



Northern Utah Conventional 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). Organic or Integrated Pest Management (IPM) production methods may further help producers add value to their products (U.S. Department of Agriculture, 2013; 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 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 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.

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 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 Nursery, 2014) and the planting density is assumed at 400 trees per acre.

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).

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).

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 1 demonstrates the prices per pound used in this publication. Also shown in Table 1 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 1: Peach Prices and Market Allocation

Market Type	Price per Pound	Percentage Sold
Wholesale	\$1.06	20%
Direct Markets	\$2.23	80%

Yields

Table 2 provides the assumed peach yields per acre for each time period in this publication. 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 one-half crop loss every third year. An 80% pack-out rate is assumed and returns are based on the pack-out rate.

Table 2: Peach Yields per Acre/Year (Pounds)

Year	Annual Yield per Acre (Lbs)	80 % Packout Rate Yield (Lbs)
(Establishment)	-	-
Year 2	-	-
Year 3	-	-
Year 4	5,500	4,400
Year 5	13,750	11,000
Year 6	19,250	15,400
Year 7	9,625	7,700
Year 8	19,250	15,400
Year 9	19,250	15,400
Year 10	9,625	7,700
Year 11	19,250	15,400
Year 12	19,250	15,400
Year 13	9,625	7,700
Year 14	19,250	15,400
Year 15	19,250	15,400
Year 16	9,625	7,700
Year 17	19,250	15,400
Year 18	16,500	13,200
Year 19	5,500	4,400
Year 20	11,000	8,800

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 \$1,000 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 \$1,000 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 per hour (Galinato, Gallardo, & Miles, 2014). Owner management and labor is \$30,000 per year (Olsen & Curtis, 2012).

Costs and Returns

Table 3 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 4 through 9.

The establishment budget in Table 4 as well as the annual budgets in Tables 5-8 demonstrate a representation of costs and returns associated with establishing and operating a 20-acre peach orchard in

Utah. Table 9 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 2. Table 9 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 7th or 8th 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 a 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 3: Initial Investment Requirements - Conventional 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
Refridgerated 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	20	\$ 3,600	\$ 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	-
Flail Mower	\$ 3,000	\$ 300	10	\$ 270	\$ 11	\$ 33	-
Flatbed Trailer (used)	\$ 2,000	\$ 200	8	\$ 225	\$ 7	\$ 22	-
Sub Total	\$ 168,000	\$ 16,800	NA	\$ 9,765	\$ 615	\$ 1,848	\$ -
Total Initial Investment	\$ 393,000	\$ 16,800	NA	\$ 30,264	\$ 1,440	\$ 10,511	\$ 9,900

Table 4: Peach Orchard Establishment and Year 1 Expenses

Operation	Units	Unit Cost (\$)	Units Per Acre	Cost Per Acre (\$)	Your Estimate
<u>Labor</u>					
Clearing	Hrs	15	30	450	_____
Discing (Custom)	Acre	20	1	20	_____
Soil Finishing (Custom)	Acre	20	1	20	_____
Fertilizing	Hrs	15	2	30	_____
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	_____
Soil Testing	Test	30	1	30	_____
<u>Fertility</u>					
Ammonium Sulfate	Lbs	3	100	300	_____
Metalosate Multi Mineral	Gal	36	0.25	9	_____
<u>Irrigation</u>					
Water	Acre Feet	30	1.5	45	_____
<u>Twig Borer</u>					
Asana XL	Gal	65	0.1	7	_____
<u>Powdery Mildew</u>					
Sulphur Granules	Lbs	0.4	0	0	_____
<u>Weeds</u>					
Roundup	Gal	12.5	0.5	6	_____
<u>Electricity</u>					
Irrigation Pump	Annual	427	0.05	21	_____
Cooler	Annual	0	0.05	0	_____
<u>Machinery/Vehicles/Equipment</u>					
Fuel & Lube	Annual	9900	0.05	495	_____
Repairs	Annual	10511	0.05	526	_____
<u>Cash Overhead</u>					
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	1440	0.05	72	_____
Owner Management/Labor	Annual	30000	0.05	1500	_____
<u>Non Cash Overhead (Capital Recovery)</u>					
Machinery & Vehicles	Annual	20499	0.05	1025	_____
Buildings, Improvements & Equipment	Annual	9765	0.05	488	_____
Total Establishment Expense Per Acre				\$10,264	
Cash Inflows From Sales				\$ -	
Net Returns-Year 1 (Per Acre)				\$ (10,263.78)	
Cumulative Net Returns (Per Acre)				\$ (10,263.78)	

