2006
IPM Mini-Grant Report
Evaluation of Preventative Alfalfa Weevil Control

Project Leaders:
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Situation:
Many alfalfa producers have incorporated the practice of applying the insecticide 'Furadan' (*carbofuran*) as a preventative alfalfa weevil control. This application is made early in the season before an alfalfa weevil infestation has been identified.

In 2004, trials conducted in fields in Box Elder and Weber Counties showed that early applications of Furadan were effective in reducing weevil numbers. However, the weevil populations never reached levels high enough to warrant control, so no evalution of the economic value of the practice in preventing an infestation could be made. The yield weights taken showed no difference between treated and untreated plots.

In 2005, the early Furadan treatment was effective in reducing the alfalfa weevil larvae and adult populations. The percent reduction of alfalfa larvae due to early treatment varied from 50 to 98 percent, with an average reduction of 85.6 percent. The average reduction in adult weevil was 74.3 percent. Twenty larvae per sweep is accepted as the economic threshold to justify treatment. Of the twenty six control field evaluations completed, eight had twenty or more larvae per sweep. All of the twenty five treated field evaluations had less than 20 larvae per sweep.

So when serious weevil populations occur, a preventative treatment appears to be a good investment. However, alfalfa weevil are not a serious problem every year. The results of this trial indicate that the annual application of an early Furadan treatment is only economical if weevil populations are expected to reach threshold levels two out of three years. Along with this conclusion, it should be noted that the possible effect of the treatment on weevil populations in future years has not been accounted for.

Results of the March/April weevil evaluations showed that it was not an effective way to predict the level of alfalfa weevil infestation that would occur later in June. In early 2004 the average weevil count per plot was 1 and the weevil infestation in the growing season was very low, peaking at 10.7 larvae per sweep. In 2005 the early weevil count averaged only 0.10 weevil per sweep per plot, yet the weevil infestation during the growing season was extremely high, peaking at 170 larvae per sweep. Thus there appears to be no correlation between early spring adult numbers and what could be expected during the growing season.

In 2005 we experienced a wet spring. Some growers feel that wet springs are a predictor of increased alfalfa weevil problems. This may be something to consider monitoring in future studies

Objective:

1) Verify the 2004 and 2005 results which showed that the early application of Furadan was effective in reducing alfalfa weevil populations.
2) Verify that in most years, a majority of the alfalfa fields do not need to be sprayed with an early application of Furadan for alfalfa weevil control because they generally do not reach the current economic threshold level of 20 larvae per 180 degree sweeps with a 15 inch sweep net.

Procedures:

Trials were established in three Utah Counties; Beaver, Box Elder and Cache The trials consisted of alfalfa fields which had been treated early with Furadan compared to alfalfa fields, in close proximity, which had not been treated. Due to wet spring weather and altered spray schedules some trials were dropped from the evaluation. Final fields evaluated consist of three comparisons in Beaver and three from Cache.

Treatment

Furadan was applied approximately 60 days prior to the first crop harvest.

Sampling

Fields were generally sampled twice before the first cutting and twice before the second cutting. Sampling consisted of counting the alfalfa weevil adults, early larval instars and late larval instars found in five sub-samples from each field. Each sub-sample consisted of ten 180 degree sweeps with a 15 inch sweep net.

Results:

The early Furadan treatments for 2006 did reduce the alfalfa weevil larvae and adult populations in every field and in every sweeping period we collected data on this year when compared to the control. In the first collection period the average total larvae for the treated was 2.65 and 6.83 for the control. The greatest number of larvae collected was in the control fields just prior to first crop harvest. They averaged 11.40 larvae. This average number is still well below the current threshold level of 20 per sweep. According to this information, most fields in Utah would not need spraying for alfalfa weevil and growers would be better off monitoring their fields and only spraying when they reach the currently established economic threshold level.

