LT-CC-09-2

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2009

SAMPLE COSTS TO PRODUCE
ICEBERG LETTUCE

HEAD LETTUCE

CENTRAL COAST REGION

Monterey & Santa Cruz Counties

Richard F. Smith	UC Cooperative Extension Farm Advisor, Monterey County
Karen M. Klonsky	UC Cooperative Extension Specialist, Department of Agricultural and Resource Economics, UC Davis
Richard L. De Moura	UC Cooperative Extension Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE ICEBERG LETTUCE
Central Coast Region 2009

CONTENTS

INTRODUCTION

The sample costs to produce iceberg lettuce in the Central Coast Region are presented in this study. The study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate 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 farm 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 local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities can be downloaded at http://coststudies.ucdavis.edu , requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-1515 or from local county UC Cooperative Extension offices.

ASSUMPTIONS

The following assumptions refer to tables 1 to 7 and pertain to sample costs to produce iceberg lettuce in the Central Coast Region. Cultural practices and costs for iceberg lettuce production vary considerably among growers within the region; therefore, many of the costs, practices, and materials in this study will not be applicable to every farm. The practices and inputs used in this cost study serve as a guide only. **The use of trade names and cultural practices 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 or cultural practices**.

Farm. The hypothetical farm is based on a 1,200 non-contiguous acre vegetable crop operation on which 200 acres are planted to fresh market iceberg lettuce. Roads comprise 5% of the acres. Other crops grown are romaine lettuce and hearts, leaf lettuce, broccoli, cauliflower, celery and some miscellaneous vegetables. Typically, the farm can produce up to two vegetable crops per year on each field (double cropped). Costs that affect both crops are allocated accordingly. The farm is operated by the grower and includes rented land on which the lettuce is planted.

Production Operating Costs and Material Inputs

Land Preparation. Primary tillage, which includes discing, rolling, subsoiling, and land leveling, occurs in October and November of the year preceding planting. The operations and sequence will vary among growers. Fields are disced twice (disc previous crop), subsoiled in two directions, disced again, leveled once every two years (cost allocated accordingly), compost applied, then chiseled twice, disced twice and beds listed with preplant fertilizer using a GPS system (custom). In January, two passes are made with a rolling cultivator; then in one operation, the grower shapes and smooth's the bed. **Ideally, the same operations are done in between each crop, but in some situations, growers will do minimal tillage by not doing all operations.**

Plant/Stand Establishment. An iceberg lettuce variety is direct seeded using a four-bed precision planter, planting two-rows (lines) on 40-inch beds. Fields are planted to a stand of 157,000 plants per acre at two to three-inch plant spacing. In the Central Coast iceberg lettuce is planted continuously from late December to mid-August. In this study the lettuce operations are based on a January planting. The plants are hand thinned to a 9 to 11-inch spacing approximately 21 to 30 days after planting.

Fertilize/Soil Amendments. Four tons of compost are commercially broadcast over the field prior to the primary tillage operations. One-half or two tons are allocated to each crop. An NPK fertilizer (8-8-8) at 612 pounds (60 gallons) is applied during the listing operation. Spray-Aide is applied as an Anticrustant at planting. UN32 fertilizer is sidedressed at 70 pounds of nitrogen (N) per acre (219 lbs or 20 gallons of material) in February and March. A total of 190 pounds of N is applied (50 lbs preplant and 140 lbs sidedressed).

Irrigation. The water is pumped from wells. Based on current grower and district information, the estimated cost is $85.00 per acre-foot or $7.08 per acre-inch. Water costs vary considerably depending upon water district and pumping variables. In some areas district or agency fees may apply. Approximately 3-acre inches of water are applied through sprinklers during stand establishment – two-inches during the first 6-10 days after planting and another one-inch 2-3 weeks later prior to thinning. An additional 12.00 acre-inches are applied weekly through the sprinkler system during the remainder of the growing season (February, March, April) for a seasonal total of 15.00 acre-inches. Water use will vary depending on various factors such as irrigation method, soil type, weather, and the time of the year the crop is planted.

Sprinkler Pipe. The grower owned sprinkler pipe and mainline are laid out immediately behind the planter taking one tractor driver and two pipe layers approximately one-half hour per acre. (1.5 man-hours) The same operation is repeated for picking up the pipe and mainlines. To allow for ground cultural operations during the season, the pipe is moved, picked up and laid out as necessary. For spraying operations, the pipe is often moved and left in the field in a way the sprayer can work around it. The sprinkler pipe value is shown under Non-Cash Overhead.

