

2012 HESSIAN FLY MONITORING AND SEED TREATMENT STUDY HILL COUNTY, TX. 2011-2012

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Summary

Hessian fly is a sporadic pest of wheat in north Texas. Damaging infestations can occur when wheat is planted early, when volunteer wheat is present, or when virulent biotypes increase that overcome resistance in widely planted wheat varieties. Weather conditions are also important in determining Hessian fly activity, development and risk for damaging infestations. However, infestations do not always develop when conditions seem favorable and in other years, damaging infestations occur with little explanation.

Hessian fly is difficult to manage because 1) there has been no method to monitor fly activity and 2) there is no curative control once a field is infested. Pheromone traps are now available that attract and capture male Hessian flies and have the potential for monitoring activity and abundance of Hessian fly. Insecticides applied to the wheat seed have been labeled for the suppression of Hessian fly infestations. These tactics offer some options in managing Hessian fly.

The objectives of this study were to 1) monitor Hessian fly activity using pheromone traps 2) determine the relationship between trap captures of flies and infestations in wheat and 3) evaluate seed treatments for Hessian fly control.

Materials and Methods

Hessian fly was monitored in nine fields in Hill County during the fall of 2011 and the spring of 2012. One trap was placed in each field and baited with a rubber dispenser containing the Hessian fly female sex pheromone. Male Hessian flies entering the trap were captured on a sticky card. Traps were suspended on a bamboo pole in the wheat field and positioned about 4-5 inches above the ground. The number of Hessian flies captured in the trap was counted and the sticky card replaced. The pheromone lure was replaced every two weeks.

Traps in two fields were inspected every week from October 7, 2011 through March 24, 2012 to provide a season long record of fly activity. One of these fields, 'Gaswell', was planted to wheat while the second field, 'Airport', was left fallow. In the other seven wheat fields, traps were monitored from October 26 through Nov 11. Traps were not monitored in these seven fields during late November through January as few adults were captured during these cold months in previous years. Monitoring resumed on January 26, 2012 and traps were inspected every 2-3 weeks through April 13. The wheat in the nine fields was planted with seed not treated with an insecticide treated seed. Four of the fields were planted to Tam 304, three fields planted to Fannin and one field was planted to Doans wheat. All of these varieties are considered susceptible to Hessian fly in Hill County.

The number of immature Hessian flies infesting the wheat in the late fall was determined by sampling each of the 7 fields in early December, 2011. A single plant was collected from 30 random locations near the pheromone trap in each field and all tillers (total 1129 tillers from 8 fields) were examined for immature Hessian fly. Sampling was repeated in mid-February and mid-March to determine spring infestations of Hessian fly present in each field. In mid-February 60 plants (total 5,311 from 8 fields) were examined and in March 10 forty plants were sampled in each field (total of 7,155 tillers from 8 fields). The tillers were separated and the areas at the base of the tillers and behind leaf sheaths were examined for Hessian fly pupae and larvae. Fields were also inspected for greenbug infestations on these three dates.

Treating wheat seed with Gaucho insecticide was evaluated for control of greenbugs and Hessian flies in a strip-test planted in two commercial fields. Each plot was ½ acre and one plot was planted to 'Fannin' with Gaucho insecticide and the second plot was planted to the same lot of 'Fannin' but was not treated. These plots were sampled for greenbugs and Hessian fly on December 11, 2011, February 10 and March 14, 2012.

Results

Monitoring Hessian Fly. In the two intensively sampled fields, no Hessian flies were captured on the first sample date, October 7, but were captured in both fields on every sample date from October 11, 2011 through April 13, 2012 (see figure). The increase in Hessian fly activity during December was very unusual as in past years few Hessian flies have been captured during this time. The large number of Hessian flies captured is attributed to the unusually warm temperatures during December, 2011. Also, its interesting to note that Hessian fly adults were common in the Gaswell field during the fall and early winter although it was not planted to wheat. The flies captured in this field apparently emerged from the previous year's wheat stubble as would be expected. During late January through April, the number of captured flies steadily increased in the Airport field which was planted to wheat, peaking at 500-700 per week. In contrast, fewer Hessian flies were captured in the Gaswell field in the spring (peak of 60 per week). Without wheat, there was no in-field reproduction so Hessian fly numbers could not increase in the spring in this field. The flies that were present in the Gaswell field in the spring could have also emerged from the wheat stubble remaining from the 2011 harvest or could have been carried into this fallow field by the wind.

In the seven other fields, Hessian fly numbers in the fall were low, averaging less than 10 flies/trap/week in six of the seven fields (Table 1). The Bridges field has the largest trap capture averaging 25 flies/trap/week. This field was planted earlier for grazing than the other six fields and this may account for the greater number of Hessian flies present in the Bridges field. Hessian fly adults were captured in all seven fields when trapping began again in early February. Trap captures then increased to a peak of 400-500 in five of the fields in early April. The greatest number of Hessian flies, 1,140 per week, was captured in the Bridges field in early April. Hessian fly larvae and pupae were not found in any of the fields during the early December sampling (Table 2). In early February, immature Hessian flies were found only in the Bridges Field. In mid-March, immature Hessian flies were found on the tillers in three fields. In two of these fields, infestations were very low, averaging only one immature Hessian fly per 100 tillers on average (Table 2). In the Bridges Field, immature Hessian flies averaged 0.24 per tiller and 14% of the tillers were infested with one or more immature Hessian fly. The greatest number of Hessian fly adults was captured in the fall and again in the spring in the Bridges field, suggesting a high trap capture of Hessian fly adults might indicate a field at risk to Hessian fly infestation.

