
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2007

SAMPLE COSTS TO PRODUCE
ORGANIC
WALNUTS

TERMINAL BEARING VARIETY



NORTH COAST – Lake County

Sprinkler Irrigation

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INTRODUCTION

Sample costs to produce organic walnuts under sprinkler irrigation in the North Coast – Lake County are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on production practices considered typical for the 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 blank column, “Your Costs”, in Tables 1 and 2 is provided to enter your costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or your local UC Cooperative Extension office.

Sample Cost of Production Studies are available for many commodities. Current and archived studies can be downloaded from the Agricultural and Resource Economics website at UC Davis <http://coststudies.ucdavis.edu>. These studies as well as other archived studies not on the website can be requested through the department by calling (530) 752-1517.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 7 and pertain to sample costs to convert a conventional orchard to organic production and produce organic walnuts in the North Coast – Lake County. The cultural practices described represent production operations and materials considered typical of a well-managed farm in the region. The costs, materials, and practices shown in this study will not apply to all situations. **For small farms such as 10 acres, custom operators may have a minimum charge and it may be considerably higher than the costs used in this study.** Establishment and production cultural practices vary by grower and the differences can be significant. **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.**

Land. The farm consists of 10 contiguous acres – 9 acres of walnuts and 1 acre of roads, irrigation system and homestead -- farmed by the owner. The land is assumed to be well drained and either a class I or II soil on level land. In this area many orchards are planted on hillsides of various slopes. The walnuts are being converted to organic production.

Trees. In this study, terminal bearing trees are planted on a 45-foot x 45-foot spacing, 20 to 21 trees per acre. The varieties used in this study are Franquette with a late October to early November harvest date and Hartley with a mid to late October harvest date. The life of the orchard at the time of planting is estimated to be 35 years.

Orchard Preparation for Organic Production. The orchard is assumed to have been established as a conventional walnut orchard. Changing a farming system from conventional to organic practices requires a 36 month transition period from the date of the final conventional material application. Crops grown in transition years can be sold or labeled transition, providing the organic rules and regulations are adhered to. Rules and regulations specific to organic commodities are established under the Organic Food Act of 1990 in the California Department of Food and Agriculture (CDFA) and the United States Department of Agriculture's (USDA) National Organic Program (NOP). The orchard in this report is considered to have begun the transition after it has begun bearing, which is the fifth or sixth year after planting. It has completed the transition period and has been certified as organic. Refer to the USDA rules for organic production.

Production Cultural Practices and Material Inputs

Prune/Sucker. Pruning is done in early February by a custom operator. The pruning is done using a tower with one person on the tower and one on the ground stacking the brush in the row middles. It takes about two hours or four man hours per acre to prune and stack. The orchard is pruned once every three years and one-third of the cost is allocated to the orchard each year. The prunings are pushed to the edge of the field using a tractor with forks to push the prunings into a stack, after which they are burned. It takes a tractor driver and one man to push and burn the prunings and to clean up the miscellaneous trash from the pruning operation. Lake County requires a Burn Permit for which there is a \$25 fee. The base of the trees are hand pruned (suckered) in July.

Irrigation. Irrigation costs include pumping (water) and labor costs. The water is pumped from a well, and fed into the pull-hose type sprinkler system. In this study water costs \$4.76 per acre inch based on current PG&E agricultural rates and reported grower costs. Local orchards may receive from 16 to 24 acre inches of water per season. In this study, a total of 24 acre-inches of water is applied to the orchard – six inches per application, one application per month in late June, July, August and September. Water rate is based on 80% application efficiency and no assumption is made about effective rainfall, evaporation, and runoff.

