

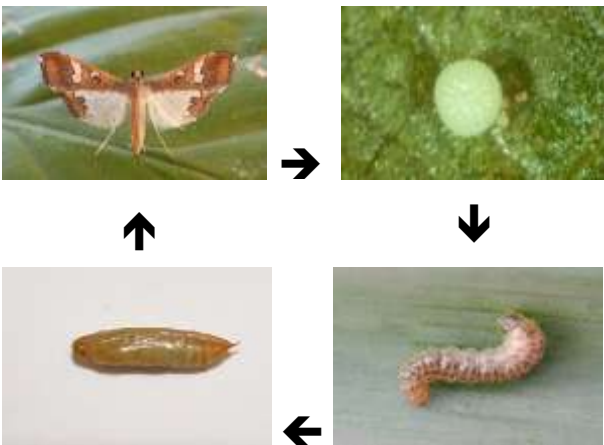
The Pest *Maruca* in Cowpea

The damage done by *Maruca* to cowpea crops is well known to farmers and extension agents. It is done by the caterpillar, or larval stage, of the insect.



These larvae develop from tiny translucent eggs which are laid singly on the leaf shoots, flowers and pods of cowpea by the adult, or moth, stage.

The adults mate in or near cowpea fields and the females then lay the eggs which take 2 – 3 days to hatch. Each larva feeds and grows over a period of 8 – 14 days before changing into a pupa, or chrysalis. This stage lasts 5 – 10 days, before the next generation of adults emerges.



What is the Pheromone of *Maruca*?

When the adult *Maruca* mate the females attract males by producing a scent which the males can follow through the air over many metres. The chemical which makes this scent is called a pheromone. Humans cannot smell this pheromone.

What is a Pheromone Trap and why is it useful?

A pheromone trap uses the same scent as the adult female *Maruca* to attract males. The pheromone is contained in the small plastic lure which hangs in the middle of the trap.

The traps are made from white, plastic cans with windows cut in each side. The lures are plastic cylinders 23 mm long and 9 mm in diameter. The lures have lids which can be opened. Although they appear empty, the pheromone is in fact contained within the walls of the lure and is released very gradually over time.

The traps catch the adult male *Maruca* when they search for females. This happens when they first enter the cowpea fields, soon after planting. It means that when the first males are caught in the traps females are nearby and in a few days larvae will begin to attack the crop. In this way the traps act as warning devices.

Although the traps kill the moths attracted to them these will probably be only a fraction of the total population, so they will not be a good control method on their own.

Installing the Pheromone Traps

Traps should be placed in cowpea fields 3 – 4 weeks after planting. A single trap in the centre of a field is sufficient, although two traps may be placed in very large fields.

To install a trap place a stick about 2 metres long in the ground at an angle so that the trap can hang down freely. Suspend the trap using wire or string so that it is about 1.2 metres above the soil.

Suspend a lure inside each trap using a short piece of wire or a paper-clip. These should be renewed every four weeks.



Place water into the trap to a depth of 5 cm to trap the moths. Add a little soap powder to reduce surface tension and so aid captures.

The traps should be checked at least three times per week, although daily visits would be better. On each occasion the number of *Maruca* moths caught in each trap should be recorded. The water and soap should be replenished as necessary, or replaced completely if the water becomes dirty. All

dead insects and other debris should be removed. Dirty water and rotting insects will reduce the efficiency of the traps and make it harder to distinguish the *Maruca* moths.

Using the traps to decide when to treat cowpea against Maruca

It is important that the traps are installed before the first adult *Maruca* arrive in the vicinity of the crop. They should be placed in the fields no later than four weeks after planting, and certainly before flowering commences. They should be sited in fields that were sown within one week of each other. If the sowing dates are very different catches will be observed in the advanced fields long before the later fields. This will mean that the warning provided by the traps will be too late for the advanced fields and too early for the later fields.

It is strongly recommended that at least SIX (6) traps are distributed around each village in different cowpea fields. This is because catches among the traps will vary and a smaller number of traps will not give a good indication. The fields should be among the earliest ones to be planted.

Farmers should treat or spray their cowpea crop when the total of moths caught in all six traps equals 12 (or two per trap). This recommendation can be applied to all fields in which traps have been positioned and other fields in the village with similar sowing dates.



Pheromone Traps for the legume podborer, *Maruca vitrata*



An Early-Warning System for *Maruca* Infestations

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