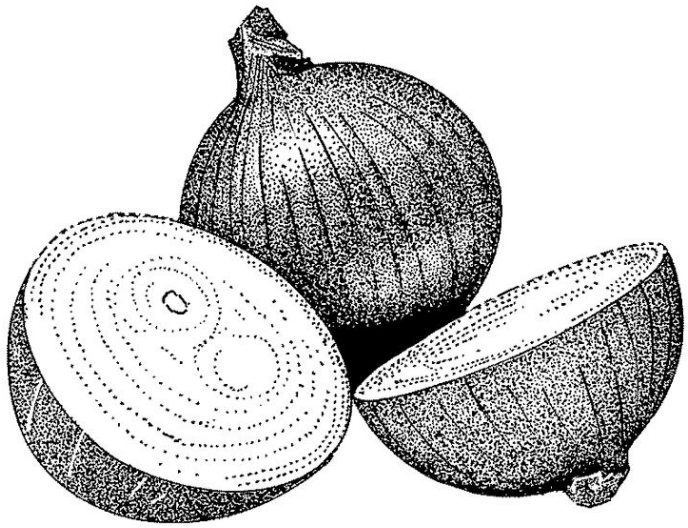
UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

2011

SAMPLE COSTS TO PRODUCE

ONIONS

For Dehydrating



INTERMOUNTAIN REGION
TULELAKE & KLAMATH BASINS

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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, 530-752-3589 or the Intermountain Research and Extension Center, 530-667-5117.

STUDY CONTENTS

Sample Cost of Production studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-6887. 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 (25 owned acres and 25 rented acres) in roads, irrigation systems, farmstead, and unused or unusable land.

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 ranges from $300 to $450 per acre with surface water attached to the land. 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.

Typically, a grower with this amount of onion acreage will have several non-adjacent fields and the cultural practices may vary among fields. Additionally, extra costs may be involved for moving equipment between fields, but are not included in the 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 onion acres are denoted as a percentage of the total onion crop acreage.

Buffer Area. Leased ground on Federal Wildlife Refuge requires a 60 foot buffer between the crop and adjacent land. Privately-owned land needs a buffer zone of 25 feet. Just over 2.5 acres are in the buffer zone and are part of the 50 acres of unused land. No chemicals are used in this portion of the field. The buffer zone is seeded with wheatgrass after two discings and irrigated with 3.0 acre-inches (AcIn) of water. The buffer area is assumed to be 1% of the onion acreage.

CULTURAL PRACTICES AND MATERIAL INPUTS

Land Preparation. It is assumed that the ground planted to the onion crop is coming out of rotation with another crop. Land preparation begins by plowing 80% of the acreage in the fall. One-half of the ground is chiseled and 60% of the ground is ripped 1.5 times. The ground is rotospiked prior to pulling the beds 1.5 times. Once the beds are shaped and planted, solid set sprinklers are placed in the field.

Irrigation. Irrigation water cost is composed of a mix of 50% ground and 50% surface water. Growers with surface water use a portable pump with a diesel engine and fuel tank that is placed along a canal to move the water to the solid set pipes. The well pump lifts the groundwater and another pump pressurizes the water to adequate pressure for solid-set sprinklers. Onions are irrigated for six months after planting (April through September). A total of 33.36 acre-inches of water are sprinkled on during the growing

season with additional water applied to the buffer area and preplant. Most fertilizers and pesticides are applied via chemigation through the sprinklers. Prior to harvest all irrigation equipment is removed from the fields.

Fertilization. A mixed preplant fertilizer with other nutrients is custom applied in April when the beds are shaped. Nitrogen and phosphorus are put directly into the beds prior to planting. Liquid fertilizers are applied through the sprinkler during irrigation. 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 with a fungicide. A granular pesticide (Lorsban) to manage maggots and a fungicide (Folicur) to control onion rot are applied at planting. Growers plant four lines of onions on 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 advisers. For information on pesticide use permits, contact the local county agricultural commissioner's office.

All pesticides are applied by chemigation and/or by air. Some pesticides are mixed and applied together during the same application and some are applied multiple times during the growing season.

Weeds. Weeds are managed with herbicides, mechanical removal, and hand weeding. Roundup is applied at 2 pints per acre by air shortly before crop emergence. This study assumes that two hand weedings (total of 15 hours per acre) will be needed to manage weed escapes for the growing season. Goal, Prowl, and Outlook are chemigated between the 2-leaf and 4-leaf stage to control weed seedlings. Fusilade is applied by air in June or July to control grass weeds.

Insects. At planting a granular insecticide (Lorsban) is used to control seed and seedling insects. Insecticides such as Lannate, Movento and Radiant are chemigated and/or air applied to manage insects during the growing season.