Pest Management. Pest control materials and rates mentioned in this cost study are those commonly used by the growers in the area. For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu or contact your UCCE farm advisor. Pesticides mentioned in this study are used to calculate rates and costs. Spray adjuvants are recommended for use with many pesticides, but are not accounted for in this study. Pesticide costs vary by location, brand, and volume purchased. Pesticide costs in this study are from a single dealer and shown as full retail. For information and pesticide use permits, contact the local county agricultural commissioner's office. **Insects and diseases will vary depending on the time of the year (cool or warm season) the lettuce is planted. The following program is based upon warm season growth.**

Pest Control Adviser. Written recommendations are required for many commercially applied pesticides and are made by licensed pest control advisers. A Pest Control Adviser (PCA) or Consultant monitors the field for insects, diseases, beneficial insects, and agronomic problems to determine if control measures are necessary. The Pest Management Consultant fee in this study is $30 per acre.

Weeds. Prefar and Kerb herbicides (with an insecticide and anticrustant) are banded (applied to 25% of the area) at planting. The crop is cultivated and thinned 21 to 30 days post plant. Approximately two weeks after thinning, the beds and furrows are cultivated. The fields are handweeded approximately three weeks after thinning.

Insects. Soil insects are controlled with a soil application of Mustang at planting. Lettuce aphid is controlled with ground applications of Acephate at thinning, at rosette and air applications of Movento and MSR at mid-heading and an air application of Provado at preharvest. Worms are controlled with ground applications of Radiant at rosette and mid-heading and an air application at preharvest. Materials are combined with the disease sprays.

Disease. Downey mildew can cause damage and crop loss in iceberg lettuce production. For downy mildew control, Manex is applied by ground at thinning and at rosette (two weeks after thinning). Manex and Previcur are applied by air at mid-heading and Phosphite by air at preharvest. Sclerotinia is controlled with a ground application of Endura at thinning. Materials are combined with the insect sprays.

Harvest. Iceberg lettuce is hand harvested (field-packed and wrapped) under contract 70 to 130 days after planting depending on the time of year planted. Cool season plantings may require 130 days to mature but as the season warms, time to maturity decreases. Total costs will vary by type of pack, labor (piece rate vs. hourly), packer and other miscellaneous items. The costs in this study are $2.10 for the carton, $3.15 per carton for harvest labor, which brings the field harvest cost to $5.25 per packed carton. A carton in this study is a 24 count weighing approximately 40 pounds per carton. Transportation costs vary depending on the distance to market and are included in the above costs. Most growers are within a 25-mile radius of the cooler. Cooling and palletizing cost an additional $0.96 per carton, which brings the total harvest cost to $6.21 per carton. Selling costs are $0.61 per carton.

Yields. The crop yield is 800 cartons weighing approximately 40 pounds each or 16 tons per acre. Yields are based on limited data from growers producing iceberg lettuce on 40-inch beds.

Returns. The price for Central Coast fresh market iceberg lettuce delivered and sold through grower-shipper channels is assumed for this study to be $12.00 per carton. The price is an average of the 2006-2008 returns based on the 2008 Salinas-Watsonville shipping point selling prices for 24 size wrapped iceberg lettuce . Table 4 shows the net returns above operating costs, cash costs and total costs for a range of prices and yields.

Pickup. The grower uses the pickup for business and personal use. The assumed business use is approximately 14,000 miles per year for the farm and not based on any specific data.

Labor, Interest and Equipment

Labor. Labor rates of $13.40 per hour for machine operators and $11.39 for general labor includes payroll overhead of 34%. The basic hourly wages are $10.00 for machine operators and $8.50 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for truck crops (code 0172), 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, 2009 (California Department of Insurance, March 2009, unreferenced). 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.

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 5.75% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

Equipment Operating Costs. 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 takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of red dye diesel and gasoline are $3.70 (excludes excise taxes) and $3.56 per gallon, respectively. The cost includes a 2% local sales tax on diesel fuel, but does not include excise taxes. Gasoline costs include an 8% sales tax plus federal and state excise tax. Some federal and excise tax can be refunded for on-farm use when filing your income tax. The costs are based on 2008 (July to December) American Automobile Association (AAA) and Department of Energy (DOE) monthly data. 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.

Risk. Risks associated with iceberg lettuce production are not assigned a production cost. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks that affect the profitability and economic viability of fresh market vegetable production. The market for fresh vegetables is volatile for both price and quantity. A market channel should be determined before any lettuce production begins.

