Yields

Celery yields, as reported by the Ventura County Agricultural Commissioner, have been averaging around 30 tons per acre. This is approximately 1,000 crates containing two dozen stalks of celery and weighing 60 pounds. For this sample cost yields of 1,000, 900, and 1,100 crates per acre are used.

Varieties and Seed

For the past twenty years almost all the celery grown in Ventura County has been of the tall Utah 52-70 variety. In the past few years the R strain of this variety has become the most popular. The 52-70-R strain variety is highly susceptible to Fusarium yellows, a serious soil-borne disease discussed at the bottom of page 33. Attempts are being made to find or develop suitable varieties that are resistant to Fusarium yellows, but until a satisfactory and reliable variety is found, 52-70-R strain will probably remain the leading variety. 5270 HK has some resistance to Fusarium yellows. It has produced satisfactory crops in Fusarium infested fields where 52-70-R strain would have failed. However, 5270 HK is not successful where conditions are highly favorable for Fusarium. The same can be said for Bud Special used by Bud Antle growers. Bishop, Deacon and Cry 003 by ASGROW have about the same degree of resistance to Fusarium as 5270 HK. They probably do not have overall advantages over 5270 HK.

A hot-water seed treatment has been found effective in reducing the incidence of late blight in celery. It is highly advisable that growers either treat their own seed or make sure that nurserymen growing plants for them have done so.

Almost all of the celery grown in Ventura County is transplanted from greenhouse grown plants produced by the celery grower or purchased from nurseries.

Soil and Climate

The medium-textured soils and the climate of the Oxnard Plain are suitable for celery production the year round. When winters are cooler than normal there are serious losses from bolting. Some bolting may occur following warm winters.

When to Plant and Harvest

It is a common practice among celery growers in Ventura County to harvest at a steady rate from early in November to the middle of July. Because the time from transplanting to harvest ranges from less than 100 to over 150 days, they follow the planting schedule on page 32 in order to avoid wide fluctuations in the amount of celery ready to harvest in any one week. Transplanting begins early in August following a celery-free period and should end soon after the 1st of April in order to have all fields free of celery by July 15. The celery-free period in July is for control of western celery mosaic. It takes about 7 to 8 weeks to grow celery plants to the transplanting stage.

Celery in Ventura County is planted in single rows spaced at 24" or two rows to a bed spaced at 40" (14" across the bed and 26" across the furrows). Spacings between plants for both systems are about 7 inches. The double row planting has 20% more plants than the single row planting. Irrigation requires special attention in the double row system. Water must be held in the furrows long enough to get adequate penetration into the beds. Sprinkler or drip irrigation eliminates this problem.

Planting, Cultivation, and Weed Control

Most transplanting is done with the aid of transplanting machines. It takes around 400 flats of 110 plants to plant an acre. Beds for single row celery are "A" shaped and in the process of making beds they are often marked at approximately 7-inch intervals so that when the ground is too wet for the transplanting machines, spacing of hand-planted celery will be uniform. Following transplanting and cultivation single-row celery plants are on the center of a bed no higher than necessary to confine irrigation water to furrows between the rows. Double row beds should also be marked for hand transplanting.

A selective herbicide sprayed over celery plants 3 to 6 weeks after transplanting will almost eliminate hoeing.

Fertilizing

The application of 10 to 15 cubic yards of poultry manure per acre prior to land preparation for celery has been a common practice, but as land is used repeatedly for celery and other highly fertilized crops it may be difficult to prove that this practice is essential. The application of a mixed fertilizer such as 14-14-7 at the rate of about 1,500 pounds per acre about 30 days after transplanting is a common practice. A second application about 60 days after transplanting may consist of a mixed fertilizer at the same rate as the first application, or it may consist of a simple nitrogen fertilizer amounting to 100 to 150 pounds per acre of nitrogen. On soil that has been fertilized with chicken manure, and soil which has been used for growing celery for a number of years, tests have failed to show benefit for more than 200 pounds of nitrogen per acre applied after transplanting.

