New Book
Efficient Weed Management to Enhance Rubber Production

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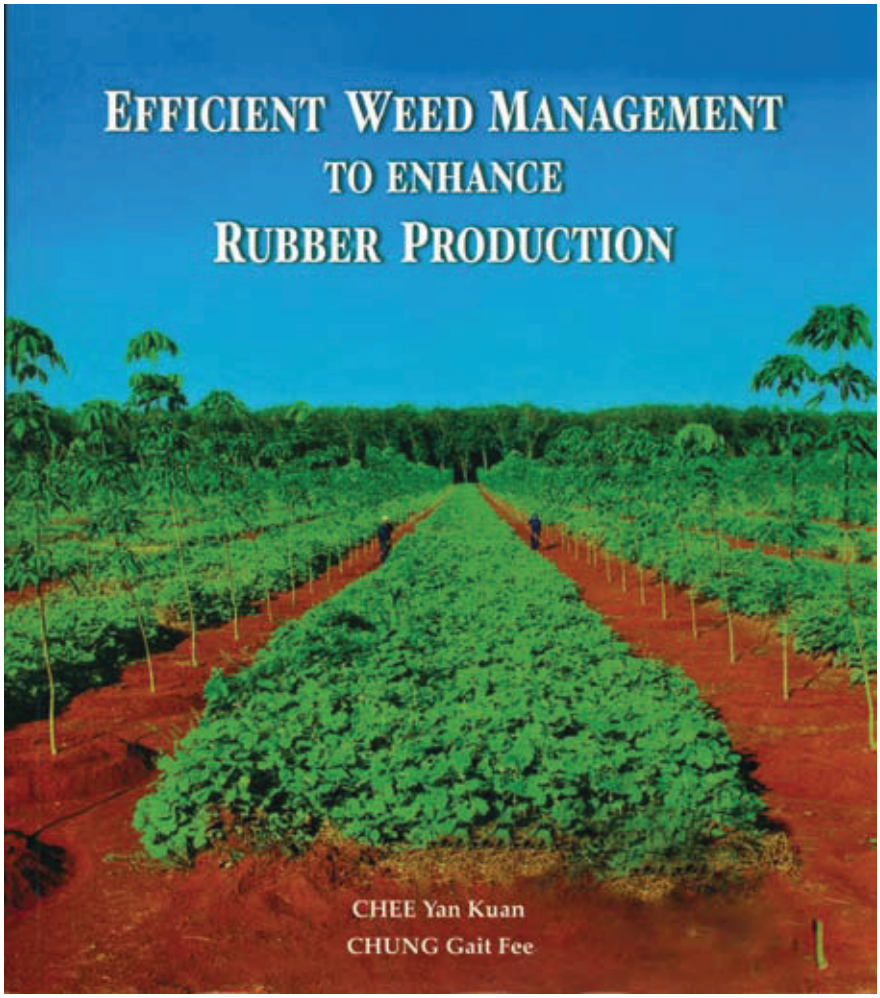
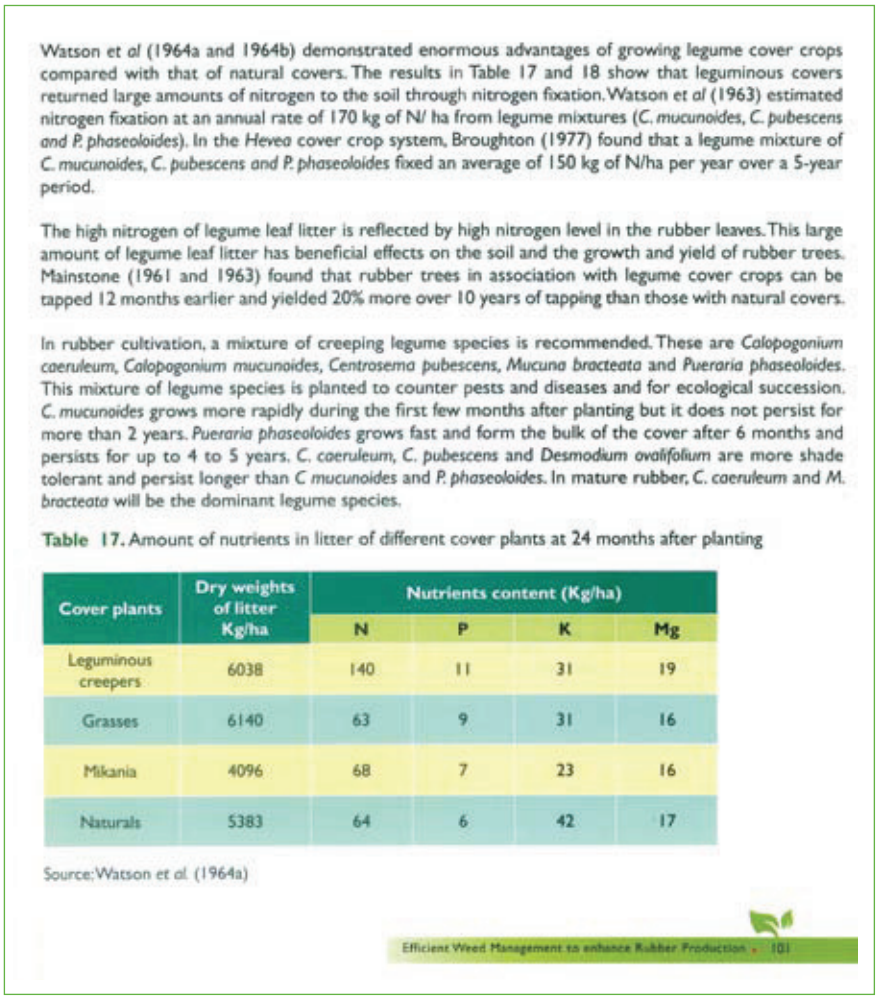
Published by MOSTI, Academy of Sciences Malaysia & International Rubber Reseach & Development Board. 2014. Pp. 200.



