TITLE:

Guar Varieties and P Fertility at AGCARES, Lamesa, TX, 2001-2003

AUTHORS:

Calvin Trostle, Texas Cooperative Extension—Lubbock, c-trostle@tamu.edu, (806) 746-6101;
Danny Carmichael, TAES-Lubbock,

METHODS AND PROCEDURES:

Soil Type:	Amarillo fine sandy loam
Planting:	Guar, June 12, 2003 on 40" rows
Previous Crop:	Cotton
Seeding Rate:	Guar, 80,000 seeds/acre with vacuum planter (~6.5 lbs./A)
Plot Set-up:	Four replicated strips, test area per variety 4 rows X 75'
Harvest Area:	2 rows X 25' (Frio experimental 2 rows X 12')
Fertilizer:	Treatments included 30 lbs. P_2O_5/A applied as 10-34-0 band (rolling coulters, 5" off top of bed) applied in April
Herbicide:	1.5 pt Treflan
Insecticide:	None
Rainfall:	See summary in AG-CARES report, 1.6" for June 3-9 prior to planting; 4.4" from June 12 to October 1 (period of physiological growth)
Date Harvested:	December 17, 2003

RESULTS AND DISCUSSION:

This concludes the third year of guar variety and P fertility testing at AGCARES. Test weight of the 2003 crop is not yet complete. Guar was seeded 1.25" deep on June 12 into good moisture. Frio is an experimental guar variety obtained from Dr. Justin Tuggle, CropDocs Consulting, Brownfield, TX, and it was seeded at a rate of ~5 lbs./A due to limited seed whereas all other varieties were approximately 6.5 lbs./A. Santa Cruz stand was lower in part due to seed that had Texas Dept. of Agriculture germination of only 62%. Harvest was delayed well into December (~4 weeks) due to the late killing frost at Lamesa.

2003 Table 1: Guar Variety & Treatment	2003 Yield (Lbs./A)^	2003 Plants per acre^	2001-2003 Avg. Yield (Lbs./A)^&
Frio	873 a	31,000 b	
Kinman + Sono Ag. 'Vigro' seed inoculant	824 ab	54,400 a	
Lewis	721 abc	48,100 a	698
Kinman + Urbana 'Rhizo Stick' Rhizobium inoculant	681 bc	51,300 a	
Santa Cruz	650 c	38,200 b	
Kinman + 30 lbs./A P2O5	630 c	52,600 a	695
Kinman	612 c	51,300 a	711
Lewis + 30 lbs./A P2O5	611 c	50,600 a	642
Mean	**700**	**47,200**	**687**
P-Value (P)	0.0478	<0.0001	Not
Fisher's PLSD (0.10)	153	9600	yet
Coeff. of Variation, CV (%)	20.9	19.4	calculated

^Means in the same column followed by the same letter are not significantly different at 0.10.

In our first evaluation of Frio, yields were strong relative to Kinman and Lewis. Frio was tested at Lubbock (irrigated and dryland), Dumas (irrigated), and Peco (irrigated) although results are not yet tabulated. Kinman and Lewis yields have not been noticeably different from each other during Texas A&M testing in the South Plains since 1999. Plant populations were adequate compared to about 80,000 seed dropped per acre per variety.

<u>2001-2003 Results in Review</u>.

The table below highlights a summary of yields and P fertility testing for Kinman and Esser. Although the legume guar might be expected to respond to P fertility, we have seen no indication that preplant sidedress P applications are enhancing yield, especially in these dry summers.

<u>Costs and net return on variable costs</u>: At $12.50-14.25/cwt. (contracted with West Texas Guar, Brownfield, TX), the average return per acre has ranged from $24 to $78 over the past three years before fixed costs are assessed. Keep in mind that in 2 of 3 years cotton failed and was not worth harvesting (2001, 2002). The single largest item figured into the variable costs is the use of a custom guar harvester and his combine at $25/A.

