UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO ESTABLISH AND PRODUCE ORGANIC BLUEBERRIES IN THE COASTAL REGION OF SOUTHERN CALIFORNIA, SAN LUIS OBISPO, SANTA BARBARA, AND VENTURA COUNTIES, 2007

Etaferahu Takele, UCCE Area Farm Advisor, Agricultural Economics/Farm Management, Southern California

Ben Faber, UCCE Farm Advisor, Soils and Water, Avocados and Minor Subtropicals, Santa Barbara/Ventura Counties

Mark Gaskell, UCCE Farm Advisor, Specialty Crops, Vegetables and Small Farms, Santa Barbara and San Luis Obispo County

Getachew Nigatu, UCCE Staff Research Associate, Agricultural Economics/Farm Management, Southern California

Ihab Sharabeen, UCCE Staff Research Associate, Agricultural Economics/Farm Management, Southern California

SAMPLE COSTS TO ESTABLISH AND PRODUCE ORGANIC BLUEBERRIES IN THE COASTAL REGION OF SOUTHERN CALIFORNIA, SAN LUIS OBISPO, SANTA BARBARA, AND VENTURA COUNTIES, 2007

Table of Contents

TABLES IN THE TEXT

FIGURE

COSTS OF PRODUCTION AND RETURNS TABLES

SAMPLE COSTS TO ESTABLISH AND PRODUCE ORGANIC BLUEBERRIES IN THE COASTAL REGION OF SOUTHERN CALIFORNIA, SAN LUIS OBISPO, SANTA BARBARA, AND VENTURA COUNTIES, 2007

INTRODUCTION

Blueberry production in the United States began with collection of wild berries growing in the Eastern and Northeastern states. Then during the early to mid 1900s, cultivated blueberry production began with the breeding of northern highbush type blueberries, developed in the cooler regions of the United States including New Jersey, Massachusetts, Maine, Michigan and eventually moving west into Oregon, and Washington. In the mid 1970's, a cooperative plant breeding effort between the USDA and several universities in the southeastern US - including the University of Florida - led to the release of the first low-chill requirement "southern" highbush blueberry for early season production in the southeast. In the late 1990s, efforts to grow blueberries began in California based on these southern highbush types and blueberry plantings have continued to expand since that time (Jimenez, et al, 2005). As of 2007, it is estimated that over 4000 acres of blueberries are planted in California.

Sample costs to establish and produce organic blueberries in the Coastal Region of southern California (CRSC) particularly in San Luis Obispo (SLO), Santa Barbara, and Ventura counties are presented in this study. Operations described are based on production practices considered typical for the area and may not apply to every situation. The study is intended as a guide for making production decisions, estimating potential returns, preparing budgets and evaluating production loans. A blank "Your Costs" column in some of the cost tables is provided for entering and comparing individual farm costs with ours.

The hypothetical farm operations (production practices) and cost calculations are described in the assumptions section. For additional information or explanations of the assumptions and calculations used in this study, please contact Eta Takele, the Area Farm Management Advisor, or Ben Faber and Mark Gaskell, Farm Advisors in Ventura, Santa Barbara, and San Luis Obispo counties, respectively. This cost study can be accessed from the following websites: the Farm Management Website of the University of California Cooperative Extension Program for Southern California at: http://groups.ucanr.org/farmgt, the University of California Hansen Trust website at: http://groups.ucanr.org/Hansen/index.cfm and the University of California, Department of Agricultural and Resource Economics websites at Davis at: http://coststudies.ucdavis.edu.

ASSUMPTIONS: CULTURAL PRACTICES AND COST CALCULATIONS

The discussion in this section includes production practices (inputs, application rates and time of application and methods). Input prices, contract fees and service expenses that are not mentioned in the text are included in Table 4. Prices and costs are for the year 2007.

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.

Organic Certification: Production of organic crop requires special growing conditions. Growers must follow the certified organic production requirements in compliance with the USDA National Organic Program (NOP). Check with an approved organic certifier to determine all compliance related issues. All cultural practices mentioned in this document are intended to comply with NOP certification guidelines.

Farm Size and Crop Characteristics: This study is based on 10 acres of organic blueberry production.

Blueberries are a perennial crop with a production life of over 20 years. In California, many cultivars are still under investigation for their adaptability and suitability to the region. Therefore, growers may be switching to a new cultivar even before the full productive life of the planting is reached. In this study, we are assuming a 23 year life (i.e. three years of establishment and 20 years production period). It should also be noted that the time of establishment may be variable depending upon the size of the plant at planting, the suitability of the growing area to the blueberry plant and the effectiveness of the cultural practices.

Land Preparation: Many blueberry plantings in the coastal southern California production areas are established in what had been strawberry or vegetable production fields. However, for this study, the blueberry planting is based on open or new land (not previously cultivated). Therefore operations and costs of land preparation, irrigation installations and/ or fertility management could be higher than previously cultivated land.

Land preparation operations include first clearing off weeds, bushes, roots and plants followed by application of 5 tons per acre of compost and bed preparation. Growers usually use contract operators to get land preparation done (Table 1). The field is then marked with flags where holes are dug for planting; an operation considered taking one minute per plant.

Wood Waste and Compost Application: Compost at 5 tons per acre is applied as a preplant fertilizer. During establishment years, wood waste in the form of coarse, wood waste is applied to promote growth of the young blueberry plants. On heavier, slow to drain soils, wood waste is incorporated into beds prior to planting**.** Application of wood waste may range from 4 to 6 inches deep and covers a 4 feet band centered on the plant row. The wood waste has to be replenished regularly as it will deteriorate over time. Deteriorated wood waste adds organic matter to the soil and creates favorable environment for root growth, however, root damage can occur if it is not replenished as needed. In this study, it is assumed that 50 tons of wood waste per acre will be applied during the first year, and replenished with about 20 tons per acre every two years. Wood waste costs around $10 per ton. In this study, we assume that the farmer needs around 5 man-hours per acre for application of wood waste during the first year and 2 man-hours per acre every

two years. On very sandy soil, wood waste is applied on the surface. It does not need to be incorporated.

Acidification: The blueberry plant is acid-loving with the optimum soil pH level in the 4.0 to 5.0 range. It is important to analyze soil samples to determine the initial pH of the soil and the level of sulfur needed for acidification. In the coastal California region, adjustments are usually necessary since most soils have pH levels between 6.7 and 8.0. Adjustments for organic blueberry production are made using organically certified pelletized sulfur application ranging from 3,000 pounds per acre to 7,000 pounds per acre. For this study, we used sulfur application at 5,000 pounds per acre before planting. Labor cost for sulfur application is estimated at $120 per acre. Also, incorporation of sphagnum peat in the planting hole will also lower soil pH , thus helping adjust the acid environment for plant establishment.