Fertilization. Pelletized chicken manure at 1,000 pounds per acre is applied in January to provide nitrogen (N). Compost (grape pumice) and gypsum 50-50 mixture is applied at three ton (6,000 lbs) per acre. Both applications are done by the grower with his tractor and a fertilizer spreader loaned by the fertilizer company. Both materials are delivered to the grower in 2,000 pound bags; a forklift is rented for a day to lift and dump the bags into the spreader. Zinc (Zn) as zinc sulfate 36% at 10 to 15 pounds per acre is applied as a foliar spray post-harvest before leaf fall. Some organic walnut growers also plant legume cover crops in the fall, early to mid-October, to supplement nitrogen, add organic matter to the soil, and reduce erosion potential. Erosion may be especially problematic on hillside orchards; however fall cover crop applications can be difficult due to interference with harvest operations and the difficulty in establishing in dryland orchards. Fertilizer rates in this study are typical nutrient requirements, but do not take into account soil and water nitrogen. Refer to *Guide to Efficient Nitrogen Fertilizer Use in Walnut Orchards* (UCANR Publ. # 21623) and *Cover Crops for Walnut Orchards* (UCANR Publ. #21627) for detailed information on N and cover crops.

Leaf Sampling. Leaf samples at two per 9 acres are collected in July once every three years. One third of the cost is included each year. The collector takes an estimated one hour to collect the two samples using the tractor to move around the field and another hour to package, mail the samples to the lab for analysis and to interpret the results once the analysis is returned.

Pest Management. The approved pesticides and rates mentioned in this cost study are federally defined and are listed in California Certified Organic Farmers (CCOF) handbook, and the Organic Materials Review Institute (OMRI). For more information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. Cultural practices are discussed in the publications *Integrated Pest Management for Walnuts* and *Walnut Production Manual*. For information and pesticide use permits, contact the local county agricultural commissioner's office. Also consult your third party organic certification agency. Pesticide costs in this study are taken from a single dealer with volume discounts taken when applicable.

Pest Control Adviser (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisers. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. No pest control adviser is hired in this study.

Weeds. Weeds are controlled by mechanical or physical means. The middles are mowed five times (less for non-irrigated orchards) during the season – May, June, July, August, September. The tree rows are weeded by hand two times - once in June and once in August - using a gas powered weed-eater,

Insects. Walnut husk fly (WHF) infestation can lead to shriveled and darkened kernels. The fly is controlled with applications of Entrust once in July, twice in August, and once in September. The grower uses a tractor with an attached 50 gallon sprayer and a hand wand to apply the material. The material is applied to every third row, the pattern differing on each application so that after three sprays, all rows have been treated. Full coverage (every row) sprays may be required for very high WHF populations.

Disease. Walnut Blight is a spring disease that infects the nutlets and is the only disease treated in this study. One treatment with Champion, a copper compound, is applied in April by a custom applicator using an airblast orchard sprayer.

Vertebrate Pest. Trapping is used to control gophers and squirrels. Owl boxes may also help reduce squirrels, moles, and gophers. Explosive gas devices (propane and oxygen mixtures) may be used with extreme caution.

Harvest. In October, a custom operator mechanically harvests the walnut crop. The custom harvest charge may be affected by yield and/or tree spacings. In this study, the charge is \$160 per acre (minimum charge) and may be more with higher yields. The grower furnishes labor for hand raking to move nuts missed by the sweeper into the windrows. For the harvest operation, the shaker head attaches to the tree trunk to shake the nuts from the tree. The nuts fall to the ground and in a separate operation are blown from around the trees and swept into windrows to dry. A pickup machine gathers the nuts from the windrow and loads them into a cart or bankout wagon. In this study the nuts are elevated or dumped into bottom dump trailers for delivery to the dryer.

Yields. Typical annual yields for walnuts are measured in clean, dry, inshell pounds per acre. Yields in organic orchards when compared to conventional orchards are subject to potential decreases in yield and quality from diseases and insects that are not controlled. In this study, the average yield based on grower information is 1,000 pounds per acre.

Returns. Actual price depends on a number of factors such as demand, size of the state crop, variety, nut size, and quality. For the 2006 year, the growers estimated the average annual premium for organic as \$0.30 per pound, resulting in an average price of \$1.00 per pound. Prices will vary during the year.