Table 5: Peach Orchard Production Expenses-Year 2

Operation	Units	Unit Cost (\$)	Units Per Acre	Cost Per Acre (\$)	Your Estimate
<u>Labor</u>					
Pruning	Hrs	15	32	480	_____
Spraying	Hrs	15	5	75	_____
Mowing	Hrs	15	5	75	_____
Thinning	Hrs	15	0	0	_____
Fertilizing	Hrs	15	2	30	_____
Irrigation	Hrs	15	30	450	_____
Picking	Hrs	15	0	0	_____
<u>Irrigation</u>					
Water	Acre Feet	30	2	60	_____
<u>Fertility</u>					
Ammonium Sulfate	Lbs	2.83	100	283	_____
Metalosate Multi Mineral	Gal	36	1	36	_____
<u>Twig Borer</u>					
Imidan 70WP	Lbs	10.65	4	43	_____
<u>Coryneum Blight</u>					
Captan 70 WP	Lbs	3.5	8	28	_____
<u>Powdery Mildew</u>					
Sulphur Granules	Lbs	0.4	0	0	_____
<u>Green Peach Aphids</u>					
Dormant Oil Spray	Gal	8.5	3	26	_____
<u>Weeds</u>					
Roundup	Gal	12.5	0.5	6.25	_____
<u>Electricity</u>					
Irrigation Pump	Annual	569	0.05	28	_____
Cooler	Annual	0	0.05	0	_____
<u>Machinery/Vehicles/Equipment</u>					
Fuel & Lube	Annual	9900	0.05	495	_____
Repairs	Annual	10511	0.05	526	_____
<u>Cash Overhead</u>					
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	1440	0.05	72	_____
Owner Management/Labor	Annual	30000	0.05	1500	_____
<u>Non Cash Overhead (Capital Recovery)</u>					
Machinery & Vehicles	Annual	20499	0.05	1025	_____
Buildings, Improvements & Equipment	Annual	9765	0.05	488	_____
Total Yearly Expense Per Acre				\$6,875	
Cash Inflows From Sales				\$	-
Net Returns-Year 2 (Per Acre)				\$	(6,875.48)
Cumulative Net Returns (Per Acre)				\$	(17,139.26)

