Evaluation of Huskie Herbicide Use in Grain Sorghum

Rex Brandon and Brent Bean; Research assistant and Professor, Texas AgriLife Research, Bushland, TX

Introduction

Due to the lack of registration of new herbicides in sorghum over the last 20+ years, producers must rely on a limited selection of chemicals for effective, economical weed control in sorghum. Weed control is always stated in surveys as one of the major concerns producers have in growing sorghum. For this reason, one of the goals of the USCP is to have new weed and grass control options utilized on 50% of the sorghum by 2015. Currently, post emergence control of broadleaf weeds in sorghum is primarily achieved by using 2,4-D or dicamba. Both of these herbicides can cause unacceptable injury to grain sorghum and drift onto nearby cotton fields can be devastating. This study examines the potential use of Huskie herbicide in grain sorghum. Huskie is a combination of two active ingredients, bromoxynil and pyrasulfatole, and is labeled for control of broadleaf weeds in wheat, barley, oats, rye, and triticale.

Objectives

1) Determine the minimum rate of Huskie needed to control small Palmer amaranth soon after sorghum emergence.
2) Examine the effectiveness of Huskie to control different sizes of Palmer amaranth (3, 9, 15, and 18 inch weeds).
3) Evaluate sorghum tolerance to Huskie when applied at 4-leaf, 8-leaf and boot growth stages.

Methods and Materials

Three trials were conducted to address each of the three objectives. In the first study, Huskie rates of 7, 10, 13, and 16 oz/A, with or without 0.5 lb lb/A atrazine and 4 oz/A dicamba, were applied to 4-inch Palmer amaranth in grain sorghum. In the second trial, three rates of Huskie (10, 13, and 16 oz/A), with the addition of 0.5 lb/A atrazine, were applied to Palmer amaranth at four growth stages (4, 9, 15 and 18 inches). In order to examine grain sorghum tolerance to Huskie, in the third trial, crop injury was examined by making Huskie applications at 4-leaf, 8-leaf and boot growth stages. Treatments evaluated for crop injury were Huskie at 10, 13, and 16 oz/A with and without 4 oz/A dicamba. All treatments were applied with 0.5 lb/A atrazine. In the crop tolerance study, all plots were kept weed-free to eliminate any weed/crop competition. Ammonium sulfate was included in all Huskie treatments in each study. Treatments were replicated 4 times on six 30-inch raised beds. Plots were 25-ft long. Treatment applications were made in water and calibrated to 10 GPA. Weed control and crop injury ratings were made throughout the growing season. Yield was obtained at full crop physiological maturity. Data was analyzed using ANOVA at the 0.05 confidence level and means were separated by LSD using Agriculture Research Manager Ver. 8 software.

Results and Discussion

Early Post Application Control

In 2010, when Huskie alone was applied to 4-inch Palmer amaranth, control was 93% or better, throughout the growing season. The addition of dicamba to the Huskie treatment did not improve weed control. However, adding 0.5 lb/A atrazine improved control to 100% 42 days after application (DAT). In 2009, early Palmer amaranth control was not as good as in 2010 with the 7 oz/A alone treatment, where control was 85% seven DAT. Similar to 2010, adding 0.5 lb atrazine improved control of all Huskie treatments to 100% 42 DAT, while the addition of dicamba did not improve control.

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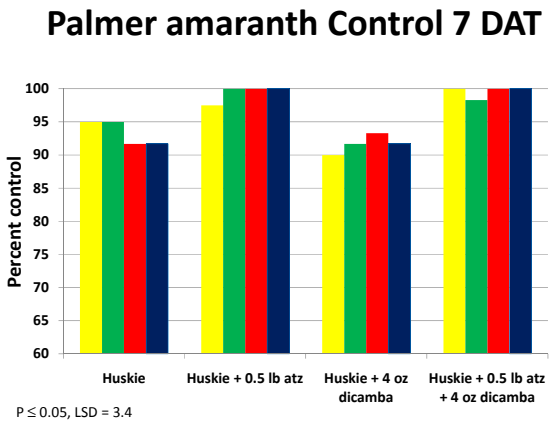