Diseases. Folicur, a fungicide is applied at planting to control onion rot. Fungicides such as Bravo, Quadris, Reason, and Manzate are applied via chemigation and/or by air from May through September.

Harvest. After sprinkler pipe removal the sides of the beds are cut away by a side cutter to lessen the amount of dirt and trash (onion tops/leaves in the furrow) put through the harvester. The tops of the onions are cut by a flail mower 2.5 times to reduce the vegetation for the harvester and then rolled. Two passes are made with mechanical onion diggers. The first pass is with a large horsepower tractor and a 4 row digger that places the onions on top of the beds while it simultaneously windrows them. In the second pass a four row digger/lifter picks up the onions and conveys them by a belt to a trailer pulled by a tractor. Two trailers support the harvester. A crew on the digger sorts the onions, pulling out clods and rot.

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 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.

Table A. Average Tulelake onion yields and prices

Onions (for Dehydration)	Acres	Yields	Base Price	Incentive
-- Year --		-- Cwt/Acre --	--- $/Cwt ---	--- $/Cwt ---
2005	2,488	459	$4.95	$0.40
2006	2,650	450	$4.95	$0.40
2007	3,386	521	$5.50	$0.40
2008	2,606	484	$6.30	$0.40
2009	3,155	502	$6.50	$0.40
5 Year Average	2,857	483	$5.64	$0.40

Source: Tulelake Irrigation District, 2005-2009

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 2005 through 2009. A current selling price of $6.00 per cwt of fresh onions is used to estimate market income. In this study, growers are paid an additional incentive of $0.30 per cwt.

Assessments: In the Tulelake area, onion growers pay three assessments. A $0.00625 per cwt charge supports garlic and onion research done by the California Garlic and Onion Research Board. Tulelake Growers Association assesses its members $2.50 per acre. Additionally, an inspection fee of $7.50 per acre is charged for any onion transported over the highway.

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.

Labor. Labor rates of $20.55 per hour for machine operators and $13.70 for non-machine workers includes payroll overhead of 37%. The basic hourly wages are $15.00 for machine operators and $10.00 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 2010 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 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.

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 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.

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 $2.67 and $3.10 per gallon, respectively. Fuel costs are derived from the 2010 Energy Information Administration (EIA) monthly data. The cost includes a 2.5% local sales tax on diesel fuel and 7.5% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax.

Interest on Operating Capital. Interest on operating capital is based on cash operating costs calculated monthly until harvest at a nominal rate of 5.75% 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. Rate is typical lending rate for a basic loan as reported by a local farm lending agency as of January 1, 2011.

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 0.775% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,410 for the entire farm or $0.94 per acre.

Crop Insurance. The growers reported paying $83 per acre for crop insurance.

Office Expense. Office and business expenses are estimated at $14.83 per acre. These expenses include office supplies, telephones, bookkeeping, accounting and legal fees, road maintenance, and miscellaneous business expenses.

Field Supervisors' Salary. Supervisor salaries for the entire farm, including insurance, payroll taxes, and benefits, and are $85,285 per year for two supervisors. Onions comprise 13% of the land and the same percentage is used to allocate salary cost to potatoes. The costs are $11,087 for 200 acres or $55.44 per acre. Any returns above total costs are considered returns on risk and investment to management (or owners).

Rent. Cash rents range from $300 to $450 per producing acre. The grower in this study rents 160 producing or planted acres and the 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 a portable powered low lift pump that pumps the water into the irrigation pipes and sprinklers. The irrigation pipe and all of the needed 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 2% 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 55% of new cost to indicate a mix of new and used equipment. **See Table 5 for list and description of Non-Cash Overhead items (Investments).**

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: ((Purchase Price-Salvage Value) x (Capital Recovery Factor)) + (Salvage Value x Interest Rate).

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 4.75% is used to calculate capital recovery cost is the effective long term interest rate in January 2011. 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 is used on the entire farm. The cost of these investments shows up as non-cash cost in tables 1 and 2. Each investment's 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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UC COOPERATIVE EXTENSION

