

GREEN LIMA BEANS FOR FREEZING

Yields

Over the past 10 years yields of Fordhook lima beans for freezing have ranged from 2,980 pounds per acre in 1978 to 4,200 pounds per acre in 1974. Yields of 4,000, 5,000, and 6,000 pounds per acre are used in this sample.

Varieties and Seed

Except for a small acreage of baby lima beans, the entire acreage of green lima beans grown for freezing here is of the concentrated Fordhook variety. One line of seed of this variety is certified by the California Crop Improvement Association. Other lines, which for practical purposes are the same, are also available. The usual procedure is for the processor to purchase the seed needed for the acreage he wants. Growers contracting to grow green lima beans are supplied the seed and charged for it by the processor.

Soil and Climate

The climate of the whole Oxnard Plain and most of the soil of this area are suitable for production of green lima beans. The mild climate of this area makes green lima beans one of the most reliable vegetable crops.

When to Plant and Harvest

Planting dates for the green lima beans are carefully scheduled by processor fieldmen so as to have an even flow of product to the freezing plant throughout the harvest season. Planting should proceed at a rate of approximately .75 acres per day per acre of harvesting capacity per day. Predicted harvest dates are shown on page 16. When to harvest is determined by processor fieldmen. At harvest time, yields of Fordhook beans are increasing at the rate of about 200 pounds per acre per day. Soon after a small percentage of beans reach the pale stage, quality, as determined by percentage of pale beans, declines rapidly.

Planting, Cultivating, and Weed Control

All Fordhook limas are planted with a Ventura-type planter which causes a minimum of seed injury, and, with its simple furrow opener and no press wheel, provides ideal conditions for germination and emergence. It is a common practice to plant 150 more pounds of seed per acre. Cultivation begins soon after the primary leaves are full size in order to throw some soil over small weeds in the row. Chemical weed control is used successfully.

Fertilizing

Although green lima beans grown in rotation with winter vegetable crops produce a highly satisfactory crop without fertilizer, the application of 100 pounds of nitrogen per acre prior to planting, or 60 pounds of nitrogen per acre side-dressed before the first irrigation may produce a small increase in yield that may more than pay for the fertilizer.



PREDICTED HARVEST DATES FOR CONCENTRATED FORDHOOK GREEN  
LIMA BEANS FOR FREEZING IN VENTURA COUNTY

The tables below were prepared from data supplied by Gino Lorenzi of Oxnard Frozen Food Co-op and processed by Dr. Thomas M. Little, former University of California Extension biometrician.

These predicted harvest dates are based on planting and harvest records for 326 plantings over a 3-year period of 1962, '63, and '64, and in three areas of the Oxnard Plain. These areas are: west (west of Oxnard), east (east of Oxnard and north of Highway 1), and southeast (south of Highway 1 and east of Hueneme). For each of the 3 years there were approximately fifty plantings in the east area and thirty each in the southeast and west areas. All fields were harvested within a suitable range of maturity for freezing. The fact that this is a range that might cover plus or minus one or two days from the best harvest date contributes somewhat to variability of the data.

Other factors contributing to the variability of the data and thus reducing the probabilities in the second table are weather within each season, weather for each season, and location within each area. Cultural practices and soil conditions probably influence harvest date less than climate and weather.

PLANTING DATE	HARVEST DATES			PLANTING DATE	HARVEST DATES		
	EAST	S.E.	WEST		EAST	S.E.	WEST
APR 20	AUG 5	AUG 10	AUG 11	MAY 25	SEP 1	SEP 5	SEP 8
APR 25	AUG 9	AUG 14	AUG 15	MAY 30	SEP 4	SEP 9	SEP 12
APR 30	AUG 12	AUG 17	AUG 19	JUN 5	SEP 9	SEP 13	SEP 16
MAY 5	AUG 16	AUG 21	AUG 23	JUN 10	SEP 13	SEP 17	SEP 20
MAY 10	AUG 20	AUG 25	AUG 27	JUN 15	SEP 17	SEP 21	SEP 24
MAY 15	AUG 24	AUG 29	AUG 31	JUN 20	SEP 20	SEP 25	SEP 28
MAY 20	AUG 28	SEP 1	SEP 4	JUN 25	SEP 24	SEP 28	OCT 2