Irrigation

Following transplanting, fields are furrow-irrigated as soon as the transplanting crew is out of the way and the soil is kept moist by repeated irrigations for 10 or 15 days following transplanting. Most celery is irrigated by furrows. An increasing amount is irrigated with sprinklers.

During the growing season, irrigations are applied at intervals ranging from one week to three weeks, depending on stage of plant development and on weather. As harvest time approaches, irrigations are frequent enough to maintain a moist appearance of the soil surface. Each crop is irrigated from 8 to 15 times. Allowing plants to show moisture stress late in the season not only retards the growth but increases risk of black heart, a physiological disease which may make affected plants entirely unmarketable.

Pest and Disease Control

The hot-water treatment of seed for control of early blight of celery and the celery-free period in July to control western celery mosaic are mentioned again to emphasize the advisability of all growers to follow these practices. Even when the hot-water treatment of celery seed is used, the application of fungicide at intervals of one to three weeks during the growing season is a general practice. Insecticides are added to sprays when field inspection shows they are advisable. Celery usually escapes root-knot nematode damage because it is growing during the cooler part of the year or because nematodes are kept under control for the benefit of other crops. However, losses from root-knot nematode can be serious, and where celery is to be grown during the warmer part of the year and this pest is suspected, it is advisable to fumigate for its control.

Fusarium yellows has been increasing in celery fields on the Oxnard Plain. Once this disease is found in a celery field it is advisable to discontinue growing celery in that field. This disease is the most severe in the warmest parts of the season, but planting for cool-season growth cannot be counted on for control. Soil fumigation greatly reduces losses from the disease but control is not adequate. Attempts are being made to develope resistant varieties. Some strains of celery are more tolerant to this disease than others but none of those available in 1983 have enough tolerance to assure satisfactory yields in infested fields. Farmers and harvesting foremen need to learn to recognize Fusarium Yellows so that planting celery in infested fields can be stopped before losses become serious.

DULLAM-LITTLE CELERY TRANSPLANTING SCHEDULE, 1968 REVISION

An even flow of celery into the market or a flow adjusted to known fluctuations in demand is required for market stability. This can be achieved only if all growers of consequence transplant on a schedule that will produce about the right amount of celery ready to harvest each week.

This schedule is a revision of the original schedule developed from ten years of records supplied by John Dullam. It is based on three years ('66, '67, '68) of records of transplanting and harvest dates supplied by 10 growers for 52-70 R strain celery.

Former University of California Biometrician Dr. Thomas M. Little devised the formulas used to compute the acreages and harvest dates. Computations were done on a University of California electronic computer at Riverside.

Deviations in time from planting to harvest can be expected because of weather conditions and the effects of market prices or demands on the state of maturity at which the celery is harvested.

Additional experience may show that this schedule should be revised. For that reason we would like to continue collecting records of transplanting and harvesting dates from as many celery growers as possible. All we need is the starting and finishing transplanting dates, and the starting and finishing harvest dates for each field or block.

The cooperation of celery growers who have supplied records for the development of this schedule is greatly appreciated. We solicit their continued cooperation and the cooperation of other celery growers too.

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

							OVERHEAD COSTS					LABOR COSTS	
	Cash		New	Hours	Life-	DEPRECIATION		12.5% INTEREST[1]				
TRACTORS	Cost/Hr		Cost	Per Yr	Years	Year	Per Hr	Year	Per Hr		Paid/Hr	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				Acres Per Year		Per Year	Per Acre	Per Year	Per Acre		CASH COSTS PER ACRE				
		Tractor								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[2]	1.36	.09	2.90
Sidedress fertilizer	1.10	65 HP	4,500	550	143	10	450	.82	281	.51	.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[3]
2,000 Ft. gated pipe 8"			9,775	2,200	2,200	10	978	.44	611	.27	2.00	14.94		.42	15.43[3]
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							

[1] 12.5% of ½ cost new

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

[3] Includes $.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