Table 1. COSTS PER ACRE TO PRODUCE ONIONS FOR DEHYDRATING

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Land Prep: Plow (80% of acres)	0.37	9	21	0	0	30	
Land Prep: Chisel (50% of acres)	0.17	4	8	0	0	12	
Buffer Area: Disc 2X, Plant Wheatgrass, Irrigate. (1% of acres)	0.00	0	0	0	0	1	
Land Prep: Rip 1.5X (60% of acres)	0.41	10	16	0	0	26	
Land Prep: Rotospike 1.5X	0.54	13	33	0	0	47	
Land Prep: Pull Beds. Fertilize: (10-34-0, 16-20-0)	0.17	4	7	240	0	251	
Land Prep: Shape Beds 1.5X	0.17	4	8	0	0	12	
Irrigate: Set up Solid Set Sprinklers & Pumps	0.15	2	0	0	0	2	
Land Prep: Roll Beds	0.18	4	5	0	0	10	
TOTAL PREPLANT COSTS	2.16	52	99	240	0	391	
Plant: Onions (seed furnished). Insecticide: (Lorsban). Disease: (Folicur)	0.23	6	16	74	0	96	
Irrigate: (water & labor)	10.36	142	0	146	0	288	
Weed: @ crop preemergence (Roundup)	0.00	0	0	10	9	19	
Weed: (Goal, Prowl, Outlook) 2X. Irrigate: (water & labor)	1.00	14	0	83	0	97	
Weed: Hand Hoe 2X	15.00	206	0	0	0	206	
Fertilize: (UN32, APS). Irrigate: (water & labor)	0.50	7	0	126	0	132	
Weed: Cultivate	0.11	3	4	0	0	7	
Weed: (Fusilade)	0.00	0	0	27	9	36	
Fertilize: Topdress (21-0-0)	0.13	3	7	72	0	82	
Insect: (Lannate). Fungicide: (Bravo). Irrigate: (water & labor)	0.76	10	0	82	0	92	
Insect: (Movento, Radiant) 2X	0.00	0	0	182	19	201	
Disease: (Quadris) (50% air, 50% chemigation)	0.00	0	0	25	5	30	
Disease: (Manzate) 2X (50% air, 50% chemigation)	0.00	0	0	41	9	51	
Irrigate: Take out pump and pipe	3.00	41	0	0	0	41	
Disease: (Reason) (50% air, 50% chemigation)	0.00	0	0	32	5	37	
Pickup Use (6 pickups)	0.38	28	13	0	0	41	
ATV Use (2 ATVs)	0.19	9	2	0	0	11	
TOTAL CULTURAL COSTS	31.66	469	41	899	56	1,465	
Harvest:							
Cut Bed Sides	0.11	3	3	0	0	6	
Top Onions 2.5X	0.72	18	39	0	0	57	
Roll Onions	0.09	2	1	0	0	4	
Dig Onions & Windrow	0.57	14	30	0	0	44	
Lift Out Onions & Sort	0.57	14	34	0	140	188	
Field Haul Onions	1.00	107	36	0	0	143	
TOTAL HARVEST COSTS	3.06	158	143	0	140	440	
Assessments:							
CA Garlic and Onion Research Board	0.00	0	0	3	0	3	
Tulelake Growers Association	0.00	0	0	3	0	3	
Inspection Fee	0.00	0	0	8	0	8	
TOTAL ASSESSMENTS	0.00	0	0	13	0	13	
Interest on operating capital @ 5.75%						48	
TOTAL OPERATING COSTS/ACRE	0.00	626	184	899	196	2,358	

UC COOPERATIVE EXTENSION

Table 1. CONTINUED

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cash Overhead:							
Liability Insurance						1	
Office Expense						15	
Field Sanitation						1	
Land Rent						357	
Field Supervisor						58	
Irrigation Pipe Rental						175	
Crop Insurance						83	
Property Taxes						44	
Property Insurance						6	
Investment Repairs						4	
TOTAL CASH OVERHEAD COSTS						744	
TOTAL CASH COSTS/ACRE						3,102	
NON-CASH OVERHEAD		Per Producing Acre		Annual Cost Capital Recovery			
Shop Buildings		59		4		4	
Storage Buildings		24		2		2	
Fuel Tanks & Pumps		18		1		1	
Shop Tools		12		1		1	
Portable Pumps (2)		15		1		1	
Land		3,590		171		171	
Semi Truck & Lowbed		30		3		3	
Tool Carrier		14		1		1	
Truck Service 2 Ton		31		7		7	
Pipe Trailers (5)		15		1		1	
Fuel Wagons		2		0		0	
Equipment		1,057		129		129	
TOTAL NON-CASH OVERHEAD COSTS		4,866		321		321	
TOTAL COSTS/ACRE						3,422	

