2012 & 2013 Fall insecticide treatments to manage spring infestations of alfalfa weevil –Dickinson Co., KS.

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Pest: Alfalfa weevil (AW), *Hypera postica*

Crop: Alfalfa

Location: Dickinson Co., KS

Planting Date: N/A

Plot Size: 240 ft. wide

Experimental Design: Randomized complete block with application date as the treatment effect. A single field represented 1 block consisting of 4 application date treatments and an untreated control, arranged as randomized subplots in each field.

Treatment Information: Stallion® applied at a rate of 11.75 oz./acre with a GPS-guided ground rig applicator with a full boom span of 120ft.

Treatment Dates: Applications were initiated 2 weeks after the first detection of adult alfalfa weevils in alfalfa each fall (09 October, 2012 and 23 October, 2013). Successive treatments were then applied every 2 weeks thereafter until a hard freeze for a total of 4 dates per year: 23 October, 06 and 20 November, 2012; 04 and 18 November and 03 December, 2013.

Phytotoxicity: None noted

Fall Sampling: To determine in-field population densities of adult weevils, sweep net sampling was done in 2012 in each treatment prior to the start of the experiment and again 3, 6, and 14 DAT (Figure 1). In 2012 and 2013 soil/litter samples were taken from each

treatment by placing a 0.25m^2 quadrant in two random locations. In 2012, adults were collected and counted using Berlasé funnels (Figure 2). In 2012 and 2013, 20 stems were randomly selected from each quadrant sample and split to count the number of alfalfa weevil egg clusters present in each treatment (Figure 3).

Spring Sampling: Spring sampling was initiated as soon as larvae began emerging (05 April, 2012 and 11 April, 2013) and repeated approximately 1 week later. All larvae present in 30 or 40 stems/ treatment were counted (Figure 4).

Conclusions: Results of this study show that the application of insecticide in the fall does not provide sufficient reduction of AW larvae in the spring to be economically feasible. Fall applications do not significantly affect adult weevil abundance, as collected by sweep net, in the fall (Fig. 1). Inactive adult weevils are often found among alfalfa leaf litter during the fall and winter months and this study showed that the untreated areas did harbor the largest number of adult weevils (Fig. 2). While this number was not significantly higher than the application dates 2 and 4 weeks after the first adult was collected, there were significantly fewer adults collected from soil/litter samples in areas treated 6 and 8 weeks after the first adult collection. Fall AW egg cluster abundance did not vary significantly among any of the four treatment application dates when compared to the untreated control (Fig. 3). Spring sampling of AW larvae showed that treatments applied 6 and 8 weeks after the first adult was collected in the fall resulted in significantly fewer larvae/stem in the spring (Fig. 4). However, all treatments were still above the widely accepted treatment threshold of 1 larva/2 stems and thus a spring insecticide treatment was required for control of the alfalfa weevil larvae to prevent economic losses in all of the treatment dates as well as the untreated control. Thus, while the application of a fall AW treatment may impact the number of adults present in the leaf litter, there does not seem to be a related reduction of eggs deposited in stems or a large enough reduction in the number of larvae the following spring to reduce or delay an application of insecticide.

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Fig. 1. Number of AW adults by sweep net 2012