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. Because overhead costs are farm and ranch specific, costs will vary among growers. **Costs are split in most cases equally between the double cropped acreage**.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. 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 two on a per acre basis.

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 0.82% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,501 for the entire farm or $1.25 per acre.

Office Expense. Annual office and business expenses are estimated at $250 per acre. Being two crops are grown on the same acres; $125 is allocated to each crop. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

Rent. Land rents for Monterey and Santa Cruz Counties ranges from $900 to $2,500 per acre. In this study, land rented for lettuce and broccoli production is $1,800 per acre with $900 allocated to each crop. Rents vary by area and ground quality. The land rented includes developed wells and irrigation system. The landowner incurs all costs for the land and the irrigation system.

Food Safety Program. Many growers of fresh market commodities such as leafy greens incorporate and participate in food safety programs for their operations. Part of a food safety program is participation in third party (independent) audits that are done to ensure the safety of fresh products and accommodate buyer requests, and to enhance marketability of the crop. Farms may have their own program, work through the processor or a combination of the two. Costs will vary depending upon the farm or processor and inspection circumstances. For this study, costs not based on any specific data are estimated at $50.00 per acre.

Supervisor Salaries. Wages for managers are not included as a cash cost. Any returns above total costs are considered a return to management.

Field Sanitation. Sanitation services for the farm provide portable toilets and washbasins to the farm. The cost includes two double toilets with washbasins, delivery and pickup, and 12 months of weekly servicing. Costs also include soap or other suitable cleansing agent, and single use towels. Separate potable water and single-use drinking cups are also supplied. Growers using contract labor may not have a separate sanitation cost. The contractor supplies the sanitation facilities.

Investment Repairs. Repair costs are the annual maintenance costs for investments in non-cash overhead. For this study annual repairs are calculated as 2% of the new cost.

Non-Cash Overhead

Non-Cash overhead is calculated as the capital recovery cost for equipment and other farm 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. The calculation for the annual capital recovery costs is ((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 wearout 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 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 4.25% used to calculate capital recovery cost is the effective long term interest rate effective January 8, 2009. The interest rate is provided by a local farm lending agency and will vary according to risk and amount of loan.

Building. The metal building or buildings are on a cement slab and comprise 2,400 square feet.

Tools. This includes shop and field tools used on the farm. The value is estimated and does not represent any specific data.

Fuel Tanks. Two 300-gallon fuel tanks using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

Irrigation/Sprinkler. The basic irrigation system is included in the land rental costs and the system is maintained by the grower/renter. The grower owns 8,800 30-foot sections of sprinkler pipe. Irrigation water is pumped from a well and delivered to the fields through an underground pipe system. In this study, water is pumped from a depth of 120 feet in a 500-foot well and the grower pays the pumping cost.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in Table 5. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

Acknowledgements. The authors wish to thank the growers, pest control advisers, processors, agricultural product dealers, and researchers who provided input.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components. Some growers prefer to separate Harvest Costs from Total Cash Costs to reflect Total Growing Costs. In the tables in this study: Total Cash Costs - Harvest Costs = Total Growing Costs.

REFERENCES

Agricultural Commissioner. *Annual Crop Reports.* 2007-2008. Monterey County. Salinas, CA.

American Society of Agricultural Engineers. (ASAE). 2002. American Society of Agricultural Engineers Standards Yearbook. Russell H. Hahn and Evelyn E. Rosentreter (ed.). St. Joseph, MO. 41st edition.

Boehlje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, New York

California Chapter of the American Society of Farm Managers and Rural Appraisers. 2008 *Trends in Agricultural Land & Lease Values.* American Society of Farm Managers and Rural Appraisers, Woodbridge, CA.

California State Automobile Association. 2008. *Gas Price Averages 2008.* AAA Press Room, San Francisco, CA. Internet accessed January 2009. http://www.csaa.com/portal/site/CSAA

California State Board of Equalization. *Fuel Tax Division Tax Rates.* Internet accessed January 2009. http://www.boe.ca.gov/sptaxprog/spftdrates.htm

Doane Editors. 1984. *Facts and Figures for Farmers.* Doane Publishing, St. Louis, MO.

