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Northern Utah Organic Peach Orchard Costs and Returns, 20 Acres, 2015

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Introduction

Peach production in Utah experienced a 12% reduction in the number of peach producing acres, decreasing from 1,792 to 1,594 acres from 2007 to 2012. However, peach production per acre and total value per acre increased, as yields expanded from 2.87 tons to 3.53 tons/acre equating to a change in overall peach production from 4,300 tons to 5,300 tons annually (U.S. Department of Agriculture, National Agricultural Statistics Service, 2014). This appears to follow an overall trend for agriculture within the state as urbanization increases each year.

Also notable is the increase in "nonbearing age" peach acres which has increased 18% from 287 acres in 2007 to 341 in 2012, indicating a potential increase in producing acres in the future. Per ton prices for peaches have also increased and in 2012 were estimated at $1080 per ton, up 36% from 2007 with a total state peach production value of $5.7 million (U.S. Department of Agriculture, National Agricultural Statistics Service, 2014).

Several varieties of peaches grow well in Utah's climate, including Early Elberta, Elberta, Angelus, O'Henry, Hale, Globe, and Red Haven (Utah Department of Agriculture and Food, 2006). Producers should investigate each variety fully before planting. For an extended harvest, producers may want to plant several varieties (early bearing, mid-season, and late bearing for example).

As the population of Utah increases, increased demand for land and water resources, as well as urban encroachment create a challenging environment in which fruit producers operate (Reeve et al., 2014). However, along with the urbanization that brings many challenges to producers in the state, Utah is also seeing an increased interest in locally produced foods as seen by the increase of farmers' markets throughout the state (U.S. Department of Agriculture, Agricultural Marketing Service, 2014a; 2014b). Peach producers may have the opportunity to make their orchards/farms more profitable through direct marketing to the growing population in the state interested in locally produced food (Toler et al., 2009). Integrated Pest Management (IPM) production methods may further help producers add value to their products (Oberholtzer, Dimitri, & Greene, 2005).

Other factors that Utah peach producers need to be aware of are the relatively short growing season throughout most of the state, the threat of spring frosts and a wide variety of pests such as the Peach Twig Borer and diseases like Coryneum Blight (Murray & Alston, 2011). Understanding these threats will allow producers to manage their orchards in order to minimize stress on trees and maximize tree productivity and fruit quality.

This publication contains average costs and returns for establishing and maintaining a 20-acre organic peach orchard in Northern Utah. Unless otherwise indicated, information in this publication is based upon grower surveys and pricing data collected in 2014. The establishment and operating costs are meant to be

"representative" of a Utah organic peach orchard, but should be adjusted where necessary to reflect individual situations. Site selection, peach variety, pest management and other practices will also affect the establishment and operating costs of an orchard and should be considered by the producer.

Organic Production Overview

This publication is meant to reflect the potential costs and returns of establishing and maintaining a 20-acre organic peach orchard in Northern Utah.

When considering whether to grow organically or conventionally, producers need to understand the challenges associated with each method. Organic growers will need to work closely with their certifier and maintain accurate production records. It will be up to the producer to decide if the environmental and economic benefits of organic production are worth the added costs of producing organically. This publication is meant to be a guide to aid in such production practice decisions.

For more information on how to become a certified organic operation, see the U.S. Department of Agriculture's National Organic Program website at the following link: http://www.ams.usda. gov/AMSv1.0/ NOPFAQsHowCertified.

Organic orchard production can vary immensely from orchard to orchard. There are a variety of methods in use and under development to address issues such as pest management, weed management and fertility within an orchard. These methods of production can have an impact on expenses and returns and should be thoroughly researched by producers before implementation. When selecting a method, it may be advisable to test the method on a small portion of the orchard block before applying it to the entire orchard. As with all production practices in an organic setting, contact your certifier to make sure any new method is in line with approved organic production practices.

Assumptions

Land

The site represented in this publication is established in open land with no improvements (ground levelling, for instance). It is also assumed that the site is in a location with minimal spring frost and winter cold damage. This representative orchard is a 20-acre organic peach orchard, which is leased at $800/acre (Olsen, Curtis, Wagner, & Knudsen, 2014). Although some producers may grow other crops as well (apples, apricots, cherries) in order to spread the cost of machinery and hedge against unfavorable weather or markets, it is assumed that only peaches are grown in this orchard.

Peach Trees

The cost of purchasing peach trees and planting density can vary significantly. Trees for this publication are priced at $7.75 each (Ty Ty Nusery, 2014) and the planting density is assumed at 400 trees per acre. While organic tree stock can be used in establishing an organic orchard, it is not necessary because conventional (non-organically produced) trees can be "sold, labeled, or represented as organically produced" when maintained under organic practices for at least one year (National Organic Program, 205 C.F.R §205.204, 2014).

Irrigation

The amount of water needed to properly irrigate a peach orchard will depend on a variety of factors including site location, soil type, annual temperatures, and rainfall. The year of growth also needs to be taken into consideration as younger orchards will require less water than fully producing orchards. The amount of water each orchard receives increases from 1.5 acre feet in year one to 3.5 acre feet in years 6-20 when orchards are in full production (Day, Klonsky, & De Moura, 2009).