UC COOPERATIVE EXTENSION

Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE ONIONS FOR DEHYDRATING

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Onions	480	cwt	6.00	2,880	
Incentive	480	cwt	0.30	144	
TOTAL GROSS RETURNS				3,024	
OPERATING COSTS					
Irrigation:					
Water (crop season 33.36 acin + other)	34.39	acin	6.24	215	
Seed:					
Wheatgrass	0.14	lb	1.30	0	
Fertilizer:					
10-34-0	40.00	gal	2.68	107	
16-20-0	80.00	lb N	1.66	133	
UN32	15.00	gal	5.42	81	
APS	10.00	gal	2.56	26	
21-0-0-24	400.00	lb	0.18	72	
Insecticide:					
Lorsban 15G	6.70	lb	1.96	13	
Lannate LV	6.00	pint	6.85	41	
Movento	10.00	floz	9.22	92	
Radiant SC	12.00	floz	7.47	90	
Custom/Contract:					
Air Application	6.00	acre	9.35	56	
Sort Onions	1.00	acre	140.00	140	
Herbicide:					
Roundup Weathermax	2.00	pint	4.85	10	
Goal 2XL	10.50	floz	0.86	9	
Prowl H2O	3.00	pint	5.17	16	
Outlook	20.90	oz	1.62	34	
Fusilade DX	10.00	floz	2.68	27	
Fungicide:					
Folicur 3.6F	21.00	floz	2.88	60	
Bravo Weatherstik	3.00	pint	5.29	16	
Quadris	8.00	floz	3.11	25	
Manzate Flowable	6.00	pint	6.89	41	
Reason 500 SC	8.00	floz	4.04	32	
Assessments:					
California Garlic & Onion Board (0.00625/cwt)	480.00	cwt	0.00	3	
Tulelake Growers Association	1.00	acre	2.50	3	
Inspection Fee	1.00	acre	7.50	8	
Labor (machine)	8.49	hrs	20.55	174	
Labor (non-machine)	36.80	hrs	13.70	504	
Fuel - Gas	3.42	gal	3.10	11	
Fuel - Diesel	61.59	gal	2.67	164	
Lube				26	
Machinery repair				81	
Interest on operating capital @ 5.75%				48	
TOTAL OPERATING COSTS/ACRE				2,358	
NET RETURNS ABOVE OPERATING COSTS				666	

UC COOPERATIVE EXTENSION

Table 2. CONTINUED

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				15	
Field Sanitation				1	
Land Rent				357	
Field Supervisor				58	
Irrigation Pipe Rental				175	
Crop Insurance				83	
Property Taxes				44	
Property Insurance				6	
Investment Repairs				4	
TOTAL CASH OVERHEAD COSTS/ACRE				744	
TOTAL CASH COSTS/ACRE				3,102	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Shop Buildings				4	
Storage Buildings				2	
Fuel Tanks & Pumps				1	
Shop Tools				1	
Portable Pumps (2)				1	
Land				171	
Semi Truck & Lowbed				3	
Tool Carrier				1	
Truck Service 2 Ton				7	
Pipe Trailers (5)				1	
Fuel Wagons				0	
Equipment				129	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				321	
TOTAL COSTS/ACRE				3,423	
NET RETURNS ABOVE TOTAL COSTS				-399	

UC COOPERATIVE EXTENSION

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE ONIONS FOR DEHYDRATING

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

Beginning NOV 10 Ending OCT 11	NOV 10	DEC 10	JAN 11	FEB 11	MAR 11	APR 11	MAY 11	JUN 11	JUL 11	AUG 11	SEP 11	OCT 11	TOTAL
Cultural:													
Land Prep: Plow (80% of acres)	30												30
Land Prep: Chisel (50% of acres)						12							12
Buffer Area: Disc 2X, Plant Wheatgrass, Irrigate. (1% of acres)						1							1
Land Prep: Rip 1.5X (60% of acres)						26							26
Land Prep: Rotospike 1.5X						47							47
Land Prep: Pull Beds. Fertilize: (10-34-0, 16-20-0)						251							251
Land Prep: Shape Beds 1.5X						12							12
Irrigate: Set up Solid Set Sprinklers & Pumps						2							2
Land Prep: Roll Beds						10							10
TOTAL PREPLANT COSTS	30					361							391
Plant: Onions (seed furnished). Insecticide: (Lorsban). Disease: (Folicur)						96							96
*Irrigate: (water & labor)						167	47		30		43		288
Weed: @ crop preemergence (Roundup)						19							19
Weed: (Goal, Prowl, Outlook) 2X. Irrigate: (water & labor)							49	49					97
Weed: Hand Hoe 2X								110	96				206
Fertilize: (UN32, APS). Irrigate: (water & labor)								132					132
Weed: Cultivate								7					7
Weed: (Fusilade)									36				36
Fertilize: Topdress (21-0-0)									82				82
Insect: (Lannate). Fungicide: (Bravo). Irrigate: (water & labor)									46	46			92
Insect: (Movento, Radiant) 2X									100		100		201
Disease: (Quadris) (50% air, 50% chemigation)										30			30
Disease: (Manzate) 2X (50% air, 50% chemigation)										21	30		51
Irrigate: Take out pump and pipe											41		41
Disease: (Reason) (50% air, 50% chemigation)											37		37
Pickup Use (6 pickups)	3	3	3	3	3	3	3	3	3	3	3	3	41
ATV Use (2 ATVs)	1	1	1	1	1	1	1	1	1	1	1	1	11
TOTAL CULTURAL COSTS	4	4	4	4	4	286	100	302	395	101	256	4	1,465
Harvest:													
Cut Bed Sides												6	6
Top Onions 2.5X												57	57
Roll Onions												4	4
Dig Onions & Windrow												44	44
Lift Out Onions & Sort												188	188
Field Haul Onions												143	143
TOTAL HARVEST COSTS												440	440