Assessment. Under a state marketing order, the California Walnut Commission (CWC) collects mandatory assessment fees. These assessments are charged to the grower to pay for health research and export market development activities. The CWC has a current fee of \$0.0079 per pound of dry in-shell nuts. The Walnut Marketing Board, governed by a Federal Marketing Order, represents the walnut growers and handlers of California. The Board is funded by mandatory assessments of the handlers. The Board promotes usage of walnuts in the United States through publicity and educational programs and provides funding for walnut production and post-harvest research.

Pickup. The study assumes business use mileage of 2,500 miles per year for the pickup. The pickup and/or tractor is used for baiting squirrels and gophers, as well as husk fly control. For this study the tractor is included in the mentioned operations. Additional pickup use for checking the orchard, diseases and the irrigation system is shown as an operation.

Labor, Equipment, and Interest

Labor. Hourly wages for workers are \$15.00 for machine operators and \$10.00 per hour non-machine labor. Adding 38% for the employer's share of federal and state payroll taxes, workers compensation insurance, for nut crops (code 0045) and other possible benefits gives the labor rates shown of \$20.70 and \$13.80 per hour for machine labor and non-machine labor, respectively. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2005 (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.

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 diesel and gasoline are \$2.30 and \$2.80 per gallon, respectively. 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 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.

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 10.00% 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. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of January 2007.

Risk. The risks associated with crop production should not be minimized. 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, which affect profitability and economic viability.

Cash Overhead Costs

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.

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 2 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 0.714% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$429 for the entire farm.

Office Expense. Office and business expenses are estimated at \$125 per producing acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop and office utilities, and miscellaneous administrative charges.

Sanitation Services. Sanitation services provide one portable toilet and cost the farm \$290 annually. The cost includes one single toilet unit with washbasin, delivery and two months of weekly service. Sanitation services are needed mostly during harvest. Rentals without water can reduce the sanitation costs to approximately \$200.

Organic Production Annual Fees. Organic growers must meet certain criteria as defined by the National Organic Act requiring state registration and certification by a USDA accredited certifying agent. For this study, it is assumed the grower has paid the first year certification and application fees which are amortized under Non-Cash Overhead, therefore only the annual fees are shown here.

California Certified Organic Farmers (CCOF). CCOF is an accredited certifying agency. They charge an annual renewal fee of \$170 or \$18.88 per acre (this fee is based on gross organic income), and annual farm inspection fee based on time and parcels, estimated at \$300 or \$33.33 per acre for this study totaling \$52.22 per acre in annual fees. The CCOF also charges a one time membership/application fee (included in investment costs in this study). Additional fees can be incurred, but are voluntary.

California Department of Food and Agriculture (CDFA). State registration is required and the county agricultural commissioner collects the fees. There is a first time registration fee of approximately \$75 for the farm (\$8.33 per acre) and is included under Organic Registration in Non-Cash Overhead. Thereafter, the annual registration fee is based on gross organic income and for this study is \$50 for the farm or \$5.55 per acre.

Management/Supervisor Salaries. The grower farms the orchard; therefore no salaries are included for management. Returns above costs are considered a return to management.

Investment Repairs. Annual maintenance is calculated as two percent of the purchase price, except for tree replacement in the orchard. The average tree replacement cost over the life of the orchard is assumed to be 0.10% of the establishment cost or \$63.50 (\$7.05 per acre) per year.

Non-Cash Overhead Costs

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). 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 formula for the calculation of the annual capital recovery costs is $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

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 the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in the tables.

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 7.25% is used to calculate capital recovery. The rate will vary depending upon size of loan and other lending agency conditions, but is a suggested rate by a farm lending agency in January 2007.