Although flood irrigation was commonly used in the past for orchard irrigation, drip systems and micro-sprinkler systems have become increasingly popular due to their consistent watering, as well as their efficiency in irrigation. This study assumes a micro sprinkler system priced at $1,500 per acre (Mountain Land Sprinkler, personal communication, October 16, 2014) and annual water cost at $30/acre foot.

Electricity

Electricity to run the irrigation pumps is assumed at $14.22 per acre foot of water (N. Allen, personal communication, November 6, 2014; Rocky Mountain Power, 2014) and electricity to run the cooler is assumed at $15.00 per day during the months of August and September ($900) for a total of $1,895 per acre per year during full production (years 6-20).

Organic Certification

Organic certification applies only to the organic orchard and includes the application fee ($200), annual on-site inspections ($267), evaluation by the organic certification inspector ($84), and additional yearly paperwork and record-keeping by the producer ($1,806) for a total of $2406 (R. Overman, personal communication September 3, 2014). Annual gross sales fees are calculated using Table 1 (Utah Department of Agriculture and Food, 2008). The U.S. Department of

Agriculture has a "Cost Sharing" program to help offset the cost of organic certification for producers, however, as of 2014, Utah was not participating in this program (U.S. Department of Agriculture, Agricultural Marketing Service, 2014a).

Marketing

Yearly marketing fees include packaging at $6 per 23-pound box (half bushel), fees and stand costs for four markets ($800), market labor costs ($2,400), and transportation to markets ($1,440).

Table 1: Graduated Annual Gross Sales Fee for Organic Products Sold

Gross Sales ($)	Annual Gross Sales Fee ($)
$0.00 - $5,000	$0
$5,001 - $10,000	$100
$10,001 - $15,000	$180
$15,001- $20,000	$240
$20,001 - $25,000	$300
$25,001- $30,000	$360
$30,001 - $35,000	$420
$35,001 - $50,000	$600
$50,001 - $75,000	$900
$75,001 - $100,000	$1,200
$100,001 - $150,000	$1,800
$150,001 - $280,000	$2,240
$280,001 - $375,000	$3,000
$375,001 - $500,000	$4,000
$500,001 - $9,999,999	$5,000

Source: Utah Department of Agriculture and Food, 2008

Market Prices

Prices received for peaches harvested are key to profitability**.** As with most agricultural products, several factors determine market prices received during any given year, including variety, total production, fruit quality, marketing strategies, and regular volatility in markets. Producers have found that through direct marketing (roadside stands, farmers' markets, community supported agriculture [CSA] programs, etc.) they have been able to gain higher prices for their peaches, and therefore can cover their costs more effectively. Contracts are also a good way to lock in prices, however, small producers may have difficulty finding buyers willing to contract with them (Utah State University, 2014).

"Wholesale" prices assumed in this study reflect prices paid by retail locations such as Associated Foods during 2014. "Direct Market" prices reflect prices received by producers at various farmers' markets in Northern Utah and Colorado during the 2014 market season. Table 2 provides the prices per pound used in this publication. Also shown in Table 2 is the market share (percentage sold in each market) decided upon after gathering data from grower surveys. Wholesale markets mainly consist of grocery stores, and direct markets include farmers' markets, CSA programs, and roadside stands.

Table 2: Peach Prices and Market Allocation

Market Type	Price per Pound	Percentage Sold
Wholesale	$2.08	20%
Direct Markets	$3.87	80%

Yields

Table 3 provides the assumed peach yields per acre for each time period in this study. The possibility of a partial or full crop loss due to frost or other factors is highly likely during the 20-year orchard life. This publication assumes a one-half crop loss every third year. An 80% pack-out rate is assumed and returns are based on the pack-out rate.

Table 3: Peach Yield per Acre/Year (Pounds)

Year	Annual Yield per Acre (Lbs)	80% Pack-out Rate Yield (Lbs)
Year 1 (Establishment)	-	-
Year 2	-	-
Year 3	-	-
Year 4	4,290	3,432
Year 5	10,725	8,580
Year 6	15,015	12,012
Year 7	7,507	6,006
Year 8	15,015	12,012
Year 9	15,015	12,012
Year 10	7,507	6,006
Year 11	15,015	12,012
Year 12	15,015	12,012
Year 13	7,507	6,006
Year 14	15,015	12,012
Year 15	15,015	12,012
Year 16	7,507	6,006
Year 17	15,015	12,012
Year 18	12,870	10,296
Year 19	4,290	3,432
Year 20	8,580	6,864

Cash Overhead

Cash overhead consists of various cash expenses paid during the year. These costs include accounting/legal costs, insurance, and office expenses.

Insurance. Insurance on farm investments vary, depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss at .666 percent of the average asset value and crop insurance provides coverage for crop loss at .75 percent average yields. Liability insurance covers accidents on the orchard. Crop and liability insurance are estimated at an annual cost of $1000 for the 20-acre orchard (S. Norman, personal communication, October 20, 2014).

Office & Travel. Office and travel costs are estimated at $5,000 for an average year. These expenses include office supplies, telephone service, internet service, and travel expenses to educational seminars.

