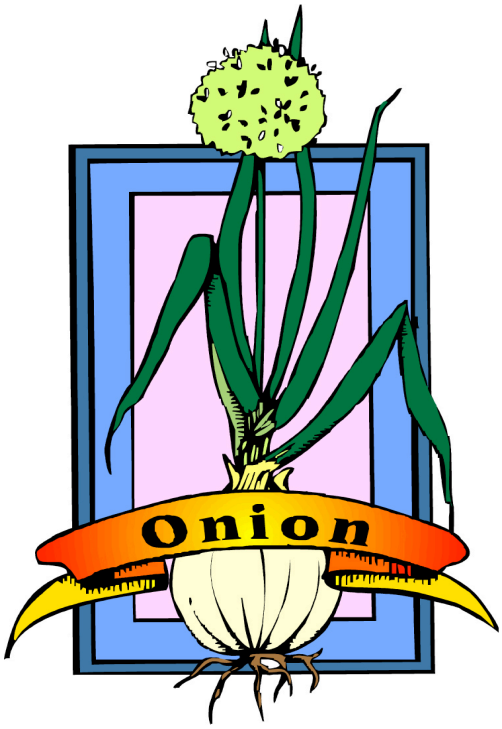
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2008

SAMPLE COSTS TO PRODUCE

ONIONS



For Dehydrating

TULELAKE BASIN in the INTERMOUNTAIN REGION

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INTRODUCTION

The sample costs to produce onions for dehydration in the Tulelake Basin of the Intermountain Region are presented in this study. The study is intended as a guide only, and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. The practices described are based on production procedures considered typical for this crop and area but will not apply to every situation. Sample costs for labor, materials, equipment, and custom services are based on current figures. A "*Your Costs*" column in Tables 1 and 2 is provided for you to enter your costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or explanation of calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, 530-752-2414 or the Intermountain Research and Extension Center, 530-667-5117.

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Sample Cost of Production studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-1517. Current studies, those produced during the last five years, can be obtained from selected county UC Cooperative Extension offices or downloaded from the department website http://coststudies.ucdavis.edu.

ASSUMPTIONS

The following assumptions pertain to sample costs to produce onions for the dehydration market in the Tulelake Basin of the Intermountain Region. Practices described should not be considered recommendations by the University of California, but represent production procedures considered typical for this crop and area. Some of the costs and practices may not be applicable to your situation or used during every production year. Other practices not indicated may be needed. Cultural practices and costs to produce onions will vary by grower and region, and can be significant. The practices and inputs used in this cost study serve as a sample or guide, only. The costs are presented on an annual, per acre basis. **The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.**

Farm. This report is based on a hypothetical 1,500 acre farm. Onions are grown on 200 acres of which the grower owns 20% of the onion acreage and rents the other 80%. The whole 1,500 acre farm has 50 acres (10 owned acres and 40 rented acres) in roads, irrigation systems, farmstead, and unused or unusable land. Typically, a grower with this amount of onion acreage will have several non-adjacent fields and the cultural practices will probably vary among fields. Additionally, extra costs may be involved for moving equipment between fields, but are not included in this study. Other crops that might be grown in rotation with the onions include potatoes, small grains, and alfalfa. In this report, practices completed on less than 100% of the acres are denoted as a percentage of the total onion crop acreage.

Owned onion land normally ranges from $2,000 to $5,000 per acre. This study uses a value of $3,500 per acre or $3,784 per producing acre.

Rented land in this region range between $300 to $450 per are with surface water attached to the land, but the water is not paid for by the landowner. The cost of the water is borne by the grower renting the land. A rental price of $350 per acre is used in this study or $357 per producing acre.

CULTURAL PRACTICES AND MATERIAL INPUTS

Land Preparation. It is assumed that the ground planted to the onion crop is coming out rotation of another crop. Land preparation begins with plowing 80% of the acreage in the fall. In the spring the fields are burned to remove any heavy plant matter. Borders are put up around the fields followed chiseling half of the ground. Only 40% of the ground is ripped, but that section is ripped 1.5 times. The ground is rotospiked prior to pulling the beds. Once the beds are up and shaped the fields are set with a solid set of sprinklers that pre-irrigates the crop with 2.0 acre-inches of water.

Irrigation. Irrigation begins in April with a pre-irrigation of 2.0 acre-inches of water. Growers will place a portable pump with a diesel engine and fuel tank along a canal. With the pump end situated in the canal a solid set of sprinkler pipes is placed in the furrows during the growing season. Onions are irrigated for six months after planting. A total of 33.36 acre-inches of water are sprinkled on during the growing season and sometimes deliver fertilizers and pesticides through the irrigations. Onions are irrigated during April through September. Prior to harvest all of the pipes are removed from the fields and the pump is pull from the canal.

