

---

## **Sorghum Versus Sorghum-Guar Mixtures for Forage and Protein Production**

**LYELL THOMPSON, The Samuel Roberts Noble  
Foundation, Inc., Ardmore, Oklahoma**

Guar, *Cyamopsis tetragonoloba*, is a hardy, drought-resistant annual summer legume that has received widespread interest in southwestern United States during the last decade. Most of this interest in guar has resulted from new industrial utilization of guar-bean flour. Guar also has been grown as a soil building legume.

The Noble Foundation became interested in guar as a possible high protein companion crop for forage sorghum, *Sorghum vulgare*. Forage sorghum is the most widely grown silage crop in Okla. Its main disadvantage as a livestock feed is a low protein content. There is a need for a summer legume which, when interplanted with sorghum, would produce a

higher protein forage. If guar could be grown with forage sorghums to increase the protein production per acre without reducing forage yields, the mixture would result in a more nutritious livestock feed.

During the summers of 1956 and 1957, an experiment was established on the Noble Foundation's Lone Grove Farm to compare sorghum with a sorghum-guar mixture. Sumac 1712 variety of sorghum and Indian variety of guar were used. The experiment was conducted on sandy cross-timber soil. A randomized block experimental design was used with three replications in 1956 and four replications in 1957. Seeds of the two species were mixed for planting in the sorghum-guar plots. Plantings were made in June and plots were harvested in late September.

Data in Table 1 give the dry matter and protein yields per acre. The percent protein within species in the 1956 crop was very similar to that of 1957. The average protein content of sorghum from all plots for both years was 6.3%; the average protein content of guar was 13.6%. In 1956, guar forage comprised 25% of the total forage from the sorghum-guar plots, but in 1957, guar accounted for only 5% of the total production of the mixture. A study of the data and observation of the plots indicated that in the extremely dry summer season of 1956 the drought-resistant guar was better able to compete with the sorghum. With the more favorable soil moisture of the 1957 season, the percentage of guar in the mixture was insignificant. Since dry-matter yields of such a silage crop would have to be at least as high as the 1957 yields to be economical, it was concluded that a sorghum-guar mixture, when compared with a conventional sorghum planting, would not increase the protein sufficiently to compensate for the expected lower yield.

Table 1. Dry matter and protein yields of sorghum and of a sorghum-guar mixture.

	Yields in pounds per acre			
	1956 season		1957 season	
	Dry matter	Protein	Dry matter	Protein
Sorghum	4739	321	6926	397
Sorghum-guar	4189	364	6692	381
L.S.D. .05	298	39	NS	NS
.01	433	NS		