Soil pH monitoring is important. Soil pH above 5.0 will cause plants to grow very slowly and remain weak. Plants that grow on land with an improper pH may become yellow, grow poorly and also may show a sign of iron deficiency or chlorosis and it should be corrected with an iron chelate application.

Soil pH can be adjusted using citric or acetic acid (vinegar) in the irrigation water at a rate of 780 pounds per acre per year. In this study, citric acid is assumed to be applied annually throughout the life of the crop. In addition, 200 pounds per acre per year sulfur will be applied.

Organically certified iron chelate fertilizers may be applied as a drench, injected into the irrigation system or applied as a foliar spray. Iron helps plant growth even when the soil pH has not fallen to the optimum range of 4.5 to 5.0.

Planting: Bushes used for planting may range from 12 to 18 months old. According to field trial results, a number of Southern Highbush cultivars are well adapted to Southern California. Among them Emerald, Jewel, Star, Saphire, Sharpblue, and Misty are the most popular cultivars in California. However, distribution of some patented blueberry cultivars may be limited to specific nurseries; therefore availability may be an issue. Farmers must check with the blueberry nurseries for timing of plant availability before they plan plantings.

Plant spacing may vary among growers. In this study, we assume plant spacings are 2.5 feet between plants within a row and 10 feet between rows allowing 1,750 plants per acre. The cost of plants is approximated $3.50 each and planting in the coastal region can occur at any time. For this study, planting is in the month of June. Some of the bushes (~2%) may not survive in the first year; and will be replanted in the second year.

Most growers use contract or hired labor to perform the planting operation. At planting, sphagnum peat moss for lowering pH is incorporated into each hole at a rate of 1 bale for 40 bushes. Incorporation of the peat moss and planting each is assumed to take one minute per bush.

Pruning: Pruning is required to maintain the vigor and productivity of blueberry plants including making the farm accessible for disease and insect inspection and management, as well as providing easy access for harvest by removing low-fruiting branches or canes. For hand harvest, bushes are kept within easy picking height. Annual pruning is essential for consistent production of high quality fruit.

Pruning immediately after harvest has the advantage of allowing rapid shoot re-growth and flower bud initiation before the plant enters into the slow growth period of winter months. Studies have shown that pruning following transplanting stimulates new vegetative growth. In the first year, pruning involves primarily stripping off flowers and fruit. The cost of pruning in the first year is estimated at $250 per acre. Beginning the second year, hand pruning is performed every year and is estimated to take 0.5 minutes per plant.

Fertilization: Table A provides the approximate amount of fertilizer requirement for organic blueberry production. Compost (5 tons/acre) is incorporated prior to planting and this will supply approximately 100 lb each of N, P, and K. Liquid fish fertilizer (Agrilizer 6-2-2 or similar) is commonly applied in organic blueberry production as a source of nitrogen (N), phosphorus (P) and potassium (K). In the first year, N fertilizer application is from pre-plant compost. Beginning the second year, N application is mainly from Agrilizer or similar liquid fish fertilizer. In the second year application includes 10 pounds N per acre per month from December to May and 15 pounds N per acre per month from June to November. Beginning the third year, N application includes 15 pounds per acre from December to May and 30 pounds per acre per month from June to November.

Iron chelate application can be done either as a foliar spray or injected into the irrigation system. Iron chelate will relieve plants from iron deficiency related to soils with pH above 5.3. In this analysis, iron chelate is applied using the irrigation system; two times (June and July) for the first year and four times (April, May, June and July) per year from the second year on. Iron Chelate is applied at the rate of 5 pounds per acre per time.

Table A. Fertilizer Application Rates in Organic Blueberry Production in San Luis Obispo, Santa Barbara, and Ventura Counties

Year	Amount of Compost Tons per Acre	Amount of Agrilizer Pounds per Acre	Amount of Nitrogen Pounds per Acre	Amount of Iron Chelate Pounds per Acre
1	5		100	10
2		2500	150	20
3		4500	270	20
Production		4500	270	20

Blueberry plants need a consistent soil moisture level for a fertilizer program to be effective. The plants are shallow rooted therefore to ensure consistent soil moisture; frequent irrigation with small amounts of water must be applied.

Soil and leaf analyses are done annually to determine the nutrient levels. Soil analysis must begin in the first year of planting while leaf analysis beings in the third year. N, Phosphorous (P), Potassium (K), Zinc (Zn) and Boron (B) levels will be analyzed from one sample. Soil and leaf laboratory analyses are approximated to cost $25 and $20 per acre per year, respectively. Irrigation water analysis should also be done periodically to determine the presence of nitrate, salinity, pH, chloride and sodium in well water.

Irrigation: Growers in San Luis Obispo, Santa Barbara, and Ventura Counties use both district water and on-site wells for irrigation. Well water provides the majority of the growers' needs in San Luis Obispo and Santa Barbara Counties. District water may be delivered, stored and pumped from a reservoir through a filtration system. Water costs are calculated based upon the use of both well and district sources. For this study, based on growers' feedback, water cost is estimated at $22.10 per acre-inch.

Water application is estimated at 24 acre-inches per acre per year during both the establishment and the production period. Irrigation is applied weekly for about 44 weeks per year from February to November (except for the first year, the number of irrigation applications will be 26 from planting in June to November). No assumption is made about effective rainfall, evaporation, or runoff. Information on evapotranspiration and rainfall if needed are available from various sources including the Fox Canyon Groundwater Management Agency (http://www.foxcanyongma.org) and the California Irrigation Management Information System (CIMIS) at www.cimis.water.ca.gov/cimis.

Labor to irrigate, and to monitor systems and check a field is estimated to take about 15 minutes per irrigation or 11 hours for the 44 annual irrigations.

Pest Management: Blueberry growers should check their field continuously and control fungal and bacterial diseases as well as arthropods and vertebrates in order to ensure good productivity. Pest control in organic production is mainly done using cultural practices. For information and pesticide use permits, contact the local county agricultural commissioner's office or a *Pest Control Adviser (PCA)*. For information on cultural control of blueberry pests, consult the Integrated Pest Management (IPM) guidelines that are applicable for cultural control of other fruit crops or contact the local University of California Cooperative Extension Farm Advisors. Written recommendations made by licensed pest control advisors are required for use of many pesticides. PCAs can also be hired to monitor fields for pests and recommend nutrition. Following are descriptions of disease and pest control practices of in organic blueberry production.

Weeds: Weed control begins in the second year and for organically produced blueberries includes mowing three times a year and hand weeding twice a year which takes approximately 160 hours per acre per year.