Fertilization. A mixed preplant fertilizer with other nutrients is custom applied in April when the beds are pulled. Nitrogen, phosphorus, zinc, manganese, and copper are put directly into the beds prior to planting. Liquid fertilizers are applied through the sprinkler during one of the June irrigations. Towards

the end of the growing season 400 pounds of ammonium sulfate (21-0-0-24) is applied as a topdress to the onions.

Planting. Onion seeds are provided by the processor and are treated to prevent disease. A granular pesticide is also applied at planting to manage insects that feed on onion seed in the ground. Growers will plant four lines of onions on a 36 inch-beds using a six-row vacuum planter.

Pest Management. The pesticides and rates mentioned in this cost study are listed in UC *Integrated Pest Management Guidelines, Onion.* For more information on pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. Written recommendations are required for many pesticides, and are made by licensed pest control advisors. For information on pesticide use permits, contact the local county agricultural commissioner's office.

All treatments of onions using pesticides are made by either chemigation or by airplane. Some pesticides are mixed and applied together during the same irrigation. Some of the pesticides are applied to a portion of the onion acreage and others are utilized multiple times.

Weeds. Weeds are managed by chemical, mechanical, and hand labor. In June Roundup is spread by air. This study assumes that the first hand hoeing also occurs during June while the second hoeing is in July for a total of 13 hours. Goal is put on twice with irrigations in July. The final two chemical weed treatments are made with Fusilade by air. In September, after the irrigation pipes are removed and just prior to harvest the fields are cultivated once.

Insects. At planting a granular insecticide is used to control seed and seedling insects. Later an insecticide is mixed twice with a fungicide and chemigated to manage insects during the growing season. In July and September, two treatments consisting of Warrior is sprayed by aircraft over the entire acreage each time.

Diseases. Control of diseases begins in May with an application of Vydate with an irrigation followed by Vydate again mixed with a June irrigation. In July and August Bravo is mixed with an insecticide and applied through the sprinklers. The onions are treated for disease with Quadris applied by air in August. The final disease management spray is put on by aircraft using Reason.

Harvest. After sprinkler pipe removal the sides of the beds are cut away to lessen the amount of dirt put through the harvester. The beds are rolled and the tops of the onions are cut by a flail mower to reduce the vegetation for the harvester. The onions are harvested with a large horsepower tractor pulling a two-row digger and conveyed by a belt to a trailer pulled by a tractor.

Growers may choose to own harvesting equipment, purchased either new or used, or hire a custom harvester. Many factors are important in deciding which harvesting option a grower uses. These considerations and appropriate method of analysis are discussed in *"Acquiring Alfalfa Hay Harvest Equipment: A Financial Analysis of Alternatives"*.

Transportation. The grower only transports the onions from the harvester to the field's edge. Hauling onions from the field over the road is the responsibility of the dehydrating company.

Yields. The crop yield used in this study is 480 hundredweight (cwt) per acre. Yields have varied over the years in the Tulelake Basin of the Intermountain Region and are shown in Table A.

Returns. The county averages for the last five years are shown in Table A. The table also includes the weighted average price in the Klamath Basin of the Intermountain Region during 2001 through 2005. A current selling price of $5.50 per cwt of fresh market onion is used to estimate market income.

Risk. Risks associated with onion production are not assigned a production cost. While this study makes an effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of onion production.

Table A. Average Tulelake onion yields and prices

Onions (for Dehydration)	Acres	Yields	Price
-- Year --		-- Cwt/Acre --	--- $/Cwt ---
2002	2,184	545	$5.00
2003	2,107	442	$5.00
2004	2,148	497	$5.00
2005	2,488	459	$4.95
2006	2,650	450	$4.95
5 Year Average	2,315	479	$4.98

Source: Tulelake Irrigation District, 2002-2006.

Labor. Labor rates of $19.14 per hour for machine operators and $12.51 for non-machine workers includes payroll overhead of 39%. The basic hourly wages are $13.77 for machine operators and $9.00 for non-machine labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for field crops (code 0171), and a percentage for other possible benefits. Workers' compensation insurance costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2007 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 and 4 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Cash Overhead

Cash Overhead. Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, rents, and investment repairs. Cash overhead costs are included in Tables 1, 2, 3 and 4.

Property Taxes. Counties charge a base property tax at the rate of 1% on the assessed value of the property including land, equipment, buildings, and improvements. In some counties special assessment districts exist and charge additional taxes on property. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis. Land value is assumed to remain unchanged.

Equipment Operating Costs. Equipment costs are composed of three parts: operating costs, cash overhead, and non-cash overhead. Both of the overhead factors are discussed in later sections. The operating costs consist of repairs, fuel, and lubrication. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 5 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum power-take-off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $2.50 and $3.10 per gallon, respectively. Fuel costs are derived from American Automobile Association (AAA) and Energy Information Administration

(EIA) 2007 monthly data. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 are determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Interest on Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 8.75% per year. It is assumed that all cash operations are financed. A nominal interest rate is the typical market cost of borrowed funds. Any postharvest costs of operations are discounted back to the harvest month using a negative interest charge.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.740% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,305 for the entire farm or $0.87 per acre.