*Other irrigations are included with chemigations

UC COOPERATIVE EXTENSION

Table 3. CONTINUED

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

Beginning NOV 10 Ending OCT 11	NOV 10	DEC 10	JAN 11	FEB 11	MAR 11	APR 11	MAY 11	JUN 11	JUL 11	AUG 11	SEP 11	OCT 11	TOTAL
Assessments:													
CGOB, TGA, Fees												13	13
TOTAL ASSESSMENT COSTS												13	13
Interest on operating capital @ 5.75%	0	0	0	0	0	3	4	5	7	8	9	11	48
TOTAL OPERATING COSTS/ACRE	35	4	5	5	5	651	104	307	402	108	265	468	2,358
OVERHEAD:													
Liability Insurance			1										1
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	15
Field Sanitation	0	0	0	0	0	0	0	0	0	0	0	0	1
Land Rent	357												357
Field Supervisor	5	5	5	5	5	5	5	5	5	5	5	5	58
Irrigation Pipe Rental	15	15	15	15	15	15	15	15	15	15	15	15	175
Crop Insurance						83							83
Property Taxes				22					22				44
Property Insurance				3					3				6
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	4
TOTAL CASH OVERHEAD COSTS	378	21	22	46	21	104	21	21	46	21	21	21	744
TOTAL CASH COSTS/ACRE	412	26	27	50	26	755	125	328	448	129	286	490	3,102

UC COOPERATIVE EXTENSION

Table 4. RANGING ANALYSIS - ONIONS FOR DEHYDRATING

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ONIONS FOR DEHYDRATING

	YIELD (cwt)						
	336.00	384.00	432.00	480.00	528.00	576.00	624.00
OPERATING COSTS/ACRE:							
Preplant Costs	391	391	391	391	391	391	391
Cultural Costs	1,465	1,465	1,465	1,465	1,465	1,465	1,465
Harvest Costs	317	358	399	440	481	522	564
Assessments	12	12	13	13	13	13	14
Interest on operating capital @ 5.75%	48	48	48	48	48	49	49
TOTAL OPERATING COSTS/ACRE	2,234	2,275	2,317	2,358	2,399	2,441	2,484
TOTAL OPERATING COSTS/cwt	6.65	5.92	5.36	4.91	4.54	4.24	3.98
CASH OVERHEAD COSTS/ACRE	743	743	743	744	744	744	744
TOTAL CASH COSTS/ACRE	2,977	3,018	3,060	3,102	3,143	3,185	3,228
TOTAL CASH COSTS/cwt	8.86	7.86	7.08	6.46	5.95	5.53	5.17
NON-CASH OVERHEAD COSTS/ACRE	308	313	317	321	325	328	331
TOTAL COSTS/ACRE	3,285	3,331	3,377	3,423	3,468	3,513	3,559
TOTAL COSTS/cwt	9.78	8.67	7.82	7.13	6.57	6.10	5.70

NET RETURNS PER ACRE ABOVE OPERATING COSTS

Onions	Incentive	YIELD (cwt)						
$/cwt	$/cwt	336.00	384.00	432.00	480.00	528.00	576.00	624.00
4.20	0.30	-722	-547	-373	-198	-23	151	324
4.80	0.30	-520	-316	-113	90	294	497	699
5.40	0.30	-318	-86	146	378	611	843	1,073
6.00	0.30	-117	145	405	666	928	1,188	1,448
6.60	0.30	85	375	664	954	1,245	1,534	1,822
7.20	0.30	286	605	923	1,242	1,561	1,879	2,196
7.80	0.30	488	836	1,183	1,530	1,878	2,225	2,571

NET RETURNS PER ACRE ABOVE CASH COSTS

Onions	Incentive	YIELD (cwt)						
$/cwt	$/cwt	336.00	384.00	432.00	480.00	528.00	576.00	624.00
4.20	0.30	-1,465	-1,290	-1,116	-942	-767	-593	-420
4.80	0.30	-1,263	-1,059	-856	-654	-450	-247	-45
5.40	0.30	-1,061	-829	-597	-366	-133	99	329
6.00	0.30	-860	-598	-338	-78	184	444	704
6.60	0.30	-658	-368	-79	210	501	790	1,078
7.20	0.30	-457	-138	180	498	817	1,135	1,452
7.80	0.30	-255	93	440	786	1,134	1,481	1,827

