SPRING AND FALL POTATO PRODUCTION - WESTERN RIVERSIDE COUNTY - 1973

Although potatoes are an important crop in western Riverside County with a total return of over 4 million dollars in 1971 (one of the high market price years since 1965), there has been a gradual decline in acreage and value since 1967 when the total spring and fall acreage was 11,375 acres compared to 4,465 acres in 1972. The decline is attributable to a series of poor market prices for either or both the spring and fall crop in any given year. Average marketable yields per acre of spring potatoes have ranged from a low of 272 to 368 one-hundred-pound sacks and of fall potatoes from 212 to 279 (except for a 199 sack yield in an unusually early frost year in 1971).

SOILS: For best tuber formation and yield, potatoes prefer sandy loam and loam soils. Fine textured (clay) soils and soils which tend to pack are undesirable. Alkali soils should be avoided as should soils and irrigation waters high in boron. Experienced growers prefer not to plant potatoes on the same land oftener than once every four years, though two or three crops are often planted on leased land where future potato production is not intended.

PLANTING:

Varieties: White Rose is the most commonly planted fresh market variety with occasional plantings of Pontiac and Red LaSoda and an increasing acreage of Norgold Russets. Kennebec - a chipping variety - is the most commonly planted processing potato.

Dates: The spring crop is planted March 1 to April 15 for harvest July 1 to August 15. The fall crop is planted July 20 to August 15 for harvest December through February. (In warm locations, potatoes are sometimes planted in late February for the production of seed for fall planting).

Method:

SPRING CROP: Usually no pre-irrigation is required for the spring crop. Following a chiseling, plowing, or heavy discing, and as many light tillage operations as necessary to break down clods, the potatoes are planted with special planting machinery which plants, fertilizes and beds in one operation. Planting rates used by growers range from 1500 to 1800 pounds of cut seed pieces per acre. For the spring crop, seed is generally planted approximately eight inches below the top of the bed. The Kennebec variety is often planted at the 2000-2500 pound rate per acre.

FALL CROP: Pre-irrigation is necessary and must be uniform. For this reason, sprinklers are nearly always used. Also, careful timing of pre-irrigation, land preparation, and planting to retain surface moisture to allow for shallow planting are desirable. A practice becoming more prevalent is to cut seed twenty-four hours ahead of planting and to store under moist (not wet) and well-aerated conditions to promote suberization before planting.

For both spring and fall crops, the rows are generally spaced 32 inches apart. Soil aeration is very important for quality potatoes. An increasingly common practice is to chisel under the seed row to a depth of twenty-four inches before planting to provide good drainage and aeration.

FERTILIZER: Potatoes require heavy nitrogen applications for maximum production - 160 to 225 pounds of actual nitrogen per acre from ammonia sources, or a mixed ammonia-phosphate combination. Generally the dry forms of ammonia are used when applied at planting in bands four to five inches below the seed and two to four inches to the side of the row. Aqua or anhydrous forms of ammonia should be

applied five to six inches from the row after emergence of the crop. Where phosphate is applied, all of it should be applied at planting and close to the plant row. Many soils are deficient in phosphorous and will respond to 100 to 120 pounds of P_2O_5 (44 to 53 pounds of P) per acre, except where heavy manure applications have been made.

IRRIGATION: Potatoes require irrigation of one inch of "rain" (or one acre inch per acre) every three or four days in hot weather. No precise rule can be laid down except that potatoes should not be allowed to wilt between irrigations. Therefore, growers should not attempt to grow potatoes unless they can get water "on call". Under sprinklers, two acre feet of water are usually required per crop. Sprinklers have nearly supplanted the furrow method of irrigation. Under furrow irrigation, two and one-half to three or more acre feet per crop may be necessary, depending on the soil.

PEST CONTROL: The common pests and diseases include tubeworms, wireworms, aphids, nematodes, and early blight (on the early crop). Growers should ask the farm advisors' office for the latest information on insect control, along with appropriate precautions on the use of insecticides.

PRE AND POST HARVEST HANDLING: Severe damage can result from poor harvest management. Moreover, readying the crop and soil for harvest is important for good shipping quality.

For the spring planted - summer harvested crop it is desirable to allow the vines to decline slowly by stopping irrigation 2-3 weeks before harvest to enhance skin set and maturity and to allow several weeks before harvest after the spring crop for the fall crop. Vines should be removed by "beating" or shredding machinery after decline and ahead of harvest.

To avoid bruising tubers during harvest cloddy soils should be light sprinkled before harvest. Heavy pre-harvest sprinkling should be avoided since it can cause rotting and poor aeration.

Avoid harvesting in extremely hot weather or harvesting or handling tubers when air temperatures are below 45°F.

Minimize sharp corners on the harvester and shed and drop distance into bulk trucks. A canvas sling in the truck bed is useful to reduce drop of first potatoes into the bulk trucks.

Bulk trucks should be covered with canvas as soon as loaded to prevent greening, drying and heat induced disorders as well as to prevent freezing in cold weather. (For more complete information on potato harvest, ask your local agricultural extension office for the leaflet POTATO HARVESTING.)

SPRING POTATOES
WESTERN RIVERSIDE COUNTY - 1973
SAMPLE COSTS OF PRODUCTION

Based on a yield of 330 marketable cwt per acre; equipment labor at $2.50/hr; field labor at $2.25/hr. (including social security and workmen's compensation) 65 hp wheel diesel tractor @ $1.60/hr. and 30 hp wheel gas tractor at $0.85/hr; "solid/set" sprinkler system.