Energy Information Administration. 2008. *Weekly Retail on Highway Diesel Prices.* Internet accessed January 2009. http://tonto.eix.doe.gov/oog/info/wohdp

Jackson, Louise Keith S. Mayberry, Frank Laemmlen, Steven T. Koike, and William Chaney. 1996. *Iceberg Lettuce Production in California.* University of California, Division of Agriculture and Natural Resources, Vegetable Research and Information Center. Publication 7215.

Tourte, Laura, Richard F. Smith, Karen M. Klonsky and Richard L. De Moura. 2009. *Sample Production Costs to Produce Organic Leaf Lettuce, Central Coast Region.* University of California, Cooperative Extension. Santa Cruz and Monterey, CA.

University of California Statewide IPM Project. 2008. *UC Pest Management Guidelines, Lettuce*. University of California, Davis, CA. http://www.ipm.ucdavis.edu

United States Department of Agriculture, Fruit and Vegetable Market News. http://marketnews.usda.gov/portal/fv?paf_dm=full&paf_gear_id=1200002&startIndex=1&dr=1&navType=comm&navClass=VEGETABLES&final=true

---

UC COOPERATIVE EXTENSION

Table 1. COST PER ACRE TO PRODUCE ICEBERG LETTUCE

CENTRAL COAST 2009

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: Disk 5X	0.72	12	46	0	0	58	
Land Prep: Rip 2X	1.29	21	79	0	0	99	
Land Prep: Level (Triplane) 1X/2Yrs, charge 1/4 per crop	0.06	1	4	0	0	5	
Soil Amendment: (Compost) 1X/2 crops (1/2 cost)	0.00	0	0	50	14	64	
Land Prep: Chisel 2X	0.35	6	21	0	0	27	
Land Prep: List Beds (GPS). Fertilize: (8-8-8)	0.00	0	0	220	18	238	
Land Prep: Lilliston (rolling cultivator) 2X	0.37	6	15	0	0	21	
Land Prep: Shape beds	0.23	4	12	0	0	16	
Plant. (Iceberg seed). Weed: (Kerb, Prefar). Insect (Mustang). Anticrustant (Spray Aide)	0.18	3	9	402	0	415	
Irrigate: Layout and/or Pickup Sprinkler Pipe	4.00	155	85	0	0	241	
Irrigate: Sprinkle 3X (includes 1X prethin)	1.50	17	0	21	0	38	
Weed: Cultivate	0.11	2	4	0	0	6	
Plant: Thin Lettuce	8.00	91	0	0	0	91	
Irrigate: Sprinkle	1.81	21	0	85	0	106	
Weed: Cultivate and Run Bottoms	0.11	2	2	0	0	4	
Fertilize: Sidedress (UN32)	0.40	6	16	90	0	112	
Disease: Mildew (Manex), Sclerotinia (Endura). Insects: Aphid (Acephate)	0.00	0	0	96	25	121	
Weed: Hand Hoe	6.00	68	0	0	0	68	
Disease: Mildew (Manex). Insects: Aphid (Acephate, MSR), Worms (Radiant)	0.00	0	0	113	25	138	
Disease: Mildew (Manex, Previcur) Insects: Aphid (Movento, MSR), Worms (Radiant)	0.00	0	0	154	25	179	
Disease: Mildew (Phosphite). Insects: Aphid (Provado), Worms (Radiant)	0.00	0	0	73	33	106	
Pest: Pest Management Consultant	0.00	0	0	0	30	30	
Pickup use	1.43	23	26	0	0	49	
TOTAL CULTURAL COSTS	26.56	437	321	1,304	170	2,232	
Harvest:							
Cut, Wrap, Pack, Haul	0.00	0	0	4,200	0	4,200	
Cool, Palletize, Sell	0.00	0	0	1,256	0	1,256	
TOTAL HARVEST COSTS	0.00	0	0	5,456	0	5,456	
Interest on operating capital @ 5.75%						66	
TOTAL OPERATING COSTS/ACRE		437	321	6,760	170	7,754	

UC COOPERATIVE EXTENSION

Table 1. CONTINUED

CENTRAL COAST 2009

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						125	
Field Sanitation (Toilets)						28	
Land Rent						900	
Food Safety Certification						50	
Property Taxes						7	
Property Insurance						6	
Investment Repairs						12	
TOTAL CASH OVERHEAD COSTS						1,130	
TOTAL CASH COSTS/ACRE						8,883	
NON-CASH OVERHEAD		Per Producing Acre		Annual Cost Capital Recovery			
Building		70		4		4	
Shop Tools		13		1		1	
Fuel Tanks		4		0		0	
Sprinkler Pipe		525		41		41	
Equipment		617		69		69	
TOTAL NON-CASH OVERHEAD COSTS		1,229		116		116	
TOTAL COSTS/ACRE						8,999	