NET RETURNS PER ACRE ABOVE TOTAL COSTS

Onions	Incentive	YIELD (cwt)						
$/cwt	$/cwt	336.00	384.00	432.00	480.00	528.00	576.00	624.00
4.20	0.30	-1,773	-1,603	-1,433	-1,263	-1,092	-921	-751
4.80	0.30	-1,571	-1,372	-1,173	-975	-775	-575	-376
5.40	0.30	-1,369	-1,142	-914	-687	-458	-229	-2
6.00	0.30	-1,168	-911	-655	-399	-141	116	373
6.60	0.30	-966	-681	-396	-111	176	462	747
7.20	0.30	-765	-451	-137	177	492	807	1,121
7.80	0.30	-563	-220	123	465	809	1,153	1,496

UC COOPERATIVE EXTENSION

Table 5. WHOLE FARM ANNUAL EQUPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
11	125HP 4WD Tractor	121,658	10	35,936	12,674	611	788	14,073
11	150HP 4WD Tractor	139,582	10	41,230	14,541	701	904	16,146
11	175HP 4WD Tractor	145,586	10	43,004	15,167	731	943	16,840
11	200HP 4WD Tractor	181,463	10	53,601	18,904	911	1,175	20,990
11	225HP 4WD Tractor	209,983	10	62,026	21,875	1,054	1,360	24,289
11	75HP 4WD Tractor	60,185	10	17,778	6,270	302	390	6,962
11	ATV #1	7,800	5	3,496	1,153	44	56	1,254
11	ATV #2	7,800	5	3,496	1,153	44	56	1,254
11	Bed Shaper - 6 Row 18'	30,000	10	5,305	3,411	137	177	3,725
11	Chisel 20'	29,877	10	5,283	3,397	136	176	3,709
11	Cultivator-Sled 6 Row 18'	30,000	10	5,305	3,411	137	177	3,725
11	Digger 4 Row Lifter	100,000	5	17,684	11,371	456	588	12,416
11	Digger 2 Row #1	70,000	5	4,946	15,157	290	375	15,822
11	Disc Finish 25'	44,743	10	7,912	5,088	204	263	5,555
11	Fertilizer Applicator 6 Row	51,864	10	9,172	5,898	237	305	6,439
11	Flat Roller 18'	14,827	10	2,622	1,686	68	87	1,841
11	Grain Drill 15'	17,285	7	4,410	2,414	84	108	2,607
11	Lister 6 Row 18'	21,158	5	6,892	3,600	109	140	3,849
11	Mower Flail 18'	55,000	10	9,726	6,254	251	324	6,829
11	Pickup 1/2 Ton #1	23,684	5	10,615	3,502	133	172	3,806
11	Pickup 1/2 Ton #2	23,684	5	10,615	3,502	133	172	3,806
11	Pickup 1/2 Ton #3	23,684	5	10,615	3,502	133	172	3,806
11	Pickup 1/2 Ton #4	23,684	5	10,615	3,502	133	172	3,806
11	Pickup 3/4 Ton #1	28,431	5	12,742	4,204	160	206	4,569
11	Pickup 3/4 Ton #2	28,431	5	12,742	4,204	160	206	4,569
11	Planter-Vacuum 6 Row	80,000	10	14,147	9,097	365	471	9,933
11	Plow Rollover 18'	45,000	10	7,958	5,117	205	265	5,587
11	Ripper 14'	30,411	10	5,378	3,458	139	179	3,776
11	Rotospike 18'	65,000	10	11,495	7,391	296	382	8,070
11	Saddle Tank 300 gal	2,619	10	463	298	12	15	325
11	Side Cutter 6 Row 18'	12,000	5	3,909	2,042	62	80	2,183
	TOTAL	1,725,439	-	451,118	203,245	8,434	10,883	222,562
	55% of New Cost *	948,991	-	248,115	111,785	4,639	5,986	122,409

*Used to reflect a mix of new and used equipment

UC COOPERATIVE EXTENSION

Table 5. CONTINUED

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead Insur-ance	Taxes	Repairs	Total
Fuel Tanks & Pumps	25,867	20	2,587	1,952	110	142	517	2,721
Fuel Wagons	2,840	10	284	341	12	16	56	424
Land	140,000	20	140,000	6,650	0	1,400	0	8,050
Pipe Trailers (5)	21,500	10	2,150	2,578	92	118	430	3,218
Portable Pump (2)	22,010	20	2,201	1,661	94	121	440	2,315
Semi Truck & Lowbed	42,626	15	4,263	3,836	182	234	853	5,105
Shop Building	85,052	25	8,505	5,700	363	468	1,707	8,237
Shop Tools	17,047	20	1,705	1,286	73	94	340	1,793
Storage Building	34,309	20	3,430	2,588	146	189	686	3,609
Tool Carrier	19,715	15	1,972	1,774	84	108	394	2,361
Truck Service 2 Ton	45,490	5	4,549	9,607	194	250	910	10,961
TOTAL INVESTMENT	456,456		171,646	37,973	1,349	3,141	6,333	48,795