Accounting & Legal. Annual accounting and legal costs are estimated at $1000 for an average year for the 20-acre orchard.

Equipment

The equipment listed is adequate for a 20-25 acre orchard. Unless otherwise noted, all equipment listed is new. Equipment prices were collected from producers, equipment dealers, and other publications (Agrisupply, 2014; B. Chapman, personal communication, October 7, 2014; Commercial Truck Trader, 2014; Drollette, 2010; Galinato & Gallardo, 2012; HOJ Forklifts, personal communication October 8, 2014; Intermountain Farmers Association, Country Stores, personal communication, September 15, 2014; Painter, 2011; Smith Equipment Co., personal communication, October 8, 2014; Weed Badger, personal communication, October 13, 2014). Producers should consider the costs of buying new equipment versus used, as well as leasing, custom hiring, and group purchasing when establishing a new orchard as these costs will vary and have a large impact on the economic returns to the project.

Fuel and Lube. The fuel and lube for machinery is calculated at 8% the average asset value.

Investment Repairs. Annual repairs on all farm investments or capital recovery items that require maintenance are calculated at 2% of the average asset value for buildings and equipment, and at 7% for machinery and vehicles.

Capital Recovery. Capital recovery costs are the annual depreciation (opportunity cost) of all farm investments. Capital recovery costs are calculated using straight line depreciation. All equipment listed is new unless otherwise noted. The price for used machinery is calculated as one-half the new purchase price and useful life is calculated as two-thirds that of new machinery.

Salvage Value. Salvage value is 10% of the purchase price, which is an estimate of the remaining value of an investment at the end of its useful life. The salvage value for land is the purchase price, as land does not normally depreciate.

Labor

The wage rate used is representative of the net cost to the grower and is assumed at $15.00 per hour (Galinato, Gallardo, & Miles, 2014). Owner management and labor is $30,000 per year (Olsen & Curtis, 2012).

Costs and Returns

Table 4 shows initial investment costs required for buildings, equipment, and machinery. The annual cost of these items is worked into the annual budgets and is reflected in Tables 5 through 10.

The establishment budget in Table 5 as well as the annual budgets in Tables 6-9 demonstrate a representation of costs and returns associated with establishing and operating a 20-acre organic peach orchard in Utah. Table 10 shows production expenses and cash inflows during full production years (years 6-20), and assumes that once the orchard is established and fully operating, expenses and sales will be constant with the exception of orchard yields noted in Table 3. Table 10 also shows the cumulative net returns for years 6-20.

Due to the nature of orchard production, producers will not see any revenues for at least the first 3 years of production when peach trees aren't producing. Depending on pricing and productivity, orchards may not become profitable until the 7^{th} or 8^{th} year of production.

A peach orchard can produce beyond 20 years, but for this analysis a 20-year orchard life is assumed. Although this publication represents "typical" establishment and operating costs for an organic peach orchard, costs of establishment and prices of inputs are highly variable so each producer will need to assess costs on an individual basis.

Table 4: Initial Investment Requirements - Organic Peach Orchard, 20 acres

Machinery & Vehicles	Purchase Price	Salvage Value	Useful Life	Annual Capital Recovery	Annual Insurance	Annual Repairs	Annual Fuel & Lube
Tractor 35 hp	$ 25,000	$ 2,500	15	$ 1,500	$ 92	$ 963	$ 1,100
Tractor 65 hp	$ 55,000	$ 5,500	15	$ 3,300	$ 201	$ 2,118	$ 2,420
Pickup 3/4 ton	$ 40,000	$ 4,000	6	$ 6,000	$ 147	$ 1,540	$ 1,760
Refriderated Truck (used)	$ 22,000	$ 2,200	7	$ 2,829	$ 81	$ 847	$ 968
Forklift	$ 23,000	$ 2,300	10	$ 2,070	$ 84	$ 886	$ 1,012
Wind Machine (x2)	$ 50,000	$ 5,000	15	$ 3,000	$ 183	$ 1,925	$ 2,200
4 Wheeler	$ 10,000	$ 1,000	5	$ 1,800	$ 37	$ 385	$ 440
Sub Total	$ 225,000		NA	$ 20,499	$ 824	$ 8,663	$ 9,900
Buildings, Improvements & Equipment							
Shop (40X40 & Tools)	$ 15,000	$ 1,500	15	$ 900	$ 55	$ 165	-
Temperature Controlled Storage (1500 square feet)	$ 80,000	$ 8,000	15	$ 4,800	$ 293	$ 880	-
Implements	$ 10,000	$ 1,000	10	$ 900	$ 37	$ 110	-
Irrigation System	$ 30,000	$ 3,000	20	$ 1,350	$ 110	$ 330	-
Pneumatic Shears/Compressor	$ 8,000	$ 800	10	$ 720	$ 29	$ 88	-
Tree Sprayer	$ 20,000	$ 2,000	10	$ 1,800	$ 73	$ 220	-
Weed Badger	$ 8,800	$ 880	20	$ 396	$ 32	$ 97	-
Manure/Compost Spreader	$ 23,900	$ 2,390	10	$ 2,151	$ 88	$ 263	-
Tiller	$ 9,000	$ 900	10	$ 810	$ 33	$ 99	-
Flail Mower	$ 3,000	$ 300	10	$ 270	$ 11	$ 33	-
Flatbed Trailer (used)	$ 2,000	$ 200	8	$ 225	$ 7	$ 22	
Sub Total	$ 209,700	$ 20,970	NA	$ 4,322	$ 768	$ 2,307	$ -
Total Initial Investment	**$ 434,700**	**$ 20,970**	**NA**	**$ 34,821**	**$ 1,592**	**$ 10,969**	**$ 9,900**

