EVALUATION OF LAMBDACYHALOTHRIN FOR CONTROL OF GREASY CUTWORM IN SEEDLING MAIZE

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Greasy cutworm (*Agrotis ipsilon* Hufn.) larvae are a crop pest of world-wide distribution. The Australasian subspecies, *A. ipsilon aneituma* (Walker) is a common and persistent pest in New Zealand where it attacks seedling maize and sweetcorn (*Zea mays* L.). Greasy cutworm are effectively and most economically controlled by insecticide spray applications after maize emergence (Watson and Hill 1985). A wide range of spray insecticides, including synthetic pyrethroids have proven successful for cutworm control (Harris *et al* 1978; Hill *et al* 1983).

Lambdacyhalothrin is a new, broad spectrum synthetic pyrethroid insecticide with activity against lepidopteran larvae. This paper reports on trials conducted in the Waikato district to evaluate the efficacy of lambdacyhalothrin (Karate, 5% EC) for greasy cutworm control in seedling maize. Deltamethrin (Decis, 2.5% EC) was included as a standard in all trials.

Trials were established in seven commercial grain maize crops by applying insecticide as blanket spray treatments (Tables 1 and 2) to maize seedlings 75 to 150 mm high. Treatments were applied in November 1989 — site 1 Kakepuku, Otorohanga silt loam; site 2 Te Mawhai, Punui silt loam; site 3 Te Mawhai, Punui clay loam; site 4 Te Kawa, Otorohanga silt loam; and November 1990 — site 5 Te Uku, Mangapiko clay loam; site 6 Taupiri, Bruntwood silt loam; site 7 Rukuhia, Horotiu sandy loam.

The insecticide treatments were applied in the afternoon or evening, to four replicate plots with a hand-held boom fitted with Spraying Systems' flat fan nozzles (no. 730 154) operated at 210 kPa and delivering 220 litres/ha from a pressurised knapsack sprayer. Wetting agent (Contact) was applied with lambdacyhalothrin at 25 mls/100 litres spray mix. Plot sizes were 3 m (4 rows) wide by 10 m long (sites 1-4), 1.5 m (2 rows) wide by 11 m long (site 5), and 3 m wide by 15 m long (site 6). At sites 1-6 plant damage from natural infestations of greasy cutworm was assessed by counting and removing cut plants in the central two rows of each plot, at 2-5 day intervals over a 2 week period following treatment application.

At site 7 the plots were 2.25 m wide by 5 m long. One galvanised iron frame 0.9 m x 0.45 m x 0.25 m high was placed in the middle row of each plot enclosing six maize seedlings. The frames were pushed into the soil to a depth of 5-10 cm. Eight laboratory reared cutworm, ranging in size from 1.5 to 4 cm long, were seeded into each enclosure.

TABLE 1: Cutworm mortality after application of deltamethrin and three rates of lambdacyhalothrin at site 7.

Treatment	g ai/ha	Dead cutworm/enclosure
untreated	—	0.3
lambdacyhalothrin	10.0	2.8
lambdacyhalothrin	12.5	4.0
lambdacyhalothrin	15.0	2.0
deltamethrin	12.5	2.8
SED		0.7

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Cutworm that failed to bury themselves within 1 hour were replaced. After burial the treatments were applied and bird proof covers placed over the frames. Dead cutworm in the top 1 cm of soil within the enclosures were counted 3, 5 and 7 days following treatment application.

Lambdacyhalothrin and deltamethrin caused significant cutworm mortalities ($P<0.01$) at site 7 (Table 1). All three rates of lambdacyhalothrin and deltamethrin produced similar cutworm mortalities.

Lambdacyhalothrin significantly reduced cutworm damage to maize seedlings at site 3 ($P<0.05$), site 4 ($P<0.01$) and sites 5 and 6 ($P<0.001$) (Table 2). There was no rate effect of lambdacyhalothrin on the number of maize seedlings damaged. Lambdacyhalothrin and deltamethrin had similar efficacies. At sites 1 and 2 the reduction in cutworm damage was not significant. At these two sites cutworm were aggregated within the trial area and damage to the maize was correspondingly variable.

The results of these trials show that lambdacyhalothrin was equivalent in efficacy to deltamethrin for the control of greasy cutworm in seedling maize.

TABLE 2: Number of plants damaged by greasy cutworm after application of deltamethrin and three rates of lambdacyhalothrin to seedling maize at six sites.

			Mean number cut plants/plot					
Treatment	g ai/ha	Site:	1	2	3	4	5	6
untreated	—		9.3	6.0	3.5	8.3	7.8	41.0
lambdacyhalothrin	10.0		4.3	5.5	0.5	4.8	1.5	6.8
lambdacyhalothrin	12.5		4.5	2.8	1.5	2.3	1.8	5.0
lambdacyhalothrin	15.0		8.0	3.5	1.3	2.0	1.0	6.8
deltamethrin	12.5		4.0	4.0	0.5	2.5	1.0	7.8
SED			2.5	1.6	0.8	1.6	1.2	4.7

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