UC COOPERATIVE EXTENSION

Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE ICEBERG LETTUCE

CENTRAL COAST 2009

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Iceberg Lettuce (wrapped 24-count ctn)	800.00	ctn	12.00	9,600	
OPERATING COSTS					
Fertilizer/Soil Amendments:					
Compost -(compost + delivery) 1/2 Quantity to lettuce	2.00	ton	25.00	50	
8-8-8 (10.2 lbs per gallon)	612.00	lb	0.36	220	
UN 32 (32-0-0 @ 11 lbs per gallon)	140.00	lb N	0.64	90	
Spray-Aide (Anticrustant)	3.00	gal	42.31	127	
Custom:					
Spread Compost	2.00	ton	7.00	14	
List (GPS) and Fertilize	1.00	acre	18.00	18	
Ground Application (pesticides)	3.00	acre	25.00	75	
Air Application-Pesticides (helicopter)	1.00	acre	33.00	33	
Pest Management Consultant	1.00	acre	30.00	30	
Harvest:					
Cut, Wrap, Pack, Carton	800.00	ctn	5.25	4,200	
Cool lettuce	800.00	ctn	0.70	560	
Palletize	800.00	ctn	0.26	208	
Sales Charge	800.00	ctn	0.61	488	
Seed:					
Lettuce Iceberg (pelleted)	157.00	thou	1.13	177	
Insecticide:					
Mustang Max EW	4.00	floz	2.41	10	
Acephate 97	2.00	lb	13.20	26	
MSR Spray Concentrate	4.00	pt	17.29	69	
Radiant SC	18.00	floz	7.46	134	
Movento	4.00	floz	8.50	34	
Provado 1.6	3.80	floz	3.75	14	
Herbicide:					
Kerb 50W	1.00	lb	59.90	60	
Prefar 4E	1.50	qt	18.86	28	
Fungicide:					
Manex	4.80	qt	12.75	61	
Endura	8.00	oz	7.80	62	
Previcur Flex	1.33	pt	15.48	21	
Phosphite	2.00	qt	6.80	14	
Water:					
Water-pumped	15.00	acin	7.08	106	
Labor (machine)	11.09	hrs	13.40	149	
Labor (non-machine)	25.31	hrs	11.39	288	
Fuel - Gas	5.95	gal	3.36	20	
Fuel - Diesel	59.75	gal	3.70	221	
Lube				36	
Machinery repair				44	
Interest on operating capital @ 5.75%				66	
TOTAL OPERATING COSTS/ACRE				7,754	
NET RETURNS ABOVE OPERATING COSTS				1,846	

UC COOPERATIVE EXTENSION

Table 2. CONTINUED

CENTRAL COAST 2009

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				125	
Field Sanitation (Toilets)				28	
Land Rent				900	
Food Safety Certification				50	
Property Taxes				7	
Property Insurance				6	
Investment Repairs				12	
TOTAL CASH OVERHEAD COSTS/ACRE				1,130	
TOTAL CASH COSTS/ACRE				8,883	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Building				4	
Shop Tools				1	
Fuel Tanks				0	
Sprinkler Pipe				41	
Equipment				69	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				116	
TOTAL COSTS/ACRE				8,999	
NET RETURNS ABOVE TOTAL COSTS				601	