	EAST	S.E.	WEST
PROBABILITY OF PREDICTED DAY	9.4%	8.4%	7.7%
PROBABILITY OF PREDICTED DAY + OR - 1	28.0%	24.7%	22.9%
PROBABILITY OF PREDICTED DAY + OR - 2	44.5%	40.0%	37.3%
PROBABILITY OF PREDICTED DAY + OR - 3	59.2%	53.3%	50.4%
PROBABILITY OF PREDICTED DAY + OR - 4	71.0%	65.4%	61.8%
PROBABILITY OF PREDICTED DAY + OR - 5	80.6%	75.1%	71.5%
PROBABILITY OF PREDICTED DAY + OR - 6	87.5%	82.7%	79.4%
PROBABILITY OF PREDICTED DAY + OR - 7	92.4%	88.4%	85.6%
PROBABILITY OF PREDICTED DAY + OR - 8	95.5%	92.5%	90.2%

AVERAGE EFFECT OF YEARS ON LENGTH OF SEASON OF FORDHOOK LIMA BEANS  
THREE LOCATIONS IN VENTURA COUNTY, CALIFORNIA

YEAR	LOCATION		
	EAST	SOUTHEAST	WEST
1962	+ 1.3 days	+ 3.6 days	+ 3.2 days
1963	- 1.7 days	- 4.7 days	- 5.4 days
1964	+ .4 days	+ .5 days	+ 1.7 days

Because Dr. Little has found that the time between planting and harvesting is shortening at a rather uniform rate from the beginning to the end of the planting season, he has suggested uniform planting schedules for planting dates between April 20 and June 30. These are: 7.5 acres a day in the southeast area, and 7.9 acres a day in the west area.

