

**GARBANZO BEAN VARIETY RESEARCH
IN THE SOUTHERN COASTAL AREA OF CALIFORNIA**

1990 RESEARCH PROGRESS REPORT

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Introduction:

Growers in this area emphasize the importance of releasing a new garbanzo bean variety with high yield potential, good canning quality, and resistance to fusarium wilt.

Trial Results - 1990:

Two regional trials were established in this area in 1990. Both trials consisted of 10 cultivars replicated 6 times in a randomized block design. Each cultivar was planted in an area 2 rows wide and 31 feet long. The plots were uniformly trimmed to 25 feet long.

The 10 cultivars selected for the 1990 uniform regional trials were the most promising potential varieties from trials in previous years.

South Coast Field Station (Tustin) - This regional trial was planted on April 19, 1990 on a sandy loam soil. The experimental area was pre-irrigated and received one furrow irrigation in June when the plants were 4"-5" tall. Dacthal was applied as a pre-plant herbicide at the rate of 10 lbs./acre (a.i.). The fertilizer 16-20-0 was applied at the rate of 300 lbs./acre prior to planting the beans. The growing conditions in May and June were excellent. Hot temperatures in July and August matured the beans earlier than normal and reduced the potential yields.

Pigeons from the surrounding area fed on the beans just before and after knifing reducing the yields in all plots. Replication 6 was not included in the yields because of the pigeon damage. Yields ranged from a high of 2358 lbs./acre to 1600 lbs./acre.

The results of this regional trial are shown on Table 1.

*Farm Advisor, Cooperative Extension, Santa Barbara County; Extension Bean Specialist, UC Riverside, Emeritus; Professor of Genetics, UC Riverside; and, Extension Specialist, UC Davis; respectively.

Santa Barbara County (Santa Maria) - This regional trial was planted on May 22, 1990 on the Sisquoe Ranch in the upper Santa Maria Valley. The loamy sand soil was pre-irrigated and sprinkler irrigated during the growing season.

Deer selectively grazed the area causing more damage to some plots than others. Because of the deer damage, this trial was not harvested and no data is reported.

Canning Quality Evaluations:

Canning quality evaluations are important in selecting new cultivars.

The results of the canning quality test for the 1990 trial are not available in time for inclusion in this publication. The results of the canning quality evaluations on the Santa Barbara and South Coast Field Station trial for 1989 are reported on Tables 2 and 3.

The cultivar 317-2 showed the best canning quality. There is variation in the quality ratings between the 3 companies. Some of these variations are the result of differences in canning procedures and in the relative importance placed on bean characteristics.

Although samples sent to each company were uniformly divided from a large sample, some differences may occur. (Example: a single green seed would affect color quality.)

**TABLE 1: GARBANZO BEAN REGIONAL TRIAL - 1990
 SOUTH COAST FIELD STATION**

**Cooperators: W. E. Bendixen, Farm Advisor, Santa Barbara County;
 W. H. Isom, UC Cooperative Extension, Riverside, Emeritus;
 Giles Waines, University of California, Riverside;
 Steve Temple, University of California, Davis**

Cultivars	Yield*			Seed Size	
	Rank	Lbs/ Acre	Duncan Test*	Gms/ 100 Seeds	Seeds/ Ounce
27	1	2358	A	50.3	56.4
SR20I	2	2241	AB	51.4	55.2
UC27	3	2005	ABC	54.9	51.7
317-2	4	2005	ABC	49.6	57.2
14	5	1997	ABC	51.7	54.9
UC15	6	1990	ABC	48.3	58.7
8554	7	1974	ABC	58.2	48.8
85150	8	1956	ABC	51.1	55.5
8532	9	1899	BC	48.2	58.9
8	10	1600	C	49.1	57.8

CV 14.5
LSD @ 5% 485.9

* Based on 5 replications.

Cultivar yields not followed by the same letter are significantly different in yields at the 5% level.

TABLE 2:

GARBANZO BEAN REGIONAL TRIAL - 1989
BILL GIORGI - BUELLTON, NOJQUUI FALLS

Cooperators:

Bill Giorgi, Grower; W. E. Bendixen, Farm Advisor, Santa Barbara County; W. H. Isom, UC Cooperative Extension, Riverside, Emeritus; Giles Waines, University of California, Riverside; Steve Temple, University of California, Davis; John Small, University of California, Davis.