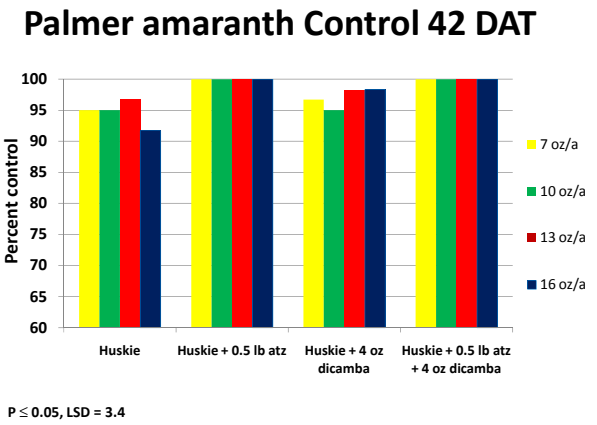

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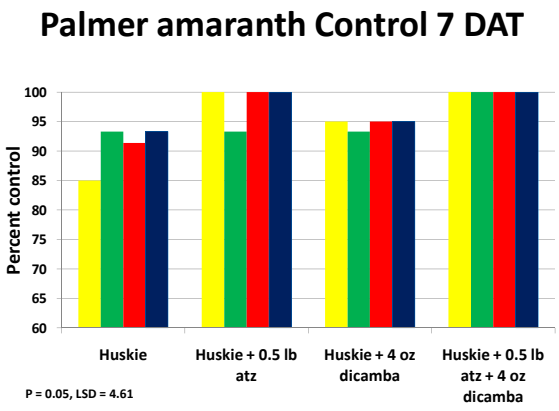

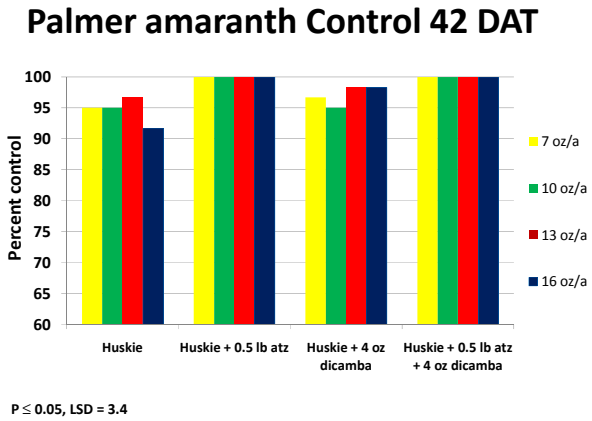

Control of Large Palmer Amaranth

Moderate control of Palmer amaranth with Huskie plus atrazine was achieved very quickly with all weed sizes except in 2010 when treatments were applied to 9-inch weeds. Control 7 DAT was only 70% following this treatment. This was likely due to the wet, cloudy weather experienced around the time of application. Soil was completely saturated with water just prior to application, causing stress to the plants and likely slowed down the activity of the herbicides. In 2010, 42 DAT, control of 3 and 9-inch weeds was 100% with all treatments. However, control of 15 and 18-inch weeds was approximately 85% 42 DAT. Although the control was not as good as that achieved on the smaller weeds, 85% is much better control than most other herbicide treatments that are available can achieve. In 2009, control of all weed sizes was greater than 93% 42 DAT among all three Huskie rates applied. In both years, rates of

10, 13 and 16 oz/A of Huskie applied with 0.5 lb/A atrazine were equally effective in controlling Palmer amaranth.

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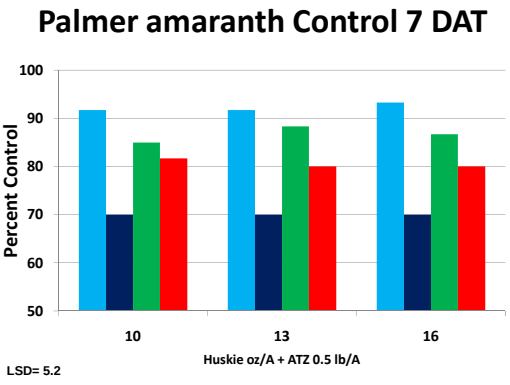

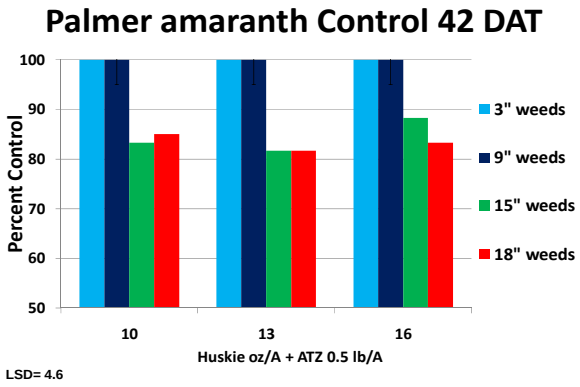

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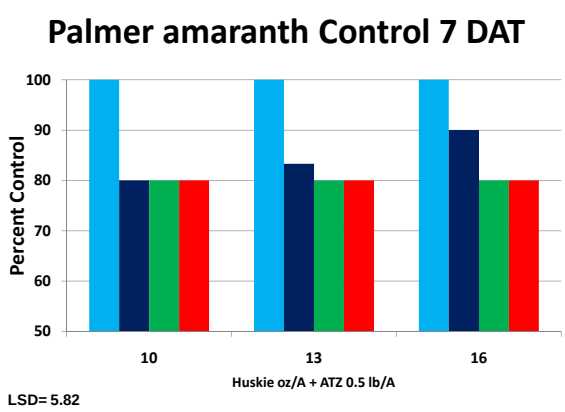