EQUIPMENT LIST AND OPERATION COSTS FOR A 350-ACRE VEGETABLE FARM, VENTURA COUNTY DECEMBER 1983

TRACTORS	Cash Cost/Hr	New Cost	Hours Per Yr	Life- Years	OVERHEAD COSTS				LABOR COSTS					
					DEPRECIATION		12.5% INTEREST		Paid/Hr		Cost/Hr			
					Year	Per Hr	Year	Per Hr	Hand	Tractor	Irrigator			
160 HP WD	\$17.00	\$65,000	1,300	10	\$6,500	\$5.00	\$4,062	\$3.15	Hand	\$5.35		\$7.01		
65 HP WD	8.00	48,000	850	14	1,286	1.50	1,125	1.32	Tractor	6.50		8.52		
65 HP WD Big Wheels	9.06	24,500	850	14	1,750	2.06	1,531	2.06	Irrigator	5.70		7.47		
<b>TILLAGE AND PLANTING</b>														
			Acres		Per	Per	Per	Per	CASH COSTS PER ACRE					
					Year	Acres	Year	Acres	Hr/A	Man	Trac	Mach	Total	
Subsoiler, 5 Shanks, 7.5'	3.25	160 HP 4,000	600	192	15	\$ 266	\$ .44	\$ 215	\$ .36	\$ .32	\$2.73	\$5.44	\$1.04	\$9.21
Plow 5'18", 2-way 7.5'	4.58	160 HP 9,000	750	240	10	900	1.20	562	.75	.32	2.73	5.44	1.44	9.61
Disc and Roller 13 1/2'	5.73	160 HP 11,500	2,500	475	7	1,642	.66	709	.29	.19	1.62	3.23	1.09	5.96
Landplane 14'	3.85	160 HP 17,000	1,500	270	15	1,133	.75	1,062	.71	.18	1.53	3.06	.69	5.28
Drag Harrow 20'	1.00	160 HP 1,800	1,200	156	15	120	.10	112	.09	.13	1.11	2.22	.13	3.46
Field Cultivator 24'	1.10	160 HP 4,000	1,200	336	15	267	.22	250	.21	.11	.94	1.87	.12	2.93
Furrow or Cultivate			1,000	3,500	10	100	.03	62	.02					
4 40-inch Beds (13.3')	.35	65 HP	2,450	637						.26	2.22	2.34	.09	4.65
4 30-inch Rows (10')	.35	65 HP	600	204						.34	2.90	2.72	.12	5.74
3 60-inch Rows (15')	.35	65 HP	450	104						.23	1.96	1.84	.08	3.88
Sled, Shape Beds, Plant			12,000	750	10	1,200	1.60	750	1.00					
4 40-inch Beds (13.3')	8.80	65 HP	600	293						.39	3.32	3.12	3.43	9.87
3 60-inch Rows (tomatoes)(15')	6.60	65 HP	150	51						.34	2.90	2.72	2.24	7.86
Plant Beans 8 rows	.55	65 HP 2,500	200	34	15	167	.83	156	.78	.17	1.45	1.36	.09	2.90
Sidedress fertilizer	1.10	65 HP 4,500	550	143	10	450	.82	281	.81	.26	2.22	2.08	.29	4.59
<b>TOTAL TRACTORS AND IMPLEMENTS</b>		<b>\$174,800</b>				<b>\$15,751</b>		<b>\$10,887</b>						
<b>IRRIGATION</b>														
Sprinkler System(1,000 gpmx10 Acres)		32,000	900	900	10	3,200	3.56	2,000	2.22	2.00	14.94		7.90*	22.51
2,000 Ft. gated pipe 8"		9,775	2,200	2,200	10	978	.44	611	.27	2.00	14.94		.42	15.43
Irrigation pipe trailer		2,225	3,100	310	15	148	.05	139	.05	.10			.07	
<b>TOTAL IRRIGATION</b>		<b>\$44,000</b>				<b>\$4,326</b>		<b>\$2,750</b>						
<b>TOTAL TRACTORS, IMPLEMENTS &amp; IRRIGATION</b>		<b>\$218,800</b>				<b>\$20,077</b>		<b>\$13,637</b>						
<b>TRANSPORTATION AND SHOP TOOLS</b>														
Pickup 1/2 ton (2)		\$ 18,000			5	\$ 4,000		\$ 1,250						
Truck 1 1/2 ton		15,000			8	1,875		938						
Shop tools		5,500			10	550		344						
Tractor trailer		2,200			15	147		138						
<b>TOTAL TRANSPORTATION AND SHOP</b>		<b>\$40,700</b>				<b>\$6,572</b>		<b>\$2,670</b>						
<b>MONTHLY CHARGE FOR DEPRECIATION AND INTEREST ON TRANSPORTATION AND SHOP</b>						<b>\$1.56/A-Mo</b>		<b>\$ .64/A-Mo</b>						
<b>TOTAL ALL EQUIPMENT</b>		<b>\$259,500</b>				<b>\$26,649</b>		<b>\$16,307</b>						

\* 12.5% of 1/2 cost new

\* One man @ \$8.52 and 1 man @ \$7.01 per Hr.

\* Incl \$ .07 per acre for trailer

\* Incl \$2.00 per acre-inch for fuel

TAXES ON EQUIPMENT:  $\frac{.5(259,500) \times .01}{4,200 \text{ acre-months}} = \$ .31 \text{ per acre-month}$