Office Expense. Office and business expenses are estimated at $12.00 per acre. These expenses include office supplies, telephones, bookkeeping, accounting and legal fees, road maintenance, and miscellaneous business expenses.

Rent. Cash rents range from $300 to $450 per producing acre. The grower in this study rents 160 acres of which 158 are producing or planted acres and the grower pays $350 per rented acre to the landlord. The rent cost is charged to the onion enterprise (160 acres) at $357 per producing acre. The non-producing acres are roads, irrigation system, and equipment yard.

Irrigation Pipe Rental. The irrigation system in this study is a canal with portable powered low lift pump that pumps the water into the irrigation pipes and sprinklers. The irrigation pipe and all of the need parts for a solid set system are rented.

Investment Repairs. Annual cash maintenance or repair costs are associated with investments under non-cash overhead. Repairs to the fuel tanks and pumps, shop building, shop tools, irrigations system, tool carrier, and fuel wagon are calculated at 10% of new cost distributed over the investment life.

Non-Cash Overhead Costs

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. This study shows the current purchase price for new equipment and then adjusts the price to 40% of new cost to indicate a mix of new and used equipment. Annual ownership costs for equipment and investments are shown in Tables 1, 2, and 4 as the capital recovery cost on an annual per acre basis.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). Put another way, it is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The calculation for the annual capital recovery costs is as follows:

$$\left[\left(\underset{\text{Price}}{Purchase} - \underset{Value}{Salvage}\right) \times \left(\underset{Factor}{\overset{Capital}{\text{Recovery}}}\right)\right] + \left[\underset{Value}{Salvage} \times \underset{Rate}{Interest}\right]$$

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear-out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is equal to the purchase price because land does not depreciate. The purchase price and salvage value for certain equipment and investments are shown in Table 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of 8.75% is used to calculate capital recovery cost is the effective long term interest rate in January 2008. The interest rate is provided by a local farm lending agency and will vary according to risk and amount of loan.

*Equipment***.** Other equipment is listed as investments and are used on the entire farm. The cost of these investments shows up as non-cash cost in tables 1 and 2. Each investment current purchase price, assumed years of life, and other costs are listed in table 4.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

Acknowledgements. The authors appreciate the help provided by those growers and other cooperators who provided information for this study.

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For information concerning the above or other University of California publications, contact UC DANR Communications Services at 1-800-994-8849, online at www.ucop.edu, or your local county UC Cooperative Extension office.

Table 1.

UC COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE ONIONS
FOR DEHYDRATING
TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

Labor Rate: $19.14/hr. machine labor
$12.51/hr. non-machine labor

Interest Rate: 8.75%
Yield per Acre: 480.0 CWT

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Preplant:							
Land Preparation - Plow 80% of Acres	0.37	9	17	0	0	25	
Land Preparation - Burn 20% of Acres	0.03	0	0	0	0	0	
Land Preparation - Put Up Borders	0.05	1	2	0	0	3	
Land Preparation - Chisel 50% of Acres	0.06	1	3	0	0	4	
Land Preparation - Rip 1.5X on 40% of Acres	0.10	2	4	0	0	6	
Land Preparation - Rotospike	0.22	5	11	0	0	16	
Land Preparation - Pull Beds & Fertilize	0.17	4	7	404	0	415	
Land Preparation - Shape Beds 1.5X	0.21	5	8	0	0	13	
Pre-irrigate - Set up Solid-set Sprinklers	0.15	2	0	12	0	14	
Land Preparation - Roll Beds 2X	0.18	4	5	0	0	9	
TOTAL PREPLANT COSTS	1.54	33	55	417	0	505	
Cultural:							
Plant Onions	0.23	5	12	13	0	31	
Irrigate	8.16	102	0	92	0	194	
Weed Control - Roundup	0.00	0	0	5	9	13	
Irrigate & Insect Control 2X	2.20	28	0	118	0	145	
Weed Control - Goal & Irrigate	0.50	6	0	16	0	22	
Weed Control - Hand Hoe 2X	13.00	163	0	0	0	163	
Weed Control - Goal + Prowl & Irrigate	0.50	6	0	41	0	48	
Irrigate & Fertilize	0.50	6	0	121	0	127	
Cultivate	0.14	3	4	0	0	7	
Weed Control - Fusilade 2X	0.00	0	0	30	17	47	
Insect & Fungal Control & Irrigate	0.76	10	0	81	0	90	
Insect Control - Warrior 2X	0.00	0	0	22	17	39	
Disease Control - Quadris	0.00	0	0	25	9	33	
Take Out Pump & Pipe	3.00	38	0	0	0	38	
Disease Control - Reason	0.00	0	0	32	9	41	
Fertilize - Topdress	0.13	3	4	72	0	79	
Pickup Truck Use (6 Pickups)	0.38	26	12	0	0	39	
ATV Use (2 ATVs)	0.19	9	1	0	0	10	
TOTAL CULTURAL COSTS	29.69	405	34	667	59	1,165	
Harvest:							
Cut Bed Sides	0.14	3	4	0	0	7	
Roll Crop	0.09	2	1	0	0	3	
Top Onions	1.50	34	62	0	0	96	
Lift Out Onions	0.33	15	32	0	0	48	
Field Haul Onions	0.50	60	44	0	0	104	
TOTAL HARVEST COSTS	2.56	115	143	0	0	258	
Interest on Operating Capital @ 8.75%						67	
TOTAL OPERATING COSTS/ACRE		553	231	1,084	59	1,995	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						12	
Field Sanitation						1	
Land Rent						357	
Field Supervisors (2)						57	
Irrigation Pipe Rental						105	
Property Taxes						42	
Property Insurance						31	
Investment Repairs						6	
TOTAL CASH OVERHEAD COSTS						612	
TOTAL CASH COSTS/ACRE						2,607	