Diseases: Fruit and foliar diseases in organic blueberry production can be controlled through selection of cultivars that are less susceptible and maintaining the farm with good cultural

practices. Stem and root diseases are more difficult to control. Selection of disease free plant stocks, removing and discarding infected plant parts, raising beds with wood waste, and selecting a well drained ground will help to reduce the incident and severity of root and stem diseases.
Fungal diseases: Fungal diseases in blueberry production in California include Botrytis blight (*Botrytis cinerea)* which affects the stem of the plant, as well as the fruit and the flower. In organic blueberry production, fungal diseases can be controlled with an annual application of copper at approximately 2 pounds per acre beginning in the second year. Phytophthora can be a problem in poorly drained soils; which can be avoided with selection of site that is possibly free of Phytophthora and with good land preparation.

Bacterial disease: Canker (*Pseudomonas* spp.) is a common bacterial disease that affects the stem and leaf of the blueberry plant. Control for organically produced blueberries is usually only through pruning out all affected parts of the plant.

Bird control: One of the most important challenges of blueberry production is the control of fruit damage by birds. Each year about 10 to nearly 100 percent of the blueberry crop can be lost to bird destruction. Netting is the only strategy that will completely reduce bird damage, though it is expensive and difficult to move around during cultural practices. In this study, it is assumed that growers will install polyethylene netting material during the third year. In addition to netting, at least one hour per week for five months (during harvesting) is needed for monitoring and maintaining the bird control system.

Bird netting replacement may be necessary every five years. Table B presents the cost breakdown of the bird control system for blueberry production.

Table B. Bird Control Materials and Installation Costs for Organic Blueberry Production in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

Items	Amount	Units	Price ($ Per Unit)	Total Cost ($)
Net	23000	ft	0.1	2300
Post	115	each	10	1150
Wire	5000	ft	0.1	500
Materials, Cement and Other				250
Labor for Installation	10	hr	13.3	133
Total Costs for One Acre ($)				4333
Total Costs for Ten Acre ($)				43330

Pollination: Cross pollination improves blueberry yield. Planting different cultivars in alternate rows can facilitate cross pollination. Planting the same cultivar within a row is, however, advantageous for ease of harvesting, so it is recommended not to mix varieties within the same row. Two Beehives per acre will be placed in the field beginning the second year. A beehive can be rented at approximately $125 a year.

Frost Protection: Sprinkler irrigation is used for frost protection of fruits especially that are early in the season from rare periods of frost damage along the Coast. This additional investment

is needed to protect early season fruits with high market prices. The system requires approximately 50 sprinkler heads, capable of delivering 3,000 gallons per hour per acre. An automatic temperature sensor and irrigation pump starter unit may also be needed or else manual overnight temperatures monitoring will be required. The estimated cost for frost protection system with an automatic controller ranges from $1,500 – $2,000 per acre. In this study, the cost of the frost protection is included in the irrigation system.

Harvesting and Marketing: We assumed that the berry bushes at planting are already one year old or more. Hence fruit bearing may start as early as 6 months after planting. Fruit is picked into buckets mostly using hired or contract labor. Some blueberry varieties begin to ripen by mid-December and usually finished by mid-June. Full ripening takes several days (3-5) after they turn blue. In this study, we assume that 10% of the crop is harvested and marketed in January, 15% in February, 20% in March, 40 % in April and 15% in May.

Picking costs are estimated at $0.70 per pound and packing which includes pallet, clam shells, boxes is estimated at $1.50 per pound. Also $0.65 per pound is assumed for cooling, loading and quality control. Early season coastal blueberry growers typically move the fruit directly to market without additional storage fees. Marketing and brokerage fees are estimated at $0.75 per pound, (10% of blueberry prices).

Yield: Yield estimates include 1 pound per bush in the second year, 4 pounds per bush in the third and an average of 8 pounds per bush beginning the 4th year.

Table C. Estimated Annual Yield of Organic Blueberry Production in San Luis Obispo, Santa Barbara, and Ventura Counties

Year	Number of Fruit Bearing Bushes Per Acre	Average Yield Pounds Per Bush	Total Yield Pounds Per Acre
2	1715	1	1715
3	1750	4	7000
Production	1750	8	14000

Labor Costs: Wage rates for both the owner and hired labor are estimated at $13.15 per hour for machine operator and $11.80 per hour for non-machine labor. Labor wages include payroll taxes, workman compensation and other overhead costs associated with employment benefits.

Equipment Operating Costs: Machinery repair costs are calculated using purchase prices, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower and fuel type. According to the data from the USDA-NASS, prices for on-farm delivery of diesel and gasoline are $2.30 and $2.80 per gallon, respectively. The fuel, lube, and repair costs per acre for each operation are determined by multiplying the equipment hourly operating cost by the number of hours per acre needed to

perform the operation. Tractor and ATV time is 10% higher than implement time for a given operation to account for setup, travel and down time. Formulas for calculating equipment operating costs can be referenced from many farm management books including the one we frequently use for our studies (Boelje, Michael D., and Vernon R. Eidman. 1984. Farm Management, John Wiley and Sons. New York, New York).

Cash Overhead Costs: Cash overhead costs consist of all cash expenses that are incurred in the blueberry farm but are not accounted for in the production practices. These costs include interest on operating capital, property taxes, office expenses, liability and property insurances, sanitation services, equipment repairs, and management.

*Interest on Operating Capital***:** The cost of borrowing or the opportunity cost (interest on operating capital) for money used in blueberry production is charged at 10% nominal interest rate on all operating expenses. Nominal interest rate is the current short term charge set by financial institutions for operating loans.

Property Taxes: Real estate property taxes depend on the value of the property and local zoning ordinances. We calculated property taxes at 1.0% (the rate most counties commonly charge) of the value (price) of land. For non-real estate properties, property taxes are estimated at 1.00% of the average values of the properties. Average values equal the price of the investment plus salvage value divided by two. Property taxes are then divided by the number of acres to obtain the per acre costs.

Property Insurance: Property loss coverage insurance is charged annually at 0.70% of the average value of the properties over their useful life. Property insurances are also divided by the number of acres to obtain the per acre costs.

Liability Insurance: Liability insurance costs to cover for accidents on the farm vary by size of farm. The cost of liability insurance for a 10 acre farm is approximately $437 per year ($44 per acre per year).

Field Sanitation: Regulations require one toilet and hand washing facility for each 20 employees of each sex, located within a quarter mile walk, or if not feasible, at the closest point of vehicular access. As an alternative to providing the required toilet and hand washing facilities themselves, employers may transport employees conducting hand-labor operations to toilet and hand washing facilities (refer to specifications Cal/OSHA Field Sanitation Standard, Section 3457, Title 8, California Code of Regulations).

For this study, one double mounted toilet facility is considered sufficient for the 10 acres for use throughout the year. The rent for the facility is approximated at $270 per acre per year.

Office Expense: Expenses for office rent, supplies, telephone, fax, internet, accounting, legal fees, utilities and miscellaneous administrative expenses are estimated at $350 per acre per year.

Investment Repair: Annual repair and maintenance costs for farm buildings, tools and reservoir are calculated at 2% of the price (value) of the investment. For irrigation system and bird control, annual maintenance and repair costs are calculated at 5% of the cost of the system.

