

2009 RESEARCH SUMMARY

ARKANSAS CORN AND GRAIN SORGHUM BOARD

TITLE: Development of Effective Weed Control Programs with Crop Safety

INVESTIGATORS: Dr. Kenneth Smith, Extension Weed Scientist, SEREC, Monticello
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CROP: Grain sorghum

STATUS: Third year

OBJECTIVES AND ACCOMPLISHMENTS:

Eighteen weed control studies have been conducted in grain sorghum in the past 3 years at experiment stations across the state including Northeast Research Station at Keiser, the Pine Tree Station at Colt, and the Southeast Research Station at Rohwer. Specific objectives to be answered in the field trials were:

1. To evaluate weed control programs in twin-row vs single-row grain sorghum.

Studies have been conducted at Rohwer and Fayetteville for the past 3 years to determine if twin-row grain sorghum at various planting rates would reduce herbicide applications and/or improve weed control over sorghum planted in conventional single rows at similar planting densities. Factors in a factorial experiment were three plant populations (80,000, 110,000, and 140,000 plants/A), two row spacings (single and twin-rows on 38-inch beds), and three herbicide programs Aatrex (atrazine), preemergence (PRE); Aatrex + S-metolachlor (Dual II Magnum), PRE; and Aatrex + Dual II Magnum, PRE, followed by (fb) Aatrex at 4-leaf grain sorghum. At 80,000 and 110,000 plants/A, the twin-row production system improved grain sorghum yield. The twin-row system gave 20% better large crabgrass and broadleaf signalgrass control by 9 weeks in the Aatrex-only herbicide program. At 140,000 plant/A, no differences were noted between row spacing or weed control programs. Twin-rows at 80,000 and 110,000 plants/A, regardless of herbicide program, improved grain sorghum yield. The twin-row planting technique has shown potential to enhance grain sorghum profitability but cannot be relied upon to reduce herbicide inputs.

2. To evaluate various herbicides and application techniques for improved annual grass control in grain sorghum.

We continue to search for better grass control products in grain sorghum. Paramount (quinclorac) shows some promise, but moisture requirements and off-target movement can make it somewhat inconsistent. Our experiments continue to indicate that split applications give the

most persistent annual grass control. The first application should be a PRE herbicide fb a 2- to 4-leaf postemergence application.

Recommendations remain to apply metolachlor at planting and follow with atrazine + a crop oil concentrate when a grain sorghum stand is achieved.

3. To provide information on new herbicides entering the market as to their effectiveness and fit in Arkansas grower programs.

The potentially new herbicides for grain sorghum are Lumax or Lexar. Both are different ratios of *S*-metolachlor + atrazine + mesotrione. Lexar applied at 10 to 14 days prior to planting (PPL) at the correct rate for soil texture provided excellent (95 to 100%) control of Palmer amaranth and broadleaf signalgrass, good (85 to 94%) control of pitted and entireleaf morningglory and prickly sida, and higher grain sorghum yield. The 10- to 14-day PPL treatments of Lexar were less injurious than Lumax. Although Lumax has received a label for use in grain sorghum, it has not been added to the MP-44 because of injury concerns. We will continue to evaluate both weed control and crop response of these materials in years when rainfall is not as great as it was in 2009.

Callisto (mesotrione) post-directed at 6- to 7-inch grain sorghum or following Dual II Magnum PRE then post-directed at 11- to 12-inch grain sorghum resulted in excellent weed control and yield and no injury. Bleacher compounds such as Callisto and Lexar are not as safe on grain sorghum as they are on corn. Treatments to reduce injury and maintain weed control will continue to be evaluated. The conventional herbicides Dual II Magnum or Bicep II Magnum applied PRE still provide excellent control, but an additional follow-up postemergence treatment at 2- to 4-leaf grain sorghum generally improves late-season weed control.

PUBLICATIONS: None