Table 2: 3-Year Economic Summary of Guar for AGCARES, Lamesa, TX

	2001	**2002**	**2003**
Average trial yield (lbs./A)	549	875	700
Avg. rainfall during growth (in.)	2.3"	3.7"	4.4"
Contract price ($/cwt, Brownfield)	$14.25	$14.00	$12.50
Gross return	$78.25	$122.50	$87.50
Variable costs of production	$54.25	$56.30	$54.75
Return before fixed costs	$24.00	$78.25	$32.75

<u>*Rhizobium* seedbox inoculant for guar, 2002-2003</u>. Seed was inoculated with Urbana Laboratories (now Becker Underwood) seedbox guar inoculant 'RhizoStick'at the double rate of 1 pouch for 50 lbs. of seed. No significant nodulation of any kind was observed, typical of observations since 2000 with seedbox *Rhizobium* inoculants of any kind. This year we also tested Sono Ag. (Plainview, TX) 'Vigro' seed inoculant. This product touts microbial activity and alludes to fixation, but does not specify guar-specific *Rhizobium* inoculation. Rather it claims that it can inoculate a wide range of crops. Results here suggest that the product may have favorable activity, but the generic nature and 'one-size-fits-all' advertising of the product suggests that it may be too general of a product to offer any advantage. No *Rhizobium* nodulation was observed with this product on guar at either AGCARES or Western Peanut Growers Assn. Research Farm in Gaines Co. Other test sites at Pecos, Lubbock, Dumas have yet to be calculated. Due to the high CV at this location I would not be confident of differences in the product without evidence from other trial sites.

<u>For more information about guar</u> check with your local Extension office, Calvin Trostle, or the Texas A&M—Lubbock website at http://lubbock.tamu.edu

TITLE:

Sesame Variety Trial, AGCARES, 2003

AUTHOR:

Calvin Trostle, Texas Cooperative Extension—Lubbock, c-trostle@tamu.edu, (806) 746-6101;
Ray Langham, Sesaco Corp., San Antonio, TX, rlangham@texas.net, (800) 737-2260

METHODS AND PROCEDURES (for guar planting):

Soil Type:	Amarillo fine sandy loam
Planting:	June 12, 2002
Previous Crop:	Cotton
Seeding Rate:	~30 seeds per foot, or 2.5 lbs./A using 'low rate' sorghum disc in JD air-vacuum planter
Plot Set-up:	Four replicated plots, 4-40" rows X 50'
Harvest Area:	2 rows X 5'
Fertilizer:	None
Herbicide:	None; plots were weeded by hand in August
Insecticide:	None
Rainfall:	See summary in AGCARES report; 1.6" for June 3-9 prior to planting; 4.4" from June 12 to October 1 (period of physiological growth)
Date Harvested:	December 2, 2003

PURPOSE OF THIS WORK:

Small acreages of sesame production in the Texas South Plains have existed for many years, but historical production has sometimes been limited by the late maturity of the varieties as well as shattering of seed from the capsules. Recent varietal improvements from Sesaco Corp., Paris, TX, have both shortened maturity and reduced shattering.

Sesame is of interest because it is, along with guar perhaps the most drought tolerant and heat tolerant crops that may be grown on the South Plains. Sesame is also insect resistant. The primary production limitation for sesame for many producers is the lack of any labeled herbicide. Producers considering sesame should note that sesame is not for weedy ground.

This trial tests the current recommended sesame variety for the Texas South Plains, S-26, as well as three experimental lines for adaptability and yield in West Texas.

RESULTS AND DISCUSSION:

The currently recommended commercial sesame variety for West Texas, S-26, had the highest yield at 645 lbs./A although there was no statistical difference among yields of the four entries.