UC COOPERATIVE EXTENSION

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE ICEBERG LETTUCE

CENTRAL COAST 2009

Beginning OCT 08	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Ending NOV 09	08	08	08	09	09	09	09	09	09	09	09	09	
Cultural:													
Land Prep: Disk 5X	58												58
Land Prep: Rip 2X	99												99
Land Prep: Level (Triplane) 1X/2Yrs, charge 1/4 per crop	5												5
Soil Amendment: (Compost) 1X/2 crops (1/2 cost)	64												64
Land Prep: Chisel 2X	27												27
Land Prep: List Beds (GPS). Fertilize: (8-8-8)	238												238
Land Prep: Lilliston (rolling cultivator) 2X				21									21
Land Prep: Shape beds				16									16
Plant. (Iceberg seed). Weed: (Kerb, Prefar). Insect (Mustang)				415									415
Irrigate: Layout and/or Pickup Sprinkler Pipe				30	90	60	60						241
Irrigate: Sprinkle 3X (includes 1X prethin)				26	13								38
Weed: Cultivate					6								6
Plant: Thin Lettuce					91								91
Irrigate: Sprinkle					13	62	31						106
Weed: Cultivate and Run Bottoms					4								4
Fertilize: Sidedress (UN32)					56	56							112
Disease: Mildew (Manex), Sclerotinia (Endura). Insects: Aphid (Acephate)					121								121
Weed: Hand Hoe						68							68
Disease: Mildew (Manex). Insects: Aphid (Acephate, MSR), Worms (Radiant)						138							138
Disease: Mildew (Manex, Previcur) Insects: Aphid (Movento, MSR), Worms (Radiant)						179							179
Disease: Mildew (Phosphite). Insects: Aphid (Provado), Worms (Radiant)							106						106
Pest: Pest Management Consultant	4	4	4	4	4	4	4						30
Pickup use	7	7	7	7	7	7	7						49
TOTAL CULTURAL COSTS	503	11	11	519	406	575	208						2,232
Harvest:													
Cut, Pack, Haul							4,200						4,200
Cool, Palletize, Sell							1,256						1,256
TOTAL HARVEST COSTS							5,456						5,456
Interest on operating capital @ 5.75%	2	2	3	5	7	10	37						66
TOTAL OPERATING COSTS/ACRE	505	14	14	524	412	584	5,701						7,754
OVERHEAD:													
Liability Insurance				1									1
Office Expense	18	18	18	18	18	18	18						125
Field Sanitation (Toilets)				7	7	7	7						28
Land Rent							900						900
Food Safety Certification					50								50
Property Taxes				7									7
Property Insurance				6									6
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	12
TOTAL CASH OVERHEAD COSTS	19	19	19	40	76	26	926	1	1	1	1	1	1,130
TOTAL CASH COSTS/ACRE	524	33	33	564	488	610	6,627	1	1	1	1	1	8,883

UC COOPERATIVE EXTENSION

Table 4. RANGING ANALYSIS

CENTRAL COAST 2009

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ICEBERG LETTUCE

	YIELD (24-count cartons/acre)						
	500	600	700	800	900	1,000	1,100
OPERATING COSTS/ACRE:							
Cultural Cost	2,232	2,232	2,232	2,232	2,232	2,232	2,232
Harvest Cost	3,410	4,092	4,774	5,456	6,138	6,820	7,502
Interest on operating capital @ 5.75%	56	59	62	65	69	72	75
TOTAL OPERATING COSTS/ACRE	5,698	6,383	7,068	7,753	8,439	9,124	9,809
TOTAL OPERATING COSTS/ctn	11.40	10.64	10.10	9.69	9.38	9.12	8.92
CASH OVERHEAD COSTS/ACRE	1,130	1,130	1,130	1,130	1,130	1,130	1,130
TOTAL CASH COSTS/ACRE	6,828	7,513	8,198	8,883	9,569	10,254	10,939
TOTAL CASH COSTS/ctn	13.66	12.52	11.71	11.10	10.63	10.25	9.94
NON-CASH OVERHEAD COSTS/ACRE	116	116	116	116	116	116	116
TOTAL COSTS/ACRE	6,944	7,629	8,314	8,999	9,685	10,370	11,055
TOTAL COSTS/ctn	13.89	12.71	11.88	11.25	10.76	10.37	10.05

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (24-count cartons/acre)						
$/box	500	600	700	800	900	1,000	1,100
9.00	-1,198	-983	-768	-553	-339	-124	91
10.00	-698	-383	-68	247	561	876	1,191
11.00	-198	217	632	1,047	1,461	1,876	2,291
12.00	302	817	1,332	1,847	2,361	2,876	3,391
13.00	802	1,417	2,032	2,647	3,261	3,876	4,491
14.00	1,302	2,017	2,732	3,447	4,161	4,876	5,591
15.00	1,802	2,617	3,432	4,247	5,061	5,876	6,691

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE	YIELD (24-count cartons/acre)						
$/box	500	600	700	800	900	1,000	1,100
9.00	-2,328	-2,113	-1,898	-1,683	-1,469	-1,254	-1,039
10.00	-1,828	-1,513	-1,198	-883	-569	-254	61
11.00	-1,328	-913	-498	-83	331	746	1,161
12.00	-828	-313	202	717	1,231	1,746	2,261
13.00	-328	287	902	1,517	2,131	2,746	3,361
14.00	172	887	1,602	2,317	3,031	3,746	4,461
15.00	672	1,487	2,302	3,117	3,931	4,746	5,561

