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Understanding Pest Biology and Behaviour for Effective Control of Oil Palm Bagworms

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The bagworms, viz. Metisa plana, Pteroma pendula and Mahasena corbetti are important leaf pest of oil palm in Malaysia. Despite the fact that effective control is available, they continue to cause outbreaks, often resulting in significant crop loss. There are many reasons for this, one of which is the inadequate understanding of the biology and behavior of the pest by the planters. Bagworm can be easily recognised by the morphology of its pupal case. The pupa of M. plana is sub-cylindrical, 9-13 mm long, with a hook-shaped attachment on the leaf. For P. pendula, it is cylindrical, 7-8 mm long, with smooth surface and a long attachment thread on the leaf like a pendulum. The pupal case of M. corbetti is relatively large, 27-33 mm, covered with irregular pieces of leaves, stalk and other materials, with a very untidy appearance. The life cycle of P. pendula, M. plana and M. corbetti is about 48-50 days, 92-97 days and 110-140 days, respectively. While the fecundity of the three species is 65, 130 and 3000 eggs, respectively. The dispersal mechanism of the bagworm species appeared to be related to the fecundity of the different species. For P. pendula which has a lower reproduction rate, it has to ensure the neonates reach and feed on the vegetation within a short time in order to reduce the mortality risk. Thus, its primary mode of dispersal is by crawling out from the mother case to reach the vegetation attached to the case and start constructing its bag as soon as possible. The neonates of M. plana are usually dispersed via long silk thread through a process known as "ballooning". P. pendula can tolerate higher humidity as compared to M. plana and thus it can also cause outbreaks during raining season. Effective control of bagworm can be achieved if the information on the life cycle and behaviour of the pest can be utilised to plan for appropriate measures to stop the spread of the pest, and guide correct timing for chemical intervention. Chemical control should be based on census results and initiated when the bagworms are at the young larval stages which are most vulnerable to the chemical. Post-treatment monitoring is important for checking the effectiveness of the control action taken and for planning the necessary follow up action.

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