Management/Supervisor Salaries: Management charges are not included in this study. We suggest that growers divide the returns after all costs between management and profit as they see fit.

Organic Certification Charges: California Certified Organic Farmers (CCOF) certification charges of $825, $1350, and $3000 per year are included in the second, third and production years, respectively.

Non-Cash Overhead Costs: Non-cash overhead costs, also referred to as ownership or fixed costs of farm assets including equipments, farm buildings, irrigation system, and farm tools are calculated using the capital recovery method. This method captures the combined cost of depreciation and interest on capital investment.

The capital recovery method of calculating depreciation and interest on investment is more complex than other methods, but more accurately represents the annual costs of ownership. It is similar to the discounted annual payment on a loan for the investment with the down payment equal to the salvage value. The formula for calculating the annual capital recovery is:

[(Purchase Price – Salvage Value) x Capital Recovery Factor] + (Salvage Value x Interest Rate).

Where:

Salvage Value: The remaining value of machinery and equipment at the end of their useful life is assumed to be 10% of the purchase price. Other investments including irrigation systems, buildings, and miscellaneous equipments (fuel tanks and pumps) are assumed to depreciate fully with no remaining values**.**

Capital Recovery Factor: The discounted present value of $1, the annual capital recovery multiplier.

Interest Rate: The ten year average long-run rate of return of agricultural assets to current income (7.25%--USDA-ERS-Economic Research Services data).

Following are the descriptions of the farm investments used in blueberry production.

Equipment: The farm complement is assumed to include both new and old equipment and machinery with an overall approximate current value of 60% of new prices. Capital recovery costs for machinery and equipment used in this study are shown in Table 6.

Irrigation and Frost Protection System: The irrigation system is assumed to include an on-site reservoir for storing water that is supplied by the districts; pumps (a new 15 horsepower booster

pump lifting water to about 20-feet); a filtration station; drip irrigation lines (installed before planting); a fertilizer injector (installed at planting), and sprinklers. The drip lines are used for irrigating the crop and sprinklers are used when irrigation is needed for frost protection. The cost to establish the irrigation system including the frost protection system is estimated at $3,500 per acre ($35,000, for a 10 acre farm). Frost protection alone could cost $1,500 to $2,000 per acre. In addition, an acid injector may be installed to maintain the acid condition of irrigation water unless the fertilizer injection system is built to serve for acid injection as well. The irrigation system has a life of 23 years.

Building: Certified organic production requires its own, dedicated facilities. The farm shed is assumed to be 1,500 square feet of metal buildings built on cement slab.

Shop Tools: Organic blueberry production requires its own dedicated shop tools including pruning tools, picking containers, pH measurement kit and other miscellaneous farm tools dedicated to it. Also a 100-gallon fuel tank is considered to service the farm. The fuel tank must be situated on a cement containment pad built to meet federal, state, and county regulations.

Land Rent: In many cases, especially in California the value of land is influenced by a rapid urban development in which case the price of land is driven not by its agricultural use but by the speculative value of its future use. Some cost studies exclude the land rent in which case the bottom line figure of net returns can be referred as returns to management and land. Growers may choose to divide this figure between management and land rent as they see fit.

Land rent is estimated at 7.25% opportunity cost (that is equivalent to a ten year average long-run rate of return of agricultural assets to current income) times $35,000 per acre value of land (which is approximated as an average for San Luis Obispo, Santa Barbara, and Ventura counties).

Establishment Costs: The cumulative net cash, the sum of all cash costs less returns over the three years, $974 per acre (9,740 for 10 acres) is called the establishment/development costs. Establishment cost is amortized over 20 years (the expected useful life of the bushes) to get the annual opportunity cost of the investment plus depreciation of the bushes**.**

Crop Returns: The fruit is sold through wholesale markets. Grower prices in this study are approximated at $7.50 per pound. This price is calculated using the weighted average price of Los Angeles Terminal Market Prices for the imported blueberries for the period January to May 2005 to 2007 (Table D) plus 15% price premium (according to the United States Department of Agriculture) for organic fruits. The gross income estimates during the establishment and production years is given in Table E below.

Table D. Los Angeles Terminal Market Prices for Imported Blueberries (January–May, 2005-2007), Percentage of Crop Harvested and Marketed, and Weighted Average Price

Month	Price ($/lb)			Average Price ($/lb)	Percentage Share	Weighted Average Price ($/lb)
	2005	2006	2007			
January	4.48	3.96	4.85	4.43	10	0.44
February	4.07	5.83	4.83	4.91	15	0.74
March	5.27	6.77	6.09	6.04	20	1.21
April	10.54	7.38	6.66	8.19	40	3.28
May	6.40	4.12	6.92	5.81	15	0.87
Total					**100**	**≈ 6.55**

Table E. Estimated Annual Yield and Gross Income of Organic Blueberry Production in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

Year	Yield Pounds Per Acre	Gross Income ($ Per Acre)
2	1,715	12,863
3	7,000	52,500
Production (yrs 4-20)	14,000	105,000

Crop prices and grower returns may, however, differ depending on the time of selling and the supply and demand condition of the market. Therefore, returns using various scenarios of prices and yield combinations are provided in Table 8. Growers may choose the returns that best reflect their specific situation. Crop values of the establishment years are used to offset costs.

SUMMARY

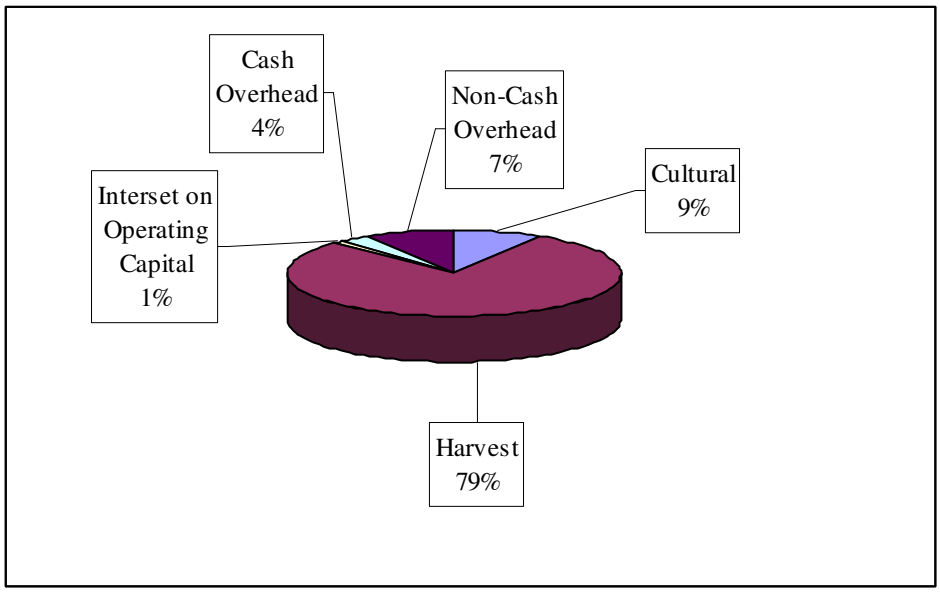
Organic blueberry establishment and production costs in this study are based on the most common or typical operations expressed by growers in the Coastal Region of San Luis Obispo Santa Barbara, and Ventura counties of California, but can vary depending upon management and cultural practices.

