CropLife
SOUTH AFRICA SUID-AFRIKA

KNOW YOUR PEST:

MAIZE STEM BORER COMPLEX

BUSSEOLA FUSCA, CHILO PARTELLUS AND SESAMIA CALAMISTIS

AFRICAN STALK BORER
(Busseola fusca)

Life cycle and Identification

- Life cycle can be completed in 7 – 8 weeks
- Three moth flights per year starting in October
- Female moths lay eggs between the stem and leaf sheath, hatching in 7 - 9 days
- Eggs are white when first laid, but darken as they age
- After hatching, larvae migrate into the leaf whorls to feed
- Young larvae are dark brown in colour and become lighter as they mature
- Larvae have small black dots along the body
- Older larvae can tunnel extensively into stems, but they prefer the tasselling stage
- Larval feeding lasts for 30 – 42 days before pupating
- Adult moth emergence 1 - 2 weeks after pupation

Damage

Regarded as the most serious borer pest of maize

- Damage due to larval feeding increases susceptibility to secondary infections e.g. Fusarium rot
- Characterised by small holes or “window panes” in young leaf whorls
- Feeding on the plant’s growing points results in withered “dead heart” symptoms
- Due to tunnelling, maize stems are hollowed out and become weak, breaking under windy conditions
- Larvae can also bore into maize cobs and feed on seed

Young Busseola larvae causing windows in the whorl

Dead heart symptoms

Larvae feeding on tassels and in maize cobs

Emergence holes in a maize stalk.

Colour variation - lighter vs dark larvae

CHILO BORER *(Chilo partellus)*

Life cycle and Identification

- Also referred to as the spotted stem borer
- Life cycle completed in 3 - 4 weeks
- Moths emerge in September
- Female moths lay eggs on young seedlings, on the underside of leaves
- Eggs are white, flat and oval, hatching after 5 - 7 days
- Larvae are creamy white in colour with dark spots along the back
- Emerging larvae migrate towards the whorl and feed on young, rolled up leaves
- Larval feeding in the whorl lasts 3 - 4 weeks before penetrating the stem for pupation

Chilo eggs

- Adult moths emerge after a short 5 –7 day pupal period
- Due to the shorter life cycle, it is regarded as a less serious pest for maize compared to *Busseola*

Damage

- Small holes or “windows” in the leaves due to larval feeding in the whorl
- Extensive tunnelling in stems and maize cobs
- Symptoms are similar to that of *Busseola*

Chilo larvae feeding in whorl and tunnelling in midrib

Characteristic spots on Chilo larvae

Larvae pupate in maize stems

PINK STEM BORER

(Sesamia calamistis)

Life cycle and Identification

- Life cycle completed between 6 - 10 weeks
- Moths start flights as early as September
- Five overlapping generations develop per year
- Need early maize plantings for egg laying and survival
- Moths lay large groups of eggs between leaf sheaths or close to maize cobs
- Eggs are creamy white, but darken before hatching in 6 - 9 days
- Emerging larvae penetrate the stalks or maize cobs directly
- Larvae are usually creamy white with a distinctive pink colouring
- Larval stage normally lasts 3 - 6 weeks
- Pupation takes place within the stem or between leaves

Damage

- In summer rainfall areas, infestations are more severe during October/November in seedlings and in February/March when cobs are present
- First visible symptoms include damage to the growing points (dead hearts) because larvae bore directly into the stem without damage to the whorl leaves
- Early maize plantings under pivot irrigation are very susceptible to pink stem borer attacks

A Sesamia larvae in a maize cob (top) and sugarcane (bottom) stalk

CONTROL OF STALK BORERS

- Planting maize cultivars modified with insect resistant technology (i.e. Bt crops) offers protection against infestations by stalk borers, but requires the planting of a mandated refuge area
- Chemical control with products registered against stalk borers must be strictly applied at recommended dosage rates as per the product label
- Cultural control measures include earlier planting dates in winter or early spring to expose overwintering larvae or covering pupae with soil
- Other measures include control of volunteer maize plants, selection of varieties with inbred resistance, allowing beneficial insects to play a role and regular scouting of fields to identify stalk borer infestations earlier rather than later.

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