Additional plant characteristics were measured to help evaluate sesame growth. Agronomically, there were some key comparisons of interest when correlations were calculated. We note that there was a slight negative correlation between plant population and yield (r = -0.29). This suggests that high plant populations might have a slight drag on yield (and branch number, r = -0.32; and mainstem nodes per plant, r = -.0.17). Advice on target seeding rates and subsequent plant populations for sesame sometimes leans toward maintaining a higher seeding rate so that the small shallow-planted sesame seeds can work together to push against possible crusts at emergence. Emergence observations in this trial did not indicate difficulty with stand establishment. In contrast branches per plant (r = 0.56) and number of nodes on the mainstem (r = 0.63) were positively correlated with yield.

Sesame Variety	Yield (lbs./A)	Population (plants/A)	Plant height (in.)	First capsule height (in.)	Branches per plant	First branch height (in.)	Main stem nodes
S-26	645 a	127,100 a	35.3 a	15.5 a	2.8 a	12.3 a	22.8 a
Ex 1	573 a	120,600 a	34.0 a	16.3 a	2.3 a	12.3 a	20.0 b
Ex 2	607 a	103,600 a	34.5 a	12.5 b	2.5 a	9.8 a	20.0 b
Ex 3	565 a	125,800 a	34.3 a	15.3 a	2.8 a	11.8 a	18.8 b
F	1.11	0.79	0.43	2.84	0.52	2.52	4.64
P-Value	0.384	0.525	0.735	0.083	0.674	0.108	0.022
PLSD (0.10)	NS*	NS	NS	2.5	NS	NS	2.0
Mean	598	119,200	34.5	14.9	2.6	11.5	20.7
CV (%)	11.7	20.1	4.5	15.3	24.6	14.9	10.1

*NS, not statistically significant at 0.10; numbers in column followed by same letter are not different at 0.10.

Economic considerations: Crop value should be based on 2003 contract prices of $0.22/lb. for a first-time grower and $0.23/lb. for a repeat grower. Sesame pricing also includes premiums and deductions based on test weight, color, foreign matter, and breakage. As long as a combine is set properly, producers are probably more likely to receive premiums rather than discounts. Approximate gross value of this crop at the average per acre yield was $131/A. Input costs were minimal for one tillage pass, planting, one cultivation, hoeing, and combining. Contract growers receive assistance for trucking costs set at the time of contracting.

For more information about sesame check with Calvin Trostle, the Texas A&M—Lubbock website at http://lubbock.tamu.edu, or call Sesaco Corporation, (800) 737-2260.

TITLE:

Summer Annual Forages Demonstration, AG-CARES, 2003

AUTHORS:

Calvin Trostle, Texas Cooperative Extension—Lubbock, c-trostle@tamu.edu, (806) 746-6101;
Jim Barber, TCE-Lubbock; Danny Carmichael, TAES-Lubbock

METHODS AND PROCEDURES:

Soil Type:	Amarillo fine sandy loam
Planting:	June 12, 2003
Previous Crop:	Cotton
Seeding Rate:	~160,000 seeds per acre or about 10 lbs./A with air vacuum planter
Plot Set-up:	Duplicate plots, 4 rows X 30'; half of plots (1 per hybrid) lost due to herbicide damage
Harvest Area:	2 rows X 5'
Fertilizer:	None
Herbicide:	None
Insecticide:	None
Rainfall:	See summary in AG-CARES report; 1.6" for June 3-9 prior to planting; 4.9" from June 12 to October 29 (period of physiological growth)
Date Harvested:	October 22, 2003; growth represented essentially total biomass production; harvest at comparable stage would have necessitated September harvest for non photoperiod-sensitive hybrids

PURPOSE OF THIS DEMONSTRATION:

South Plains producers frequently inquire about summer annual forages for either grazing or baling. If producers plan to graze or possibly take multiple cuttings then sorghum/sudans, which re-tiller better than forage sorghums, are a preferred choice. What kind of yields might producers expect from these forages under dryland? In 2002, we attempted an identical demonstration at AG-CARES by planting similar forages with a drill, but we achieved a very poor stand due to lack of good seed placement. This year we opted to plant the study with a planter as moisture conditions at planting were considered good, but with listed ground we expected problems getting plant establishment on all rows if drilled.