Establishment Cost. Costs to establish the orchard are used to determine capital recovery expenses, depreciation, and interest on investment for the production years. Establishment cost is the sum of the costs for land preparation, planting, trees, cash overhead and production expenses for growing the trees through the first year that walnuts are harvested minus any returns from production. The Total Accumulated Net Cash Cost on Table 1 in *Sample Costs to Establish and Produce Walnuts, 2005, North Coast – Lake County, Homesite* in the sixth year represents the establishment cost. The final establishment costs for this study may vary from 2005 study due to different variety and tree populations but would not be significant. For this study the cost is \$7,056

per acre or \$63,504 for the 9-acre orchard. The establishment cost is spread over the remaining 29 years of production. Establishment costs in the study are based on typical basic operations, but can vary considerably, depending upon terrain, soil type, local regulations, and other factors. Also, the assumptions in the 2005 study use different tree populations and walnut variety.

Building. The metal building(s) are on a cement slab and total approximately 1,200 square feet. The buildings are used for shops and equipment storage.

Sprinkler Irrigation System. The sprinkler system consists of 1.14 pull hose sprinklers per acre or 10 hoses for the field. A three inch buried mainline runs through the center of the field to which the pull hoses are attached. Each hose is 150 feet long and includes sprinklers that spray 45 feet and sprinkle four gallons per minute.

Irrigation Pumping System. Electric pumps range from 7.5 horsepower (HP) to 50 HP depending on well depth and water requirements. For this study, it is assumed that the grower has a 10 horsepower pump.

Land. Agricultural land in this study is valued at \$10,000 per acre. Bare agricultural land in Lake County ranges from \$6,000 to \$12,000 per acre, excluding the homesite value. Small parcels, 30 acres and under, may have a homesite value of \$100,000 to \$150,000 per acre, with the remaining acreage at agricultural value. For this study, the 10 acres was purchased for \$215,000.

Shop/FieldTools. This includes shop tools and equipment, hand tools, and miscellaneous field tools including the pruning equipment. The cost is assumed and not based on any collected data.

Fuel Tanks. Fuel tanks are furnished by the petroleum dealer; therefore, a cost is not shown.

Organic Registration (First Time Fees). For organic certification, the grower must meet the organic requirements and pay the required fees. The CDFA charges a first time registration fee of \$75 for the farm (\$8.33 per acre). A first time fee to get certified is also charged by the certifying agency. For this study, there is a \$250 application fee and a new farm certification fee of approximately \$700 totaling of \$950 in first year agency fees (\$108.33 per acre). The fees (\$950 + \$75) are amortized over the remaining life of the orchard.

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 40% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in Tables 5 and 6. 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.

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

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For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

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Table 1. COSTS PER ACRE TO PRODUCE ORGANIC WALNUTS
 NORTH COAST - Lake County 2007