GREEN LIMA BEANS FOR FREEZING

Yields: 4,000, 3,000, and 5,000 Lb/A

Land Use: 5 months

Plant: Late April to June 25

Harvest: August 1 to October 10

Labor Per Acre

	Tractor	Hrs.	Cost	Tractor & Machinery	Contract & Materials	Total Per A.
<b>CULTURAL CASH COSTS</b>						
Subsoil 1/2 x	160 HP	.16	\$ 1.36	\$ 3.24		\$ 4.60
Plow	160 HP	.32	2.73	6.88		9.61
Disc & Roll 2 x	160 HP	.38	3.24	8.64		10.88
Landplane 2 x	160 HP	.36	3.06	7.50		10.56
Field Cultivate 1 x	160 HP	.11	.94	1.99		2.93
Furrow for Irrig	65 HP	.26	2.22	2.43		4.65
Pre Irrigate		2.00	14.94	.49	1/2 A-Ft @ \$35 17.50	32.93
Drag Harrow 3 x	160 HP	.39	3.03	9.05		10.38
Preplant Weed and Maggot Control					60.00	60.00
Field Cultivate 2 x	160 HP	.22	1.88	3.98		5.86
Fumigate Soil					Contract Once in 2 years-1/2 of \$140.00 70.00	70.00
Fertilize, Pre-plant					Contract 100 Lbs. N Applied 50.00	50.00
Plant 8 rows, 2 men	65 HP	.17	2.68*	1.45	150 Lb Seed @ \$61 91.50	95.99
Cultivate 3 x	65 HP	1.02	8.00	8.52		17.22
Irrigate 2 x		2.00	29.88	.98	1/2 A-Ft @ \$35 17.50	48.36
Hoe		6.00	22.06			42.06
Pest Control					Contract 25.00	25.00
Disc & Roll Refuse 1 x	160 HP	.18	1.62	4.92		5.94
<b>Total Cultural Cash Costs</b>		<b>13.74</b>	<b>\$18.60</b>	<b>\$57.47</b>	<b>\$331.50</b>	<b>\$507.49</b>

**CASH OVERHEAD**

Land Rent			\$56.25 per acre-month x 6 months			\$281.25
Taxes on Machinery			@ .29 per acre-month x 5 months			1.55
Supervision			@ 10.45 per acre-month x 6 months			52.25
General Expense			@ 4% of Cultural Cash Costs			20.30
Interest on Operating Capital			@ 1.04% per acre-month			69.20
<b>Total Cash Overhead</b>						<b>\$394.55</b>
<b>Total Cash Costs Except Harvesting</b>						<b>\$902.04</b>

**HARVESTING, PACKAGING, AND SELLING CASH COSTS**

Harvesting by Freezer Plant					No Charge	
<b>Total Cultural and Overhead Cash Costs</b>						<b>\$902.04</b>

**INVESTMENT OVERHEAD**

Depreciation:	Tractor & Machinery	\$20.91	Transportation & Shop	\$7.80	\$ 28.71
Interest:	Tractor & Machinery	18.94	Transportation & Shop	3.20	19.74
<b>Total Investment Overhead</b>					<b>\$ 47.85</b>
<b>Total Cost Per Acre</b>	@ 4,000 Lb/A				<b>\$949.89</b>
<b>Total Cost Per Pound</b>	@ 4,000 Lb/A			\$ .237	
<b>Total Cost Per Pound</b>	@ 3,000 Lb/A			.317	
<b>Total Cost Per Pound</b>	@ 5,000 Lb/A			.190	

\* 1 man @ \$8.52/Hr. and 1 man @ \$7.01/Hr.

LAND PREPARATION AND STAND ESTABLISHMENT

Sugar beets, broccoli, cabbage, cauliflower, cucumbers, head lettuce, and spinach all require approximately the same field operations for seedbed preparation, planting, pre-plant fertilizing, the first side-dressing, the first two cultivations, irrigation for germination, and the first irrigation after thinning. Costs of these operations are itemized below and entered in the cost of each crop as "land preparation and stand establishment". Costs of fertilizer, seed, herbicides, and thinning are

omitted here because they vary according to crop.

It is common practice to have furrowing and application of pre-plant fertilizer in the bed done by contract. This eliminates the need for fertilizing equipment on the sled used for bed shaping and planting.

Minor deviations from these procedures will not appreciably affect total cost.