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE	YIELD (24-count cartons/acre)						
$/box	500	600	700	800	900	1,000	1,100
9.00	-2,444	-2,229	-2,014	-1,799	-1,585	-1,370	-1,155
10.00	-1,944	-1,629	-1,314	-999	-685	-370	-55
11.00	-1,444	-1,029	-614	-199	215	630	1,045
12.00	-944	-429	86	601	1,115	1,630	2,145
13.00	-444	171	786	1,401	2,015	2,630	3,245
14.00	56	771	1,486	2,201	2,915	3,630	4,345
15.00	556	1,371	2,186	3,001	3,815	4,630	5,445

UC COOPERATIVE EXTENSION

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

CENTRAL COAST 2009

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
09	125 HP 4WD Tractor	87,000	10	25,698	9,063	462	563	10,089
09	160 HP 4WD Tractor	108,000	10	31,901	11,251	574	700	12,524
09	200 HP Track Tractor	192,137	10	56,754	20,016	1,020	1,244	22,281
09	75 HP MFWD Tractor	66,603	10	19,673	6,939	354	431	7,724
09	80 HP Specialty Tractor	51,000	10	15,065	5,313	271	330	5,914
09	Bed Shaper/Mulcher 4 bed 13'	34,000	12	4,709	3,482	159	194	3,834
09	Chisel 16'	9,333	12	1,293	956	44	53	1,052
09	Cultivator 4 bed 13'	2,500	10	442	284	12	15	311
09	Disk-Finish, Folding 18'	30,000	12	4,155	3,072	140	171	3,383
09	Fertilizer Rig 4 bed 13’	4,285	10	758	487	21	25	533
09	Pickup 1/2 Ton	32,000	5	14,342	4,732	190	232	5,153
09	Planter Precision 4 bed, 2 line 13'	23,891	10	4,225	2,717	115	141	2,973
09	Rolling Cultivator, 13'	11,500	10	2,034	1,308	55	68	1,431
09	Subsoiler - 3 shank 5'	3,500	5	1,140	595	19	23	638
09	Trailer-Pipe	2,100	10	371	239	10	12	261
09	Triplane - 16'	24,000	12	3,324	2,458	112	137	2,707
	TOTAL	681,849		185,884	72,912	3,558	4,339	80,808
	60% of New Cost *	409,109		111,530	43,747	2,135	2,603	48,485

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
Building 2400 sqft	80,000	32		4,913	328	400	1,600	7,241
Fuel Tank OH 2-300 gal	4,500	30	350	279	20	24	90	413
Pipe Sprinkler 264,000 ft	598,400	20		47,005	2,453	2,992	11,968	64,418
Shop Tools	15,000	20	1,307	1,138	67	82	300	1,586
TOTAL INVESTMENT	697,900		1,657	53,334	2,868	3,498	13,958	73,658

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Food Safety Certification	1,140	acre	50.00	57,000
Land Rent (Lettuce portion)	200	acre	900.00	180,000
Liability Insurance	1,140	acre	1.32	1,505
Office Expense	1,140	acre	125.00	142,500
Sanitation (Toilets 2 double)	200	acre	28.20	5,640

UC COOPERATIVE EXTENSION

Table 6. HOURLY EQUIPMENT COSTS

CENTRAL COAST 2009

		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
09	125 HP 4WD Tractor	1,200	4.53	0.23	0.28	4.05	30.87	34.92	39.96
09	160 HP 4WD Tractor	1,600	4.22	0.22	0.26	2.87	39.51	42.38	47.08
09	200 HP Track Tractor	1,600	7.51	0.38	0.47	5.11	49.39	54.50	62.86
09	75 HP MFWD Tractor	1,600	2.60	0.13	0.16	1.77	15.67	17.44	20.33
09	80 HP Specialty Tractor	1,200	2.66	0.14	0.17	2.38	16.72	19.10	22.07
09	Bed Shaper/Mulcher 4 bed 13'	166	12.56	0.57	0.70	7.12	0.00	7.12	20.95
09	Chisel 16'	166	3.46	0.16	0.19	1.97	0.00	1.97	5.78
09	Cultivator 4 bed 13'	200	0.85	0.04	0.04	0.52	0.00	0.52	1.45
09	Disk-Finish, Folding 18'	166	11.12	0.51	0.62	4.87	0.00	4.87	17.12
09	Fertilizer Rig 4 bed 13’	120	2.43	0.10	0.13	1.66	0.00	1.66	4.32
09	Pickup 1/2 Ton	286	9.94	0.40	0.49	2.08	16.10	18.18	29.01
09	Planter Precision 4 bed, 2 line 13'	150	10.90	0.46	0.56	6.58	0.00	6.58	18.50
09	Rolling Cultivator, 13'	200	3.93	0.17	0.20	2.36	0.00	2.36	6.66
09	Subsoiler - 3 shank 5'	400	0.89	0.03	0.03	0.82	0.00	0.82	1.77
09	Trailer-Pipe	800	0.18	0.01	0.01	0.32	0.00	0.32	0.52
09	Triplane - 16'	250	5.90	0.27	0.33	3.67	0.00	3.67	10.17