Table 5: Organic Peach Orchard Establishment - Year 1 Expenses

Operation	Units	Unit Cost ($)	Units Per Acre	Cost Per Acre ($)	Your Estimate
Labor					
Clearing	Hrs	15	30	450	
Discing (Custom)	Acre	20	1	20	
Soil Finishing (Custom)	Acre	20	1	20	
Fertilizing	Hrs	15	4	53	
Trees	Trees	7.75	400	3100	
Planting	Hrs	15	40	600	
Training	Hrs	15	3	45	
Irrigating	Hrs	15	15	225	
Irrigation Setup	Acre	100	1	100	
Spraying	Hrs	15	5	75	
Soil Testing	Test	30	1	30	
Fertility					
Feathermeal	Lbs	0.77	225	173	
Compost	Tons	80	5	400	
Metalosate Multi Mineral	Lbs	12.5	1.3	16	
Irrigation					
Water	Acre Feet	30	1.5	45	
Twig Borer					
Dipel DF Pro	Lbs	20	1	20	
Powdery Mildew					
Sulphur Tiger 90CR	Lbs	0.9	0	0	
Organic Certification					
Certification	Fee	2,406	0.05	120	
Annual Gross Sales Fee	Fee	-	0.05	0	
Weeds					
Straw Mulch	Tons	250	1.5	375	
Electricity					
Irrigation Pump	Annual	427	0.05	21	
Cooler	Annual	-	0.05	0	
Machinery/Vehicles/Equipment					
Fuel & Lube	Annual	9,900	0.05	495	
Repairs	Annual	10,969	0.05	548	
Cash Overhead					
Land Rental	Acre	800	1	800	
Accounting/Legal	Annual	1,000	0.05	50	
Liability/Crop Insurance	Annual	1,000	0.05	50	
Office/Travel	Annual	5,000	0.05	250	
Annual Investment Insurance	Annual	1,592	0.05	80	
Owner Management/Labor	Annual	30,000	0.05	1500	
Non Cash Overhead (Capital Recovery)					
Machinery & Vehicles	Annual	20,499	0.05	1025	
Buildings, Improvements & Equipment	Annual	14,322	0.05	716	
Total Establishment Expense Per Acre				**$11,403**	
Cash Inflows From Sales				**$ -**	
Net Returns-Year 1 (Per Acre)				**$ (11,402.73)**	
Cumulative Net Returns (Per Acre)				**$ (11,402.73)**	

Table 6: Organic Peach Orchard Production Expenses-Year 2

Operation	Units	Unit Cost ($)	Units Per Acre	Cost Per Acre ($)	Your Estimate
Labor					
Pruning	Hrs	15	32	480	
Spraying	Hrs	15	5	75	
Mowing	Hrs	15	5	75	
Tilling	Hrs	15	5	75	
Thinning	Hrs	15	0	0	
Fertilizing	Hrs	15	4	53	
Irrigation	Hrs	15	30	450	
Picking	Hrs	15	0	0	
Irrigation					
Water	Acre Feet	30	2	60	
Fertility					
Compost	Tons	80	5	400	
Feathermeal	Lbs	0.77	225	173	
Metalosate Multi Mineral	Lbs	12.5	1.3	16	
Twig Borer					
Dipel DF Pro	Lbs	20	1	20	
Isomate PTB	Acres	80	1	80	
Coryneum Blight					
Nordox 75WG	Lbs	8	13	104	
Powdery Mildew					
Sulphur Tiger 90CR	Lbs	0.9	0	0	
Green Peach Aphids					
Stylet Oil	Gal	20	2	40	
Weeds					
Straw Mulch	Tons	250	1.5	375	
Electricity					
Irrigation Pump	Annual	569	0.05	28	
Cooler	Annual	0	0.05	0	
Organic Certification					
Certification Fee	Fee	2,406	0.05	120	
Annual Gross Sales Fee	Fee	-	0.05	0	
Machinery/Vehicles/Equipment					
Fuel & Lube	Annual	9,900	0.05	495	
Repairs	Annual	10,969	0.05	548	
Cash Overhead					
Land Rental	Acre	800	1	800	
Accounting/Legal	Annual	1,000	0.05	50	
Liability/Crop Insurance	Annual	1,000	0.05	50	
Office/Travel	Annual	5,000	0.05	250	
Annual Investment Insurance	Annual	1,592	0.05	80	
Owner Management/Labor	Annual	30,000	0.05	1500	
Non Cash Overhead (Capital Recovery)					
Machinery & Vehicles	Annual	20,499	0.05	1025	
Buildings, Improvements & Equipment	Annual	14,322	0.05	716	
Total Yearly Expense Per Acre				**$8,139**	
Cash Inflows From Sales				**$ -**	
Net Returns-Year 2 (Per Acre)				**$ (8,138.84)**	
Cumulative Net Returns (Per Acre)				**$ (19,541.58)**	

