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Native budworm spraying threshold

Department of Primary Industries and Regional Development, Western Australia

Native budworm spraying threshold

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The number of native budworm caterpillars in a crop is the major factor determining potential economic damage from the pest. Table 1 was generated with results from department trials to provide an estimate of potential loss from native budworm damage.

Crop loss (kilograms per hectare (kg/ha)) for each caterpillar netted in 10 sweeps (or found per square metre (m^2)) is shown in Table 1. One caterpillar netted in 10 sweeps is equivalent to about 20,000 caterpillars/ha for most pulse crops, assuming an even distribution over the crop.

How to use the table

The losses in Table 1 are for the number of caterpillars captured in sweep nets during early pod formation for all crops except lupins and canola, for which numbers are for during pod maturation.

To calculate the economic threshold or the number of caterpillars that will cause more financial loss than the cost of spraying, use the table and substitute control costs with your actual costs and expected grain price per hectare.

Calculation of the economic threshold or the number of caterpillars that will cause more financial loss than the cost of spraying

The on-farm value of field peas is $300 per tonne (t)
The cost of control is $12 per hectare (ha)
ET = C ÷ (K x P) where:

- ET = Economic threshold (numbers of grubs in 10 sweeps)
- C = Control cost (includes price of chemical + application) ($ per ha)
- K = kg/ha eaten for every one caterpillar netted in 10 sweeps or per m^2
- P = Price of grain per kilogram (price per tonne ÷ 1000)

Therefore, economic threshold for field pea = 12 ÷ (50 x (300 ÷ 1000)) = 0.8 (about 1 grub per 10 sweeps)

Table 1: Economic thresholds (ET) for native budworm on various crops

Crop	P Grain price per tonne	C Control costs including chemical + application	K Loss for each grub in 10 sweeps (kg/ha/grub)	ET Grubs in 10 sweeps	ET Grubs in 5 lots of 10 sweeps	ET Grubs (>15mm) per m^2
Field pea - trailing type (for example, Helena, Dundale)	e.g. 300	10	50	1.0	5	-
Field pea - semi leaf less (for example, Kaspa)	e.g. 300	10	100	~1	3	-
Chickpea	e.g. 420	10	30	~1	4	-
Faba bean	e.g. 280	10	90	~1	2	-
Lentil	e.g. 520	10	60	~1	1.5	-
Canola	e.g. 500	10	6	3	15	-
Lupin	e.g. 370	10	7	~4	19	5.1

Growers using this table to calculate spray thresholds should substitute their own control costs and the expected current on-farm grain price, where:

ET = Economic threshold (numbers of grubs in 10 sweeps)
C = Control cost (includes price of chemical + application) ($ per ha)
K = Kilogram per hectare (kg/ha) eaten for every one caterpillar netted in 10 sweeps or m^2
P = Price of grain per kg (price per tonne ÷ 1000)

Adjusting thresholds

Use of the table and calculations will provide a personalised and more precise measure of potential loss from native budworm damage. Sometimes the actual loss will be less than predicted if, for example, the season is shortened by a lack of moisture.

Premiums paid for exceeding quality standards for high value and large-seeded pulses like kabuli chickpea may necessitate even lower thresholds than those provided above.

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