

PARATOR V1.0 - A DIAGNOSTIC TOOL FOR THE IDENTIFICATION OF PARASITOIDS AND PREDATORS FOR BAGWORMS AND NETTLE CATERpillARS IN OIL PALM

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Parasitoids and predators play a major role in regulating pest numbers, especially the bagworms and nettle caterpillars. A field study had revealed the importance of several species of parasitoids in regulating the bagworm numbers at low levels, which in effect is natural control (Basri *et al.*, 1995).

The parasitoids are relatively small and sometimes tiny insects (measuring between 0.5 mm to more than 5 mm). The size of the parasitoids depends also on the size of the hosts and also whether it is a primary or secondary (hyper) parasitoid. A hyperparasitoid tends to be much smaller as it is a parasitoid within another species of parasitoid. The hyperparasitoid is therefore not beneficial because it kills the primary parasitoid.

THE PARATOR

This simple diagnostic tool is derived from the handbook of common parasitoids and predators of bagworms and nettle caterpillars (Norman *et al.*, 1998) and packed in a Microsoft PowerPoint show. The objective of this tool is to assist planters to identify the common parasitoids and predators.

Users will be asked a series of questions, as follows:

1. What is the host or pest species (*Figure 1*)? This includes common species of bagworms and nettle caterpillars.
2. What is the type of its natural enemies (*Figure 2*)? This determines whether it is an insect predator (one which consume the host) or parasitoid (one which live within its host)
3. Which stage of the pest does the parasitoid emerge from (*Figure 3*)? This specifies whether the insect parasitoid had emerged from the larval or pupal stage of the host.
4. Is it a solitary or gregarious parasitoid (*Figure 4*)? This specifies whether the insect parasitoid emerged as one (solitary) or many individuals (gregarious) at one time.

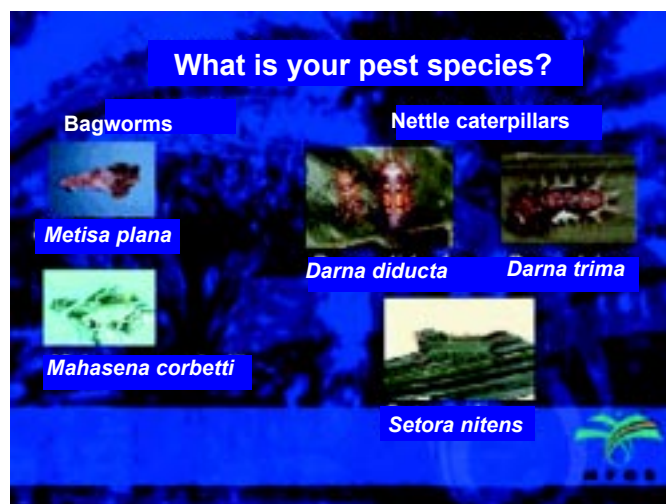


Figure 1. Type of hosts.

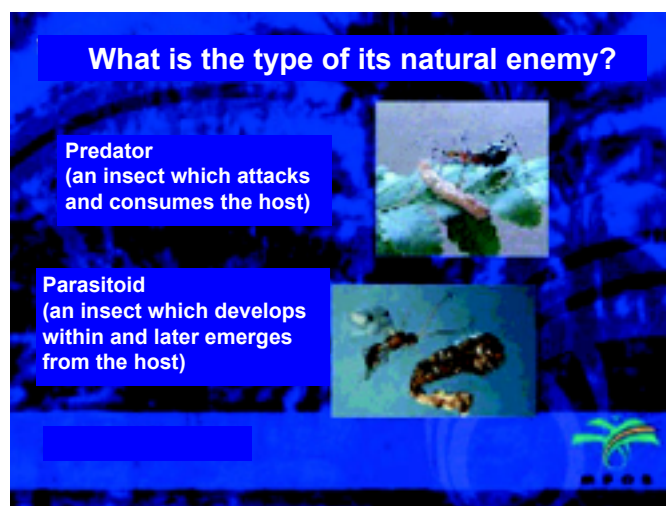


Figure 2. Type of natural enemies.