Table 7. Organic Peach Orchard Production Expenses-Year 3

Operation	Units	Unit Cost ($)	Units Per Acre	Cost Per Acre ($)	Your Estimate
Labor					
Pruning	Hrs	15	32	480	
Spraying	Hrs	15	5	75	
Mowing	Hrs	15	5	75	
Tilling	Hrs	15	5	75	
Thinning	Hrs	15	2	30	
Fertilizing	Hrs	15	4	53	
Irrigation	Hrs	15	30	450	
Picking	Hrs	15	0	0	
Irrigation					
Water	Acre Feet	30	2.5	75	
Fertility					
Compost	Tons	80	5	400	
Feathermeal	Lbs	0.77	225	173	
Metalosate Multi Mineral	Lbs	12.5	1.3	16	
Twig Borer					
Dipel DF Pro	Lbs	20	1	20	
Isomate PTB	Acres	80	1	80	
Coryneum Blight					
Nordox 75WG	Lbs	8	13	104	
Powdery Mildew					
Sulphur Tiger 90CR	Lbs	0.9	0	0	
Green Peach Aphids					
Stylet Oil	Gal	20	2	40	
Weeds					
Straw Mulch	Tons	250	1.5	375	
Electricity					
Irrigation Pump	Annual	711	0.05	36	
Cooler	Annual	-	0.05	0	
Organic Certification					
Certification Fee	Fee	2,406	0.05	120	
Annual Gross Sales Fee	Fee	-	0.05	0	
Machinery/Vehicles/Equipment					
Fuel & Lube	Annual	9,900	0.05	495	
Repairs	Annual	10,969	0.05	548	
Cash Overhead					
Land Rental	Acre	800	1	800	
Accounting/Legal	Annual	1,000	0.05	50	
Liability/Crop Insurance	Annual	1,000	0.05	50	
Office/Travel	Annual	5,000	0.05	250	
Annual Investment Insurance	Annual	1,592	0.05	80	
Owner Management/Labor	Annual	30,000	0.05	1500	
Non Cash Overhead (Capital Recovery)					
Machinery & Vehicles	Annual	20,499	0.05	1025	
Buildings, Improvements & Equipment	Annual	14,322	0.05	716	
Total Yearly Expense per Acre				**$8,191**	
Cash Inflows From Sales				**$ -**	
Net Returns-Year 3 (Per Acre)				**$ (8,190.95)**	
Cumulative Net Returns (Per Acre)				**$ (27,732.53)**	

Table 8: Organic Peach Orchard Production Expenses-Year 4

Operation	Units	Unit Cost ($)	Units Per Acre	Cost Per Acre ($)	Your Estimate
Labor					
Pruning	Hrs	15	42	630	
Spraying	Hrs	15	5	75	
Mowing	Hrs	15	5	75	
Tilling	Hrs	15	5	75	
Thinning	Hrs	15	50	750	
Fertilizing	Hrs	15	4	53	
Irrigating	Hrs	15	30	450	
Picking	Hrs	15	60	900	
Marketing	Hrs	15	6.4	96	
Irrigation					
Water	Acre Feet	30	3	90	
Fertility					
Compost	Tons	80	5	400	
Feathermeal	Lbs	0.77	225	173	
Metalosate Multi Mineral	Lbs	12.5	1.3	16	
Twig Borer					
Dipel DF Pro	Lbs	20	1	20	
Isomate PTB	Acres	80	1	80	
Coryneum Blight					
Nordox 75WG	Lbs	8	13	104	
Powdery Mildew					
Sulphur Tiger 90CR	Lbs	0.9	100	90	
Green Peach Aphids					
Stylet Oil	Gal	20	2	40	
Weeds					
Straw Mulch	Tons	250	1.5	375	
Electricity					
Irrigation Pump	Annual	853	0.05	43	
Cooler	Annual	900	0.05	45	
Organic Certification					
Certification Fee	Fee	2,406	0.05	120	
Annual Gross Sales Fee	Fee	2,240	0.05	112	
Marketing					
Packaging	Box	6	187	1119	
Marketing fees	Annual	800	0.05	40	
Transportation	Hrs	15	4.8	72	
Machinery/Vehicles/Equipment					
Fuel & Lube	Annual	9,900	0.05	495	
Repairs	Annual	10,969	0.05	548	
Cash Overhead					
Land Rental	Acre	800	1	800	
Accounting/Legal	Annual	1,000	0.05	50	
Liability/Crop Insurance	Annual	1,000	0.05	50	
Office/Travel	Annual	5,000	0.05	250	
Annual Investment Insurance	Annual	1,592	0.05	80	
Owner Management/Labor	Annual	30,000	0.05	1500	
Non Cash Overhead (Capital Recovery)					
Machinery & Vehicles	Annual	20,499	0.05	1025	
Buildings, Improvements & Equipment	Annual	14,322	0.05	716	
Total Yearly Expense Per Acre				**$11,557**	
Cash Inflows From Sales					
Wholesale Market Sales (20%)	Lbs	$ 2.08	686	**$ 1,427.71**	
Direct Market Sales (80%)	Lbs	$ 3.87	2,746	**$ 10,625.47**	
Net Returns-Year 4 (Per Acre)				**$ 495.99**	
Cumulative Net Returns (Per Acre)				**$ (27,236.54)**	