Our estimate of the total accumulated net cash cost during the three years period of blueberry establishment in San Luis Obispo, Santa Barbara, and Ventura counties of California is $974 per acre (Table 1). The annual production cost including harvesting (assuming 14,000 pounds per acre yield) is $63,581 per acre or $4.54 per pound (Tables 2, 3 and 4). Table 2 shows costs by category, Table 3 by type of operation and Table 4 by type of production input**.** Due to rounding, the totals may not be exactly the same in all tables.

The proportion of production costs by category is shown in the pie graph below. It includes about 9% in cultural costs (such as pruning, weed control, pest control, fertilization, and

irrigation), 79% harvesting (picking, packing, cooling and handling, and marketing and brokerage fees). Cash overhead costs including liability insurance, soil analysis, leaf analysis, sanitation fee, office expenses, property taxes, property insurance, investment repairs, and organic certification charges are estimated to account for about 4%; non-cash overhead or annual ownership costs estimates of land rent, equipments, buildings, tools, and irrigation system account for 7% and interest on operating capital for 1%.

Figure 1. Proportion of Organic Blueberry Production Costs in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007



PROFIT ANALYSIS

Profitability is measured using the unit cost of production (or break-even prices) as well as the gross and economic margins. Break-even levels (costs per unit of production) compared with market prices provide the margin of profit. Break-even levels are calculated as the cost of production per acre divided by yield per acre. Gross margin (or returns above cash costs) is what growers often refer to as profit if there is no debt on the farming operation. It approximates the return to management and investment. If we deduct depreciation, it also approximates the taxable income of the investment. Gross margin is calculated as gross returns (price times yield) minus cash costs of production. Economic profit or the net returns above all total costs including management can be zero or positive. A zero economic profit should not be alarming if all costs including the owners' labor and management are included in the production cost.

The break-even price using our assumption of 14,000 pounds per acre yield at maturity is $4.54 per pound. The gross margin estimate using the same yield level and an average price of $7.50

per pound is $45,679 per acre. In this study we did not calculate the economic returns because we did not include management charges. Information was not available for it.

Crop yield and prices received by growers may vary. To accommodate such variation, we provided unit costs of production (break-even prices), gross margins and returns to management and profit at various price and yield levels (Table 8). The table included lower and higher than the average price and yield.

ACKNOWLEDGEMENTS

The authors thank the growers in the San Luis Obispo, Santa Barbara, and Ventura counties of the coastal region of southern California who have been the main source of information for this study. We also thank those who participated in the review of this study and appreciate the secondary sources (research papers) that enhanced our understanding of the organic blueberry production.

Table 1. Sample Costs per Acre to Establish Organic Blueberries in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

Year	Year 1	Year 2	Year 3
		Cost per Acre ($)	
OPERATIONS			
LAND PREPARATION: (Contract)			
Brush Removal	450		
Root Removal & Burn	350		
Rip Field	375		
Bed Preparation	500		
TOTAL LAND PREPATION COSTS	**1675**		
PRE PLANT:(Contract, Labor, Material and Equipment operating Costs)			
Acidification	1220		
Flag fields	438		
Drill holes	438		
Compost	282		
TOTAL PREPLANT COSTS	**2378**		
PLANT:(Contract, Labor, Material and Equipment operating Costs)			
Plants	6524	140	
Peat Moss (@1minute per bush)	829	18	
TOTAL PLANTING COSTS	**7353**	**158**	
CULTURAL:(Contract, Labor, Material and Equipment Operating Costs)			
Irrigation	401	759	759
Acidification -Sulfur		44	44
Weed control		1888	1888
Mow strip		24	24
Fungicide		26	26
Pruning (0.5 min/plant year 2 on)	250	172	172
Wood Waste	637	127	127
Fertilize (Iron Chelate)	107	214	214
Fertilize (Agrilizer)		502	862
Citric Acid	499	988	987
Pollination		250	250
Bird control			502
TOTAL CULTURAL COSTS	**1894**	**4994**	**5855**
HARVEST: (Contract)			
Picking ($0.70 per Pound)		1201	4900
Packing ($1.50 per Pound)		2572	10500
Cooling and Handling($0.65 per Pound)		1115	4550
Marketing and Brokerage Fees ($0.75 per Pound)		1286	5250
TOTAL HARVESTING COSTS		**6174**	**25200**
Interest on Operating Capital @ 10%	845	367	567
TOTAL OPERATING COSTS	**14145**	**11693**	**31622**
CASH OVERHEAD:			
Liability Insurance	44	44	44
Office Expenses	350	350	350
Interest- Cash Overhead Costs	79	83	100
Interest-Establishment Net Cash Cost		1580	1796
Soil Analysis	25	25	25
Leaf Analysis			20
Field Sanitation	270	270	270
Organic Certification Charges	0	83	135
Property Taxes	392	394	415
Property Insurance	274	275	291
Investment Repairs	225	225	442
TOTAL CASH OVERHEAD COSTS	**1659**	**3330**	**3888**
TOTAL ALL CASH COSTS	**15804**	**15023**	**35510**
INCOME FROM PRODUCTION	**0**	**12863**	**52500**
NET CASH COSTS FOR THE YEAR	**15804**	**2160**	**-16990**
ACCUMULATED NET CASH COSTS	**15804**	**17964**	**974**
NON-CASH OVERHEAD (CAPITAL RECOVERY):			
Irrigation System (Including Frost Protection)	317	317	317
Land Rent	2537	2537	2537
Shop Building	181	181	181
Shop Tools	44	44	44
Bird Control-Net	0	0	565
Bird Control-Rest of Material (Post, Wire, Cement and Labor)	0	0	191
Equipment	265	331	331
TOTAL NON-CASH OVERHEAD COSTS	**3344**	**3410**	**4166**
TOTAL ALL COSTS	**19148**	**18433**	**39676**
RETURNS/INCOME FROM PRODUCTION	0	12863	52500
TOTAL NET COST FOR THE YEAR	19148	5570	-12824
TOTAL ACCUMULATED NET COST	**19148**	**24718**	**11894**

Table 2. Costs per Acre by Category to Produce Organic Blueberries in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