5. What is the size of the parasitoid or predator? There is a range of sizes where the user needs to choose.

After answering these questions step by step, the user will then be able to go directly to the description of a particular insect parasitoid or predator (*Figure 5*).



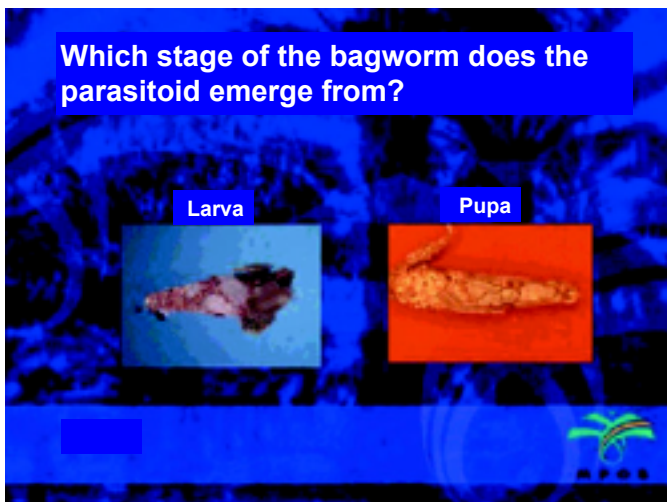


Figure 3. Host stage of parasitoid emergence.

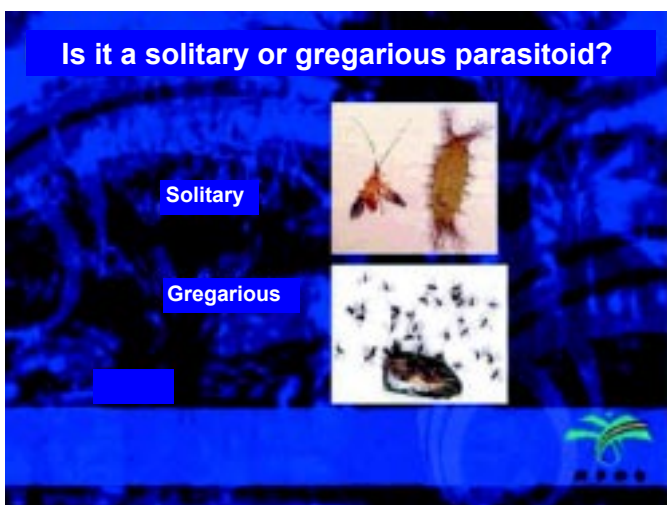


Figure 4. Type of parasitoid.

CONCLUSION

It is hoped that this tool will serve as a guide for the planters in the identification of the predators and parasitoids in their plantations. Planters thereby, would then be able to understand the importance of these

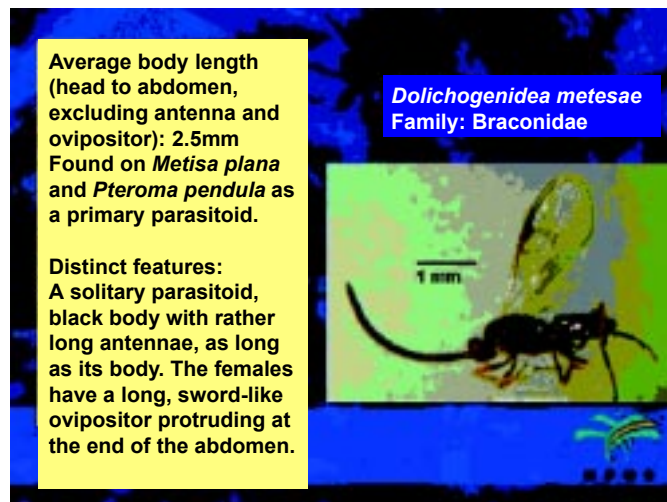


Figure 5. Description of a natural enemy.

beneficial insects and will have to provide suitable environments (i.e. planting of beneficial plants), for the conservation of predators and parasitoids. Careful application and selective use of insecticides are important so as not to cause any adverse effect on the population of these beneficial insects.

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