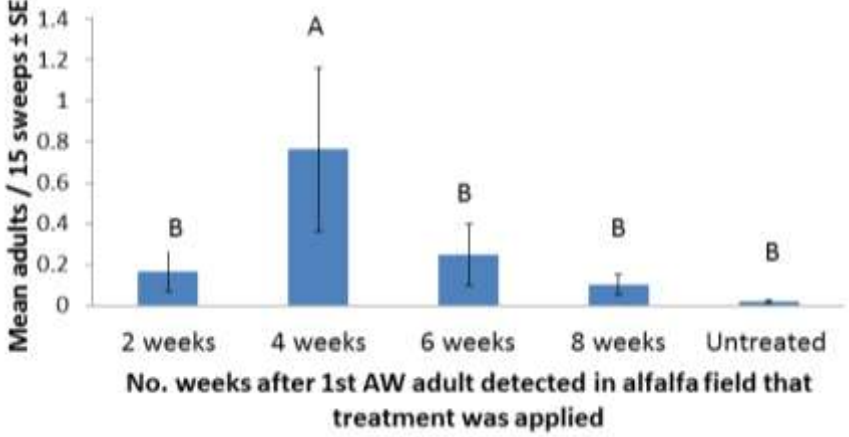
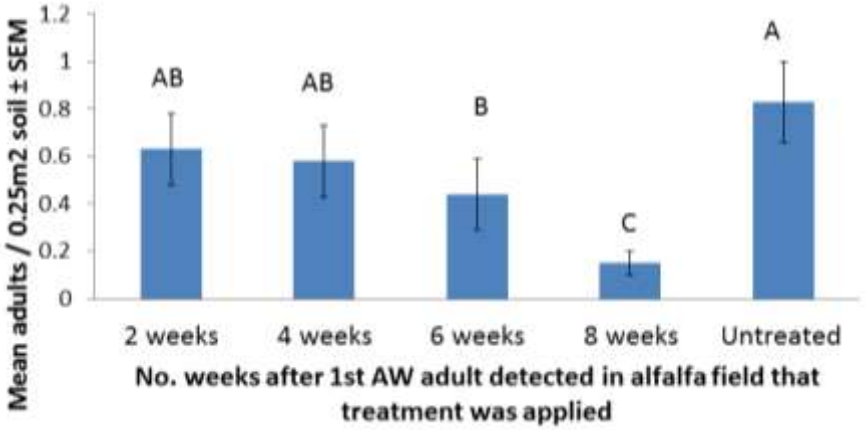
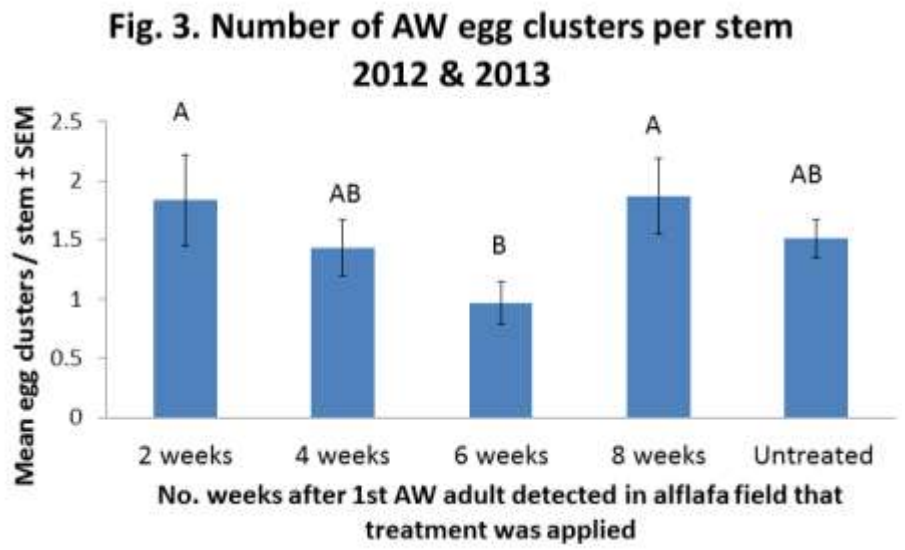
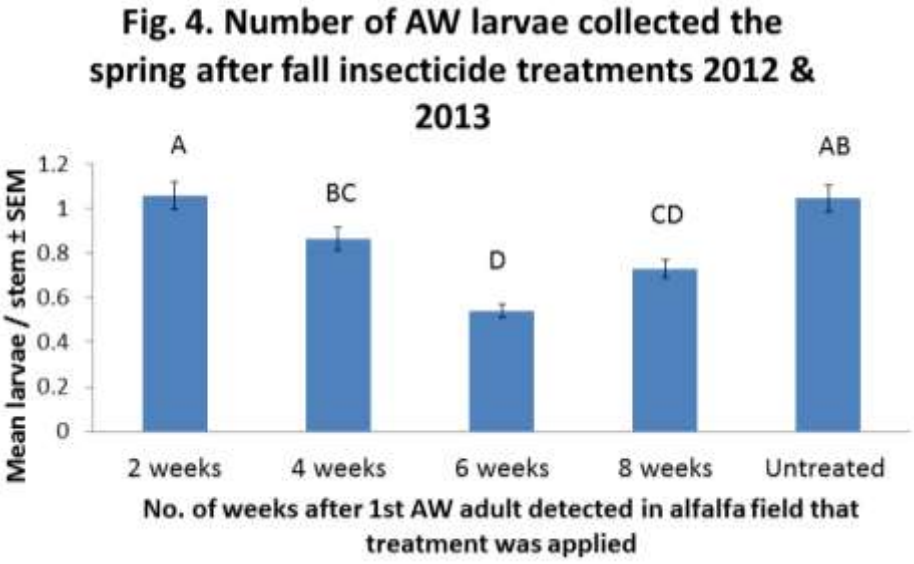


Fig. 2. Number of AW adults by soil sample 2012







Means within a column followed by the same letter are not significantly different (Different letters indicate significant differences (P>0.05) [SAS Institute 2003]).

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