Table 1 continued

NON-CASH OVERHEAD:			
	Per producing	-- Annual Cost --	
Investment	Acre	Capital Recovery	
Shop Building	50	4	4
Storage Building	20	2	2
Fuel Tanks & Pumps	15	1	1
Shop Tools	10	1	1
Portable Pump	8	1	1
Land	3,784	236	236
Semi Truck & Lowbed Trailer	25	3	3
Tool Carrier	12	1	1
Truck - Service 2 Ton	27	6	6
Pipe Trailers	24	3	3
Fuel Wagons	2	0	0
Equipment	550	69	69
TOTAL NON-CASH OVERHEAD COSTS	4,527	327	327
TOTAL COSTS/ACRE			2,935

Table 2

UC COOPERATIVE EXTENSION
COSTS AND RETURNS PER ACRE TO PRODUCE ONIONS
FOR DEHYDRATING
TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

Labor Rate: $19.14/hr. machine labor $12.51/hr. non-machine labor

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Onions for Dehydrating	480.0	Cwt	5.50	2,640	
TOTAL GROSS RETURNS FOR ONIONS				2,640	
OPERATING COSTS					
Fertilizer:					
10-34-0	20.00	Gal	2.23	45	
16-20-0	150.00	Lb N	1.63	244	
Zinc	20.00	Lb	2.18	44	
Copper	10.00	Lb	5.64	56	
Manganese	10.00	Lb	1.54	15	
UN-32	15.00	Gal	5.21	78	
APS	10.00	Gal	2.46	25	
21-0-0-24	400.00	Lb	0.18	72	
Irrigation:					
Water - Pumped	35.36	AcIn	6.11	195	
Insecticide:					
Lorsban 15G	6.70	Lb	1.96	13	
Lannate LV	6.00	Pint	6.74	40	
Warrior T	7.68	FlOz	2.90	22	
Custom:					
Air Application	7.00	Acre	8.50	59	
Herbicide:					
Roundup	1.00	Pint	4.644	5	
Goal 2XL	8.00	FlOz	0.826	7	
Prowl H2O	4.00	Pint	4.955	20	
Fusilade DX	20.00	FlOz	1.49	30	
Fungicide:					
Vydate L	8.00	Pint	12.64	101	
Bravo Weatherstik	3.00	Pint	5.23	16	
Quadris	8.00	FlOz	3.08	25	
Reason 500 SC	8.00	FlOz	4.00	32	
Labor (machine)	8.13	Hrs	19.14	156	
Labor (non-machine)	31.80	Hrs	12.51	398	
Fuel - Gas	3.42	Gal	3.10	11	
Fuel - Diesel	59.04	Gal	2.50	148	
Lube				24	
Machinery repair				49	
Interest on Operating Capital @ 8.75%				67	
TOTAL OPERATING COSTS/ACRE				1,995	
NET RETURNS ABOVE OPERATING COSTS				645	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				12	
Field Sanitation				1	
Land Rent				357	
Field Supervisors (2)				57	
Irrigation Pipe Rental				105	
Property Taxes				42	
Property Insurance				31	
Investment Repairs				6	
TOTAL CASH OVERHEAD COSTS/ACRE				612	
TOTAL CASH COSTS/ACRE				2,607	

NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):	
Shop Building	4
Storage Building	2
Fuel Tanks & Pumps	1
Shop Tools	1
Portable Pump	1
Land	236
Semi Truck & Lowbed Trailer	3
Tool Carrier	1
Truck - Service 2 Ton	6
Pipe Trailers	3
Fuel Wagons	0
Equipment	69
TOTAL NON-CASH OVERHEAD COSTS/ACRE	327
TOTAL COSTS/ACRE	2,935
NET RETURNS ABOVE TOTAL COSTS	-295

[§] Total returns will vary across farms because of differing support under government programs.