Table 9: Organic Peach Orchard Production Expenses-Year 5

Operation	Units	Unit Cost ($)	Units Per Acre	Cost Per Acre ($)	Your Estimate
Labor					
Pruning	Hrs	15	50	750	
Spraying	Hrs	15	5	75	
Mowing	Hrs	15	5	75	
Tilling	Hrs	15	5	75	
Thinning	Hrs	15	100	1500	
Fertilizing	Hrs	15	4	53	
Irrigating	Hrs	15	30	450	
Picking	Hrs	15	80	1200	
Marketing	Hrs	15	6.4	96	
Irrigation					
Water	Acre Feet	30	3.5	105	
Fertility					
Compost	Tons	80	5	400	
Feathermeal	Lbs	0.77	225	173	
Metalosate Multi Mineral	Lbs	12.5	1.3	16	
Twig Borer					
Dipel DF Pro	Lbs	20	1	20	
Isomate PTB	Acres	80	1	80	
Coryneum Blight					
Nordox 75WG	Lbs	8	13	104	
Powdery Mildew					
Sulphur Tiger 90CR	Lbs	0.9	100	90	
Green Peach Aphids					
Stylet Oil	Gal	20	2	40	
Weeds					
Straw Mulch	Tons	250	1.5	375	
Electricity					
Irrigation Pump	Annual	995	0.05	50	
Cooler	Annual	900	0.05	45	
Organic Certification					
Certification Fee	Fee	2,406	0.05	120	
Annual Gross Sales Fee	Fee	5,000	0.05	250	
Marketing					
Packaging	Box	6	466	2798	
Marketing fees	Fee	800	0.05	40	
Transportation	Hrs	15	4.8	72	
Machinery/Vehicles/Equipment					
Fuel & Lube	Annual	9,900	0.05	495	
Repairs	Annual	10,969	0.05	548	
Cash Overhead					
Land Rental	Acre	800	1	800	
Accounting/Legal	Annual	1,000	0.05	50	
Liability/Crop Insurance	Annual	1,000	0.05	50	
Office/Travel	Annual	5,000	0.05	250	
Annual Investment Insurance	Annual	1,592	0.05	80	
Owner Management/Labor	Annual	30,000	0.05	1500	
Non Cash Overhead (Capital Recovery)					
Machinery & Vehicles	Annual	20,499	0.05	1025	
Buildings, Improvements & Equipment	Annual	14,322	0.05	716	
Total Yearly Expense Per Acre				**$14,566**	
Cash Inflows From Sales					
Wholesale Market Sales (20%)	Lbs	$ 2.08	1,716	**$ 3,569.28**	
Direct Market Sales (80%)	Lbs	$ 3.87	6,864	**$ 26,563.68**	
Net Returns-Year 5 (Per Acre)				**$ 15,566.96**	
Cumulative Net Returns (Per Acre)				**$ (11,669.58)**	

Table 10: Organic Peach Orchard Production Expenses-Years 6-20

Operation	Units	Unit Cost ($)	Units Per Acre	Cost Per Acre ($)	Your Estimate
Labor					
Pruning	Hrs	15	45	675	
Spraying	Hrs	15	5	75	
Mowing	Hrs	15	5	75	
Tilling	Hrs	15	5	75	
Thinning	Hrs	15	150	2250	
Fertilizing	Hrs	15	4	53	
Irrigating	Hrs	15	30	450	
Picking	Hrs	15	120	1800	
Marketing	Hrs	15	6.4	96	
Irrigation					
Water	Acre Feet	30	3.5	105	
Fertility					
Compost	Tons	80	5	400	
Feathermeal	Lbs	1	225	173	
Metalosate Multi Mineral	Lbs	13	1.3	16	
Twig Borer					
Dipel DF Pro	Lbs	20	1	20	
Isomate PTB	Acres	80	1	80	
Coryneum Blight					
Nordox 75WG	Lbs	8	13	104	
Powdery Mildew					
Sulphur Tiger 90CR	Lbs	1	100	90	
Green Peach Aphids					
Stylet Oil	Gal	20	2	40	
Weeds					
Straw Mulch	Tons	250	1.5	375	
Electricity					
Irrigation Pump	Annual	995	0.05	50	
Cooler	Annual	900	0.05	45	
Organic Certification					
Certification Fee	Fee	2406	0.05	120	
Annual Gross Sales Fee	Fee	5000	0.05	250	
Marketing					
Packaging	Box	6	653	3917	
Marketing fees	Fee	800	0.05	40	
Transportation	Hrs	15	4.8	72	
Machinery/Vehicles/Equipment					
Fuel & Lube	Annual	9900	0.05	495	
Repairs	Annual	10969	0.05	548	
Cash Overhead					
Land Rental	Acre	800	1	800	
Accounting/Legal	Annual	1000	0.05	50	
Liability/Crop Insurance	Annual	1000	0.05	50	
Office/Travel	Annual	5000	0.05	250	
Annual Investment Insurance	Annual	1592	0.05	80	
Owner Management/Labor	Annual	30000	0.05	1500	
Non Cash Overhead (Capital Recovery)					
Machinery & Vehicles	Annual	20499	0.05	1025	
Buildings, Improvements & Equipment	Annual	14322	0.05	716	
Total Yearly Expense Per Acre				**$16,960**	
Cash Inflows From Sales					
Wholesale Market Sales (20%)	Lbs	$ 2.08	2,402	**$ 4,996.99**	
Direct Market Sales (80%)	Lbs	$ 3.87	9,610	**$ 37,189.15**	
Net Returns-Year 6 (Per Acre)				**$ 25,226.01**	
Cumulative Net Returns (Per Acre)				**$ 13,556.43**	