CULTURAL CASH COSTS	Labor		Machinery <sup>*</sup> Cash Cost	Contract & Materials	Total Per Acre	
	Tractor	Hours				Cost
Subsoil 1 x	160	.32	\$2.73	\$6.48	\$	\$9.21
Plow 1 x	160	.32	2.73	6.88		9.61
Disc & Roll 2 x	160	.38	3.24	8.64		11.88
Land Plane 2 x	160	.36	3.06	7.50		10.56
Field Cultivator 2 x	160	.22	1.88	3.98		5.86
Furrow & Fertilize		Contract	(See each crop for fertilizer)	11.00		11.00
Shape Beds & Plant	65	.39	3.22	6.55 (See ea. crop for seed)		9.77
Irrigate for Germ.2x (Sprinkler)	4.00		29.88	15.00 1/3 A-Ft water	11.66	56.54
Cultivate, 4 beds 2 x	65	.52	4.44	4.86		9.30
Side-dress, 4 beds 1 x	65	.26	2.22	2.51 (See ea. crop for Fert.)		4.73
Irrigate 1 x (after thinning)		2.00	14.94	.49 1/4 A/Ft water	8.75	24.18
<b>Total Cultural Cash Costs</b>		<b>8.77</b>	<b>\$68.34</b>	<b>\$62.89</b>	<b>\$31.41</b>	<b>\$162.64</b>

Investment overhead for land preparation - Depreciation: \$25.99      Interest: \$16.72

\* Includes Tractor

## LARGE LIMA BEANS

### Yields

The Agricultural Commissioner reports yields that average a little over 2,000 pounds per acre over the past 5 years. Yields used in this sample are 2,000, 2,500, and 3,000 pounds. These are the kinds of yields expected on good land with good cultural practices. Even with the good prices of the past few years, there is a tendency for dry lima beans to be crowded off the very best land by vegetable crops.

### Varieties and Seed

Almost all of the lima beans grown in Ventura County are of the White Ventura N variety. It has a whiter seed coat than other varieties and is resistant to some types of root knot nematodes.

Purity of White Ventura N seed is maintained by a certification procedure supervised by the California Crop Improvement Association. Certified or registered seed is used to produce the seed one year out of certification used by local growers.

### Soil and Climate

The deep alluvial soils of Ventura County, unless excessively saline, are well suited to the growing of large lima beans. For the best of yield and quality, this crop requires a mild summer climate. The climate of the Oxnard Plain and of areas extending inland to Santa Paula and almost to Moorpark meets the requirements of this crop.

### When to Plant and Harvest

The lima bean is a warm-weather crop. Planting before the 25th of April is not advisable and the ideal time for planting is between May 1 and May 10.

Beans should be cut at a time when nearly all the beans are fully developed but while some of the pods are still green. Beans planted between May 1 and 10 are usually ready to cut soon after the 1st of September and ready to thresh 2 or 3 weeks after cutting.

### Planting, Cultivation, and Weed Control

Seedbed preparation for planting Ventura limas involves making a smooth seedbed free of compaction in the top 5 inches and with a shallow dry mulch on the surface. This is essential for the proper operation of the Ventura planter which has a simple shovel furrow opener and depends on loose soil falling into the furrow for covering the seed. No pack wheel is used.

Cultivation begins soon after the beans are out of the ground and tall enough so that weeds in the row can be covered in the first cultivation. Under good cultural practices weeds are well controlled by cultivation. Some growers mix an herbicide with the soil in the process of preparing the seedbed.

Fertilizing

Although most land used for growing lima beans will produce a satisfactory crop without fertilizing, small responses to 100 pounds of nitrogen applied before planting can be expected, especially in sandy soil where the crop is to be irrigated twice.

Irrigation

Soil with a high moisture-holding capacity on the Oxnard Plain will produce a satisfactory crop of large lima beans without irrigation if winter rains or pre-irrigation has wet the soil to a depth of 5 feet or more. However, most land will produce a better crop with one or two irrigations. Irrigation water is applied in small furrows in alternate row spaces.

Pest and Disease Control

Root-knot nematode, Rhizoctonia stem canker, Lygus bugs, aphids, and two-spotted mites are the principal diseases and pests of large lima beans. On land used to grow beans every year, soil fumigation for nematode control may be necessary only every second or third year, but where other crops susceptible to root-knot nematode are grown either in the winter or in summer rotation with the beans, annual fumigation may be advisable.

Except where Rhizoctonia is severe, seed treatment alone gives practical control.

University of California recommendations for pest and disease control are available at the farm advisors office.