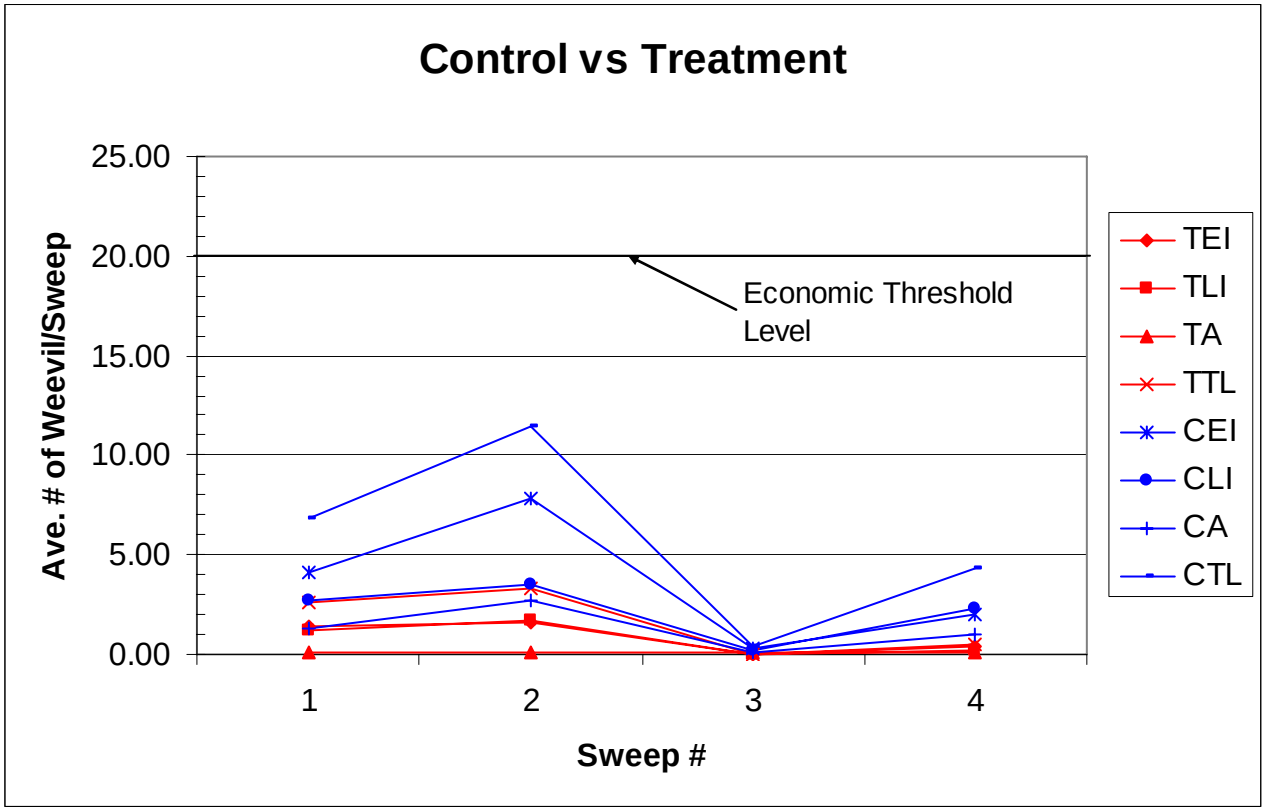
Previous year's data showed weevil numbers in most fields we sampled are well below the threshold number after first crop harvest and continue to decline until few weevil are found in the fields. However, producers will tell you that in fields that are not treated, the field will be slow to recover and will have a lower second crop yield than one that has been treated under similar growing conditions. Yet the larvae numbers do not show the need for treating a field.

As a result of this years research and previous years data, we suggest more research is needed looking at the generally accepted threshold level of 20 alfalfa weevil larvae to see if it is too high and to see if it fits today's prices for alfalfa hay and costs for insecticides.

Summary of Alfalfa Weevil per Sweep 2006

(averaged by collection period)

		Furadan Treatment			Total	Control			Total
	Date	Early Ins.	Late Ins.	Adults	Larva	Early Ins.	Late Ins.	Adults	Larva
Beaver 1	19-May	1.54	1.56	0.10	**3.10**	6.98	4.12	0.06	**11.10**
Beaver 2	23-May	4.10	4.54	0.01	**8.64**	2.26	1.70	0.04	**3.96**
Beaver 3	19-May	1.64	0.90	0.10	**2.54**	6.58	4.78	0.14	**11.36**
Cache 1	13-May	0.12	0.00	0.04	**0.12**	2.62	1.70	2.68	**4.32**
Cache 2	13-May	0.08	0.00	0.06	**0.08**	2.48	2.26	1.90	**4.74**
Cache 3	13-May	1.04	0.40	0.14	**1.44**	3.50	2.02	3.04	**5.52**
Sweep #1	**Average**	**1.42**	**1.23**	**0.07**	**2.65**	**4.07**	**2.76**	**1.31**	**6.83**
Beaver 1	1-Jun	2.10	2.70	0.04	**4.80**	3.80	5.64	0.04	**9.44**
Beaver 2	1-Jun	2.14	4.28	0.02	**6.42**	3.46	1.74	0.06	**5.20**
Beaver 3	1-Jun	1.28	1.68	0.04	**2.96**				
Cache 1	24-May	1.08	0.00	0.16	**1.08**	7.08	1.98	5.56	**9.06**
Cache 2	24-May	0.58	0.16	0.08	**0.74**	13.28	4.42	3.46	**17.70**
Cache 3	24-May	2.56	1.26	0.24	**3.82**	11.60	3.98	4.22	**15.58**
Sweep #2	**Average**	**1.62**	**1.68**	**0.10**	**3.30**	**7.84**	**3.55**	**2.67**	**11.40**
Beaver 1	21-Jun	0.00	0.02	0.00	**0.02**	0.16	0.22	0.00	**0.38**
Beaver 2	21-Jun	0.10	0.02	0.12	**0.12**	0.10	0.12	0.00	**0.22**
Beaver 3	21-Jun	0.04	0.02	0.02	**0.06**				
Cache 1	16-Jun	0.00	0.00	0.10	**0.00**	0.40	0.06	0.16	**0.46**
Cache 2	16-Jun	0.00	0.00	0.12	**0.00**	0.30	0.14	0.16	**0.44**
Cache 3	16-Jun	0.00	0.00	0.10	**0.00**	0.40	0.28	0.14	**0.68**
Sweep #3	**Average**	**0.02**	**0.01**	**0.08**	**0.03**	**0.27**	**0.16**	**0.09**	**0.36**
Cache 1	30-Jun	0.40	0.06	0.16	**0.46**	2.06	3.30	1.68	**5.36**
Cache 2	30-Jun	0.30	0.14	0.16	**0.44**	1.96	1.40	0.50	**3.36**
Cache 3	30-Jun	0.40	0.28	0.14	**0.68**	2.06	2.30	0.70	**4.36**
Sweep #4	**Average**	**0.37**	**0.16**	**0.15**	**0.53**	**2.03**	**2.33**	**0.96**	**4.36**



TEI = Treated Early Instar, TLI = Treated Late Instar, TA = Treated Adult, TTL = Treated Total Larvae, CEI = Control Early Instar, CLI = Control Late Instar, CA = Control Adult, CTL = Control Total Larvae