Pest Control No. TPC6

Maize stalk borer, *Busseola fusca*

The maize stalk or stem borer is a widespread pest throughout tropical and sub-tropical Africa, from south of the Sahara to South Africa, usually in areas with and altitude greater than 700m.

Host

The maize stalk borer feeds mainly on maize and sorghum. Young caterpillars can also be found on many species of grasses and cereals.

Symptoms

Young plants have holes and 'windows' in the leaves and small dark caterpillars can be seen at the base of the leaf. In severe attacks, the central leaves die.

In older plants the young caterpillars bore into the main stem and later move up into the cob of maize.

Description of pest

The caterpillar is pinkish with more or less distinct black spots along its body. When full-grown it measures about 4cm long.

Life cycle

The round eggs are laid on the underside of leaves in columns stretching from the stem. They are white when first laid but get darker with age. They hatch into a larvae after about 10 days. The larvae develop from being small and black to a pink caterpillar with black spots on it's back. The young caterpillar crawls to the base of a leaf and eats the plant tissue. After some time they bore into the stem and feed there until they are fully grown.

The mature caterpillar (35 days old) cuts a hole in the side of the stalk just before pupating. After 10 days of pupating in a brown sack roughly 2.5cm long the brown night-flying adult moth emerges through the hole in the stem. The moth has a wing span of about 3.5cm.

Prevention and control

Light traps: Light traps can provide useful information about the population of moths and therefore of caterpillars. Light traps help to predict if there is going to be an outbreak. A tripod made of wooden poles (bamboo) is constructed with a lantern (kerosene) hanging in the middle over a bowl of water. The lantern is a fire hazard so the tripod must be secure, and the lamp must be hung so that the wood does not catch fire.

Field hygiene: After a severe outbreak, stubble should be ploughed into the soil or burnt to kill any remaining larvae.

Crop rotation: This separates the pest in space and time from its host plant. Pests life-cycles are interrupted by depriving them of their food source. It is best to rotate crops which have few common enemies.

Legumes: Growing a maize-cowpea mixture reduces the incidence of the maize stalk borer.

Cow urine: First urine needs to be collected. Then it must stand for 2 weeks in sunlight. 1 part urine to 2 parts water is a general guideline for killing caterpillars but the farmer can experiment (care should be taken to not burn tender leaves with too high a concentration).

Plant preparations

Neem (*Azadirachta indica*): Native to India, *Azadirachta indica* is now distributed throughout Southeast Asia, East and sub-Sahelian Africa. Fallen fruits are collected from underneath the trees. The flesh is removed from the seeds and any remaining shreds washed away. The seed is carefully dried in airy conditions (in sacks or baskets), to stop them becoming mouldy. When needed, the seeds are shelled, finely grated, then soaked overnight in a cloth suspended in a barrel of water. There should be 25 to 50g of powder per litre of water. Spray onto the underside of leaves.

Pyrethrum (*Chrysanthemum cinerariaefolium*): The white flowerheads possess insecticidal propertis. Pyrethrum is most productive at altitudes of 1600 meters and ideally in semi-arid conditions where winters are cool. On richer soils the insecticidal properties are reduced.

Pick on a warm day when the flower are fully open. Then pile up into small heaps in the sun to warm through. Spread out to dry on thick mats in a shady area. If they are to be stored, they need to be kept in an air-tight container in the darkness. Light reduces the effectiveness of the flowers. Pyrethrum is a contact poison, it repels pests and acts as an antifeedant.

Pyrethrum powder: Grind flowers to a dust. Use pure or mix with a carrier like talc or lime. Sprinkle over infested plants.

Pyrethrum liquid: Mix 1 to 1.5kg pyrethrum flowers with 3kg liquid soap and 100 litres water. Strain through a sieve or cloth and use immediately as a spray. The soap increases the effect of the pyrethrum four times. Use potash based soft soap that is used for washing dishes and not the modern washing powders that contain caustic soda which will harm plants.

Ryania *(Ryania speciosa)*: The most useful parts of this plant are the roots and the stalks. Ryania acts as a contact and stomach poison. The effects of ryania seem slow but eating and breeding should soon stop. It has longer lasting properties than pyrethrum as it lasts in the field from 5 to 9 days.

Ryania powder: Grind dried ryania roots, stalks and leaves. Mix with just under half the amount of talc or clay. Sprinkle over plants one week after the moths start to emerge.

Ryania spray: Mix 30 to 40g of ryania powder with 7 to 8 litres of water and filter through a fine cloth. Spray every 10 to 14 days against the caterpillars.

The timing of any kind of spray is crucial. Spray before the moths lay their eggs or spray caterpillars when they are at their most vulnerable, that is feeding at the base of the leaves.

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