Special Machinery

Item	Cost		Life	Dep.	Int.	Cash	Labor
	New	A/Yr		/A	/A	Cost/A	/A
Bean Knives	\$15.00	100	15	\$1.00	\$ .94	\$ .40	\$ 2.49
Side Delivery Rake	18.00	100	20	.90	1.12	.35	2.49
Total	\$33.00			\$1.90	\$2.06	\$ .75	\$ 4.98

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CASH FLOW - LARGE LIMA BEANS  
INCLUDING LAND RENT AND SUPERVISION

Acres, Yields, and Prices as Reported by  
Ventura County Agricultural Commissioner

Apr	May	June	July	Aug	Sept	Oct	Year	ACRES	Cwt/A	\$/Cwt	\$/A
							1971	3,880	13.6	19.0	260
							1972	3,500	20.6	30.00	617
							1973	3,039	27.0	37.00	1,001
							1974	7,800	20.6	45.50	503
							1975	4,056	17.2	30.00	516
							1976	6,354	11.8	38.00	447
							1977	5,000	20.0	34.00	680
							1978	3,700	22.8	34.00	773
							1979	3,115	20.1	40.00	792
							1980	4,930	24.4	40.00	977
							1981	5,811	21.6	32.10	691
							1982	3,170	15.6	30.59	478
							1983	3,452	9.8	42.19	413
							1984	1,920	17.0	38.30	658



LARGE LIMA BEANS

Yield: 25 Cwt, 20 Cwt, and 30 Cwt/A

Land Use: 6 months

Plant: May

Harvest: September and October

	Tractor	Hrs	Cost	Tractor & Machinery	Contract & Materials	Total Per A.
<b>CULTURAL CASH COSTS</b>						
Plow 5 - 18	160 HP	.32	\$2.73	\$6.88		\$ 9.61
Disc & Roll 2 x	160 HP	.38	3.24	8.64		11.88
Furrow for Irrig.	65 HP	.26	2.22	2.43		4.65
Pre-irrigate		2.00	14.94	.49	Wtr .5 A-Ft @ \$35 \$ 17.50	32.93
Chemical Weed & Maggot Control			Contract		50.00	60.00
Fumigate 1 x in 2 Yr.			Contract	1/2 of \$140	70.00	70.00
Drag Harrow 3 x	160 HP	.39	3.33	7.05		10.38
Field Cultivator 2 x	160 HP	.22	1.88	3.98		5.86
Plant 8 rows	65 HP	.17✓	2.64✓	1.45	Seed 90 lb. @ \$.61 54.90	58.99
Cultivate 4 rows 3 x	65 HP	1.02	8.70	7.68		16.38
Irrigate 1 x		2.00	14.94	.49	Wtr 1/3 A-Ft @ \$35 11.67	27.10
Hoe 1 x		6.00	42.06			42.06
Pest Control			Contract		20.00	20.00
Disc & Roll Refuse 1 x	160 HP	.18	1.62	4.32		5.94
<b>Total Cultural Cash Costs</b>		<b>13.12</b>	<b>\$98.30</b>	<b>\$43.41</b>	<b>\$234.07</b>	<b>\$375.78</b>

**CASH OVERHEAD**

Land Rent			\$56.25 per acre-month x 6 months			\$337.50
Taxes on Machinery	@		.31 per acre-month x 6 months			1.86
Supervision	@		10.45 per acre-month x 6 months			62.70
General Expense	@		4% of cultural and harvest costs			18.20
Interest on Operating Capital	@		12.5% annually (1.04% Per acre-month)			50.00
<b>Total Cash Overhead</b>						<b>\$470.26</b>
<b>Total Cash Costs Except Harvesting</b>						<b>\$846.04</b>

**HARVESTING, CLEANING, AND STORING CASH COSTS**

	Tractor	Hr.	Labor	Tractor & Machinery	
Cut	65 HP	.30	\$2.49	\$2.80	\$ 5.29
Windrow	65 HP	.30	2.49	2.75	5.24
Thresh and Haul, Contract	@	\$2.75/Cwt	25 Cwt		68.75
Cleaning and Warehousing	@	\$4.00/Cwt	25 Cwt		100.00
<b>Total Harvesting, Cleaning, and Storing Cash Costs</b>				<b>\$4.33 per Cwt</b>	<b>\$179.28</b>
<b>Total Cultural, Overhead, Harvesting, Cleaning, and Storing Cash Costs</b>					<b>\$1,025.32</b>

