

SPINACH FOR FREEZING AND FRESH MARKETYields

Yields after dockage of around 10 percent for unusable material have averaged approximately 8.6 tons per acre for the past two years. For this report yields of 9, 8, and 10 tons per acre are used. Yields of 800, 700, and 900-lb packages of fresh spinach are less in lb per acre than freezer yields because harvesting is done before plants are fully grown.

Varieties and Seed

Several new downey mildew resistant varieties are still in the testing stage. They are needed to replace Hybrid 424 which is not resistant to the prevalent strains of downey mildew.

Soil and Climate

Almost all of the soils of the Oxnard Plain are suitable for spinach. The climate of the Oxnard plain is suitable for spinach production almost any time of the year.

When to Plant and Harvest

In recent years freezer spinach has been a spring crop planted in December through March, and harvested in March, April, and May. Fresh market spinach may be harvested all year.

Planting, Cultivation, and Weed Control

Spinach is planted two rows to a standard vegetable bed with centers 40 inches apart at around 15 pounds of seed per acre. The seed is usually planted in dry soil and irrigated up with either furrow or sprinkler irrigation. It is not thinned. Because the crop is not thinned, and because herbicides have not been successful locally, spinach is usually planted in fields relatively free of weed seed. Weed control consists of careful, close cultivation, and pulling weeds immediately before harvest.

Fertilizing

To produce a large tonnage of large, tender leaves with a dark green color, most spinach fields receive over 200 pounds of nitrogen per acre. Half of this can be applied at planting time or before, and the other half applied with a mid-season sidedressing. If phosphorus is needed, it should be applied at planting time.

Irrigation

Following irrigation for germination spinach is irrigated frequently enough to keep it growing vigorously until harvested. If there is no rain during the growing season, the crop may be irrigated three or four times.

Pest and Disease Control

Spinach must be almost free of insect pests at harvest time. The crop needs to be watched carefully for infestations of aphids and worms. Because in spinach, pesticides must be applied to the leaves which make up the harvested product, special attention must be given to waiting periods between treatment and harvest. Before spinach is treated with a pesticide, consult a representative of the freezer plant.

Fresh Market

Varieties and cultural practices are the same. Most fresh market spinach is packed 2 dozen .9 -lb bunches per waxed carton or wire bound crate (at least 20 lb of spinach).

## PLANTING SCHEDULE FOR FREEZER SPINACH 1983

From Oxnard FF 1981, 1982, 1983

Planting Date	Acres to Plant/Wk to Harvest 10 A/Wk	Approx. Harvest Date	Planting Date	Acres to Plant/Wk to Harvest 10 A/Wk	Approx. Harvest Date
Dec 02	8.6	Mar 06	Mar 03	5.3	May 07
09	8.1	12	10	5.7	27
16	8.0	18	17	6.3	14
23	8.0	23	24	6.4	19
30	7.9	29	31	6.7	23
Jan 06	7.6	Apr 04	Apr 07	6.7	May 28
13	7.1	09	14	6.7	Jun 02
20	6.6	14	21	7.3	06
27	6.1	19	28	7.9	12
Feb 03	5.7	Apr 23	May 05	8.6	Jun 17
10	5.0	27	12	9.7	23
17	4.9	30	19	9.9	30
24	4.7	May 03	26	9.9	Jul 07
			Jun 02	9.9	Jul 14
			09	10.0	20

## TENTATIVE PLANTING SCHEDULE FOR MARKET SPINACH 1977

This schedule is based on records of planting and harvest dates provided by Pleasant Valley Co-op from 1965-66 through 1976-77. Its validity can be improved by adding more records from more farms.

Planting Date	Acres to Plant/Week For Harvest- ing 10 A/Wk	Date of Harvest
Sept. 2	12	Oct. 11
9	12	20
16	12	28
23	13	Nov. 6
30	14	15
Oct. 7	16	26
14	18	Dec. 9
21	18	21
28	20	Jan. 3
Nov. 4	20	18
11	16	Feb. 2
18	12	10
25	10	19
Dec. 2	9	24
9	7	Mar. 1
16	6	5
23	5	9
30	4	12
Jan. 6	4	15

LOW AND HIGH THURSDAY LOS ANGELES WHOLESALE MARKET PRICES  
 FOR FRESH SPINACH IN DOLLARS PER 20 POUND CRATE OR CARTON OF 2 DOZ  
 1981 THRU 1984

