

PROCESSING ONIONS
PALO VERDE VALLEY - RIVERSIDE COUNTY

California onion dehydration plants open in May and run through December. The opening of the plants in the spring hinges upon a constant flow of trucks from California's southern desert region. The natural resource of capable growers, course textured soils and abundant water has encouraged dry onion processors to seek acreage in the Palo Verde Valley. Acreage has increased from 400 acres in 1966 to 4,546 acres in 1973 as recorded by the Riverside County Agricultural Commissioner and the Palo Verde Irrigation District reports respectively.

Varieties:

Company owned varieties predominate the dehydrator onion market. Planting starts October 15th with 1/3 of the acreage going to early bolt-resistant company varieties. These are followed with 1/3 of the acreage planted to creoles and the final 1/3 to late high yielding company hybrids. Dehydrator onions are high in percent soluble solids.

Soil Requirements:

Medium textured sandy loams have been the most desirable. The soil should be retentive enough under cultivation to keep sufficient moisture about the roots and yet be friable enough to allow proper expansion of the bulbs and facilitate easy machine harvest. Sand streaks, common in many fields, require additional fertilizer and water. Soils with more than 30-45% clay cause serious problems. Saline soils will result in reduced stands unless properly managed. Soils with EC_e above 4-6 mmhos/cm commonly result in stand loss and low yields. Sprinklers, when available, are useful to ensure a complete stand. An average of twenty-five to thirty plants per foot of bed is considered an optimum stand.

Planting:

Plant shallow, one-fourth inch, on crust-type soils often just under the surface. Commonly, four, five, or six rows are planted on 40 inch centered beds. Raw seeds can be planted with a scatter shoe, or pelleted seed with precision planters. Seeding rates vary from 3½-5 pounds for raw seed and 35-50 pounds for coated seed.

Irrigation:

Until two or three weeks before intended harvest, onions should never suffer lack of water. Weather and soil conditions determine the number of irrigations. Ten to fifteen irrigations are common. Seasonal crop water use is 2 to 2½ acre feet.

Weed Control:

Weed control may be the most expensive cultural practice. Herbicides are commonly applied preemergence and again postemergence. Canary grass, Maritime beard grass and yellow nutsedge pose the greatest weed problems and hand weeding costs of \$100 - \$150 per acre are not uncommon when these grasses are present. When possible, grassy fields should be avoided.

Fertilization:

Successful growers apply from 200 to 500 pounds of actual nitrogen, and 100

to 300 pounds of P_2O_5 per acre, depending upon soil type and the prior crop. Potassium should be considered on very sandy soils where manure has not recently been applied. 11-48-0 is commonly broadcast preplant. Nitrogen is sidedressed or water run after the crop is up.

Insects:

Thrips are the main insect pest of the crop. Chemical control is usually included with disease control.

Diseases:

Pink root is a soil-borne disease affecting onions. Heavily infested soils should not be used for onions. The disease has a large host range including small grains. Local information is lacking on fumigation and resistance in processing varieties to control pink root.

High humidity and low-to-moderate temperatures favor downy mildew. Fields are kept moist to ensure proper root moisture for onion development. Couple moist fields with a cloudy, wet winter-spring season and downy mildew can develop. A preventive spray program is necessary to adequately control downy mildew. A complete control program of 4-6 sprayings should not be necessary except during an unusually cool, wet winter-spring season.

Nematodes:

Where nematodes (stubby-root, *Trichodorus* sp.) are a problem, onions respond to soil fumigation. At present grower experience dictates which fields are fumigated.

Harvesting:

Water cutoff is based on 25% of the onion tops having fallen over. Harvest starts when all the tops have fallen down about mid May and continues to July. All harvesting equipment, crews, and operations are the responsibility of the processor.

PROCESSING ONIONS
Sample Costs of Production
Palo Verde Valley - Riverside and Imperial Counties

Irrigation labor was based on \$2.50 per hour. The crop was contracted and cost data based on custom rates where possible.