This well-illustrated book serves both as a guide to weed management and to identification of weeds in the rubber plantations in Malaysia. Chee was a scientist at the Rubber Research Institute while Chung worked for an estate company. Their interest in weed management brought them together to produce this valuable book on current practices of weed management in the country.

This book provides a comprehensive account of weed species and the authors did well to separate beneficial and acceptable ground covers from noxious weeds. Noxious weeds suppress



Watson et al (1964a and 1964b) demonstrated enormous advantages of growing legume cover crops compared with that of natural covers. The results in Table 17 and 18 show that leguminous covers returned large amounts of nitrogen to the soil through nitrogen fixation. Watson et al (1963) estimated nitrogen fixation at an annual rate of 170 kg of N/ ha from legume mixtures (*C. mucunoides, C. pubescens and P. phaseoloides*). In the *Hevea* cover crop system, Broughton (1977) found that a legume mixture of *C. mucunoides, C. pubescens and P. phaseoloides* fixed an average of 150 kg of N/ha per year over a 5-year period.

The high nitrogen of legume leaf litter is reflected by high nitrogen level in the rubber leaves. This large amount of legume leaf litter has beneficial effects on the soil and the growth and yield of rubber trees. Mainstone (1961 and 1963) found that rubber trees in association with legume cover crops can be tapped 12 months earlier and yielded 20% more over 10 years of tapping than those with natural covers.

In rubber cultivation, a mixture of creeping legume species is recommended. These are *Calopogonium caeruleum, Calopogonium mucunoides, Centrosema pubescens, Mucuna bracteata* and *Pueraria phaseoloides*. This mixture of legume species is planted to counter pests and diseases and for ecological succession. *C. mucunoides* grows more rapidly during the first few months after planting but it does not persist for more than 2 years. *Pueraria phaseoloides* grows fast and form the bulk of the cover after 6 months and persists for up to 4 to 5 years. *C. caeruleum, C. pubescens* and *Desmodium ovalifolium* are more shade tolerant and persist longer than *C mucunoides* and *P. phaseoloides*. In mature rubber, *C. caeruleum* and *M. bracteata* will be the dominant legume species.

Table 17. Amount of nutrients in litter of different cover plants at 24 months after planting

Cover plants	Dry weights of litter Kg/ha	Nutrients content (Kg/ha)			
		N	P	K	Mg
Leguminous creepers	6038	140	11	31	19
Grasses	6140	63	9	31	16
Mikania	4096	68	7	23	16
Naturals	5383	64	6	42	17

Source: Watson et al. (1964a)

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the growth of rubber, interfere with agronomic practices, obstruct tapping and reduce yield but ground covers could be beneficial.

The book is arranged in a user-friendly manner and starts with an account of the effects of weeds on the establishment of rubber. For those keen on identifying the weeds in their rubber plantations, the authors devoted a large section on classification of plant species with additional information on weed biology and ecology. The other chapters are focused on weed science research and management.

The role of biological control is limited to two pages. More attention could have been given to the possible role of some cover crops such as *Mucuna* sp. to suppress weeds by allelopathic actions. In some cases, cover crops might provide a supportive environment for the biological control agents that help to protect rubber plants from pest infestation. It may also be possible to screen for cover crops to manage nematodes and other pests.