**INVESTMENT OVERHEAD**

Depreciation	Tractor & Machinery	\$17.28	Transportation & Shop	\$9.36	\$ 26.64
Interest	Tractor & Machinery	12.39	Transportation & Shop	3.84	16.23
<b>Total Investment Overhead</b>					<b>\$ 42.87</b>
<b>Total Cost Per Acre</b>			25 Cwt		<b>\$1,068.19</b>
<b>Total Cost Per Acre</b>			20 Cwt		<b>\$1,034.44</b>
<b>Total Cost Per Acre</b>			30 Cwt		<b>\$1,109.14</b>

Total Cost Per Cwt	@ 25 Cwt/A	\$42.73
Total Cost Per Cwt	@ 20 Cwt/A	51.72
Total Cost Per Cwt	@ 30 Cwt/A	36.73

✓ 1 man @ \$8.52/hr. and 1 man @ \$7.01/hr.

LAND PREPARATION AND STAND ESTABLISHMENT

Sugar beets, broccoli, cabbage, cauliflower, cucumbers, head lettuce, and spinach all require approximately the same field operations for seedbed preparation, planting, pre-plant fertilizing, the first side-dressing, the first two cultivations, irrigation for germination, and the first irrigation after thinning. Costs of these operations are itemized below and entered in the cost of each crop as "land preparation and stand establishment". Costs of fertilizer, seed, herbicides, and thinning are

omitted here because they vary according to crop.

It is common practice to have furrowing and application of pre-plant fertilizer in the bed done by contract. This eliminates the need for fertilizing equipment on the sled used for bed shaping and planting.

Minor deviations from these procedures will not appreciably affect total cost.

CULTURAL CASH COSTS	Labor		Machinery <sup>*</sup> Cash Cost	Contract & Materials	Total Per Acre	
	Tractor	Hours				Cost
Subsoil 1 x	160	.32	\$2.73	\$6.48	\$	\$9.21
Plow 1 x	160	.32	2.73	6.88		9.61
Disc & Roll 2 x	160	.38	3.24	8.64		11.88
Land Plane 2 x	160	.36	3.06	7.50		10.56
Field Cultivator 2 x	160	.22	1.88	3.98		5.86
Furrow & Fertilize		Contract	(See each crop for fertilizer)	11.00		11.00
Shape Beds & Plant	65	.39	3.22	6.55 (See ea. crop for seed)		9.77
Irrigate for Germ. 2x (Sprinkler)	4.00		29.88	15.00 1/3 A-Ft water	11.66	56.54
Cultivate, 4 beds 2 x	65	.52	4.44	4.86		9.30
Side-dress, 4 beds 1 x	65	.26	2.22	2.51 (See ea. crop for Fert.)		4.73
Irrigate 1 x (after thinning)		2.00	14.94	.49 1/4 A/Ft water	8.75	24.18
<b>Total Cultural Cash Costs</b>		<b>8.77</b>	<b>\$68.34</b>	<b>\$62.89</b>	<b>\$31.41</b>	<b>\$162.64</b>

Investment overhead for land preparation - Depreciation: \$25.99      Interest: \$16.72