Operations	Hrs/ Acre	Labor Cost	Equip Cost	Materials Kind	Materials Amount	Cost/ Acre	Total Cost/Acre
Plow (or chisel) 1X	0.70	1.75	1.70				$ 3.45
Disc 2X	0.68	1.70	1.63				3.33
Harrow 1X	0.25	0.63	0.29				0.92
Chisel under row	0.33	0.83	0.95				1.78
Cut seed (Contract 18 cwt @ 70¢ = $12.60)				Seed @ $6.50/cwt		117.00	129.60
Plant & Fertilize 1X	1.5 (Equip)		3.37	Nitrogen	90#	11.70	
(2 men x 1.5 hrs)	3.0	7.12		P_2O_5	120#	16.68	38.87
Irrigate 18X	4.0	9.00		Water	0.2 AcFt	65.00	74.00
Cultivate, Furrow and Side-dress fertilizer	0.72	1.80	1.48	Nitrogen	90#	11.70	14.98
Move In Pipe (solid set)	1.5	3.38					3.38
Pest Control (Contract: Material + Application)							28.00
Remove Pipe 1X	1.0	2.25					2.25
Roll beds 1X	0.2	0.50	0.25				0.75
Hill Beds	0.72	1.80	1.08				2.88
TOTAL CULTURAL COSTS							$304.19
Pre-harvest sprinkling	1.8	4.05		Water	"1 acre"	2.71	6.76
Combine-harvest, haul(10 mi.), sort, grade, pack contract, and marketing cost (330 marketable sacks @ $1.30/cwt)							429.00
TOTAL HARVEST & MARKETING COSTS							$435.76
Cash overhead (office, phone, auto, insurance, etc.)							30.00
County taxes on equipment, structures and sprinkler system							5.96
Cash rent							25.00
TOTAL CASH OVERHEAD AND RENT							$60.96

	Investment per Acre	Depreciation	Interest (at 7% of 1/2 original cost)
Buildings	$ 15.00	$ 0.50	$ 0.52
Irrigation System	575.00	38.33	20.12
Tractors & Field Equipment	94.00	9.40	3.29
	$684.00	$48.23	$23.93

TOTAL DEPRECIATION & INTEREST ON INVESTMENT	$ 72.16
TOTAL COST PER ACRE	$873.07
TOTAL COST PER MARKETABLE SACK	2.65

Prices per 100 pound marketable sack of spring produced potatoes have varied from a low of $1.66 (1965) to a high of $3.32 (1970) from 1965 through 1972.

FALL POTATOES
WESTERN RIVERSIDE COUNTY - 1973
SAMPLE COSTS OF PRODUCTION

Based on a yield of 250 marketable sacks, equipment labor at $2.50/hr; field labor at $2.25/hr (including social security and workmen's compensation). 65 hp wheel diesel @ $2.60/hr and 30 hp wheel gas tractor @ $0.85/hr; other equipment at national rates adopted for Western Riverside County; solid set sprinkler irrigating system.

Operations	Hrs/ Acre	Labor Cost	Equip Cost	Materials Kind	Amount	Cost/ Acre	Total Cost/Acre
Pre-irrigate 1X	1.8	4.05	-	Water	1/4AcFt	$7.50	$ 11.55
Plow or chisel 1X	0.7	1.75	1.70				3.45
Disc 2X	0.68	1.70	1.63				3.33
Harrow 1X	0.25	0.63	0.29				0.92
Chisel under row 1X	0.33	0.83	0.95				1.78
Cut Seed (Contract, 18 cwt @ 70¢ = $12.60)				Seed @ $6.50 cwt		117.00	129.60
Plant & Fertilize 1X	1.5 (Equip)		3.37	Nitrogen	90#	11.70	
(2 men x 1.5 hrs)	3.0	7.12		P_2O_5	120#	16.68	38.87
Irrigate 18X	4.0	9.00		Water	2 AcFt	65.00	74.00
Cultivate, Furrow and Side-dress Fertilizer	0.72	1.80	1.48	Nitrogen	90#	11.70	14.98
Move In Pipe (Solid Set)	1.5	3.38					3.38
Pest Control (Contract, Material + Application)							28.00
Remove Pipe 1X	1.0	2.25					2.25
Roll Beds 1X	0.2	0.50	0.25				0.75
Hill Beds 1X	0.72	1.80	1.08				2.88
TOTAL CULTURAL COSTS							$315.74
Pre-harvest sprinkling	1.8	4.05		Water	1 acre"	2.71	6.76
Combine-harvest, Haul (10 mi) sort, grade, pack contract, and marketing cost (250 marketable cwt @ $1.30/sack)							325.00
TOTAL HARVEST & MARKETING COST							$331.76
Cash overhead (office, phone, auto, insurance, etc.)							30.00
County taxes (on equipment, structures & irrigating system)							5.96
Cash rent							25.00
TOTAL CASH OVERHEAD & RENT							$60.96

	Investment Per Acre	Depreciation	Interest (at 7% of 1/2 original cost	
Buildings	$ 15.00	$ 0.50	$ 0.52	
Irrigating system	575.00	38.33	20.12	
Tractors & Field Equipment	94.00	9.40	3.29	
	$684.00	$48.23	$23.93	
TOTAL DEPRECIATION & INTEREST ON INVESTMENT				$72.16
TOTAL COST PER ACRE				$780.62
TOTAL COST PER MARKETABLE CWT				3.12

Prices per 100 pound marketable sack of fall produced potatoes during the years 1965 through 1972 have varied from a low of $1.71 (1967) to a high of $3.88 (1970) averaging $2.97 during that period.

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