Operation	Operation	Cash and Labor Costs per acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent			
Cultural:								
Fertilize: Manure (Chicken Pellets)	0.10	2	1	63	9	75		
Fertilize: Compost & Gypsum	0.10	2	1	105	9	117		
Prune: Custom (1X/3 Yrs)	0.00	0	0	0	36	36		
Prune: Pruning Disposal (1X/3 Yrs)	0.42	16	4	3	0	23		
Vertebrate: Gopher/Squirrel (trap)	0.53	13	5	0	0	18		
Disease: Blight (Champion)	0.00	0	0	35	25	60		
Weed: Mow Middles 5X	0.69	17	8	0	0	26		
Weed: Tree Row (Hand w/ Weed Eater)	1.05	26	10	0	0	36		
Irrigate: (water & labor) 4X	0.12	2	0	114	0	116		
Prune: Hand Sucker	1.00	14	0	0	0	14		
Insect: Husk Fly (Entrust, GF120) 3X	0.30	7	3	76	0	86		
Fertilize: Leaf Samples 1X/3 Yr	0.11	4	1	0	2	7		
Fertilize: Zn (foliar)	0.00	0	0	4	25	29		
Pickup Use	3.50	86	49	0	0	136		
TOTAL CULTURAL COSTS	7.92	191	83	400	106	780		
Harvest:								
Harvest: Shake Pickup (Custom) Rake (hand)	2.00	28	0	0	160	188		
Harvest: Haul (Custom)	0.00	0	0	0	6	6		
Harvest: Hull, Dry	0.00	0	0	0	90	90		
CWC Assessment Fee	0.00	0	0	8	0	8		
TOTAL HARVEST COSTS	2.00	28	0	8	256	292		
Interest on operating capital @ 10.00						41		
TOTAL OPERATING COSTS/ACRE		218	83	408	362	1,112		
CASH OVERHEAD:								
Office Expense						125		
Liability Insurance						48		
Sanitation Rentals						32		
CCOF Annual Fees						52		
CDFA Annual Fees						6		
Property Taxes						190		
Property Insurance						133		
Investment Repairs						143		
TOTAL CASH OVERHEAD COSTS						729		
TOTAL CASH COSTS/ACRE						1,841		
Non-Cash Overhead (Capital Recovery):								
		Per producing Acre		Annual Cost		Capital Recovery		
Buildings		4,444		367		367		
Shop/Field Tools		556		80		80		
Irrigation: Pull Hoses		800		63		63		
Irrigation: Pump & Well		1,111		88		88		
Land (9 acres)		10,000		725		725		
Orchard Establishment		7,056		583		583		
Organic Registration (First Time)		117		10		10		
Equipment		340		354		354		
TOTAL NON-CASH OVERHEAD COSTS		24,424		2,270		2,270		
TOTAL COSTS/ACRE						4,111		

X=times as 1X/3 Yrs is 1 time every 3 years

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Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE ORGANIC WALNUTS
 NORTH COAST - Lake County 2007

	Quantity /Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Organic Walnuts	1,000.00	lb	1.00	1,000	
OPERATING COSTS					
Fertilizer/Soil Amendments:					
Chicken Manure Pelletized	1,000.00	lb	0.06	63	
Compost (grape pumice) w/ Gypsum 50-50 mixture	3.00	ton	35.00	105	
Zinc Sulfate 36%	5.00	lb	0.74	4	
Fungicide:					
Champion WP (copper)	10.00	lb	3.51	35	
Insecticide:					
Entrust	1.98	oz	31.34	62	
GF-120 (fruit fly bait)	15.00	floz	0.93	14	
Irrigation:					
Water (pumped)	24.00	acin	4.76	114	
Rent:					
Forklift	0.12	day	145.00	17.40	
Custom:					
Prune & Stack (1X/3 Yrs)	0.66	hrs	55.00	36	
Ground Spray Application	2.00	acre	25.00	50	
Leaf Analysis (1X/3 Yrs)	0.07	sample	30.00	2	
Shake, Sweep, Pickup	1.00	acre	160.00	160	
Haul Walnuts	0.50	ton	12.00	6	
Hull/Dry	1,000.00	lb	0.09	90	
Assessment:					
County Burn Permit (1X/3 Yrs)	0.11	each	25.00	3	
CA Walnut Commission (\$0.0079/lb)	1,000.00	lb	0.01	8	
Labor (machine)	8.15	hrs	20.70	169	
Labor (non-machine)	3.64	hrs	13.80	50	
Fuel - Gas	14.97	hrs	2.80	42	
Fuel - Diesel	7.27	gal	2.30	17	
Lube				9	
Machinery repair				15	
Interest on operating capital @ 10.00				41	
TOTAL OPERATING COSTS/ACRE				1,112	
NET RETURNS ABOVE OPERATING COSTS				-112	
CASH OVERHEAD COSTS:					
Office Expense				125	
Liability Insurance				48	
Sanitation Rentals				32	
CCOF Annual Fees				52	
CDFA Annual Fees				6	
Property Taxes				190	
Property Insurance				133	
Investment Repairs				143	
TOTAL CASH OVERHEAD COSTS/ACRE				729	
TOTAL CASH COSTS/ACRE				1,841	