Table 10 Continued

Cumulative Net Returns (Per Acre)		
Year 6	$	13,691
Year 7	$	17,845
Year 8	$	43,094
Year 9	$	68,342
Year 10	$	72,497
Year 11	$	97,745
Year 12	$	122,994
Year 13	$	127,148
Year 14	$	152,396
Year 15	$	177,645
Year 16	$	181,799
Year 17	$	207,047
Year 18	$	226,269
Year 19	$	221,385
Year 20	$	228,553
NPV (5%)	$	122,689

Considerations and Limitations

Break-Even Analysis

A break-even analysis is helpful in analyzing potential costs and returns of an investment. A break-even analysis shows a range of yields and prices required to make a project profitable at a given cost. Table 11 demonstrates a break-even analyses for the 20-acre organic peach orchard, and shows varying prices needed (italicized) for the orchard at and around the assumed pack-out rate yield for a full production year. The median pack-out rate yield (bolded) is the yield assumed in the budget during a full production year, rounded to the nearest hundredth. The yield varies by increments of 500 pounds to show the prices required for the orchard to be profitable, or "break-even." The analysis uses costs from a full production year and assumes an 80/20 direct and wholesale market distribution.

Table 12 shows another break-even analysis, but uses the peach prices assumed in the budget and changes the pack-out rate yields (italicized) needed at those prices for the orchard to become profitable, or to "break-even." The median prices (bolded) are the prices used in the budget, rounded to the nearest tenth. The price difference between wholesale and direct market prices is maintained while adjusting prices.

Table 11: Break-Even Analysis[a] - Returns Per Acre at Varying Prices

	Wholesale and Direct Market Prices (Pound)						
Wholesale	*0.75*	*0.80*	*0.85*	*0.90*	*0.95*	*1.00*	*1.05*
Direct Market	*1.40*	*1.49*	*1.58*	*1.67*	*1.77*	*1.86*	*1.95*
Pack-Out Rate Yield							
10500	$ (3,663)	$ (2,777)	$ (1,891)	$ (1,004)	$ (118)	$ 769	$ 1,655
11000	$ (3,030)	$ (2,102)	$ (1,173)	$ (244)	$ 684	$ 1,613	$ 2,542
11500	$ (2,397)	$ (1,426)	$ (455)	$ 515	$ 1,486	$ 2,457	$ 3,428
12000	$ (1,764)	$ (751)	$ 262	$ 1,275	$ 2,288	$ 3,301	$ 4,314
12500	$ (1,131)	$ (76)	$ 980	$ 2,035	$ 3,090	$ 4,146	$ 5,201
13000	$ (498)	$ 600	$ 1,697	$ 2,795	$ 3,892	$ 4,990	$ 6,087
13500	$ 136	$ 1,275	$ 2,415	$ 3,555	$ 4,694	$ 5,834	$ 6,974

[a]Assumes full production year and total annual per acre cost of $16,960

Table 12: Break-Even Analysis[a] - Returns Per Acre at Varying Pack-Out Yields

	Wholesale and Direct Market Prices (Pound)						
Wholesale	1.95	2.00	2.05	**2.10**	2.15	2.20	2.25
Direct Market	3.63	3.72	3.81	**3.91**	4.00	4.09	4.19
Pack-Out Rate Yield							
3500	$ (5,436)	$ (5,141)	$ (4,845)	$ (4,550)	$ (4,254)	$ (3,959)	$ (3,663)
4000	$ (3,790)	$ (3,452)	$ (3,115)	$ (2,777)	$ (2,439)	$ (2,102)	$ (1,764)
4500	$ (2,144)	$ (1,764)	$ (1,384)	$ (1,004)	$ (624)	$ (244)	$ 136
5000	$ (498)	$ (76)	$ 347	$ 769	$ 1,191	$ 1,613	$ 2,035
5500	$ 1,149	$ 1,613	$ 2,077	$ 2,542	$ 3,006	$ 3,470	$ 3,935
6000	$ 2,795	$ 3,301	$ 3,808	$ 4,314	$ 4,821	$ 5,328	$ 5,834
6500	$ 4,441	$ 4,990	$ 5,539	$ 6,087	$ 6,636	$ 7,185	$ 7,734