	Custom Rate	Labor and Materials		Cost Per Acre
		Description	Cost	
A. LAND PREPARATION				
Disk 1X	\$ 3.55			\$ 3.55
Rip - 26" 3 shanks	10.00			10.00
Border	1.10			1.10
Flood 24-36 hrs	-	Irrigator	\$ 5.15	5.15
Knock down borders	1.10			1.10
Disk 2X	7.10			7.10
Land Plane 2X	8.50			8.50
Broadcast fertilizer	3.00	400# 11-48-0 @ \$200/ton	40.00	43.00
Chisel 11 shanks 14" - 16" deep	6.60			6.60
Disk 1X	3.55			3.55
Disk with cultipack 1X	3.90			3.90
List beds	4.50			4.50
(List with fumigation)	(4.50)	(12 gal 1, 3-D \$1.30/gal)	(18.60)	-
LAND PREPARATION	CUSTOM \$52.90	LABOR \$5.15	MATERIAL \$40.00	TOTAL \$98.05
B. GROWING PERIOD				
Shape bed, apply herbicide & mulch	7.00	Herbicide	9.60	16.60
Plant	3.80	Seed supplied by processor	-	3.80
Overspray herbicide, bed tops	2.90	Herbicide	9.60	12.50
Irrigate up (3-5 days)	-	Irrigator	8.57	8.57
Irrigate (1-3 days) 2X	-	Irrigator	7.00	7.00
Cultivate (flag Stage-1st true leaf) 1X	4.25			4.25
Sidedress nitrogen	3.25	80# nitrogen	16.70	19.95
Irrigate (1-14 days)	-	Irrigator	4.17	4.17
Weed control (Sulfuric acid included)	14.50			14.50
Cultivate 1X	4.25			4.25
Sidedress (or water run)	3.25	80# nitrogen	16.70	19.95
Lay by herbicide	2.90	Herbicide	9.60	12.50
Irrigate (1-4 days)	-	Irrigator	4.17	4.17
Hand weed		Hand crew, sup. & sanitation	65.00	65.00
Cultivate 1X	4.25			4.25
Irrigate (1-4 days) 3X + nitrogen	-	Irrigator	6.00	
		120# nitrogen	33.00	39.00
Disease control 2X(4-6 X's if neces.)	6.00	Fungicide & surfactant	5.30	11.30
Insect control 1X (with fungicide)	-	Insecticide	.85	.85
Irrigate (weekly) 8X (some nitrogen)	-	Irrigator	20.00	-
		180# nitrogen	49.50	69.50
Ditching, etc. (inc. weed control on ditches)	-	Misc. ditching Labor & Equip.	10.00	10.00
GROWING PERIOD	CUSTOM \$56.35	LABOR \$124.91	MATERIAL \$150.85	TOTAL \$332.11
C. PALO VERDE IRRIGATION DISTRICT				
Water Cost & Assessments (3/4 year)				12.00
D. CASH OVERHEAD				
General expenses-10% of above (inc. office, insurance, auto, supervision, etc.)				44.22
E. LAND RENT				
				90.00
TOTAL EXPENSES				\$576.38

() = optional treatments dependent upon presence of soil nematodes or weather conditions.

Cost Per Ton Based on Yield of				
12 tons	14 tons	16 tons	18 tons	20 tons
\$47.47	\$40.69	\$35.60	\$31.65	\$28.48

MONTHLY CASH FLOW FOR ONIONS

	Cost Per Acre	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
<u>LAND PREPARATION</u>													
Disk 1X	\$ 3.55		3.55										
Rip - 3 shanks, 26" deep	10.00		10.00										
Border	1.10		1.10										
Flood 24-36 hrs	5.15		5.15										
Knock down borders	1.10			1.10									
Disk 2X	7.10			7.10									
Land plane 2X	8.50			8.50									
Broadcast fertilizer	43.00			43.00									
Chisel- 11 shanks, 14" - 16" deep	6.60				6.60								
Disk 1X	3.55				3.55								
Disk with cultipack 1X	3.90				3.90								
List beds	4.50				4.50								
<u>GROWING PERIOD</u>													
Shape bed, apply herbicide & mulch	16.60			16.60									
Plant	3.80				3.80								
Apply herbicide, bed tops	12.50				12.50								
Irrigate up (3-5 days)	8.57				8.57								
Irrigate (1-3 days) 2X	7.00					7.00							
Cultivate (flag stage-1st true leaf) 1X	4.25							4.25					
Sidedress nitrogen	19.95							19.95					
Irrigate (1-4 days)	4.17							4.17					
Weed control (acid)	14.50							14.50					
Cultivate 1X	4.25							4.25					
Sidedress (or water run)	19.95							19.95					
Lay by herbicide	12.50							12.50					
Irrigate (1-4 days)	4.17							4.17					
Hand weed	65.00							25.00	25.00	15.00			
Cultivate 1X	4.25							4.25					
Irrigate (1-4 days) 3X + nitrogen	39.00							39.00					
Disease control 2X(4-6 X's if necess.)	11.30									11.30			
Insect control 1X (with fungicide)	.85									.85			
Irrigate (weekly) 8X (some nitrogen)	69.50									59.50	10.00		
Ditching, etc. (inc. weed control on ditches)	10.00					8.90						1.10	
<u>PALO VERDE IRRIGATION DISTRICT</u>													
Water Cost & Assessments (3/4 year)	12.00				9.00							3.00	
<u>CASH OVERHEAD</u>													
General expenses-10% of above (inc. office insurance, auto, supervision, etc.)	44.22	44.22											
<u>LAND RENT</u>	90.00	90.00											
<u>TOTAL EXPENSE</u>	\$576.38	\$134.22	\$19	\$59.70	\$69.02	\$15.90	\$42.87	\$109.12	\$37.15	\$74.50	\$13.00	\$10	\$4