Seed Treatment Strip Test Study

No tillers were found infested with Hessian fly larvae or pupae in the Gaucho treated or untreated plots in either field when sampled in early December, mid-February and mid-March. Also, no greenbugs were present in either plot on these dates.

Conclusions

High trap captures of Hessian fly adults may indicate a field at risk to a Hessian fly infestation. Additional trapping studies will need to be conducted to correlate Hessian fly trap numbers to field infestations and damage.

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Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.

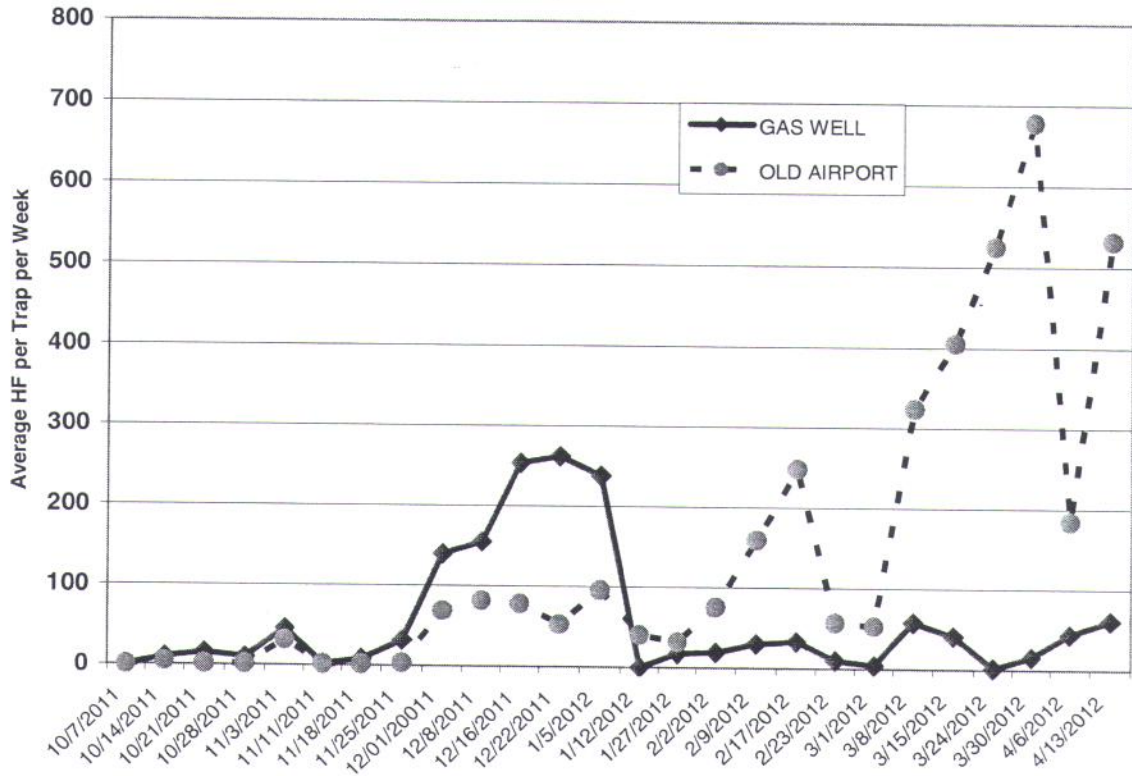
Table 1. Average number of adult Hessian flies captured per trap per week. Hill County, Tx. 2011-2012.

Date	TRIANGLE	EUGENE	WEIR	VARIETY	WENDELL	HUDSON	BBRIDGES
11/3/2011	0	1	2	2	9	1	25
11/11/2011	0	1	1	0	2	0	3
2/2/2012	9	10	3	31	1	3	49
2/24/2012	3	7	11	128	29	4	151
3/14/2012	28	98	17	49	32	18	167
3/29/2012	56	252	55	163	222	34	493
4/6/2012	503	549	480	429	413	189	1143
4/13/2012	54	14	27	103	34	106	900

Table 2. Average number of immature (larvae and pupae) Hessian Fly per tiller. Hill County, Tx. 2011-2012.

Sample Date	TRIANGLE	EUGENE	WEIR	VARIETY	WENDELL	HUDSON	BRIDGES	GAS WELL	OLD AIRPORT
12/11/2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2/10/2012	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0
3/14/2012	0.0	0.01	0.01	0.0	0.0	0.0	0.24	0.0	0.0

Mean Number of Hessian Fly Adults/Trap/ Week.
 Hill Co. 2011-2012



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