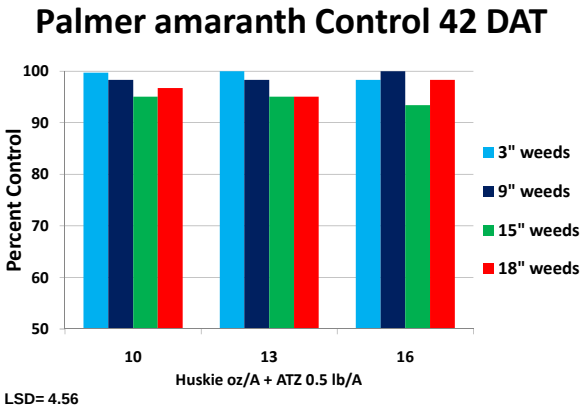

Crop Tolerance

When crop tolerance was examined, in both years of the study, only minor leaf burn (<20%) was observed 3 days after application to 4-leaf sorghum (data not shown). When applied to 8-leaf or sorghum in the boot stage, even less leaf burn was observed. Fourteen DAT very little leaf burn was apparent following any of the applications. When grain yield was examined in 2010, only one treatment reduced yield compared to the untreated weed-free check. This was with the high rate of Huskie (16 oz/A) applied with 4 oz/A dicamba at the boot stage of development where yield was reduced 30%. In 2009, five treatments significantly reduced yield compared to the untreated weed-free check. These were the Huskie 10 oz/A treatment applied without dicamba at the 8-leaf stage, the Huskie 16 oz/A alone treatment applied at boot, and all three boot applications when Huskie was applied with 4 oz of dicamba. The reduction in yield with the Huskie 10 oz/A treatment was a surprise and is believed to be due to something other than the treatment and should be disregarded. However, the reduced yield observed with the Huskie boot treatments applied with dicamba is not surprising. Dicamba is known to cause a reduction in yield when applied at this stage.

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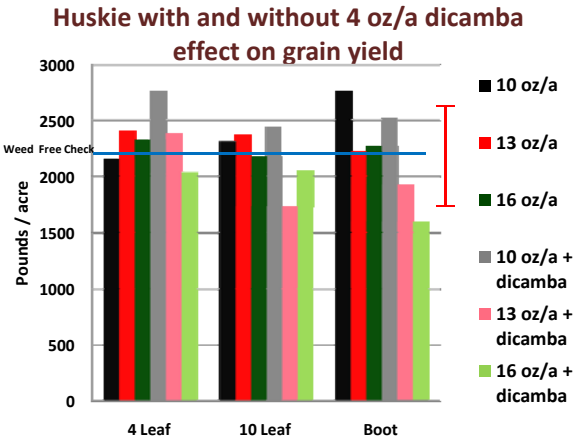

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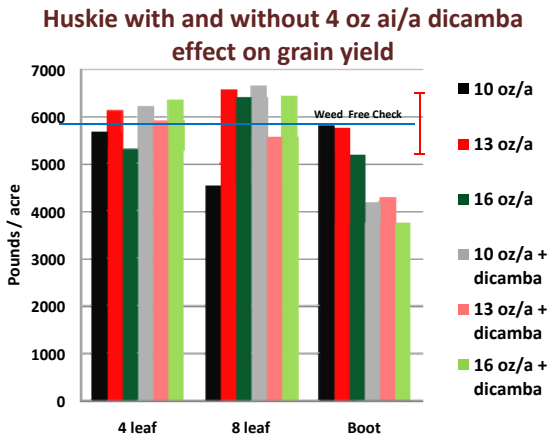

Conclusions

Huskie at 7 oz/A or greater gave at least 85% control 7 DAT of 4-inch Palmer amaranth in grain sorghum. The addition of 0.5 lb/A atrazine improved control to 100% 42 DAT. Adding dicamba did not improve Palmer amaranth control. Excellent control was achieved with 10 oz/A Huskie plus 0.5 lb/A atrazine of Palmer amaranth 9 inches or less in height. On larger weeds up to 18 inches in height, control was at least 80%. Sorghum tolerance to Huskie was excellent, although some leaf burn was observed for a few days after application. Sorghum yield was only reduced when high rates of Huskie were used in combination with dicamba when applied to sorghum in the boot stage of development.