YIELD, SEED SIZE, AND CANNING QUALITY OF GARBANZO BEANS

Cultivars	Yield*			Seed Size		Canning Quality***		
	Rank	Lbs./ Acre	Duncan Test*	Gms./ 100	Seeds/ Ounce	Canning Companies**		
						A	B	C
14	1	2794	A	60.3	47.1	3	3	3
SR-201	2	2788	A	59.4	47.8	1	3	3
317-2	3	2751	A	54.7	51.9	2	2	2
8	4	2582	A	56.9	49.9	2	3	2
27	5	2549	A	55.8	50.9	3	2	
85150	6	2522	A	55.6	51.0			
8624	7	2348	A	55.0	51.6			
152	8	2211	AB	50.7	56.0			
UC-15	9	2173	AB	54.1	52.4	2	2	
8554	10	2146	AB	63.4	44.8			
8532	11	2107	AB	51.8	54.8			
8536	12	2076	AB	60.4	47.0			
UC-27	13	2033	AB	56.0	50.7			
85183	14	2018	AB	59.1	48.0			
Surutato	15	1572	B	61.9	45.8	2	3	
UC-5	16	0	C	52.6	53.9			

LSD @ 5% 701.8
CV 22.8

* Cultivar yields not followed by the same letter are significantly different yields at the 5% level.

** Our thanks is extended to the following canning companies for making the quality evaluations: S & W Fine Foods, Hanover Brands, and Case-Swayne. The companies have requested that the canning results not reflect the company name. The A, B, & C listings are not in the same sequence as the company names.

The beans were evaluated with regard to size, size variation, color, seed coat cracks, slippage of seed coat, splitting of beans, flavor, starchy characteristics, and the soak test for percentage of water gain.

There is variation in the quality ratings between the 3 companies. Some of the variation is the result of differences in canning procedures and in the relative importance placed on bean characteristics. Although the samples sent to each company were uniformly divided from a large sample, some differences may occur (Example: a single green seed would affect color quality).

1 - Top Quality - Best canners
2 - Regular Quality
3 - Unacceptable Quality for Canning

TABLE 3:

GARBANZO BEAN REGIONAL TRIAL - 1989
SOUTH COAST FIELD STATION

Cooperators:

Bill Giorgi, Grower; W. E. Bendixen, Farm Advisor, Santa Barbara County; W. H. Isom, UC Cooperative Extension, Riverside, Emeritus; Giles Waines, University of California, Riverside; Steve Temple, University of California, Davis; John Small, University of California, Davis.

YIELD, SEED SIZE, AND CANNING QUALITY OF GARBANZO BEANS

Cultivars	Yield*			Seed Size		Canning Quality***		
	Rank	Lbs./ Acre	Duncan Test*	Gms./ 100	Seeds/ Ounce	Canning Companies**		
						A	B	C
SR-20I	1	4127	A	53.3	53.2	3	2	2
8554	2	4119	A	60.0	47.3			
317-2	3	4051	AB	49.1	57.8	1	1	1
27	4	4043	AB	49.9	56.9	2	2	1
UC-15	5	4004	ABC	48.6	58.4		2	1
8624	6	3953	ABC	51.0	55.6			
85150	7	3901	ABC	50.3	56.4			
14	8	3898	ABC	57.7	49.2	1	3	1
UC-5	9	3854	ABCD	51.4	55.2			
UC-27	10	3819	ABCD	53.4	53.1			
85183	11	3773	ABCD	51.7	54.9			
8536	12	3744	ABCD	55.6	51.0			
8532	13	3715	BCD	47.0	60.4			
152	14	3690	BCD	43.1	65.8			
8	15	3631	CD	53.9	52.6	3	1	1
Surutato	16	3470	D	61.1	46.4	3	3	1

LSD @ 5%
CV

344.7
6.3

* Cultivar yields not followed by the same letter are significantly different yields at the 5% level.

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TABLE 4: BERMUDAGRASS CONTROL IN LIMA BEANS - 1990

Cooperator: Fred Hayes, Sweeney Road, Lompoc

Dates of herbicide application - June 26 and July 10, 1990
Lima Bean Variety - Lee
Planting Date - May 21, 1990
Planting Rate - 100 lbs/acre
Method of herbicide application - Hand CO₂ sprayer
Spray Volume, - 20 gallons/acre
Pressure and nozzles - 40 psi; 8002E.

Stage of growth - Beans: June 26 - 8"-10" tall
 July 10 - 12"-14" tall
 Bermudagrass: June 26 - 2"-5" long shoots
 July 10 - 3"-6" long shoots

Soil Type - Mocho Loam

LIMA BEAN YIELDS

Herbicide Treatment	Formulation	Appl. Rate lbs/A a.i.	Lima Bean Yield* lbs/acre
1-Poast+O.C.	1.5	.5+.5	3480
2-Check	-	-	1940

LSD · 5% - 270 lbs/acre

O.C.= Oil Concentrate applied at rate of 1.2% or 1 quart/acre.

Area Harvest = 50' long x 52" wide (2 bean rows)

Yield based on Clean Beans -
 top screen = 40
 bottom screen = 26

*Yields based on average of 8 replications.