UC COOPERATIVE EXTENSION

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE ONIONS FOR DEHYDRATING TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

Beginning NOV 07 Ending OCT 08	NOV 07	DEC 07	JAN 08	FEB 08	MAR 08	APR 08	MAY 08	JUN 08	JUL 08	AUG 08	SEP 08	OCT 08	TOTAL
Preplant:													
Land Prep: Plow 80% of Acres	25												25
Land Prep-Burn Fields 20% of Acres					0								0
Land Prep: Put Up Borders					3								3
Land Prep: Chisel 50% of Acres						4							4
Land Prep: Rip 1.5X on 40% of Acres						6							6
Land Prep: Rotospike						16							16
Land Prep: Pull Beds & Fertilize						415							415
Land Prep: Shape Beds 1.5X						13							13
Pre-irrigate - Set Up Solid-set Sprinklers						14							14
Land Prep: Roll Beds 2X						9							9
TOTAL PREPLANT COSTS	25				3	477							505
Cultural:													
Plant Onions						31							31
Irrigate						145			29		21		194
Weed Control - Roundup						13							13
Irrigate & Insect Control							145						145
Weed Control - Goal & Irrigate							22						22
Weed Control - Hand Hoe 2X								100	63				163
Weed Control - Goal + Prowl & Irrigate								48					48
Irrigate & Fertilize								127					127
Cultivate								7					7
Weed Control - Fusilade 2X									23	23			47
Insect & Fungal Control & Irrigate									45	45			90
Insect Control - Warrior 2X									20		20		39
Disease Control - Quadris										33			33
Take Out Pump & Pipe											38		38
Disease Control - Reason											41		41
Fertilize - Topdress											79		79
Pickup Truck Use (6 Pickups)												39	39
ATV Use (2 ATVs)	1	1	1	1	1	1	1	1	1	1	1	1	10
TOTAL CULTURAL COSTS	1	1	1	1	1	189	168	283	181	102	198	40	1,165
Harvest:													
Cut Bed Sides												7	7
Roll Crop												3	3
Top Onions												96	96
Lift Out Onions												48	48
Field Haul Onions												104	104
TOTAL HARVEST COSTS												258	258
Interest on Operating Capital @ 8.75%	0	0	0	0	0	5	6	8	10	10	12	14	67
TOTAL OPERATING COSTS/ACRE	26	1	1	1	4	671	174	291	190	113	210	312	1,995
CASH OVERHEAD:													
Liability Insurance			1										1
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	12
Field Sanitation	0	0	0	0	0	0	0	0	0	0	0	0	1
Land Rent	357												357
Field Supervisors (2)	5	5	5	5	5	5	5	5	5	5	5	5	57
Irrigation Pipe Rental	9	9	9	9	9	9	9	9	9	9	9	9	105
Property Taxes				21					21				42
Property Insurance				16					16				31
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	6
TOTAL CASH OVERHEAD COSTS	372	15	16	52	15	15	15	15	52	15	15	15	612
TOTAL CASH COSTS/ACRE	398	16	17	53	19	686	189	306	242	128	225	327	2,607

UC COOPERATIVE EXTENSION

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
ONIONS FOR DEHYDRATING
TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead - Insur-ance	Taxes	Total
08	125 HP 4WD Tractor	82,000	10	24,222	9,457	393	531	10,381
08	150 HP 4WD Tractor	115,000	10	33,969	13,263	551	745	14,559
08	175 HP 4WD Tractor	140,000	10	41,354	16,147	671	907	17,724
08	200 HP 4WD Tractor	170,000	10	50,215	19,607	815	1,101	21,522
08	225 HP 4WD Tractor	182,000	10	53,760	20,991	872	1,179	23,042
08	75 HP 4WD Tractor	42,500	10	12,554	4,902	204	275	5,381
08	ATV	4,273	5	1,915	683	23	31	737
08	ATV	4,273	5	1,915	683	23	31	737
08	Bed Shaper 6 Row	13,292	10	2,351	1,651	58	78	1,787
08	Chisel - 20'	28,500	10	5,040	3,540	124	168	3,832
08	Cultivator - Sled 6 Row	4,980	10	881	619	22	29	670
08	Disc - Border 15'	7,984	10	1,412	992	35	47	1,074
08	Fertilizer Applicator 6 Row	3,573	10	632	444	16	21	480
08	Harvester	49,457	10	4,946	6,429	201	272	6,902
08	Lister - 6 Row	20,176	5	6,572	3,662	99	134	3,895
08	Mower - Flail - 15	28,000	10	4,952	3,478	122	165	3,765
08	Pickup - 1/2 Ton	22,757	5	10,199	3,639	122	165	3,926
08	Pickup - 1/2 Ton	22,757	5	10,199	3,639	122	165	3,926
08	Pickup - 1/2 Ton	22,757	5	10,199	3,639	122	165	3,926
08	Pickup - 1/2 Ton	22,757	5	10,199	3,639	122	165	3,926
08	Pickup - 3/4 Ton	27,112	5	12,151	4,335	145	196	4,677
08	Pickup - 3/4 Ton	27,112	5	12,151	4,335	145	196	4,677
08	Planter - Vacuum 6 Row	20,277	10	3,586	2,519	88	119	2,726
08	Plow - 18' Rollover	12,023	10	2,126	1,494	52	71	1,617
08	Flat Roller - 18'	14,139	10	2,500	1,756	62	83	1,901
08	Ripper - 14'	29,000	10	5,128	3,602	126	171	3,899
08	Rotospike - 15"	29,000	10	5,128	3,602	126	171	3,899
08	Saddle Tank - 300 Gal	2,374	10	420	295	10	14	319
08	Trailer Dollie	1,451	15	139	146	6	8	160
08	Trailer Dollie	1,451	15	139	146	6	8	160
	TOTAL	1,150,975		330,954	143,334	5,483	7,410	156,227
	55% of New Cost *	633,036		182,025	78,834	3,016	4,075	85,925