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Table 2. continued
 NORTH COAST - Lake County 2007

	Quantity /Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Buildings				367	
Shop/Field Tools				80	
Irrigation: Pull Hoses				63	
Irrigation: Pump & Well				88	
Land (9 acres)				725	
Orchard Establishment				583	
Organic Registration (First Time Fees)				10	
Equipment				354	
TOTAL NON-CASH OVERHEAD COSTS\ACRE				2,270	
TOTAL COSTS\ACRE				4,111	
NET RETURNS ABOVE TOTAL COSTS				-3,111	

UC COOPERATIVE EXTENSION

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE ORGANIC WALNUTS

NORTH COAST - Lake County 2007

Beginning JAN 07	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 07	07	07	07	07	07	07	07	07	07	07	07	07	
Fertilize: Manure (Chicken Pellets)	75												75
Fertilize: Compost & Gypsum	117												117
Prune: Custom (1X/3 Yrs)		36											36
Prune: Pruning Disposal (1X/3 Yrs)		23											23
Vertebrate: Gopher/Squirrel (trap)			2	2	2	2	2	2	2	2	2	2	18
Disease: Blight (Champion)				60									60
Weed: Mow Middles 5X					6	6	6	6					26
Weed: Tree Row (Hand w/ Weed Eater)						18		18					36
Irrigate: (water & labor) 4X						29	29	29	29				116
Prune: Hand Sucker							14						14
Insect: Husk Fly (Entrust, GF120) 3X							29	58					86
Fertilize: Leaf Samples 1X/3 Yr							7						7
Fertilize: Zn (foliar)										29			29
Pickup Use	11	11	11	11	11	11	11	11	11	11	11	11	136
TOTAL CULTURAL COSTS	204	70	13	73	20	67	99	124	42	42	13	13	780
Harvest:													
Harvest: Shake Pickup (Custom) Rake (hand)										188			188
Harvest: Haul (Custom)										6			6
Harvest: Hull, Dry										90			90
CWC Assessment Fee										8			8
TOTAL HARVEST COSTS										292			292
Interest on operating capital @ 10.00	2	2	2	3	3	4	5	6	6	9	0	0	41
TOTAL OPERATING COSTS/ACRE	205	73	16	76	23	70	103	130	48	342	13	13	1,112
CASH OVERHEAD:													
Office Expense	10	10	10	10	10	10	10	10	10	10	10	10	125
Liability Insurance										48			48
Sanitation Rentals										16	16		32
CCOF Annual Fees										52			52
CDFA Annual Fees										6			6
Property Taxes				95								95	190
Property Insurance	133												133
Investment Repairs	12	12	12	12	12	12	12	12	12	12	12	12	143
TOTAL CASH OVERHEAD COSTS	156	22	22	117	22	22	22	22	22	144	38	117	729
TOTAL CASH COSTS/ACRE	361	95	38	194	45	93	125	152	70	486	51	130	1,841

UC COOPERATIVE EXTENSION
Table 4. RANGING ANALYSIS
 NORTH COAST - Lake County 2007

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ORGANIC WALNUTS

	YIELD (lb/acre)						
	500	750	1,000	1,250	1,500	1,750	2,000
OPERATING COSTS							
Cultural Cost	780	780	780	780	780	780	780
Harvest Cost (shake, sweep, pickup)	94	141	188	235	281	328	375
Haul to Dryer	3	5	6	8	9	10	12
Dry/Hull	45	68	90	113	135	158	180
Assessment	4	6	8	10	12	14	16
Interest on operating capital	39	40	41	41	42	43	43
TOTAL OPERATING COSTS	965	1,040	1,113	1,187	1,259	1,333	1,406
Total Operating Costs/lb	1.93	1.39	1.11	0.95	0.84	0.76	0.70
CASH OVERHEAD COSTS							
TOTAL CASH COSTS	1,694	1,769	1,842	1,916	1,988	2,062	2,135
Total Cash Costs/lb	3.39	2.36	1.84	1.53	1.33	1.18	1.07
NON-CASH OVERHEAD COSTS							
TOTAL COSTS	3,964	4,039	4,112	4,186	4,258	4,332	4,405
Total Costs/lb	7.93	5.38	4.11	3.35	2.84	2.48	2.20