OPERATION	Operation Time (Hrs/A)	Costs per Acre ($) Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom or Rent	Total Cost	Your Cost
CULTURAL: (Contract, Labor, Material, & equipment costs)							
Irrigation -44 weeks/year for 15 minutes/irrigation	11.0	174	55	530	0	759	
Weed Control-hand weeding for 160hours &Roundup	160.0	1888	0	0	0	1888	
Mow Strip- 3X	1.5	24	0	0	0	24	
Fungicide 1X- Copper Champion @2lb/acre	0.5	8	0	18	0	26	
Pruning - 0.5 minutes per plant	14.6	172	0	0	0	172	
Wood Waste -20 tons for 2 years	1.0	16	12	100	0	128	
Acidification-Sulfur	0.0	0	0	44	0	44	
Acidification-Citric Acid	4.4	52	0	936	0	988	
Fertilize-Agrilzer 4500 lbs/acre or@270 lbs of N/acre	4.4	52	0	810	0	862	
Fertilize- - Iron Chelate @5 lbs per time 4X a month	8.0	94	0	120	0	214	
Pollination - Rent $125/hive & 2hives/acre	0.0	0	0	0	250	250	
Bird Control -labor for 24 hours/acre and ATV operating cost	24.0	379	124	0	0	503	
TOTAL CULTURAL COSTS	**229.4**	**2859**	**191**	**2558**	**250**	**5856**	
HARVEST:							
Picking ($0.70/lb)	0	0	0	0	9800	9800	
Packing ($1.50/lb)	0	0	0	0	21000	21000	
Cooling and Handling($0.65/lb)	0	0	0	0	9100	9100	
Marketing and Brokerage Fees ($0.75/lb)	0	0	0	0	10500	10500	
TOTAL HARVEST COSTS	**0**	**0**	**0**	**0**	**50400**	**50400**	
Interest on Operating Capital @10%						**792**	
TOTAL OPERATING COSTS/ACRE		**2859**	**191**	**2558**	**50650**	**57048**	
CASH OVERHEAD:							
Liability Insurance						44	
Office Expenses						350	
Interest- Cash Overhead Costs						108	
Leaf Analysis						20	
Soil Analysis						25	
Field Sanitation						270	
Organic Certification Charges						300	
Property Taxes						420	
Property Insurance						294	
Investment Repairs						442	
TOTAL CASH OVERHEAD COSTS						**2273**	
TOTAL ALL CASH COSTS						**59321**	
NON-CASH OVERHEAD:							
		Unit Price $ Per Acre		**Capital Recovery Per year ($)**			
Irrigation System		3500		317		317	
Land Rent		35000		2537		2537	
Shop Building		2000		181		181	
Shop Tools		500		44		44	
Establishment Costs- Accumulated Net Cash Cost		974		94		94	
Bird Control-Net		2300		565		565	
Bird Control-Rest of Material (Post, Wire, Cement and Labor)		2033		191		191	
Equipment		2421		331		331	
TOTAL NON-CASH OVERHEAD COSTS						**4260**	
TOTAL ALL COSTS						**63581**	

Table 3. Costs per Acre by Operation to Produce Organic Blueberries in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

OPERATION	Operation Time (Hours Per Acre)	Costs Per Acre ($)								
		Labor Costs	Material Costs	Custom or Rent Costs	Equipment			Operating Interest Costs	Total Cost	Your Cost
					Capital Recovery Costs	Cash Overhead Tax & Insurance Costs	Operating (Fuel, Lubricant & Repair Costs			
CULTURAL:										
Irrigation	11	174	530	0	15	1	55	40	815	
Weed Control	160	1888	0	0	0	0	0	142	2030	
Mow Strip	2	24	0	0	41	2	0	1	68	
Fungicide	1	8	18	0	25	1	0	1	53	
Pruning	15	172	0	0	0	0	0	7	179	
Wood Waste	1	16	100	0	212	16	12	4	360	
Acidification-Sulfur	0	0	44	0	0	0	0	1	45	
Acidification-Citric Acid	4	52	936	0	0	0	0	54	1042	
Fertilize (Agrilizer)	4	52	810	0	0	0	0	47	909	
Fertilize (Iron Chelate)	8	94	120	0	0	0	0	13	227	
Pollination	0	0	0	250	0	0	0	21	271	
Bird Control	24	379	0	0	40	2	124	40	585	
TOTAL CULTURAL	**229**	**2859**	**2558**	**250**	**333**	**22**	**191**	**371**	**6583**	
HARVEST:										
Picking	0	0	0	9800	0	0	0	82	9882	
Packing	0	0	0	21000	0	0	0	175	21175	
Cooling and Handling	0	0	0	9100	0	0	0	76	9176	
Marketing and Brokerage Fees	0	0	0	10500	0	0	0	88	10588	
TOTAL HARVEST	**0**	**0**	**0**	**50400**	**0**	**0**	**0**	**421**	**50821**	
TOTAL OPERATING		**2859**	**2558**	**50650**	**333**	**22**	**191**	**792**	**57404**	
CASH OVERHEAD										
Liability Insurance									44	
Office Expenses									350	
Interest- Cash Overhead Costs									108	
Leaf Analysis									20	
Soil Analysis									25	
Field Sanitation									270	
Organic Certification Charges									300	
Investment Property Taxes									407	
Investment Property Insurance									285	
Investment Repairs									442	
TOTAL CASH OVERHEAD									**2251**	
NON-CASH OVERHEAD										
				Unit Price $ Per Acre	**Capital Recovery Per year ($)**					
Irrigation System				3500	337				317	
Land Rent				35000	2537				2537	
Shop Building				2000	192				181	
Shop Tools				500	47				44	
Establishment Costs- Accumulated Net Cash Cost (Bushes)				974	94				94	
Bird Control-Net				2300	565				565	
Bird Control-Rest of Material (Post, Wire, Cement and Labor)				2033	206				191	
TOTAL NON-CASH OVERHEAD COSTS									**3929**	
TOTAL ALL COSTS									**63584**	

Table 4. Costs and Returns Per Acre to Produce Organic Blueberries in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

