

**PROFIT—Productive Rotations On Farms In Texas  
ANNUAL REPORT**

**Enhancing Producer Profitability in Southern High Plains Cropping Systems through  
Sorghum Education, Demonstrations, and Applied Research  
(Regional Project)**

1. **Dryland Sorghum Hybrid Trial—Lamesa, Texas**  
Jim Barber, Calvin Trostle, John Farris, Darrell Rosenow
2. Texas Cooperative Extension, Texas Agricultural Experiment Station
3. Lubbock, Texas
4. Texas A&M—Lubbock, Route 3, Box 213AA, Lubbock, TX 79403, 806-746-6101,  
[j-barber@tamu.edu](mailto:j-barber@tamu.edu)

SECTION 1

Project Description, Expected Results, Benefit to Producers, Project Accomplishments, Most Important Outcome, Producer Adaptation and Constraints

Recent dryland grain sorghum production in the lower Texas South Plains faces limitations due to weather, producer practices, and lack of infrastructure (few combines and grain elevators). Yet this region historically has often produced nearly one million acres of grain sorghum. Many excellent commercial grain sorghum hybrids are available, but limited testing has been conducted in the lower Texas South Plains (Big Spring-Seminole north to Crosbyton-Morton). For 2001, we made our best picks of 32 modern grain sorghum hybrids, mostly medium maturity. Yield results are expected to help producers improve hybrid selection for the lower Texas South Plains by identifying top-yielding hybrids over time. We believe that good hybrid selection more than justifies the sometimes higher cost of modern hybrid seed, and can add 200 to 400 lbs./A in yields compared to older though familiar hybrids that a typical farmer in, for example, Dawson or Terry County might choose.

Due to heat and dry conditions at AGCARES, Lamesa, planting moisture and subsequent stand establishment and growth were severely affected, even though seed drop was reduced to 26,000 seeds/acre. No harvestable yields were achieved. Rainfall amounts after planting were July, 0.00", August 0.67", September 1.35", and October 0.30" for a total of 2.32". We estimated that about 2" of available soil moisture existed at planting below the 10" depth. Sorghum typically requires 5-7" of total moisture to reach the point of seed production.

No grain yield outcome has been achieved. The five-year history of grain sorghum production in the June-planted commercial dryland hybrid trial at AGCARES-Lamesa is 1997, 3529 lbs./A; 1998, 3508 lbs./A; 1999, 1590 lbs./A; 2000 & 2001, no harvestable yield. In spite of not achieving yield results these past two years, we still have been able to make suggestions regarding hybrid selection, which several producers in Dawson County have followed. Constraints to adoption of sorghum hybrid recommendation are mainly twofold: 1) Producers view sorghum as absolutely a minimal input crop, and they will plant an inferior hybrid simply

because the seed costs them \$0.50/A less, that is, they are not confident that a better hybrid will make any difference due to weather, drought, etc. 2) Many growers continue to use too high seeding rates thus in a dry year it doesn't matter which hybrid you use, you grow a lot of vegetation without getting grain yield (not enough moisture *per plant* for grain).

## **Project Report**

Kind of Project—Regional

Project Objectives—

- A) Evaluate grain sorghum hybrid performance under dryland conditions in the lower South Plains.
- B) Determine which sorghum maturity group performs best under dryland conditions.

Methodology

On June 28, 2001 a grain sorghum hybrid strip trial was established at AGCARES using 32 hybrids planted with a John Deere Max Emerge air vacuum planter at 26,000 seeds/A, a lower seeding rate reflecting dry soil moisture conditions. This seeding rate is consistent with regional recommendations, a rate that many producers too easily surpass in planting for dryland production. Six medium-early maturity, thirteen medium maturity, and four medium-late maturity hybrids were used. The strip plots were 2 rows (40") wide and ~800' long, replicated twice. Target harvest area included four plots, two within each strip.

Results and Discussion

Due to heat and dry conditions at AGCARES, Lamesa, planting moisture was not available until after a June 23<sup>rd</sup> rain. Immediate hot, windy weather depleted moisture within 3 days, and due to the AGCARES facility's priority to take care of their irrigated program, we had to plant on minimal moisture June 28<sup>th</sup>, using a reduced seed drop of 26,000 seeds/acre. Germination was fairly good, but rooting was poor as few roots penetrated the dry soil around the disk opener thus a 'ribbon of roots' formed in the soil packed into the disk opener. This phenomenon has been observed before. It emphasizes the need to plant as soon as possible and if dry plant even deeper than the 1.25 to 1.50" that was used. Poor stands were achieved often less than 10,000 plants/acre, and about 1/4 to 1/3 of those plants did not survive. Little heading occurred and since the highest yields were estimated at no more than 200 lbs./acre, the trial was not harvested. Rainfall amounts after planting were July, 0.00", August 0.67", September 1.35", and October 0.30" for a total of 2.32". We estimated that about 2" of available soil moisture existed at planting below the 10" depth. Sorghum typically requires 5-7" of total moisture to reach the point of seed production.

Is project meeting stated objectives? No, due to drought and lack harvestable grain yield. Project remains part of key to emphasizing appropriate sorghum hybrid selection and low seeding rates targeted to fit soil moisture conditions.

Technology Transfer and Education Activity

Technology developed and available to producers: No sorghum yield data yet available though a list of suggested hybrids for dryland sorghum has been compiled and was used to guide several information requests for hybrid selection.

Publications: Summary of the project will be published in the Dawson County/AGCARES report.

Presentations: Field demonstration and talk, AGCARES dryland crop tour, Dawson Co., September 11, 2001

Student Education: One South Plains college student received training in grain sorghum production due to his help in planting and maintaining the study.