NET RETURNS PER ACRE ABOVE OPERATING COSTS

\$/lb	YIELD (lb/acre)						
	500	750	1,000	1,250	1,500	1,750	2,000
0.70	-615	-515	-413	-312	-209	-108	-6
0.80	-565	-440	-313	-187	-59	67	194
0.90	-515	-365	-213	-62	91	242	394
1.00	-465	-290	-113	63	241	417	594
1.10	-415	-215	-13	188	391	592	794
1.20	-365	-140	87	313	541	767	994
1.30	-315	-65	187	438	691	942	1,194

NET RETURNS PER ACRE ABOVE CASH COSTS

\$/lb	YIELD (lb/acre)						
	500	750	1,000	1,250	1,500	1,750	2,000
0.70	-1,344	-1,244	-1,142	-1,041	-938	-837	-735
0.80	-1,294	-1,169	-1,042	-916	-788	-662	-535
0.90	-1,244	-1,094	-942	-791	-638	-487	-335
1.00	-1,194	-1,019	-842	-666	-488	-312	-135
1.10	-1,144	-944	-742	-541	-338	-137	65
1.20	-1,094	-869	-642	-416	-188	38	265
1.30	-1,044	-794	-542	-291	-38	213	465

NET RETURNS PER ACRE ABOVE TOTAL COSTS

\$/lb	YIELD (lb/acre)						
	500	750	1,000	1,250	1,500	1,750	2,000
0.70	-3,614	-3,514	-3,412	-3,311	-3,208	-3,107	-3,005
0.80	-3,564	-3,439	-3,312	-3,186	-3,058	-2,932	-2,805
0.90	-3,514	-3,364	-3,212	-3,061	-2,908	-2,757	-2,605
1.00	-3,464	-3,289	-3,112	-2,936	-2,758	-2,582	-2,405
1.10	-3,414	-3,214	-3,012	-2,811	-2,608	-2,407	-2,205
1.20	-3,364	-3,139	-2,912	-2,686	-2,458	-2,232	-2,005
1.30	-3,314	-3,064	-2,812	-2,561	-2,308	-2,057	-1,805

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT AND BUSINESS OVERHEAD
 NORTH COAST - Lake County 2007

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
07	60HP MFWD Tractor	36,072	20	6,151	3,325	148	211	3,684
07	Brush Rake	1,584	25	317	134	7	10	150
07	Loader Forks	810	30	162	65	3	5	74
07	Mower/Flail 10 ft	10,000	20	521	950	37	53	1,039
07	Pickup 1/2 ton	26,000	10	7,680	3,195	118	168	3,482
07	Sprayer, 3 point. 50 gal	1,600	10	283	210	7	9	226
07	Weed Eater	400	5	130	76	2	3	80
TOTAL		76,466		15,244	7,956	321	459	8,736
40% of New Cost *		30,586		6,098	3,182	128	183	3,494

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
Buildings 1200 sqft	40,000	30		3,305	140	200	800	4,445
Orchard Establishment	63,504	30		5,247	222	318	64	5,850
Land (9 acres)	90,000	30	90,000	6,525	630	900	0	8,055
Organic Registration (First Time Fees)	1,050	30		87	0	0	0	87
Irrigation: Pull Hoses & Sprinklers	7,200	35		571	25	36	126	759
Irrigation: 10 HP Pump & Well	10,000	35		793	35	50	200	1,078
Shop/Field Tools	5,000	10		720	18	25	100	863
TOTAL INVESTMENT	216,754	0	90,000	17,248	1,070	1,529	1,290	21,136