Most producers are still not familiar with the class of forages known as brown midrib (BMR) sorghum/sudans and forage sorghums. These BMR forages have less lignin, an indigestible component of forages even for ruminants, hence they are more palatable to livestock. Grazing demonstrations of these BMR forages in other South Plains counties have highlighted livestock grazing preference for BMR forages. Also, photoperiod sensitive forages, which head only in October regardless of planting date in response to reaching increased darkness, were included.

This test was conducted for demonstration purposes only. Since one plot for each forage was lost due to herbicide damage, these yield values should serve as an index only for yield comparisons. A particular hybrid in this study and its yield should be less important than an understanding of what sort of forage yields were obtained in 2003 in the face of a dry year.

RESULTS AND DISCUSSION:

Entry #	Hybrid	Company	Forage Type	Oct. 29 Height (ft.)	Dry tons/A
1	T-E Haygrazer	Golden Acres	Conventional sorgh/sudan	6.0	1.7
2	Nutri-Ton II	NC+	Conv. forage sorghum	3.5	2.7
3	Sweeter N Honey	Richardson Seed	Conv. sorgo-sorgh/sudan	6.0	2.1
4	Millennium II	Walter Moss	BMR* forage sorghum	3.5	2.8
5	Nutri Plus BMR	Production Plus	BMR sorghum/sudan	6.0	1.9
6	1990	Sorghum Partner	PS^ forage sorghum	4.0	2.6
7	HoneyGraze BMR	Richardson Seed	BMR sorghum/sudan	6.0	2.8
8	Experimental	Richardson Seed	BMR-PS forage sorghum	5.0	2.5
9	Maxi-Gain	Coffey Seeds	PS sorghum/sudan	6.0	2.7
10	Leafy 60	Coffey Seeds	Conv. hybrid pearl millet	3.0	2.7
11	800HS	NC+	PS sorghum/sudan	5.0	2.2
12	MegaMil	Walter Moss	PS hybrid pearl millet	3.5	2.7

*BMR, brown midrib forage; ^PS, photoperiod sensitive forage

Non-PS sorghum/sudans (4)	2.1
Photoperiod sensitive sorghum sudans (2)	2.5
Forage sorghums (4)	2.6
Hybrid pearl millets (2)	2.7
Demonstration average (12)	2.5

Again, these yield results are unreplicated and should be used only as an 'index' of yield during the 2003 growing season.

We noted substantial differences in maturity, as much as three weeks difference in heading, among conventional forages. Photoperiod sensitive forages (PS) may yield more due to full-season growth. Forage sorghum is primarily for one-time harvest and would not be suitable for grazing. Millets performed well even though the forage is not tall. Millet compensated for forage yield due to high drought tolerance and prolific tillering, which often results in higher quality forage. Tall forages did not necessarily yield more as there was negative correlation between plant height and forage yield ($r = -0.61$).

Growers in the Dawson Co. region should consider the purpose of any forage, i.e. what type of animal the forage will be fed to or whether a hay buyer understands and is willing to pay for quality. Protein content in the early maturity hybrids in this trial (which had reached dough stage) would be only 10% or less. Nevertheless, even for lower quality forage, producers could still expect a range of hay prices from the above forage of $30-45/ton, or substantial income of $90 or more per acre.

Finally, Extension encourages growers in dryland forage production to consider using a planter rather than a drill, even if on 40" rows. Seed placement and stand establishment are key to adequate forage yields in the face of expected droughty conditions. If a drill is old and worn out seed placement is difficult, soil planting conditions are marginal in soil moisture, or if ground is uneven (listed), then a planter may achieve better results than a drill. It certainly can reduce risk! If grazing livestock walk between the rows if 20-24" apart and not tromp the stubble enhancing forage regrowth.

For more information about summer annual forages check with your local Extension office, Calvin Trostle, or the Texas A&M—Lubbock website at http://lubbock.tamu.edu