UC COOPERATIVE EXTENSION

Table 7. OPERATIONS WITH EQUIPMENT and MATERIALS

CENTRAL COAST 2009

Operation	Operation Month	Tractor	Implement	Labor	Material	Broadcast Rate/acre	Unit
Cultural:							
Land Prep: Disk 5X	October	200 HP	Disk 18'				
	October	200 HP	Disk 18'				
	October	200 HP	Disk 18'				
Land Prep: Sub Soil (Rip) 2X	October	200 HP	Sub Soiler 5'				
Land Prep: Level 1X/2Yr	October	200 HP	Triplane 16'				
Fertilize: 4 ton (1/2 to current crop)	October	Custom			Compost	2.00	ton
Land Prep: Chisel 2X	October	200 HP	Chisel 16'				
Land Prep: List Beds. Fertilize	January	Custom			8-8-8	612.00	lb
Land Prep: Lilliston	January	125 HP	Rolling Cultivator 13'				
Land Prep: Shape Beds	January	160 HP	Bed/Mulch Shaper 13'				
Plant. Weeds. Soil Insects. Anticrustant	January	160 HP	Planter 13'		Lettuce Seed	157.00	thou
					Kerb	1.00	lb
					Prefar	1.50	qt
					Mustang	4.00	floz
					Spray-Aide	3.00	gal
Plant: Thin	February			8.00			
Irrigate: Layout Sprinkler Pipe	January	80 HP	Pipe Trailer	1.00			
Irrigate: Pickup Sprinkler Pipe	February	80 HP	Pipe Trailer	1.00			
Irrigate: Layout Sprinkler Pipe	February	80 HP	Pipe Trailer	1.00			
Irrigate: Pickup Sprinkler Pipe	February	80 HP	Pipe Trailer	1.00			
Irrigate: Layout Sprinkler Pipe	March	80 HP	Pipe Trailer	1.00			
Irrigate: Pickup Sprinkler Pipe	March	80 HP	Pipe Trailer	1.00			
Irrigate: Layout Sprinkler Pipe	April	80 HP	Pipe Trailer	1.00			
Irrigate: Pickup Sprinkler Pipe	April	80 HP	Pipe Trailer	1.00			
Irrigate: Sprinkle	January			1.00	Water	2.00	acin
	February			0.50	Water	1.00	acin
	February			0.15	Water	1.50	acin
	March			1.05	Water	7.00	acin
	April			0.53	Water	3.50	acin
Fertilize: Sidedress	February	125 HP	Fertilizer Rig		UN32	70.00	lb N
	March	125 HP	Fertilizer Rig		UN32	70.00	lb N
Weed: Cultivate	February	125 HP	Cultivator				
Weed: Cultivate & Run Bottoms	February	125 HP	Cultivator				
Weed: Hand	March			6.00			
Disease: Mildew. Insect: Sclerotinia, Aphid.	February	Custom			Manex	1.60	qt
					Endura	8.00	oz
					Acephate	1.00	lb
Disease: Mildew. Insect: Sclerotinia, Aphid.	March	Custom			Manex	1.60	qt
					Acephate	1.00	lb
					MSR	2.00	pt
					Radiant	6.00	floz
Disease: Mildew. Insect: Aphid, Worm	March	Custom			Manex	1.60	qt
					Previcur	1.33	pt
					Movento	4.00	floz
					MSR	2.00	pt
					Radiant	6.00	floz
Disease: Mildew. Insect: Aphid, Worm	April	Custom-Air			Phosphite	2.00	qt
					Provado	3.80	floz
					Radiant	6.00	floz
Harvest: Cut, Wrap, Pack, Haul	April	Contract					
Harvest: Cool, Palletize, Sell	April	Contract					