HEAD LETTUCE

VENTURA CO.
DECEMBER 1983

Yields

Lettuce yields range from complete failures because of diseases, pests, or poor market price to over 600 cartons of 2 dozen heads weighing around 50 pounds. Yields of 500, 400, and 600 cartons per acre are used in this sample.

Varieties and Seed

All head lettuce varieties used here are of the Great Lakes type. Salinas and Calmar have become the principal variety for the spring crop and Great Lakes 659 is used for the fall crop.

Soil and Climate

The climate of the whole Oxnard Plain and most of the soils of this area are suitable for production of a fall crop of lettuce in October and November, and a spring crop from late March through early June. Where land is suitably leveled for lettuce, it can also be grown as far inland as Santa Paula and Moorpark. For harvesting in December, January, February, and early March, the crop is usually unsatisfactory because of small head size. Competition with other lettuce-producing areas and the high risk of tipburn discourages harvesting in July through September.

When to Plant and Harvest

Planting for the fall crop is confined to the month of August and the first week in September. Planting for the spring crop begins in late November and continues through early March. A planting schedule for lettuce is on page 43. This schedule shows not only a predicted harvest date for each planting but also the rate of planting required for a steady rate of harvest in terms of acres per week.

Planting, Cultivating, and Weed Control

An increasing amount of lettuce is being precision planted. By precision planting we mean dropping single seeds at least 1.5 inches apart. This is done at some risk of excessive gap space, or unoccupied row space in the final stand. The advantages of precision planting are (1) earlier and more uniform maturity, (2) less injury to plants at thinning time, (3) lower hand-thinning costs, (4) suitability for long-handled hoe thinning, (5) the possibility of using a mechanical thinner, and (6) lower seed costs. Considerable experimentation involving the coating of seed, seed sizing, different types of planters, planting depth, spacing of seed, and sprinkler irrigation for germination will be required before lettuce stands suitable for a synchronous mechanical thinner can be planted with confidence.

At least one herbicide is being used to good advantage when the crop is germinated with sprinkler irrigation.

Fertilizing

The nitrogen requirement of the lettuce crop can usually be satisfied with around 50 pounds nitrogen per acre applied under the seed at planting time and one or two side-dressings of 60 to 100 pounds of nitrogen per acre after thinning. Although soils in which lettuce is grown are rich in phosphorous, a lettuce crop often responds to under-the-seed application of 20 pounds of P_2O_5 or more per acre. The response to phosphorous applied at planting time is expressed as earlier and more uniform plant development.

Irrigation

Most lettuce seed is planted in dry soil, and the first irrigation is for germination. Another irrigation follows thinning, and water requirements of the crop are usually satisfied with one or two subsequent irrigations timed so as to make the final application as close as possible to harvesting. Sprinkler irrigation for germination is increasing. It is especially advantageous where soil salinity is a problem, where precision planting is used, and where it will facilitate using an herbicide.

Pest and Disease Control

Aphids, cabbage loopers, and corn earworms are the principal insect pests and the timing of pesticide applications for their control is based on vigilant field observations. The fungus diseases, Sclerotinia, Botrytis, and downey mildew occasionally cause losses in lettuce but chemical control of these diseases is seldom practical. Downey mildew is seldom a problem now in spring lettuce because of the widespread use of the resistant variety, Calmar.

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

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HEAD LETTUCE CASH FLOW - INCLUDING LAND RENT AND SUPERVISION

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
								(FALL CROP)			
							Start $695				
								Grow $390			
(SPRING CROP)											
Start $695										Harvest $1,620	
		Grow $390									
				Harvest $1,620							

PLANTING SCHEDULE FOR HEAD LETTUCE

This planting schedule provides two estimates:

1. Acres to plant each week in order to have the crop ready to harvest at the rate of ten acres a week.
2. Harvest date

This schedule was developed by former University of California Extension Biometrician Dr. Thomas M. Little from 25 years of records (1944 to 1968) provided by Bob Gill. We need to collect more records of this kind to serve as a basis for improving this schedule. If you have planting and harvest date records you think would be useful for this purpose, I shall appreciate your contribution.

HEAD LETTUCE

Planting Date	Acres to Plant/Week for Harvesting 10 A/Wk	Date of First Harvest	Planting Date	Acres to Plant/Week for Harvesting 10 A/Wk	Date of First Harvest
Jul 2	11.2	Sep 3	Jan 1	5.3	Apr 20
9	11.8	11	8	5.0	23
16	12.5	19	15	4.8	27
23	13.2	28	22	4.8	May 1
30	13.9	Oct 8	29	4.9	4
Aug 6	14.6	18	Feb 5	5.1	8
13	15.2	28	12	5.4	12
20	15.7	Nov 8	19	5.8	15
27	16.1	19	26	6.1	20
Sep 3	16.4	Dec 1	Mar 5	6.6	24
10	16.5	12	12	6.9	28
17	16.5	24	19	7.2	Jun 2
24	16.2	Jan 4	26	7.5	8
Oct 1	15.8	15	Apr 2	7.8	13
8	15.3	26	9	8.0	18
15	14.5	Feb 6	16	8.1	24
22	13.7	16	23	8.3	30
29	12.8	25	30	8.4	Jul 6
Nov 5	11.8	Mar 5	May 7	8.5	12
12	10.8	13	14	8.6	18
19	9.7	21	21	8.8	24
26	8.7	27	28	9.0	30
Dec 3	7.8	Apr 2	Jun 4	9.3	Aug 5
10	7.0	7	11	9.7	12
17	6.3	12	18	10.1	19
24	5.7	16	25	10.7	26

