

Fresh Vegetable Product Group
Horticulture New Zealand
PO Box 10 232
Wellington

**Order form (for other than grower members of HortNZ)
for the**

**“Information guide for integrated pest
management in outdoor head lettuce”**



Please send me copies of the Fresh Vegetable Product Group's information guide for integrated pest management in outdoor head lettuce. I agree to pay \$100 plus GST (\$112.50 incl GST) per copy.

My cheque for \$..... is enclosed. For registered companies payment on receipt of our invoice may be requested.

If you need any further information please contact HortNZ on 04 472 3795 and ask to speak to either Kate Shannon or ken Robertson.

For return mailing purposes please write your name and address in BLOCK LETTERS below:

Name:

Address:

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Information guide for integrated pest management in outdoor head lettuce

Heliothis or tomato fruitworm (Helicoverpa armigera)


Description:
Freshly laid tomato fruitworm eggs appear as white ribbed domes about 1 mm in diameter (but are not as wide as green looper eggs). Close to hatching they become more yellow and develop an orange ring near the top.
Newly emerged caterpillars are about 1.5 mm long and pale brown with dark heads. Small caterpillars up to about 15 mm are generally creamy brown. Larger caterpillars develop up to 50 mm and vary in colour from brown to green, yellow, or reddish, with a broad, pale band within the coloration along their sides. The caterpillars can be distinguished from loopers by the presence of four pairs of prolegs on the mid-abdomen. Full-grown caterpillars leave their host plants, burrow into the soil, and pupate.
The tomato fruitworm adults are sturdy moths with a wing span of about 40 mm. The forewings are typically brown with green to yellow or red tones. The hind wings are pale with a broad, dark, outer margin. At rest, the wings are folded flat over the body.

Seasonality:

| Heliothis caterpillars | Heliothis moths |
|-------------------------|-------------------------|
| J F M A M J J A S O N D | J F M A M J J A S O N D |

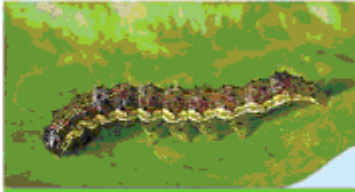


Heliothis adult moth



Side view of Heliothis egg showing domed appearance and ridges

Damage / symptoms:
Small Heliothis caterpillars feed on outer and inner leaves and cause holes similar to those formed by loopers. Some caterpillars, especially larger stages, tend to burrow more and can severely damage the inner leaves and heart, and contaminate produce with droppings.

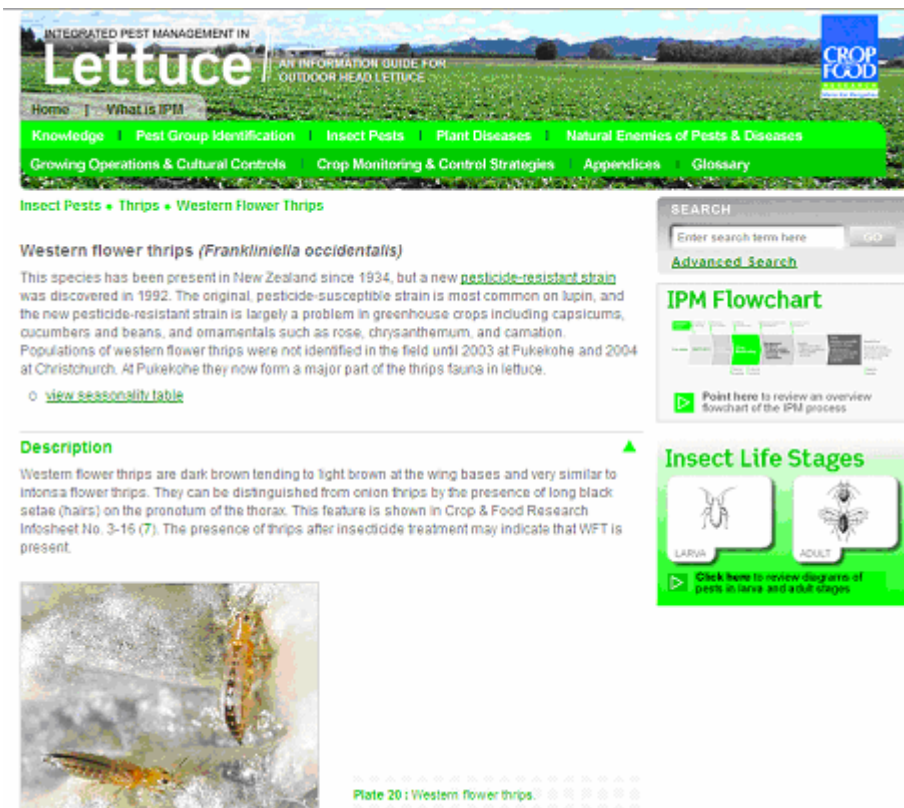


Heliothis larva on lettuce leaf showing the four pairs of prolegs on the mid-abdomen and characteristic stripes and hairs

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LEPIDOPTERA
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The information guide for integrated pest management in outdoor head lettuce was published by the Fresh Vegetable Product Group of Horticulture New Zealand in May 2008.

The pocket sized handbook (pictured above) will help growers and scouts to identify key pests and diseases out in the field. The CD-ROM (pictured below) includes information and management advice relevant to all stages of the crop cycle, from selecting a field prior to planting through to scouting for pests and diseases and managing these issues. Used together, these resources will be an important tool in the integrated pest management of outdoor head lettuce crops in New Zealand for years to come.



INTEGRATED PEST MANAGEMENT IN **Lettuce** AN INFORMATION GUIDE FOR OUTDOOR HEAD LETTUCE

Home | What is IPM

Knowledge | Pest Group Identification | Insect Pests | Plant Diseases | Natural Enemies of Pests & Diseases

Growing Operations & Cultural Controls | Crop Monitoring & Control Strategies | Appendices | Glossary

Insect Pests • Thrips • Western Flower Thrips

Western flower thrips (*Frankliniella occidentalis*)

This species has been present in New Zealand since 1934, but a new [pesticide-resistant strain](#) was discovered in 1992. The original, pesticide-susceptible strain is most common on lupin, and the new pesticide-resistant strain is largely a problem in greenhouse crops including capsicums, cucumbers and beans, and ornamentals such as rose, chrysanthemum, and carnation. Populations of western flower thrips were not identified in the field until 2003 at Pukekohe and 2004 at Christchurch. At Pukekohe they now form a major part of the thrips fauna in lettuce.

[view seasonality table](#)

Description

Western flower thrips are dark brown tending to light brown at the wing bases and very similar to onion flower thrips. They can be distinguished from onion thrips by the presence of long black setae (hairs) on the pronotum of the thorax. This feature is shown in Crop & Food Research Infosheet No. 3-15 (7). The presence of thrips after insecticide treatment may indicate that WFT is present.

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IPM Flowchart
Point here to review an overview flowchart of the IPM process

Insect Life Stages
LARVA ADULT
Click here to review diagrams of thrips in larva and adult stages

Plate 20 : Western flower thrips.