjuran: Bahagian Teknologi Makanan, MARDI.

Oktober 24-26

Judul: Regional Seminar on Impact of Microbiology in Tropical Agriculture.
Tempat: UPM, Serdang
Anjuran: Fakulti Pertanian UPM, Serdang

November 1-2

Judul: Persidangan Kebangsaan Mengenai Arahaliran Pembangunan Pertanian di Malaysia.
Tempat: UPM, Serdang
Anjuran: Fakulti Ekonomi Sumber & Perniagaantani, UPM, Serdang.

November 6-9

Judul: Bengkel Porim-Pemindahan Teknologi Perusahaan Kelapa Sawit.
Tempat: UPM, Serdang.
Anjuran: PORIM/UPM

November 7-10

Judul: Teknologi Memproses Kek, Roti & Biskut.
Tempat: Serdang
Anjuran: Bahagian Teknologi Makanan, MARDI.

November 14-24

Judul: Bengkel "Asian Modular Training".
Tempat: UPM, Serdang.
Anjuran: Pusat Pengembangan & Pendidikan Lanjutan, UPM, Serdang.

November 19-22

Judul: Teknologi Memproses Kulit Pasir Putih, Kelantan.
Tempat: Pasir Putih, Kelantan.
Anjuran: Bahagian Teknologi Makanan, MARDI.

November 21-25

Judul: Seminar Latihan Kebangsaan
Penilaian Kesan-Kesan Alam
Sekitar.
Tempat: UPM, Serdang
Anjuran: WHO/PEPAS/Bahagian Alam Sekitar,
Kementerian Sains Teknologi & Alam
Sekitar.

November 3- Dec 3

Judul: Kursus Jawatankuasa Kemajuan dan
Keselamatan Kampong.
Tempat: UPM, Serdang
Anjuran: Jabatan Kemajuan Negeri Selangor/
UPM

Disember 1-5

Judul: Seminar Pengembangan Risda
Tempat: UPM, Serdang
Anjuran: Risda/UPM

Disember 5-9

Judul: Seminar Kebangsaan Tentang
Komunikasi untuk Pembangunan
Tempat: UPM, Serdang
Anjuran: Pusat Pengembangan & Pendidikan
Lanjutan, UPM, Serdang.

Disember 5-16

Judul: Program Pendidikan Lanjutan dan
Kesihatan Haiwan & Peternakan.
Tempat: UPM, Serdang
Anjuran: Fakulti Kedokteran Veterinar dan
Sains Peternakan, UPM.

Disember 12-14

Judul: Teknologi Memproses Mee, Laksa dan
Mee Hoon.
Tempat: Serdang
Anjuran: Bahagian Teknologi Makanan, MARDI.

Disember 12-16

Judul: Kursus Pegawai-Pegawai Baru Felda
(Bahagian kilang)
Tempat: UPM, Serdang.
Anjuran: Felda/UPM

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