

Information Sheet

8. PESTS

8.7 Thrips

Introduction

Thrips (*Fulmekiola serrata*) is a minute sap-sucking insect found in many sugarcane industries in Africa and in the rest of the world. It attacks mainly young sugarcane, particularly plant crops and can be a serious economic pest if not managed.

History

Thrips originated in Asia and was first recorded in sugarcane in Java. There are also records from China, India, Japan, the Malay Archipelago and Taiwan. Recent records have shown that this pest has now expanded its range as far as Madagascar, Mauritius, Réunion, Barbados, Guadeloupe, Venezuela and the West Indies. The first record of its invasion in the South African sugar industry was in 2005 on the Umfolosi Flats. Since then, it has spread rapidly and has become a serious problem throughout the industry.

Identification

Eggs

Eggs are approximately 0.29 mm long and 0.09 mm wide, with a smooth, shiny, translucent chorion (outermost membrane).

Nymphs

The nymphs appear translucent after emergence, except for the red-pigmented eyes, and thereafter turn yellow in colour.

Pupae

The prepupa and pupa are pale and sluggish. They do not feed and may be distinguished by the short wing pads and forwardly directed antennae. In the pupal stage, they have long wing pads and backward pointing antennae.

Adults

Elongated and darkly pigmented adults, 2-3 mm in length, they feed on the young leaf roll of sugarcane. Large numbers of this insect gather in leaf rolls and feed on the sap of the young plant (Figure 1).

Biology

Life Cycle

Young sugarcane is particularly prone to attack by thrips. Nymphs and adults avoid sunlight and consequently live in the central leaf roll. When disturbed, the insect makes erratic circular movements, and flies away, or are wind dispersed. Concealment within the leaves reduces the chances of desiccation (drying out) and provides protection from predation. In the mornings and evenings, and on cloudy days, adults may move to the curled leaf margins of young leaves. The adults show a strong preference for young, tender leaves and feed and lay their eggs in the soft, younger leaves of the central leaf roll. At the optimal temperature of 20-25°C, a female can lay up to 80 eggs that develop over an estimated



Figure 1. Thrips in the leaf spindle of sugarcane (Inset - magnified view of thrips).

5 days. Nymphs develop and feed on the leaves for about 10 days, and adults live for between 18 and 31 days. Although not determined specifically for this species, the life cycle would probably range between 15 and 20 days.

Seasonal Occurrence

There is a recurring seasonal cycle in sugarcane. Numbers during the autumn, winter and early spring months (April to September) are generally low but increase sharply from November, peaking in summer between December and February (Figure 2). This seasonal cycle can be used to the grower's advantage by ensuring that the most susceptible growth stage of the crop is not present when thrips numbers are high.

Research has shown that the younger the crop, the more susceptible it is to thrips. For example, in one trial, thrips numbers on one-month old cane during the mid-summer period (December/January) reached 60 thrips/leaf spindle. By contrast, older plants (6 months or more) over the same period had as few as 0.3 thrips/spindle. Consequently, planting or ratooning the crop over the mid-summer period will almost certainly lead to a heavy infestation when the crop is most susceptible to thrips. Typically, higher thrips numbers are recovered from plant cane, and from rainfed crops compared to irrigated crops.

Host plants

While thrips feeds primarily on sugarcane, it has however been recorded on tobacco in Java. This is thought to be

the only record of this pest feeding on any plant other than sugarcane.

Damage

Symptoms of thrips damage are usually noticeable on the spindle leaves. The insect pierces the leaf tissues with their mouthparts and sucks the plant sap, usually from the upper (soft) parts of the young leaves. The damaged central leaf roll shows yellowish-white blotches when it unfurls. Afterwards, the patches turn light or dark yellow and become irregular patches or stripes, which may cover most of a seriously damaged leaf. Injury symptoms may be confused with heat scorch, nutrient deficiency, water stress and/or herbicide-damaged leaves. A further symptom is that, often, leaf tips remain joined together and, as the leaves grow, a distinctive net-like appearance can be seen.

Field trials conducted under rainfed conditions on the SASRI research farm at Gingindlovu showed that, under high thrips pressure, yield reductions ranged from between 18.0% and 26.8% tons cane/ha and between 16.2% and 24.0% tons sucrose/ha. Insecticide trials indicate that yield increases of between 12.1% and 22.7% tons sucrose/ha can be achieved.