	Quantity Per Acre	Unit	Price or Cost Per Unit ($)	Value or Cost Per Acre ($)	Your Cost ($)
GROSS RETURNS: BLUEBERRY	14000	lb	7.50	**105000**	
OPERATING COSTS:					
Irrigation					
Water	24	acin	22.1	530	
Fungicide					
Copper Champion	2	lb	9	18	
Wood Waste					
Wood Waste	10	ton	10	100	
Acidification					
Citric Acid	780	lb	1.2	936	
Sulfur	200	lb	0.22	44	
Fertilizer					
Agrilizer	4500	lb	0.18	810	
Iron Chelate	20	lb	6	120	
Pollination					
Beehives	2	each	125	250	
Harvest					
Picking	14000	lb	0.70	9800	
Packing	14000	lb	1.50	21000	
Cooling and Handling	14000	lb	0.65	9100	
Marketing and Brokerage Fees	14000	lb	0.75	10500	
Labor (Machine)	45.60	hr	13.15	600	
Labor (Non-machine)	191.40	hr	11.8	2259	
Fuel - Gas	50.46	gal	2.8	141	
Fuel - Diesel	3.78	gal	2.3	9	
Oil and Lubricant				22	
Machinery Repair				19	
Interest on Operating Capital at @10%				792	
TOTAL OPERATING COSTS PER ACRE				**57050**	
NET RETURNS ABOVE OPERATING COSTS				**47950**	
CASH OVERHEAD COSTS:					
Liability Insurance				44	
Office Expenses				350	
Interest- Cash Overhead Costs				108	
Leaf Analysis				20	
Soil Analysis				25	
Field Sanitation				270	
Organic Certification Charges				300	
Property Taxes				420	
Property Insurance				294	
Investment Repairs				442	
TOTAL CASH OVERHEAD COSTS				**2273**	
TOTAL ALL CASH COSTS				**59322**	
NET RETURNS ABOVE CASH COSTS				**45678**	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY)					
Irrigation System				317	
Land Rent				2537	
Shop Building				181	
Shop Tools				44	
Establishment Costs- Accumulated Net Cash Cost				94	
Bird Control-Net				565	
Bird Control-Rest of Material (Post, Wire, Cement and Labor)				191	
Equipment				331	
TOTAL NON-CASH OVERHEAD COSTS				**4260**	
TOTAL ALL COSTS				**63582**	
NET RETURNS ABOVE TOTAL ALL COSTS				**41418**	

Table 5. Monthly Cash Costs per Acre to Produce Organic Blueberries in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

	Costs Per Acre ($)												
Beginning JAN 07 Ending DEC07	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
CULTURAL:													
Irrigate		69	86	69	86	69	86	86	69	69	69		759
Weed Control	944						944						1888
Mow Strip		8				8				8			24
Fungicide										26			26
Pruning								172					172
Wood Waste									127				127
Acidification-Sulfur										44			44
Acidification-Citric Acid		98	100	98	100	98	100	100	98	98	98		988
Fertilize (Agrilizer)		86	87	86	87	86	87	87	86	86	86		862
Fertilize (Iron Chelate)				54	54	54	54						214
Pollination			250										250
Bird Control	84	84	84	84	84	84							502
TOTAL CULTURAL COSTS	**1028**	**345**	**607**	**391**	**411**	**399**	**1271**	**445**	**380**	**331**	**253**	**0**	**5856**
HARVEST:													
Picking	980	1470	1960	3920	1470								9800
Packing	2100	3150	4200	8400	3150								21000
Cooling and Handling	910	1365	1820	3640	1365								9100
Marketing and Brokerage Fees	1050	1575	2100	4200	1575								10500
TOTAL HARVEST COSTS	**5040**	**7560**	**10080**	**20160**	**7560**								**50400**
Interest on Operating Capital	56	81	110	208	94	26	37	41	44	46	49	0	792
TOTAL OPERATING COSTS	**6124**	**7986**	**10797**	**20759**	**8065**	**425**	**1308**	**486**	**424**	**377**	**302**	**0**	**57048**
CASH OVERHEAD:													
Liability Insurance												44	44
Office Expenses												350	350
Interest- Cash Overhead Costs												108	108
Leaf Analysis												20	20
Soil Analysis												25	25
Field Sanitation												270	270
Organic Certification Charges												300	300
Property Taxes				210							210		420
Property Insurance				147							147		294
Investment Repairs	37	37	37	37	37	37	37	37	37	37	37	37	442
TOTAL CASH OVERHEAD COSTS	**37**	**37**	**37**	**394**	**37**	**37**	**37**	**37**	**37**	**37**	**394**	**1154**	**2273**
TOTAL CASH COSTS	**6161**	**8023**	**10834**	**21153**	**8102**	**462**	**1345**	**523**	**461**	**414**	**696**	**1154**	**59321**

Table 6. Whole Farm Equipment, Investment, and Business Overhead Costs Based on a-10 Acre Organic Blueberry Farm in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

EQUIPMENT

Year	Description	life (Year)	Price ($)	Capital Recovery ($)	Cash Overhead Costs ($)		Total Costs ($)
					Insurance	Taxes	
2007	70 HP 2WD Tractor	12	28850	3522	111	159	3792
2007	ATV 4WD	7	4500	791	17	25	833
2007	Bin Trailer #1	15	1000	108	4	6	118
2007	Mower - Rotary 5'	5	3000	685	12	16	713
2007	Power Sprayer	10	3000	411	12	16	439
TOTAL			**40350**	**5517**	**156**	**222**	**5895**
60% OF EQUIPMENT COSTS*			**24210**	**3310**	**94**	**133**	**3537**

*Used to reflect a mix of new and used equipment.

INVESTMENT

Description	Life (Years)	Price ($)	Capital Recovery ($)	Cash Overhead Costs ($)			Total Cost($)
				Insurance	Taxes	Repairs	
Bird Control-Net	5	23000	5647	81	115	1150	6993
Bird Control-Rest of Material (Post, Wire, Cement and Labor)	21	20330	1914	71	102	1017	3104
Establishment Costs- Accumulated Net Cash Cost	20	9740	937	34	49	0	1020
Irrigation System	23	35000	3172	123	175	1750	5220
Land	23	350000	25375	2450	3500	0	31325
Shop Building	23	20000	1812	70	100	400	2382
Shop Tools	23	5000	444	19	28	100	591
TOTAL INVESTMENT		**463070**	**39301**	**2848**	**4069**	**4417**	**50635**

ANNUAL BUSINESS OVERHEAD

Description	Units Per Farm	Unit	Price Per Unit ($)	Total Cost ($)
Field Sanitation	10	acre	270	2700
Interest -Cash Overhead	10	acre	108	1080
Leaf Analysis	10	acre	20	200
Liability Insurance	10	acre	44	440
Office Expenses	10	acre	350	3500
Soil Analysis	10	acre	25	250
Organic Certification Charges	10	acre	300	3000

Table 7. Hourly Equipment Costs to Produce Organic Blueberries in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

			Cost per hour ($)*							
		Actual		Cash overhead			Operating Expenses			
Year	Description	Hours Used	Capital Recovery	Insurance	Taxes	Total Cash Overhead	Repairs	Fuel & Lube	Total Operating Expenses	Total Cost Per Hour
2007	70 HP 2WD Tractor	11	192.1	6.06	8.66	14.72	1.25	9.09	10.34	217.16
2007	ATV 4WD	385	1.23	0.03	0.04	0.07	0.33	4.22	4.55	5.85
2007	Bin Trailer #1	250	0.26	0.01	0.01	0.02	0.15	0.00	0.15	0.43
2007	Mower - Rotary 5'	15	27.39	0.46	0.66	1.12	0.29	0.00	0.29	28.80
2007	Power Sprayer	5	49.27	1.39	1.98	3.37	0.80	0.00	0.80	53.44

* Costs are based on 60% of the values of assets to reflect the mix of old and new equipment complements.