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

Year	Acres	50 Lb Cartons/A	$/Carton	$/A
1976	2264	591	2.84	1676
1977	2965	558	2.65	1476
1978	2829	512	4.75	2431
1979	2097	388	3.38	1311
1980	1237	617	5.49	3387
1981	1545	670	3.91	2621
1982	1359	630	4.00	2520
1983	1217	508	6.15	3127
1984	1099	684	3.62	2475

HEAD LETTUCE

Yield: 600, 500, and 700 50 Lb Cartons/A Land Use: 4 months

Plant: Fall Crop - August 10 to September 5
Spring Crop - December, January, February

Harvest: Fall - October, November
Spring - March, April
May, June

Labor Per Acre

	Tractor	Hrs.	Cost	Tractor & Machinery		Contract & Materials	Total Per A.
CULTURAL CASH COSTS							
Land Preparation and Stand Establishment		8.77	$68.34	$62.89		$ 31.41	$162.64
Preplant Fertilizer					300 lb. 16-20-0	43.50	43.50
Seed					1/3 lb.seed, coated	50.00	50.00
Herbicide, applied			Contract			45.00	45.00
Thinning			Contract			90.00	90.00
Fertilizer after Thin.					100 lb. N @ $.41/lb	41.00	41.00
Late Fertilizer, Sidedress	65 HP	.26	2.22	2.37	60 lb. N @ $.41.lb	24.60	29.19
Cultivate 1 x 4 beds	65 HP	.26	2.22	2.43			4.65
Irrigate 2 x		2.00	29.88	.98	.5 A-Ft @ $35	17.50	48.36
Pest Control 3 x			Contract			160.00	160.00
Hoe 1 x		8.00	56.08				56.08
Disc & Roll Refuse	160 HP	.38	3.24	8.64			11.88
Total Cultural Cash Costs		19.67	$161.98	$77.31		$503.01	$742.30
CASH OVERHEAD							
Land Rent	@	$56.25 per acre-month x 4 months					$225.00
Taxes on Machinery	@	.31 per acre-month x 4 months					1.24
Supervision	@	10.45 per acre-month x 4 months					41.80
General Expense	@	4% of Cultural Cash Costs					29.69
Interest on Operating Capital	@	1.04% per A/month					35.00
Total Cash Overhead							$332.73
Total Cash Costs Except Harvesting							$1,075.03
HARVESTING, PACKAGING, AND SELLING COSTS							
Cut, Pack and Haul	$2.85 x 600 Cartons						$1,710.00
Sell	8% x $5.25 x 600 Cartons						252.00
Total Harvesting, Packaging, and Selling Cash Costs					$3.27 Per Carton		$1,962.00
Total Cultural, Overhead, Harvesting, Packaging, and Selling Cash Costs							$3,037.03
INVESTMENT OVERHEAD							
Depreciation:	Tractor & Machinery	$31.82	Transportation & Shop	$6.24			$38.06
Interest:	Tractor & Machinery	$20.36	Transportation & Shop	$2.56			22.92
Total Investment Overhead							$60.98
Total Cost Per Acre	@ 600 Cartons/A						$3,098.01
Total Cost Per Acre	@ 500 Cartons/A						$2,771.01
Total Cost Per Acre	@ 700 Cartons/A						$3,425.01
Total Cost Per Carton	@ 600 Cartons/A				$5.16		
Total Cost Per Carton	@ 500 Cartons/A				$5.54		
Total Cost Per Carton	@ 700 Cartons/A				$4.89		

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	Tractor	Labor Hours	Labor Cost	Machinery* Cash Cost		Contract & Materials	Total Per Acre
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
Total Cultural Cash Costs		8.77	$68.34	$62.89		$31.41	$162.64

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 DEPRECIATION Year	DEPRECIATION Per Hr	12.5% INTEREST Year	12.5% INTEREST Per Hr		LABOR COSTS Paid/Hr	LABOR COSTS Cost/Hr
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
TILLAGE AND PLANTING		Tractor		Acres Per Year			Per Year	Per Acre	Per Year	Per Acre		CASH COSTS PER ACRE 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 13½'	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
TOTAL TRACTORS AND IMPLEMENTS			$174,800				$15,751		$10,887							
IRRIGATION																
Sprinkler System(1,000 gpmx10 Acres)			32,000	900	900	10	3,200	3.56	2,000	2.22		2.00	14.94		7.50*	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	
TOTAL IRRIGATION			$ 44,000				$ 4,326		$ 2,750							
TOTAL TRACTORS, IMPLEMENTS & IRRIGATION			$218,800				$20,077		$13,637							
TRANSPORTATION AND SHOP TOOLS																
Pickup ½ ton (2)			$ 18,000			5	$ 4,000		$ 1,250		CASH COST CHARGED TO SUPERVISION					
Truck 1½ ton			15,000			8	1,875		938		CASH COSTS COVERED BY GENERAL EXPENSE					
Shop tools			5,500			10	550		344		(4% OF CULTURAL COSTS OR 4% OF CULTURAL					
Tractor trailer			2,200			15	147		138		COSTS AND HARVEST COSTS).					
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							

12.5% of ½ cost new

One [illegible] $8.52 and 1 man @ $7.01 per Hr.

Incl[illegible] .07 per acre for trailer

* Includes $2.00 per acre-inch for fuel

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