Table 6: Peach Orchard Production Expenses-Year 3

Operation	Units	Unit Cost (\$)	Units Per Acre	Cost Per Acre (\$)	Your Estimate
<u>Labor</u>					
Pruning	Hrs	15	32	480	_____
Spraying	Hrs	15	5	75	_____
Mowing	Hrs	15	5	75	_____
Thinning	Hrs	15	2	30	_____
Fertilizing	Hrs	15	2	30	_____
Irrigation	Hrs	15	30	450	_____
Picking	Hrs	15	0	0	_____
<u>Irrigation</u>					
Water	Acre Feet	30	2.5	75	_____
<u>Fertility</u>					
Ammonium Sulfate	Lbs	2.83	100	283	_____
Metalosate Multi Mineral	Gal	36	1	36	_____
<u>Twig Borer</u>					
Imidan 70WP	Lbs	10.65	4	43	_____
<u>Coryneum Blight</u>					
Captan 50 WP	Lbs	3.5	8	28	_____
<u>Powdery Mildew</u>					
Sulphur Granules	Lbs	0.4	0	0	_____
<u>Green Peach Aphids</u>					
Dormant Oil Spray	Gal	8.5	3	26	_____
<u>Weeds</u>					
Roundup	Gal	12.5	0.5	6.25	_____
<u>Electricity</u>					
Irrigation Pump	Annual	711	0.05	36	_____
Cooler	Annual	0	0.05	0	_____
<u>Machinery/Vehicles/Equipment</u>					
Fuel & Lube	Annual	9900	0.05	495	_____
Repairs	Annual	10511	0.05	526	_____
<u>Cash Overhead</u>					
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	1440	0.05	72	_____
Owner Management/Labor	Annual	30000	0.05	1500	_____
<u>Non Cash Overhead (Capital Recovery)</u>					
Machinery & Vehicles	Annual	20499	0.05	1025	_____
Buildings, Improvements & Equipment	Annual	9765	0.05	488	_____
Total Yearly Expense per Acre				\$6,928	
Cash Inflows From Sales				\$	-
Net Returns-Year 3 (Per Acre)				\$	(6,927.58)
Cumulative Net Returns (Per Acre)				\$	(24,066.84)

Table 7: Peach Orchard Production Expenses-Year 4

Operation	Units	Unit Cost (\$)	Units Per Acre	Cost Per Acre (\$)	Your Estimate
<u>Labor</u>					
Pruning	Hrs	15	42	630	_____
Spraying	Hrs	15	5	75	_____
Mowing	Hrs	15	5	75	_____
Thinning	Hrs	15	50	750	_____
Fertilizing	Hrs	15	2	30	_____
Irrigating	Hrs	15	30	450	_____
Picking	Hrs	15	60	900	_____
Marketing	Hrs	15	6.4	96	_____
<u>Irrigation</u>					
Water	Acre Feet	30	3	90	_____
<u>Fertility</u>					
Ammonium Sulfate	Lbs	2.83	100	283	_____
Metalosate Multi Mineral	Gal	36	1	36	_____
<u>Twig Borer</u>					
Imidan 70WP	Lbs	10.65	4	43	_____
<u>Coryneum Blight</u>					
Captan 50 WP	Lbs	3.5	8	28	_____
<u>Powdery Mildew</u>					
Sulphur Granules	Lbs	0.4	200	80	_____
<u>Green Peach Aphids</u>					
Dormant Oil Spray	Gal	8.5	3	26	_____
<u>Weeds</u>					
Roundup	Gal	12.5	0.5	6.25	_____
<u>Electricity</u>					
Irrigation Pump	Annual	853	0.05	43	_____
Cooler	Annual	900	0.05	45	_____
<u>Marketing</u>					
Packaging	Box	6	239	1435	_____
Marketing fees	Annual	800	0.05	40	_____
Transportation	Hrs	15	4.8	72	_____
<u>Machinery/Vehicles/Equipment</u>					
Fuel & Lube	Annual	9900	0.05	495	_____
Repairs	Annual	10511	0.05	526	_____
<u>Cash Overhead</u>					
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	1440	0.05	72	_____
Owner Management/Labor	Annual	30000	0.05	1500	_____
<u>Non Cash Overhead (Capital Recovery)</u>					
Machinery & Vehicles	Annual	20499	0.05	1025	_____
Buildings, Improvements & Equipment	Annual	9765	0.05	488	_____
Total Yearly Expense Per Acre				\$10,487	
Cash Inflows From Sales					
Wholesale Market Sales (20%)	Lbs	\$ 1.06	880	\$ 933	
Direct Market Sales (80%)	Lbs	\$ 2.23	3,520	\$ 7,850	
Net Returns-Year 4 (Per Acre)				\$ (1,705.06)	
Cumulative Net Returns (Per Acre)				\$ (25,771.91)	