Control

Variety choice

Some varieties tend to support higher numbers of thrips than others. Where possible, select varieties that are less

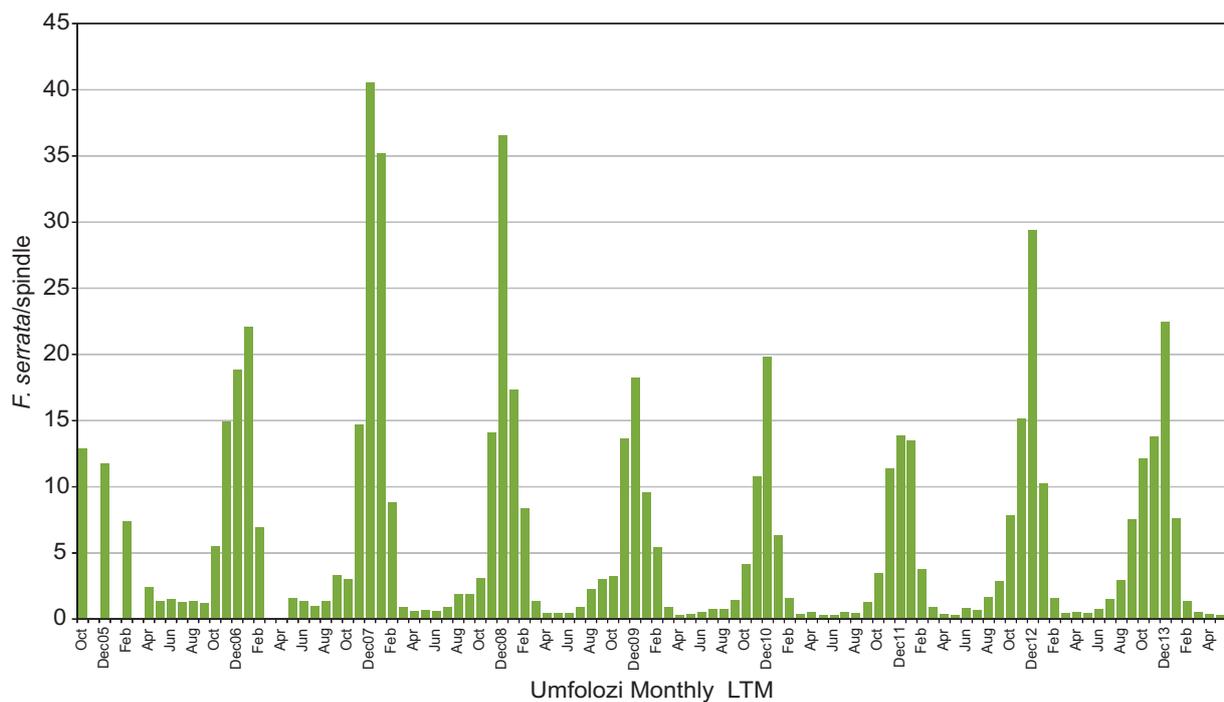


Figure 2. Seasonal cycle of thrips recorded at Umfolozi.



Figure 3. Sugarcane exhibiting thrips damage, joined dead leaf tips (left) and spindle leaf damage (right).

severely damaged by thrips. The table below summarises the susceptibility of varieties to thrips damage.

Planting date

Avoid planting over the September-December period, as such crops will be young and vulnerable during December/January when thrips numbers peak. Plant either in early Spring (August-September) or in Autumn (March-April) to avoid having young cane less than 4 months old during the thrips peak period in summer.

Insecticide use

The group of insecticides called neonicotinoids are among the most effective for the control of sucking insect pests such as thrips.

Table 1. Susceptibility rating of sugarcane varieties.

Thrips infestation level	Variety
Intermediate-low	N12*, N14, N16, N33, N35, N37, N39, N40
Intermediate	NCo376, N19, N23, N25, N26, N29, N30, N36, N38, N42
Intermediate-high	N22, N27, N28, N31, N32, N41, N43, N45, N48
High	N21

**Exercise caution as there is a risk of mosaic infection when planting N12 between October and February.*

Two products are registered:

- Bandit® 350 SC (imidacloprid) applied in the furrow at planting at a rate of 1-2 L product/ha. Note that this product is registered for ground application only.
- Allice™ 20SP (acetamiprid) is a registered foliar spray applied to ratoon crops when the pest is noticed at a rate of 1.5 kg/ha after 6-8 green leaves have developed. This product may also be applied aerially.

(For more detailed information on the use of these products, please read the product labels).

Like strobilurin fungicides, these insecticides have also been reported to enhance plant vigour and stress tolerance, independent of their insecticidal function.

Biological control

Thrips is an exotic insect therefore classical biological control (introducing a pest's natural enemies from its country of origin) is an option to consider. In some industries, thrips is suppressed by climatic factors as well as natural enemies (spiders, rovebeetles, earwigs and ants) that are conserved through the judicious use of insecticides combined with cultural control measures.

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