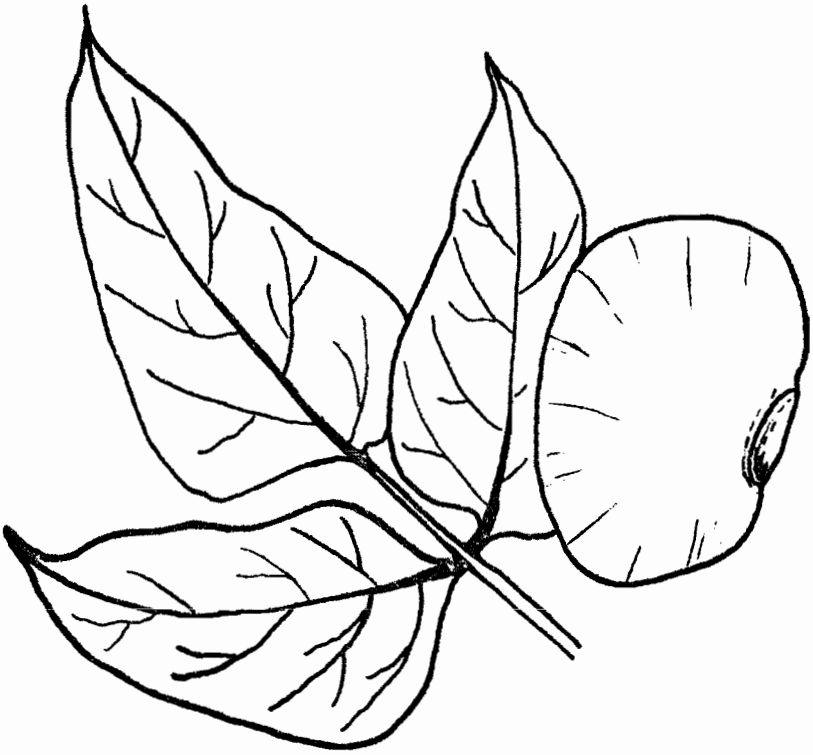
L A R G E

LIMA BEAN

PRODUCTION & COSTS



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LARGE LIMA BEAN PRODUCTION & COSTS in SANTA BARBARA COUNTY

Large limas are important to the economy of Santa Barbara County. Limas are the leading dry bean crop and the only dry bean that has increased in acreage over the past 20 years. A new trend of increased acreage and production started in 1962.

California's lima bean acreage is decreasing. The 4-year average acreage for 1962-65 was only 64% of 1952-55.

Santa Barbara County's lima bean acreage in 1962-65 was 171% of 1952-55. Santa Barbara County produced 4.4% of California's total production in 1952-55, compared to 15.4% in 1962-65. Santa Barbara County has also made significant increases in yields per acre as shown in the following table.

	Acreage	Yield/ Acre	Total Production	% of 1952-55
Santa Barbara Co.		cwt	cwt	
1952-55 ave.	3,840	13.9	53,440	100%
1962-65 ave.	6,600	18.3	121,520	227%
California				
1952-55 ave.	73,500	16.4	1,208,000	100%
1962-65 ave.	47,250	16.7	791,000	65%

With the acreage of lima beans decreasing in the state, the outlook for Santa Barbara County appears promising.

TABLE 1

CALIFORNIA'S LARGE LIMA BEAN PRODUCTION

Year	Acres	Yield	Total Yield
		cwt/acre	cwt
1950	71,000	17.3	1,225,000
1951	68,000	17.2	1,168,000
1952	81,000	16.8	1,360,000
1953	68,000	16.7	1,137,000
1954	73,000	17.3	1,259,000
1955	72,000	15.0	1,077,000
1956	60,000	17.1	1,024,000
1957	61,000	15.5	943,000
1958	66,000	16.6	1,093,000
1959	59,000	15.5	916,000
1960	49,000	15.4	756,000
1961	47,000	16.5	774,000
1962	53,000	17.9	950,000
1963	48,000	16.3	781,000
1964	42,000	16.1	678,000
1965	46,000	16.4	755,000
1966	42,000	14.2	597,000

Source: California Crop and Livestock Reporting Service, California Agricultural Extension Service, University of California, Davis.