[a]Assumes full production year and total annual per acre cost of $16,960

Pricing

Due to the fact that there are no USDA organically certified peach producers in the state of Utah, the prices used for organic Direct Market peaches reflect those available in Colorado. Based on the results of a willingness-to-pay (WTP) survey conducted by Utah State University (Curtis, Ward, & Reeve, 2014), there is evidence that suggests that Utah consumers are willing to pay approximately 21% more for direct market organic peaches than for conventional peaches sold at direct markets. If this is the case then the hypothetical price per pound for organic peaches would be $2.70/lb. and the net returns and cumulative net returns for an organic peach orchard would be those seen in Table 13. Table 13 also shows the net present value of an organic orchard with direct market prices of $2.70/lb. and wholesale market prices of $2.08/lb. discounted at a rate of 5%.

Quantity of Peaches Sold

A limitation to the outcome of this study, is the amount of peaches consumed in Utah. Utahns consumed approximately 10.5 million pounds of peaches in 2012 (U.S. Department of Agriculture, Economic Research Service, 2014). This suggests that according to the assumptions outlined, Utah could support 44 of the 20-acre organic peach orchards during a full production year. Utah's ability to support this quantity of 20-acre peach orchards also assumes that Utahns would only consume organic peaches produced in Utah. A survey by the Organic Trade Association revealed that only about 10% of the produce purchased throughout the United States in 2013 was organically produced (Burfield, 2014). If that assumption holds true in Utah, then Utah could only support between four and five 20-acre organic peach orchards, and all other orchards would need to use other production methods in order to reflect consumer preferences.

Summary

Organic peach production has the potential to be profitable for producers in Northern Utah under the assumptions outlined in this publication. The organic peach orchard in this publication is profitable starting in year 6. Table 14 illustrates the costs, revenues, returns, and cumulative net returns for each of the 20 years of orchard production. When discounted at a 5% rate, cumulative net returns per acre in year 20 are $122,409.

Table 13: Costs and Returns at Direct Market Price of $2.70/lb.

Year	Total Cost per Acre	Total Revenue Per Acre	Net Returns per Acre	Cumulative Net Returns per Acre
Year 1	$11,403	$0	($11,403)	($11,403)
Year 2	$8,139	$0	($8,139)	($19,542)
Year 3	$8,191	$0	($8,191)	($27,733)
Year 4	$11,557	$8,841	($2,716)	($30,449)
Year 5	$14,566	$22,102	$7,536	($22,913)
Year 6	$16,960	$30,943	$13,983	($8,930)
Year 7	$16,960	$15,470	($1,490)	($10,420)
Year 8	$16,960	$30,943	$13,983	$3,563
Year 9	$16,960	$30,943	$13,983	$17,546
Year 10	$16,960	$15,470	($1,490)	$16,056
Year 11	$16,960	$30,943	$13,983	$30,039
Year 12	$16,960	$30,943	$13,983	$44,022
Year 13	$16,960	$15,470	($1,490)	$42,532
Year 14	$16,960	$30,943	$13,983	$56,515
Year 15	$16,960	$30,943	$13,983	$70,498
Year 16	$16,960	$15,470	($1,490)	$69,008
Year 17	$16,960	$30,943	$13,983	$82,991
Year 18	$16,960	$26,522	$9,562	$92,553
Year 19	$16,960	$8,841	($8,119)	$84,434
Year 20	$16,960	$17,682	$722	$85,155
NPV (5%)				**$40,701**

Table 14: Summary of 20 Year Cost and Returns

Year	Total Cost per Acre	Total Revenue Per Acre	Net Returns per Acre	Cumulative Net Returns per Acre
Year 1	$11,403	$0	($11,403)	($11,403)
Year 2	$8,139	$0	($8,139)	($19,542)
Year 3	$8,191	$0	($8,191)	($27,733)
Year 4	$11,557	$12,053	$496	($27,237)
Year 5	$14,566	$30,133	$15,567	($11,670)
Year 6	$16,960	$42,186	$25,226	$13,556
Year 7	$16,960	$21,092	$4,132	$17,688
Year 8	$16,960	$42,186	$25,226	$42,914
Year 9	$16,960	$42,186	$25,226	$68,140
Year 10	$16,960	$21,092	$4,132	$72,272
Year 11	$16,960	$42,186	$25,226	$97,498
Year 12	$16,960	$42,186	$25,226	$122,724
Year 13	$16,960	$21,092	$4,132	$126,855
Year 14	$16,960	$42,186	$25,226	$152,081
Year 15	$16,960	$42,186	$25,226	$177,307
Year 16	$16,960	$21,092	$4,132	$181,439
Year 17	$16,960	$42,186	$25,226	$206,665
Year 18	$16,960	$36,160	$19,199	$225,864
Year 19	$16,960	$12,053	($4,907)	$220,957
Year 20	$16,960	$24,106	$7,146	$228,103
NPV (5%)				**$122,409**

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