EVALUATION OF FOLIAR FUNGICIDES ON ALFALFA, 2011

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Introduction

Current trends in agronomic field crop production (corn and soybean) have been towards the use of foliar fungicides to increase yield in the absence of disease to promote "plant health." Trials conducted across Wisconsin and the region has indicated very inconsistent results. Recently, Headline® (BASF, Research Park Triangle, NC) was approved for use in alfalfa. We have received numerous questions from growers and university researchers regarding the benefits of foliar fungicide use in alfalfa grown for hay. Many of these questions have been focused on the use of a fungicide in a tank mix combination with an insecticide with the hope of providing a positive synergistic yield response. Thus, the objective of this study was to conduct field research trials in Wisconsin to examine the benefit of using a foliar fungicide, foliar insecticide, or both in alfalfa.

Methods

Two experiments were conducted during the 2011-growing season. One was conducted at the Arlington Agricultural Research Station (Arlington, WI) and the second was conducted on a grower field in Tomah, WI. The Arlington trial was in its second year and would be classified as a high yielding environment. The Tomah trial was in its fourth year of production.

At each location, a randomized complete block experimental design was used. The number of treatments at each site differed due to logistical and space challenges of examining too many treatments at Tomah. At Tomah, the treatments were: Headline® (6 fl oz/a), Headline ® (6 fl oz/a) + Respect ® (4 fl oz/a), Respect® (4 fl oz/a), and an untreated check (UTC). All plots measured 20 x 30 ft and were replicated four times. In addition to those treatments, at Arlington, the following additional treatments were also examined: Quadris® (6 fl oz/a), Warrior II ® (1.28 fl oz/a) + Quadris® (6 fl oz/a) and Warrior II ® (1.28 fl oz/a), as well as several experimental compounds (*data not shown*). Plots dimensions were 20 x 50 ft and were replicated four times.

At Arlington, the alfalfa variety was Dairyland Hybriforce-2400 (Dairyland Seed, West Bend, WI). This variety carries resistance for bacterial wilt, Fusarium wilt, Phytophthora root rot, Verticillium wilt, anthracnose (race 1) and aphanomyces (race 1). The variety at Tomah was not known because of loss of planting records.

Trials were conducted during the second and third cuttings at both locations and were conducted in unique sections of the fields to avoid possible interactions between experiments. All treatments were applied using a CO^2 powered back pack sprayer which delivered 20.4 GPA at Arlington and 20.6 GPA at Tomah. Application timing was between 6 to 9 inches at all locations.

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Yields were taken using small plot harvesters. Subsamples were pulled from the harvested forage and sent to the Marshfield Soil and Forage Analysis Laboratory (Marshfield, WI) for NIR analysis. The following data were collected from each site: yield (T/a), forage quality, insect sweep counts and disease severity ratings (severity as a % and severity based on a 1 to 6 scale). Harvest timing was meant to reflect the forage cutting schedule of alfalfa grown for dairy forage. At Tomah, harvest was conducted prior to bloom while at Arlington, it was at 10 to 20% as it was necessary to enable the research farm to harvest the bulk sections of the field first.

Arlington Results

Visual differences were noted in the insecticide treated plots prior to the second cut harvest. There was evidence of a deeper green color with stands slightly taller than the UTC and those treated only with a fungicide. Overall, however, there was no evidence of differences among treatments in terms of yield in dry matter tons per acre ($P > 0.10$). There was evidence of lower disease severity in plots that received a foliar fungicide application ($P < 0.10$) and there was less defoliation in the second cut ($P < 0.10$). Insect pressure was relatively low and no single insect (potato leafhopper, plant bugs and pea aphids) exceeded individual economic thresholds.

No visual differences among treatments were noted for the third cut. There was evidence of a difference in yield in the third cut ($P < 0.10$); however, there was no pattern observed regarding specific treatment effects and the UTC fell in the middle of the yields. Similar to second cut, disease severity was lower with the application of a foliar fungicide, however, disease severity in the third cut was approximately half of what it was in the second cut.

Tomah Results

Overall, stand density and crop vigor were lower at Tomah compared to Arlington. Disease severity was lower in plots that received a foliar fungicide ($P < 0.10$). However, insect abundance was low in the second cut, and overall, there was no evidence of a statistical difference in either second crop yield or quality. Results were similar for third crop although there was some evidence of differences among treatments for several quality factors ($P < 0.10$).

Conclusion

Overall, results were inconclusive across the two trials in 2011. While there was evidence of reductions in disease severity and defoliation in some alfalfa crops, overall, there was no evidence of differences in terms of yield. Based on this year's trial, additional trial data are needed before recommendations can be made regarding foliar fungicide use in alfalfa.