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	------ Cash Overhead ------ Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Fuel Tanks & Pumps	21,949	20	2,195	1,895	89	121	439	2,544
Fuel Wagons	2,186	10	219	284	9	12	44	349
Land	140,000	20	140,000	8,750	1,036	1,400	0	11,186
Pipe Trailers	35,000	10	700	4,759	132	178	700	5,770
Portable Pump	11,774	20	1,177	1,016	48	65	589	1,718
Semi Truck & Lowbed Trailer	36,170	15	3,617	3,633	147	199	531	4,510
Shop Building	72,168	25	7,217	5,653	294	397	722	7,066
Shop Tools	14,465	20	1,447	1,249	59	80	145	1,532
Storage Building	29,112	20	2,911	2,513	118	160	586	3,377
Tool Carrier	16,730	15	1,673	1,680	68	92	837	2,677
Truck - Service 2 Ton	38,600	5	3,860	8,545	157	212	3,860	12,774
TOTAL INVESTMENT	418,154		165,016	39,977	2,158	2,916	8,453	53,503

UC COOPERATIVE EXTENSION

Table 4 continued

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Field Sanitation	1,500	Acre	1.00	1,500
Field Supervisors (2)	1,500	Acre	54.67	82,005
Irrigation Pipe Rental	1,500	Acre	101.28	151,920
Land Rent	160	Acre	350.00	56,000
Liability Insurance	1,500	Acre	0.87	1,305
Office Expense	1,500	Acre	12.00	18,000

UC COOPERATIVE EXTENSION

Table 5. HOURLY EQUIPMENT COSTS

ONIONS FOR DEHYDRATING

TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

			---------- COSTS PER HOUR ----------						
		Actual		- Cash Overhead -		-------- Operating --------			
Yr	Description	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
08	125 HP 4WD Tractor	1,599.8	3.25	0.14	0.18	1.95	20.86	22.81	26.38
08	150 HP 4WD Tractor	1,599.8	4.56	0.19	0.26	2.73	25.03	27.76	32.77
08	175 HP 4WD Tractor	1,599.2	5.55	0.23	0.31	3.33	29.20	32.53	38.62
08	200 HP 4WD Tractor	1,607.5	6.71	0.28	0.38	4.04	33.37	37.41	44.78
08	225 HP 4WD Tractor	1,599.7	7.22	0.30	0.41	4.33	37.54	41.87	49.79
08	75 HP 4WD Tractor	1,599.3	1.69	0.07	0.09	1.01	10.59	11.60	13.45
08	ATV	149.0	2.52	0.08	0.11	0.25	3.56	3.81	6.53
08	ATV	149.0	2.52	0.08	0.11	0.25	3.56	3.81	6.53
08	Bed Shaper 6 Row	199.4	4.55	0.16	0.22	2.54	0.00	2.54	7.47
08	Chisel - 20'	199.8	9.75	0.34	0.46	5.50	0.00	5.50	16.05
08	Cultivator - Sled 6 Row	199.8	1.70	0.06	0.08	0.95	0.00	0.95	2.79
08	Disc - Border 15'	199.7	2.73	0.10	0.13	1.18	0.00	1.18	4.14
08	Fertilizer Applicator 6 Row	119.5	2.04	0.07	0.10	1.25	0.00	1.25	3.46
08	Harvester	124.5	28.40	0.89	1.20	17.41	33.37	50.78	81.27
08	Lister - 6 Row	399.5	5.04	0.14	0.18	3.86	0.00	3.86	9.22
08	Mower - Flail - 15	292.5	6.54	0.23	0.31	10.61	0.00	10.61	17.69
08	Pickup - 1/2 Ton	284.0	7.05	0.24	0.32	1.35	8.91	10.26	17.86
08	Pickup - 1/2 Ton	284.0	7.05	0.24	0.32	1.35	8.91	10.26	17.86
08	Pickup - 1/2 Ton	284.0	7.05	0.24	0.32	1.35	8.91	10.26	17.86
08	Pickup - 1/2 Ton	284.0	7.05	0.24	0.32	1.35	8.91	10.26	17.86
08	Pickup - 3/4 Ton	284.0	8.39	0.28	0.38	1.61	10.70	12.31	21.37
08	Pickup - 3/4 Ton	284.0	8.39	0.28	0.38	1.61	10.70	12.31	21.37
08	Planter - Vacuum 6 Row	149.8	9.25	0.32	0.44	4.99	0.00	4.99	15.00
08	Plow - 18' Rollover	248.1	3.31	0.12	0.16	3.05	0.00	3.05	6.64
08	Flat Roller - 18'	199.7	4.84	0.17	0.23	1.47	0.00	1.47	6.71
08	Ripper - 14'	199.2	9.95	0.35	0.47	5.99	0.00	5.99	16.76
08	Rotospike - 15"	149.1	13.29	0.47	0.63	7.76	0.00	7.76	22.14
08	Saddle Tank - 300 Gal	149.5	1.08	0.04	0.05	0.58	0.00	0.58	1.76
08	Trailer Dollie	499.5	0.16	0.01	0.01	0.10	0.00	0.10	0.28
08	Trailer Dollie	499.5	0.16	0.01	0.01	0.10	0.00	0.10	0.28