DOLLARS PER 20 POUND CRATE OR CARTON OF 2 DOZ \* AND : = .2  
 0 2 4 6 8 10 12

Year	Month	Low Price	High Price
1981	JAN	81	81
1981	FEB	81	81
1981	MAR	81	81
1981	APR	81	81
1981	MAY	81	81
1981	JUN	81	81
1981	JUL	81	81
1981	AUG	81	81
1981	SEP	81	81
1981	OCT	81	81
1981	NOV	81	81
1981	DEC	81	81
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1982	JAN	82	82
1982	FEB	82	82
1982	MAR	82	82
1982	APR	82	82
1982	MAY	82	82
1982	JUN	82	82
1982	JUL	82	82
1982	AUG	82	82
1982	SEP	82	82
1982	OCT	82	82
1982	NOV	82	82
1982	DEC	82	82
00000000			
1983	JAN	83	83
1983	FEB	83	83
1983	MAR	83	83
1983	APR	83	83
1983	MAY	83	83
1983	JUN	83	83
1983	JUL	83	83
1983	AUG	83	83
1983	SEP	83	83
1983	OCT	83	83
1983	NOV	83	83
1983	DEC	83	83
00000000			
1984	JAN	84	84
1984	FEB	84	84
1984	MAR	84	84
1984	APR	84	84
1984	MAY	84	84
1984	JUN	84	84
1984	JUL	84	84
1984	AUG	84	84
1984	SEP	84	84
1984	OCT	84	84
1984	NOV	84	84
1984	DEC	84	84

0 2 4 6 8 10 12

**SPINACH FOR FREEZING AND FRESH MARKET**

Yield: 9, 8, and 10 Tons/A  
 Plant: Dec, Jan, Feb, Mar

Land Use: 3 months  
 Harvest: March, April, and May

Labor Per Acre

	Tractor	Hrs.	Cost	Tractor & Machinery	Contract & Materials	Total Per A.
<b>CULTURAL CASH COSTS</b>						
Land Preparation & Stand Establishment		8.77	\$68.34	\$62.89	\$31.41	\$162.64
Pre-plant Fertilizer				400 lb/A 16-20	59.00	59.00
Seed				14 lb @ \$3.75	60.00	60.00
Early Fertilizer, Sidedressed				100 lb. N @ \$.41	41.00	41.00
Late Fertilizer, Sidedressed	65 HP	.26	2.22	2.37 100 lb. N @ \$.41	41.00	45.59
Late Irrigation 1 x		2.00	14.94	.49 .25 A-Ft @ \$35	8.75	24.18
Pest Control				Contract	110.00	110.00
Cultivate 1 x late	65 HP	.26	2.22	2.43		4.65
Pull Weeds		10.00	70.10			70.10
Disc, Roll Refuse 2x	160 HP	.38	3.24	8.64		11.88
<b>Total Cultural Cash Costs</b>		<b>21.67</b>	<b>\$161.06</b>	<b>\$76.82</b>	<b>\$351.16</b>	<b>\$589.04</b>

**CASH OVERHEAD**

Land Rent	@ \$56.25 per acre-month x 3 months	\$168.75
Taxes on Machinery	@ .31 per acre-month x 3 months	.93
Supervision	@ 10.45 per acre-month x 3 months	31.35
General Expense	@ 4% of Cash Cultural Costs	23.56
Interest on Operating Capital	@ 1.04% per acre-month	23.29
<b>Total Cash Overhead</b>		<b>\$247.88</b>

**Total Cash Costs Except Harvesting** \$836.92

Harvesting and hauling to freezer done by processor at no charge.

**Total Cultural and Overhead Cash Cost** \$836.88

**INVESTMENT OVERHEAD**

Depreciation: Tractor & Machinery	\$31.33	Transportation & Shop	\$4.68	\$36.01
Interest: Tractor & Machinery	\$20.04	Transportation & Shop	\$1.92	21.96

**Total Investment Overhead** \$57.93

<b>Total Cost Per Acre</b>	<b>@ 9, 8, or 10 Tons/A</b>	<b>\$894.85</b>
<b>Total Cost Per Ton</b>	<b>@ 9 Tons/A</b>	<b>\$ 99.43</b>
<b>Total Cost Per Ton</b>	<b>@ 8 Tons/A</b>	<b>\$111.86</b>
<b>Total Cost Per Ton</b>	<b>@10 Tons/A</b>	<b>\$ 89.48</b>

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

**FREEZER SPINACH**

Year	Acres	Ton/A	\$/Ton	\$/A
1979	1370	7.74	66.89	518
1980	997	9.95	76.24	758
1981	1260	8.66	68.65	594
1982	1066	8.64	75.13	649
1983	1657	4.29	100.00	429
1984	1570	6.46	106.42	687

**FRESH MARKET SPINACH**

Year	Acres	20 Lb Cartons	\$/Carton	\$/A
1979	1171	890	3.38	3004
1980	1394	776	3.54	2745
1981	1463	922	3.77	3478
1982	1346	1013	3.84	3899
1983	1238	985	4.93	4856
1984	2185	814	4.24	3753

**SPINACH FOR FREEZING - CASH FLOW INCLUDING LAND RENT AND SUPERVISION**

Dec.	Jan.	Feb.	Mar.	Apr.
Start	Grow	Harvest		
\$530	\$325	0		
Start	Grow	Harvest		
\$530	\$325	\$2400		

**FRESH MARKET SPINACH COSTS**

Total Cost Per Acre	20 Lb Cartons Per Acre	Total Cost Per Carton
\$3594.85	900	\$3.99
3294.85	800	4.12
3894.85	1000	3.89

Preharvest costs same as for freezing: (\$894.85/A)

Harvest and selling costs: \$3.00 per 20 lb carton

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**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		Machinery*		Contract & Materials	Total Per Acre
		Hours	Cost	Cash 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		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		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