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
California Certified Organic Farmers (CCOF)	9	acre	52.22	470
California Department of Agriculture (CDFA)	9	acre	5.55	50
Liability Insurance	9	acre	47.67	429
Office Expense	9	acre	125.00	1,125
Sanitation Fee	9	acre	32.22	290

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 NORTH COAST - Lake County 2007

Yr	Description	COSTS PER HOUR							Total Costs/Hr.
		Actual Hours Used	Cash Overhead			Operating			
			Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
07	60HP MFWD Tractor	22	60.04	2.67	3.81	0.94	7.79	8.73	75.25
07	Brush Rake	4	14.31	0.71	1.01	0.17	0.00	0.17	16.20
07	Loader Forks	4	6.96	0.36	0.52	0.08	0.00	0.08	7.92
07	Mower/Flail 10 ft	6	61.29	2.38	3.39	2.73	0.00	2.73	69.79
07	Pickup 1/2 ton	32	40.58	1.50	2.14	0.58	13.42	14.00	58.22
07	Sprayer, 3 point. 50 gal	3	31.14	0.98	1.39	0.28	0.00	0.28	33.79
07	Weed Eater	10	2.91	0.07	0.10	7.68	1.05	8.73	11.81

UC COOPERATIVE EXTENSION
Table 7. OPERATIONS WITH EQUIPMENT & MATERIALS
 NORTH COAST - Lake County 2007

Operation	Operation		Field Labor		Broadcast		
	Month	Tractor	Implement	Hr/Acre	Material	Rate/acre	Unit
Fertilize: (Chicken Pellets)	Jan	60HP MFWD	Spreader (loaned)		Chicken Manure	1,000.00	lb
					Forklift Rental	.06	day
Fertilize: Compost/Gypsum	Jan	60HP MFWD	Spreader (loaned)		Compost/Gypsum	3.00	ton
			Loader Forks		Forklift Rental	.06	day
Prune: (1X/3 Yrs)	Feb				Custom		
Prune: Brush Disposal (1X/3 Yrs)	Feb	60HP MFWD	Loader Forks				
			Brush Rake	0.40	Burn Permit		
Vertebrate: Gopher/Squirrel	Mar	60HP MFWD					
	Apr	60HP MFWD					
	May	60HP MFWD					
	June	60HP MFWD					
	July	60HP MFWD					
	Aug	60HP MFWD					
	Sept	60HP MFWD					
	Oct	60HP MFWD					
	Nov	60HP MFWD					
	Dec	60HP MFWD					
Disease: Walnut Blight	Apr	Custom			Champion	10.00	lb
Weed: Mow Middles	May	60HP MFWD	Mower				
	June	60HP MFWD	Mower				
	July	60HP MFWD	Mower				
	Aug	60HP MFWD	Mower				
Weed: Hand (tree row)	June		Weedeater				
	Aug		Weedeater				
Irrigate	June			0.03	Water	6.00	acin
	July			0.03	Water	6.00	acin
	Aug			0.03	Water	6.00	acin
	Sept			0.03	Water	6.00	acin
Prune: Hand Sucker	July			1.00			
Insect: Husk Fly (every 3d row/application)	July	60HP MFWD	Sprayer 50 gal		Entrust	0.66	oz
					GF120	5.00	floz
	Aug	60HP MFWD	Sprayer 50 gal		Entrust	0.66	oz
					GF120	5.00	floz
	Aug	60HP MFWD	Sprayer 50 gal		Entrust	0.66	oz
					GF120	5.00	floz
Fertilize: Leaf Samples (1X/3 Yrs)	July			0.11	Sample Analysis	0.07	each
Harvest: (shake, sweep, pickup)	Oct	Custom		2.00			
Harvest: Haul Nuts	Oct	Custom					
Harvest: Dry/Hull Nuts	Oct	Custom					
Fertilize: Zinc	Oct	Custom			Zinc Sulfate	5.00	lb