TABLE 2

SANTA BARBARA COUNTY'S
LARGE LIMA BEAN PRODUCTION

Year	Acres	Yield	Total Yield
		cwt/acre	cwt
1950	1,927	17.9	34,429
1951	2,843	8.8	25,142
1952	4,020	14.3	57,481
1953	3,733	13.9	51,854
1954	3,873	14.1	54,768
1955	3,734	13.3	49,657
1956	3,914	15.5	60,820
1957	4,274	14.5	61,916
1958	5,996	15.1	90,311
1959	4,500	14.1	63,460
1960	4,324	19.5	84,200
1961	4,147	17.9	74,320
1962	7,134	21.2	150,880
1963	6,930	18.0	124,800
1964	6,140	16.0	98,200
1965	6,230	18.0	112,200

Source: Agricultural Commissioner's Annual Reports. Santa Barbara County.

SAMPLE COSTS - SANTA BARBARA COUNTY - 1967
PRODUCE DRY LIMA BEANS

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Yield: 2400 lbs./acre
Labor: Equip. operator - 1.75/hr.
Other labor - 1.50/hr.

Operations Cost	Fuel & Repairs	Deprec.	Int.	Total
CT crawler tractor 80 h.p	3.80	1.80	1.00	6.60
WT wheel tractor 50 h.p.	1.20	.60	.30	2.10

Operation	Hours/ Acre		Labor	Fuel & Repairs	Materials Kind and Amount	Cost	Cost/acre Sample	Your
CULTURAL COST	hr.		$	$		$	$	
Disc 2x	CT	.6	1.05	2.28			3.33	
Chisel	CT	.5	.88	1.90			2.78	
Landplane	CT	.5	.88	1.90			2.78	
Disc	CT	.3	.53	1.14			1.67	
Harrow	CT	.2	.35	.76			1.11	
Plant	WT	.3	.53	.36	125 lbs/acre @ 18¢/lb.	22.50	23.39	
Cultivate 4x	WT	2.0	3.50	2.40			5.90	
Irrigate 3x		4.5	6.75		1.5 ac. ft. @ $5/ac. ft.	7.50	14.25	
Hand hoe		5.0	7.50				7.50	
Pest Control-Custom					Materials @ $6 Applic. @ $3.50	9.50	9.50	
Total Cultural Cost	13.9		21.97	10.74		39.50	72.21	
HARVESTING COST								
Cut	WT	.4	.70	.48			1.18	
Windrow	WT	.4	.70	.48			1.18	
Handwork		1.0	1.50				1.50	
Thresh					Custom @ 65¢/cwt (2400 lbs)	15.60	15.60	
Haul					Custom @ 12¢/cwt (2400 lbs)	2.88	2.88	
Clean beans					Custom @ 1.20/cwt(2400 lbs)	28.80	28.80	
Total Harvest Cost	1.8		2.90	.96		47.28	51.14	
Misc. overhead							8.00	
Rent							75.00	
Total Cash Cost							206.35	

DEPRECIATION & INTEREST	Depreciation	Interest 6%		
CT crawler tractor-2.1 hrs.	3.78	2.10		
WT wheel tractor-3.1 hrs.	1.86	.93		
other equipment	1.25	.60		
irrigation system	4.00	2.00		
Total Depreciation and Interest	10.89	5.63	16.52	
Management 5% of 2400 lbs. @ $14/cwt.			16.80	
Total Cost per Acre			$239.67	
Cost per cwt.			$ 9.99	

SOILS - Limas are grown on a wide range of soil types. The medium textured soils are better suited for bean production.

Beans have a low salt tolerance. Salts in the soil can restrict bean growth severely without obvious injury symptoms. Growers may not realize that salinity is responsible for a considerable loss of yield. Soil and water analyses are helpful in evaluating salinity.

Soils with slight salt accumulations as indicated by an electrical conductivity (EC_e) of 2.5 millimhos may have yield reductions of 25%. Soils with an EC_e of 3.3 millimhos may only yield 50% of normal.

LAND PREPARATION - Land is prepared for planting in March and April. A typical land preparation may include the following operations: disc, chisel, land plane, disc, and spiketooth harrow.

VARIETIES - The White Ventura 63, Ventura, and Mackie (bush type) are the principle varieties grown in this area. Mackie matures earlier and in local tests on 40" double row beds has yielded more than Ventura. Yield comparisons from local trials are reported in the Santa Barbara County publication, "Lima Bean Variety Trials".

PLANTING - Limas are usually planted between May 5 - 20. Seeding rates vary from 80-140 lbs./acre. Treat the seed with recommended fungicide and insecticide.

Germination of seed depends primarily on three factors: temperature, moisture, and oxygen supply. Soil temperature decreases with depth.