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Crop Insurance (Onions)	195	acre	83.00	16,185
Field Sanitation (Toilets)	1,500	acre	1.23	1,845
Field Supervisor	1,500	acre	55.44	83,160
Irrigation Pipe Rental	1,445	acre	175.00	252,875
Land Rent (Onions)	160	acre	350.00	56,000
Liability Insurance	1,500	acre	0.94	1,410
Office Expense	1,500	acre	14.83	22,245

UC COOPERATIVE EXTENSION

Table 6. HOURLY EQUIPMENT COSTS

INTERMOUNTAIN REGION-TULELAKE BASIN 2011

		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
11	125HP 4WD Tractor	1,600	4.36	0.21	0.27	2.96	22.27	25.23	30.07
11	150HP 4WD Tractor	1,600	5.00	0.24	0.31	3.40	26.73	30.13	35.68
11	175HP 4WD Tractor	1,600	5.21	0.25	0.32	3.55	31.18	34.73	40.51
11	200HP 4WD Tractor	1,600	6.50	0.31	0.40	4.43	35.64	40.07	47.28
11	225HP 4WD Tractor	1,601	7.52	0.36	0.47	5.12	40.09	45.21	53.56
11	75HP 4WD Tractor	1,599	2.16	0.10	0.13	1.47	11.31	12.78	15.17
11	ATV #1	285	2.23	0.08	0.11	0.47	3.56	4.03	6.45
11	ATV #2	285	2.23	0.08	0.11	0.47	3.56	4.03	6.45
11	Bed Shaper - 6 Row 18'	200	9.40	0.38	0.49	5.89	0.00	5.89	16.16
11	Chisel 20'	200	9.37	0.38	0.48	5.84	0.00	5.84	16.07
11	Cultivator-Sled 6 Row 18'	200	9.36	0.38	0.48	5.89	0.00	5.89	16.11
11	Digger 4 Row Lifter	250	25.04	1.00	1.30	14.49	0.00	14.49	41.83
11	Digger 2 Row #1	250	33.38	0.64	0.83	7.85	0.00	7.85	42.70
11	Disc Finish 25'	200	13.97	0.56	0.72	6.77	0.00	6.77	22.02
11	Fertilizer Applicator 6 Row	200	27.13	1.09	1.40	18.41	0.00	18.41	48.03
11	Flat Roller 18'	200	4.64	0.19	0.24	1.56	0.00	1.56	6.63
11	Grain Drill 15'	214	6.20	0.22	0.28	4.48	0.00	4.48	11.18
11	Lister 6 Row 18'	400	4.96	0.15	0.19	4.07	0.00	4.07	9.37
11	Mower Flail 18'	200	17.16	0.69	0.89	21.26	0.00	21.26	40.00
11	Pickup 1/2 Ton #1	285	6.76	0.26	0.33	1.41	5.87	7.28	14.63
11	Pickup 1/2 Ton #2	285	6.76	0.26	0.33	1.41	5.87	7.28	14.63
11	Pickup 1/2 Ton #3	285	6.76	0.26	0.33	1.41	5.87	7.28	14.63
11	Pickup 1/2 Ton #4	285	6.76	0.26	0.33	1.41	5.87	7.28	14.63
11	Pickup 3/4 Ton #1	285	8.11	0.31	0.40	1.70	7.04	8.74	17.56
11	Pickup 3/4 Ton #2	285	8.11	0.31	0.40	1.70	7.04	8.74	17.56
11	Planter-Vacuum 6 Row	150	33.40	1.34	1.73	20.21	0.00	20.21	56.68
11	Plow Rollover 18'	200	14.07	0.56	0.73	11.68	0.00	11.68	27.04
11	Ripper 14'	200	9.51	0.38	0.49	6.36	0.00	6.36	16.74
11	Rotospike 18'	150	27.10	1.09	1.40	17.83	0.00	17.83	47.42
11	Saddle Tank 300 gal	150	1.10	0.04	0.06	0.65	0.00	0.65	1.85
11	Side Cutter 6 Row 18'	400	2.81	0.08	0.11	2.31	0.00	2.31	5.31

UC COOPERATIVE EXTENSION

Table 7. COSTS AND RETURNS/BREAKEVEN ANALYSIS

INTERMOUNTAIN REGION - TULELAKE BASIN 2011

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	3,024	2,358	666	3,102	-78	3,423	-399