Table 6.

UC COOPERATIVE EXTENSION
RANGING ANALYSIS
ONIONS FOR DEHYDRATING
TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

COSTS PER ACRE AT VARYING YIELD TO PRODUCE DEHYDRATING ONIONS

	YIELD (CWT/ACRE)						
	420	440	460	480	500	520	540
OPERATING COSTS/ACRE:							
Preplant Cost	505	505	505	505	505	505	505
Cultural Cost	1,165	1,165	1,165	1,165	1,165	1,165	1,165
Harvest Cost	226	237	247	258	269	280	290
Interest on Operating Capital	67	67	67	67	67	67	67
TOTAL OPERATING COSTS/ACRE	1,962	1,973	1,984	1,995	2,006	2,017	2,027
TOTAL OPERATING COSTS/CWT	4.67	4.48	4.31	4.16	4.01	3.88	3.75
CASH OVERHEAD COSTS/ACRE	612	612	612	612	613	613	613
TOTAL CASH COSTS/ACRE	2,575	2,586	2,596	2,607	2,618	2,629	2,640
TOTAL CASH COSTS/CWT	6.13	5.88	5.64	5.43	5.24	5.06	4.89
NON-CASH OVERHEAD COSTS/ACRE	325	326	326	327	328	329	329
TOTAL COSTS/ACRE	2,899	2,911	2,923	2,935	2,946	2,958	2,970
TOTAL COSTS/CWT	6.90	6.62	6.35	6.11	5.89	5.69	5.50

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR DEHYDRATING ONIONS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Onions	420	440	460	480	500	520	540
4.00	-282	-213	-144	-75	-6	63	133
4.50	-72	7	86	165	244	323	403
5.00	138	227	316	405	494	583	673
5.50	348	447	546	645	744	843	943
6.00	558	667	776	885	994	1,103	1,213
6.50	768	887	1,006	1,125	1,244	1,363	1,483
7.00	978	1,107	1,236	1,365	1,494	1,623	1,753

NET RETURN PER ACRE ABOVE CASH COST FOR DEHYDRATING ONIONS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Onions	420	440	460	480	500	520	540
4.00	-895	-826	-756	-687	-618	-549	-480
4.50	-685	-606	-526	-447	-368	-289	-210
5.00	-475	-386	-296	-207	-118	-29	60
5.50	-265	-166	-66	33	132	231	330
6.00	-55	54	164	273	382	491	600
6.50	155	274	394	513	632	751	870
7.00	365	494	624	753	882	1,011	1,140

NET RETURNS PER ACRE ABOVE TOTAL COST FOR DEHYDRATING ONIONS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Onions	420	440	460	480	500	520	540
4.00	-1,219	-1,151	-1,083	-1,015	-946	-878	-810
4.50	-1,009	-931	-853	-775	-696	-618	-540
5.00	-799	-711	-623	-535	-446	-358	-270
5.50	-589	-491	-393	-295	-196	-98	0
6.00	-379	-271	-163	-55	54	162	270
6.50	-169	-51	67	185	304	422	540
7.00	41	169	297	425	554	682	810

UC COOPERATIVE EXTENSION

Table 7. COSTS AND RETURNS/BREAKEVEN ANALYSIS
ONIONS FOR DEHYDRATING
TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Onions for Dehydrating	2,640	1,995	645	2,607	33	2,935	-295

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Onions for Dehydrating	514,800	389,007	125,793	508,437	6,363	572,231	-57,431

BREAKEVEN PRICES PER YIELD UNIT

			-------- Breakeven Price To Cover --------		
CROP	Base Yield (Units/Acre)	Yield Units	Operating Costs	Cash Costs	Total Costs
			---------- $ per Yield Unit ----------		
Onions for Dehydrating	480.0	Cwt	4.16	5.43	6.11