\* Includes Tractor

EQUIPMENT LIST AND OPERATION COSTS FOR A 350-ACRE VEGETABLE FARM, VENTURA COUNTY DECEMBER 1983

TRACTORS	Cash Cost/Hr	New Cost	Hours Per Yr	Life-Years	OVERHEAD COSTS				LABOR COSTS					
					DEPRECIATION		12.5% INTEREST		CASH COSTS PER ACRE		Paid/Hr		Cost/Hr	
					Year	Per Hr	Year	Per Hr	Per Acre	Man	Mach	Tractor		Irrigator
160 HP WD	\$17.00	\$65,000	1,300	10	\$6,500	\$5.00	\$4,062	\$3.15	Hand			\$5.35	\$7.01	
65 HP WD	8.00	48,000	850	14	1,286	1.50	1,125	1.32	Tractor			6.50	8.52	
65 HP WD Big Wheels	9.06	24,500	850	14	1,750	2.05	1,531	2.06	Irrigator			5.70	7.47	
TILLAGE AND PLANTING														
Subsoiler, 5 Shanks, 7.5'	3.25	4,000	192	15	\$ 266	\$ .44	\$ 215	\$ .36	Hand			\$1.04	\$9.21	
Plow 5'18", 2-way 7.5'	4.58	9,000	240	10	900	1.20	562	.75	Tractor			1.44	9.61	
Disc and Roller 13 1/2'	5.73	11,500	475	7	1,642	.66	709	.29				1.09	5.96	
Landplane 14'	3.85	17,000	270	15	1,133	.75	1,062	.71				.69	5.28	
Drag Harrow 20'	1.00	1,800	156	15	120	.10	112	.09				.13	3.46	
Field Cultivator 24'	1.10	4,000	336	15	267	.22	250	.21				.12	2.93	
Furrow or Cultivate		1,000		10	100	.03	62	.02						
4 40-inch Beds (13.3')	.35	65 HP	637									2.34	.09	4.65
4 30-inch Rows (10')	.35	65 HP	204									2.72	.12	5.74
3 60-inch Rows (15')	.35	65 HP	104									1.84	.08	3.88
Sled, Shape Beds, Plant		12,000		10	1,200	1.60	750	1.00						
4 40-inch Beds (13.3')	8.80	65 HP	293									3.12	3.43	9.87
3 60-inch Rows (tomatoes) (15')	6.60	65 HP	51									2.72	2.24	7.86
Plant Beans 8 rows	.55	65 HP	34	15	167	.83	156	.78				1.36	.09	2.90
Sidedress fertilizer	1.10	65 HP	143	10	450	.82	281	.81				2.08	.29	4.59
TOTAL TRACTORS AND IMPLEMENTS		\$174,800			\$15,751		\$10,887							
IRRIGATION														
Sprinkler System (1,000 gpm x 10 Acres)		32,000	900	10	3,200	3.56	2,000	2.22				14.94	7.50*	22.51
2,000 ft. gated pipe 8"		9,775	2,200	10	978	.44	611	.27				14.94	.42	15.43
Irrigation pipe trailer		2,225	310	15	148	.05	139	.05					.07	
TOTAL IRRIGATION		\$44,000			\$ 4,326		\$ 2,750							
TOTAL TRACTORS, IMPLEMENTS & IRRIGATION		\$218,800			\$20,077		\$13,637							
TRANSPORTATION AND SHOP TOOLS														
Pickup 1/2 ton (2)		\$ 18,000			\$ 4,000		\$ 1,250							
Truck 1 1/2 ton		15,000			1,875		938							
Shop tools		5,500			550		344							
Tractor trailer		2,200			147		138							
TOTAL TRANSPORTATION AND SHOP		\$ 40,700			\$ 6,572		\$ 2,670							
MONTHLY CHARGE FOR DEPRECIATION AND INTEREST ON TRANSPORTATION AND SHOP					\$1.56/A-Mo		\$ 64/A-Mo							
TOTAL ALL EQUIPMENT		\$259,500			\$26,649		\$16,307							

CASH COST CHARGED TO SUPERVISION  
 CASH COSTS COVERED BY GENERAL EXPENSE  
 (% OF CULTURAL COSTS OR 4% OF CULTURAL COSTS AND HARVEST COSTS)

\* 1/2 12.5% of 1/2 cost new  
 \* One man @ \$8.52 and 1 man @ \$7.01 per Hr.  
 \* Includes \$.07 per acre for trailer  
 \* Includes \$2.00 per acre-inch for fuel

TAXES ON EQUIPMENT, 5(259,500) x .01 = \$529.50  
 4,200 acre-months = \$.31 per acre-month