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	589,680	459,791	129,889	604,820	-15,140	667,421	-77,741
TOTAL	589,680	459,791	129,889	604,820	-15,140	667,421	-77,741

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	480.00	cwt	4.68	6.15	6.79

BREAKEVEN YIELDS PER ACRE

			Breakeven Yield to Cover		
CROP	Base Price ($/Unit)	Yield Units	Operating Costs	Cash Costs	Total Costs
			Yield Units/Acre		
Onions	6.00	cwt	374.30	492.30	543.30

UC COOPERATIVE EXTENSION

Table 8. OPERATIONS WITH EQUIPMENT & MATERIALS

INTERMOUNTAIN REGION-TULELAKE BASIN 2011

Operation	Operation Month	Tractor	Implement	Material	Broadcast Rate/acre	Unit
Cultural:						
Land Prep: Plow 80% of acres	November	200HP 4WD	Plow - 18' Rollover			
Land Prep: Chisel 50% of acre	April	200HP 4WD	Chisel 20'			
Land Prep: Buffer 1% acres Disc 2X	April	200HP 4WD	Disc Finish 25'			
Land Prep: Buffer. Plant	April	125HP 4WD	Grain Drill 15'	Wheatgrass	0.14	lb
Land Prep: Buffer (irrigate)	April	Labor		Water	0.03	acin
Land Prep: Rip 1.5X 60% of acres	April	150HP 4WD	Ripper 14'			
Land Prep: Rotospike 1.5X	April	200HP 4WD	Rotospike 18'			
Land Prep: Pull beds & fertilize	April	175HP 4WD	Lister 6 Row	10-34-0	40.00	gal
			Saddle Tank 300 gal	16-20-0	80.00	lb N
Land Prep: Shape Beds 1.5X	April	175HP 4WD	Bed Shaper 6 Row			
Irrigate: Preirrigate-Set up Solid Set Sprinklers	April	Labor				
Land Prep: Roll Beds 2X	April	125HP 4WD	Flat Roller 18'			
Plant: (Onions furnished by processor)	April	225HP 4WD	Planter Vacuum 6 Row	Lorsban	6.70	lb
				Folicur	21.00	floz
Irrigate:	April	Labor		Water	10.50	acin
	May	Labor		Water	1.75	acin
	May	Labor		Water	1.00	acin
	July	Labor		Water	4.00	acin
	September	Labor		Water	6.11	acin
Weed:	April	Air Application		Roundup	2.00	pt
Weed/Irrigate:	May	Labor		Prowl	1.50	pt
				Outlook	10.45	oz
				Goal	5.25	floz
				Water	2.00	acin
	June	Labor		Prowl	1.50	pt
				Outlook	10.45	oz
				Goal	5.25	floz
				Water	2.00	acin
Fertilize/Irrigate	June	Labor		UN32	15.00	gal
				APS	10.00	gal
				Water	3.00	acin
Fertilize: Top Dress	July	150HP 4WD	Fertilizer Applicator	21-0-0	400.00	lb
Weed: Hand Hoe 2X	June	Labor			8.00	hrs
	July	Labor			7.00	hrs
Weed: Cultivate	June	125HP 4WD	Cultivator Sled 6 Row			
Weed:	July	Air Application		Fusillade	10.00	floz
Insecticide/Fungicide/Irrigate 2X	July	Labor		Bravo	1.50	pt
				Lannate	3.00	pt
				Water	2.00	acin
	August	Labor		Bravo	1.50	pt
				Lannate	3.00	pt
				Water	2.00	acin
Insect: 2X	July	Air Application		Movento	5.00	floz
				Radiant	6.00	floz
	September	Air Application		Movento	5.00	floz
				Radiant	6.00	floz
Disease: 50% by air, 50% by chemigation	August	Air & Labor		Quadris	8.00	floz
	September	Air & Labor		Reason	8.00	floz
Disease: 2X. 50% by air, 50% by chemigation	August	Air & Labor		Manzate	3.00	pt
	September	Air & Labor		Manzate	3.00	pt
Irrigate: Take out pump & pipes	September	Labor				
Harvest: Cut Bed Sides	October	125HP 4WD	Side Cutter 6 Row			
Harvest: Roll Crop	October	75HP 4WD	Flat Roller 18'			
Harvest: Top Onions 2X	October	150HP 4WD	Mower-Flail 18'			
Harvest: Dig Onions & Windrow	October	200HP 4WD	Digger - 4 Row			
Harvest: Lift Out Onions	October	200HP 4WD	Digger/Lifter - 4 Row	Onion Sorters	Labor	
Harvest: Field Haul Onions	October	175HP 4WD	Dollie #1 (furnished)			
		150HP 4WD	Dollie #2 (furnished)			