BREAKEVEN YIELDS PER ACRE

			-------- Breakeven Yield To Cover --------		
CROP	Yield Units	Base Price ($/Unit)	Operating Costs	Cash Costs	Total Costs
			---------- Yield Units / Acre ----------		
Onions for Dehydrating	Cwt	5.50	362.7	474.1	533.5

UC COOPERATIVE EXTENSION

Table 8. DETAILS OF OPERATIONS TO PRODUCE ONION FOR DEHYDRATING TULELAKE BASIN IN THE INTERMOUNTAIN REGION- 2008

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Land Preparation - Plow 80% of Acres	November	200 HP 4WD Tractor	Plow - 18' Rollover			
Land Preparation - Burn 20% of Acres	March	200 HP 4WD Tractor	Rotospike - 15"			
Land Preparation - Put Up Borders	March	150 HP 4WD Tractor	Disc - Border 15'			
Land Preparation - Chisel 50% of Acres	April	200 HP 4WD Tractor	Chisel - 20'			
Land Preparation - Rip 1.5X on 40% of Acres	April	150 HP 4WD Tractor	Ripper - 14'			
Land Preparation - Rotospike	April	200 HP 4WD Tractor	Rotospike - 15"			
Land Preparation - Pull Beds & Fertilize	April		Lister - 6 Row	10-34-0	20.00	Gal
			Saddle Tank - 300 Gal	16-20-0	150.00	Lb N
				Zinc	20.00	Lb
				Copper	10.00	Lb
				Manganese	10.00	Lb
Land Preparation - Shape Beds 1.5X	April	175 HP 4WD Tractor	Bed Shaper 6 Row			
Pre-irrigate - Set up Solid-set Sprinklers	April	Labor		Water	2.00	AcIn
Land Preparation - Roll Beds 2X	April	125 HP 4WD Tractor	Flat Roller - 18'			
Plant Onions	April	225 HP 4WD Tractor	Planter - Vacuum 6 Row	Lorsban 15G	6.70	Lb
Irrigate	April	Labor		Water	8.50	AcIn
	July	Labor		Water	2.00	AcIn
	September	Labor		Water	3.00	AcIn
Irrigate & Insect Control	May			Vydate L	4.00	Pint
		Labor		Water	1.75	AcIn
	June			Vydate L	4.00	Pint
				Water	1.00	AcIn
Weed Control - Roundup	June	Air Application		Roundup	1.00	Pint
Weed Control - Goal & Irrigate	May	Labor		Goal 2XL	4.00	FlOz
				Water	2.00	AcIn
Weed Control - Hand Hoe 2X	June	Labor			8.00	Hrs
	July	Labor			5.00	Hrs
Weed Control - Goal + Prowl & Irrigate	June			Goal 2XL	4.00	FlOz
				Prowl H_2O	4.00	Pint
				Water	3.00	AcIn
Irrigate & Fertilize	June	Labor		Water	3.00	AcIn
				UN-32	15.00	Gal
				APS	10.00	Gal
Weed Control - Fusilade 2X	July	Air Application		Fusilade DX	10.00	FlOz
	August	Air Application		Fusilade DX	10.00	FlOz
Insect & Fungal Control & Irrigate 2X	July			Lannate LV	3.00	Pint
				Bravo Weatherstik	1.50	Pint
				Water	2.00	AcIn
	August			Lannate LV	3.00	Pint
				Bravo Weatherstik	1.50	Pint
				Water	2.00	AcIn
Insect Control - Warrior 2X	July	Air Application		Warrior T	3.84	FlOz
	September	Air Application		Warrior T	3.84	FlOz
Disease Control - Quadris	August	Air Application		Quadris	8.00	FlOz
Take Out Pump & Pipe	September	Labor			3.00	Hrs
Disease Control - Reason	September	Air Application		Reason 500 SC	8.00	FlOz
Cultivate	September	125 HP 4WD Tractor	Cultivator - Sled 6 Row			
Fertilize - Topdress	September	150 HP 4WD Tractor	Fertilizer Applicator 6 Row	21-0-0-24	400.00	Lb
Cut Bed Sides	October	125 HP 4WD Tractor	Cultivator - Sled 6 Row			
Roll Crop	October	75 HP 4WD Tractor	Flat Roller - 18'			
Top Onions	October	150 HP 4WD Tractor	Mower - Flail - 15			
Lift Out Onions	October	200 HP 4WD Tractor	Harvester			
Field Haul Onions	October	200 HP 4WD Tractor	Trailer Dollie			
		225 HP 4WD Tractor	Trailer Dollie			
Pickup Truck Use (6 Pickups)	All	Pickup - 1/2 Ton				
		Pickup - 3/4 Ton				
ATV Use (2 ATVs)	All	ATV				