Faster emergence is obtained from shallow planting because of the higher temperature. Slow emergence increases the seedlings susceptibility to disease and soil insects. Delay planting until the soil temperature at seeding depth is at least 65° F. The effect of soil temperature on germination is shown in the following table.

Temp. °F	% Germination Ave.	Days to Emerge
50	1	0
59	52	30.5
68	82	17.6
77	80	6.5
86	88	6.7
95	2	0

Reference: J. E. Harrington, P. A. Minges. VEGETABLE SEED GERMINATION. UC Agricultural Extension Service - Multilith, 1954.

ROW SPACING - Single row and double row beds are used. Row spacing varies from 22"-30" single rows and 38"-40" double row beds.

CULTIVATION - Limas are cultivated two to four times. Cultivation is primarily for weed control.

IRRIGATION - Unless winter rains have supplied adequate moisture, pre-irrigate to insure good seed germination and deep moisture. Irrigation practices, the number of irrigations, and amount of water applied, vary between different soil textures and climatic conditions. Furrow irrigation is the predominate method, although the acreage of sprinkler irrigation is increasing. Sprinkler irrigation reduces the hazard of salt damage.

FERTILIZATION - Compared with many crops, lima beans have a low fertilization requirement. Frequently, good fertilization practices in the previous crops will provide adequate carryover for the beans.

Although the requirement is low, adequate fertility is necessary. In some fields, applications of one or more of the following materials have increased yields: nitrogen, phosphorus, potassium, and zinc.

The amount of fertilizer removed from a lima bean crop is low. A bean yield of 2,000 lbs./acre would remove (vines not included) approximately 67 lbs. of nitrogen; 7.4 lbs. of phosphorus (17 lbs. P_2O_5), and 34 lbs. of potassium (41 lbs. of K_2O).

HARVESTING - The vines are cut when about three-fourths of the pods are dry and the rest are turning yellow. This usually occurs from mid to late September. Most of the beans are cut with a tractor-drawn blade running 2-3 inches below the ground surface. Side delivery rakes are used to place the cut vines in windrows.

Cutting and windrowing must be done when the pods have been toughened by high humidity to reduce shattering.

From 1-3 weeks are necessary to dry the plants sufficiently for threshing. The beans are threshed directly from the windrow with large threshers specially designed for beans.

MARKETING - Most of the lima beans are marketed through a cooperative. The remaining limas are stored in local warehouses and marketed independently. Cull beans are used in animal and poultry feed.

INSECT AND DISEASE CONTROL - For control recommendations check the current University of California Pest Control Guide.

Lygus bugs are a serious pest, often lowering yields and quality of beans. Early control is important.

Black Aphids may attack the plants, causing damage to the foliage and reducing yields.

Root-Knot Nematodes cause economic losses in localized areas. This nematode is more common on sandy soils. Soil fumigation will control this pest for one year.

Rhizoctonia, Fusarium, and Pythium diseases occur in this area. The principle effect is stand reductions.

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Cooperative Extension Work in Agriculture and Home Economics U.S. Department of Agriculture, University of California and County of Santa Barbara Cooperating.

LIMA BEAN PROFITS AS AFFECTED BY YIELD & PRICE

Yields	Harvesting cost	Total Production cost	Lima Beans - Price/cwt. $12.00	$13.00	$14.00	$15.00	$16.00
cwt/ac.	$	$	$ - profits per acre				
14	27.58	219.97	-51.97	-37.97	-23.97	- 9.97	+ 4.03
16	31.52	223.91	-31.91	-15.91	+ 0.09	+16.09	32.09
18	35.46	227.85	-11.85	+ 6.15	24.15	42.15	60.15
20	39.40	231.79	+ 8.21	28.21	48.21	68.21	88.21
22	43.34	235.73	28.27	50.27	72.27	94.27	116.27
24	47.28	239.67	48.33	72.33	96.33	120.33	144.33
26	51.22	243.61	68.39	94.39	120.39	146.39	172.39
28	55.16	247.55	88.45	116.45	144.45	172.45	200.45
30	59.10	251.49	108.51	138.51	168.51	198.51	228.51
32	63.04	255.43	128.57	160.57	192.57	224.57	256.57
34	66.98	259.37	148.63	182.63	216.63	250.63	284.63
36	70.92	263.31	168.69	204.69	240.69	276.69	312.69

Cost based on threshing @ .65/cwt.
hauling @ .12/cwt.
cleaning @ 1.20/cwt.

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