Bulletin of the Rubber Research Institute of Sri Lanka, (1997) 35, 19-21

IMPACT OF MANAGEMENT STRATEGIES OF *HEVEA* DISEASES ON THE ENVIRONMENT

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One of the very important strategies in management of rubber plantations is the increasing of output per unit area. But one of the principle constrain for increasing crop production is the plant diseases.

Like most of the other agricultural crops when rubber is grown on its natural habitat under forest conditions pests and diseases are of very little consequence due to the balance in nature resulted from very high biodiversity factor. But with the introduction of *Hevea* to new habitats as a mono-crop several devastating diseases have been spread causing a considerable economic losses.

The economically important diseases of *Hevea* tree in Sri Lanka are grouped below according to the part of the plant affected by each disease.

Root	White Root disease	*(Rigidiporus lignosus)*
	Black Root disease	*(Xylaria thwaitsii)*
	Fusarium Wilt	*(Fusarium solani)*
	Ustulina Root Rot	*(Ustulina deusta)*
Stem and Branch	Bark Rot	*(Phytophthora* spp.)
	Pink disease	*(Corticium salmonicolor)*
	Ustulina Stem Rot	*(Ustulina deusta)*
	Pathogenic Die Back	*(Phytophthora* spp.; *Colletotrichum* spp.,)
	Secondary Die Back	*(Botryodiplodia* spp. *Phyllosticta* spp; *Colletotrichum spp)*
Leaf	Powdery Mildew	*(Oidium heveae)*
	Phytophthora Leaf Fall	*(Phytophthora* spp.)
	Colletotrichum Leaf disease	*(Colletotrichum* spp.)
	Anthracnose	*(Glomerella cingulata)*
	Corynespora Leaf Fall disease	*(Corynespora cassiicola)*
	Birds Eye Spot disease	*(Bipolaris heveae)*

With regards to the management strategies of *Hevea* diseases until recent times, the diseases of rubber have been controlled without considering the economic benefits and without considering the damage to the environment that are likely to accure from such action. They never considered the environmental pollution aspects of recommended pesticides. This is merely due to the unawareness of toxicological data of their recommended chemicals.

However, this attitude was changed during 1960s and Pathologists initiated extensive research projects with the view of minimising the application of chemicals to the environment. As a result extensive research porgramme was formulated to study the biology, epidemiology, host parasite interactions, resistance and control of diseases.

On the basis of these findings it has been possible to reduce the number of applications of fungicides to control diseases or even totally eliminate the use of chemicals in some instances. Fig. 1 illustrates the old and present recommendations of the RRISL to control the commonly occuring diseases in mature clearings.

Disorder	**Old recommendation**	**Present recommendation**
Oidium Leaf Disease	Dusting of sulphur during Jan. and Feb. in all rubber growing regions 100 kg/ha; 8 rounds/season	No routine dusting is recommended Dusting of S at higher elevations above 300 ft. allowed.
Phytophthora Leaf Fall	Dusting of copper powder 140 kg/ha; 25 rounds in May-Sept.	No chemical application is recommended
Colletotrichum Leaf Disease	Spraying of Cu fungicides or Organo-mercurial fungicides	No chemical application
Bark Rot	Application of panel dressings ANTIMUCIN FILOMAC 90 DIFOLATAN BRUNOLINUM	Application of panel dressings BRUNOLINUM RIDOMIL
White Root Disease	Application of the a collar protectant containing PCNB	Application of the a collar protectant containing PHENOL

Fig. 1. Old and present recommendations in management of rubber diseases (Mature Clearings)

The development of economic methods of control has resulted in a drastic reduction in the expenditure incurred for controlling rubber diseases and also protects the environment from unnecessary chemical pollution which as became a very serious problem in many crops.

In conclusion it could be stated that the management of *Hevea* diseases in field clearings uses only minimal levels of chemicals which has been achieved by

(A) Through breeding of resistant clones to certain diseases.
(B) Though better understanding of epidemiology, biology and host-parasitic interactions of the disease causing organisms.

Therefore the establishment of rubber plantations in Sri Lanka can be considered to be the most environmentally acceptable crop cultivated which is second only to a natural forest ecosystem.