Table 8. Range Analysis: Analysis of Costs and Returns for Producing Organic Blueberries at Varying Yields and Prices in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

Harvesting Costs 3.60 **$ Per Pound**

Costs per Acre and Pound at Varyiing Yields

	Yield (Pounds per Acre)						
	9800	11200	12600	14000	15400	16800	18200
OPERATING COSTS:							
Cultural Cost ($)	5856	5856	5856	5856	5856	5856	5856
Harvest Cost ($)	35280	40320	45360	50400	55440	60480	65520
Interest on Operating Capital ($)	554	634	713	792	871	950	1030
TOTAL OPERATING COSTS PER ACRE($)	**41690**	**46810**	**51929**	**57048**	**62167**	**67286**	**72406**
TOTAL OPERATING COSTS PER POUND ($)	**4.25**	**4.18**	**4.12**	**4.07**	**4.04**	**4.01**	**3.98**
CASH OVERHEAD COSTS PER ACRE ($)	2273	2273	2273	2273	2273	2273	2273
TOTAL CASH COSTS PER ACRE ($)	**43963**	**49083**	**54202**	**59321**	**64440**	**69559**	**74679**
TOTAL CASH COSTS PER POUND ($)	**4.49**	**4.38**	**4.30**	**4.24**	**4.18**	**4.14**	**4.10**
NON-CASH OVERHEAD COSTS PER ACRE ($)	4260	4260	4260	4260	4260	4260	4260
TOTAL COSTS PER ACRE ($)	**48223**	**53343**	**58462**	**63581**	**68700**	**73819**	**78939**
TOTAL COSTS PER POUND ($)	**4.92**	**4.76**	**4.64**	**4.54**	**4.46**	**4.39**	**4.34**

Net Returns per Acre Above Operating Costs at Varying Yield and Prices

	Yield (Pounds per Acre)						
	9800	11200	12600	14000	15400	16800	18200
	Net Returns Per Acre Above Operating Costs ($)						
Price ($ Per Pound)							
5.25	9760	11990	14221	16452	18683	20914	23144
6.00	17110	20390	23671	26952	30233	33514	36794
6.75	24460	28790	33121	37452	41783	46114	50444
7.50	31810	37190	42571	**47952**	53333	58714	64094
8.25	39160	45590	52021	58452	64883	71314	77744
9.00	46510	53990	61471	68952	76433	83914	91394
9.75	53860	62390	70921	79452	87983	96514	105044

Net Returns per Acre Above Cash Costs at Varying Yield and Prices

	Yield (Pounds per Acre)						
	9800	11200	12600	14000	15400	16800	18200
	Net Returns Per Acre Above All Cash Costs ($)						
Price ($ Per Pound)							
5.25	7487	9717	11948	14179	16410	18641	20871
6.00	14837	18117	21398	24679	27960	31241	34521
6.75	22187	26517	30848	35179	39510	43841	48171
7.50	29537	34917	40298	**45679**	51060	56441	61821
8.25	36887	43317	49748	56179	62610	69041	75471
9.00	44237	51717	59198	66679	74160	81641	89121
9.75	51587	60117	68648	77179	85710	94241	102771

Net Returns per Acre Above Total Costs at Varying Yield and Prices

	Yield (Pounds per Acre)						
	9800	11200	12600	14000	15400	16800	18200
	Net Returns Per Acre Above Total Costs ($)						
Price ($ Per Pound)							
5.25	3227	5457	7688	9919	12150	14381	16611
6.00	10577	13857	17138	20419	23700	26981	30261
6.75	17927	22257	26588	30919	35250	39581	43911
7.50	25277	30657	36038	**41419**	46800	52181	57561
8.25	32627	39057	45488	51919	58350	64781	71211
9.00	39977	47457	54938	62419	69900	77381	84861
9.75	47327	55857	64388	72919	81450	89981	98511

Table 9. Break-Even Prices ($ Per Pound) of Organic Blueberry Production in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

	Break-Even Prices($ Per Pound) to Cover Costs Using our Yield Assumption		
Yield (Pounds per Acre)	Operating Costs	Cash Costs	Total Costs
14,000	4.07	4.24	4.54

Table 10. Break-Even Yields (Pounds Per Acre) of Organic Blueberry Production in San Luis Obispo, Santa Barbara, and Ventura Counties, 2007

	Break-Even Yield (Pounds Per Acre) to Cover Costs Using Our Price Assumption		
Price ($ per pound)	Operating Costs	Cash Costs	Total Costs
7.50	7,607	7,910	8,478

REFERENCES

American Society of Agricultural Engineers, 1994. American Society of Agricultural Engineers Standards Yearbook. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, Missouri. 41st edition.

American Society of Farm Managers and Rural Appraisal, http://www.asfmra.org

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

California Certified Organic Farmers (CCOF), http://www.ccof.org/fees.php

High Bush blueberry Council, http://www.blueberry.org/

Jimenez, Manuel, Francis Carpenter, Richard H. Molinar, Kathryn Wright, Kevin R. Day (2005) Blueberry Research Launches Exciting New California Specialty Crop. California Agriculture. Vol. 59, No. 2.

Northwest Berry and Grape Information Network. Oregon State University, Idaho University and Washington State University, USDA.ARS, http://berrygrape.oregonstate.edu/category/fruit-growing/berry-crops/blueberry/

North America Blueberry Council, http://www.nabcblues.org/blueberry.htm

Small Farm Center, University of California Davis, http://www.sfc.ucdavis.edu/research/blueberry.html

Etaferahu Takele
Area Farm Advisor, Agricultural Economist/Farm Management
University of California Cooperative Extension
21150 Box Springs Road
Moreno Valley, CA 92557
Tel. (951) 683-6491 Ext. 243
Fax (951) 788-2615
e-mail: ettakele@ucdavis.edu
website: http://groups.ucanr.org/farmgt

Ben Faber
Farm Advisor, Soils and Water, Avocados and Minor Subtropicals
University of California, Cooperative Extension
669 County Square Drive, #100
Ventura, CA 93003-5401
Tel. (805) 645-1462
Fax: (805) 645-1474
e-mail: bafaber@ucdavis.edu
website: http://ceventura.ucdavis.edu

Mark Gaskell
Farm Advisor, Specialty crops, Vegetables, Sustainable Agriculture and Small Farms
University of California Cooperative Extension
624-A West Foster Road
Santa Barbara County
Santa Maria, CA 93455
Tel. (805) 934-6240
Fax: (805) 934-6333
e-mail: mlgaskell@ucdavis.edu
website: http://cesantabarbara.ucdavis.edu

02/07/2008