Table 8: Peach Orchard Production Expenses-Year 5

Operation	Units	Unit Cost (\$)	Units Per Acre	Cost Per Acre (\$)	Your Estimate
<u>Labor</u>					
Pruning	Hrs	15	50	750	_____
Spraying	Hrs	15	5	75	_____
Mowing	Hrs	15	5	75	_____
Thinning	Hrs	15	100	1500	_____
Fertilizing	Hrs	15	2	30	_____
Irrigating	Hrs	15	30	450	_____
Picking	Hrs	15	80	1200	_____
Marketing	Hrs	15	6.4	96	_____
<u>Irrigation</u>					
Water	Acre Feet	30	3.5	105	_____
<u>Fertility</u>					
Ammonium Sulfate	Lbs	2.83	100	283	_____
Metalosate Multi Mineral	Gal	36	1	36	_____
<u>Twig Borer</u>					
Imidan 70WP	Lbs	10.65	4	43	_____
<u>Coryneum Blight</u>					
Captan 50 WP	Lbs	3.5	8	28	_____
<u>Powdery Mildew</u>					
Sulphur Granules	Lbs	0.4	200	80	_____
<u>Green Peach Aphids</u>					
Dormant Oil Spray	Gal	8.5	3	26	_____
<u>Weeds</u>					
Roundup	Gal	12.5	0.5	6.25	_____
<u>Electricity</u>					
Irrigation Pump	Annual	995	0.05	50	_____
Cooler	Annual	900	0.05	45	_____
<u>Marketing</u>					
Packaging	Box	6	598	3587	_____
Marketing fees	Annual	800	0.05	40	_____
Transportation	Hrs	15	4.8	72	_____
<u>Machinery/Vehicles/Equipment</u>					
Fuel & Lube	Annual	9900	0.05	495	_____
Repairs	Annual	10511	0.05	526	_____
<u>Cash Overhead</u>					
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	1440	0.05	72	_____
Owner Management/Labor	Annual	30000	0.05	1500	_____
<u>Non Cash Overhead (Capital Recovery)</u>					
Machinery & Vehicles	Annual	20499	0.05	1025	_____
Buildings, Improvements & Equipment	Annual	9765	0.05	488	_____
Total Yearly Expense Per Acre				\$13,832	
Cash Inflows From Sales					
Wholesale Market Sales (20%)	Lbs	\$ 1.06	2,200	\$ 2,332	
Direct Market Sales (80%)	Lbs	\$ 2.23	8,800	\$ 19,624	
Net Returns-Year 5 (Per Acre)				\$ 8,124.26	
Cumulative Net Returns (Per Acre)				\$ (17,647.65)	

Table 9: Peach Orchard Production Expenses-Years 6-20

Operation	Units	Unit Cost (\$)	Units Per Acre	Cost Per Acre (\$)	Your Estimate
<u>Labor</u>					
Pruning	Hrs	15	45	675	_____
Spraying	Hrs	15	5	75	_____
Mowing	Hrs	15	5	75	_____
Thinning	Hrs	15	150	2250	_____
Fertilizing	Hrs	15	2	30	_____
Irrigating	Hrs	15	30	450	_____
Picking	Hrs	15	120	1800	_____
Marketing	Hrs	15	6.4	96	_____
<u>Irrigation</u>					
Water	Acre Feet	30	3.5	105	_____
<u>Fertility</u>					
Ammonium Sulfate	Lbs	2.83	100	283	_____
Metalosate Multi Mineral	Gal	36	1	36	_____
<u>Twig Borer</u>					
Imidan 70WP	Lbs	10.65	4	43	_____
<u>Coryneum Blight</u>					
Captan 50 WP	Lbs	3.5	8	28	_____
<u>Powdery Mildew</u>					
Sulphur Granules	Lbs	0.4	200	80	_____
<u>Green Peach Aphids</u>					
Dormant Oil Spray	Gal	8.5	3	26	_____
<u>Weeds</u>					
Roundup	Gal	12.5	0.5	6.25	_____
<u>Electricity</u>					
Irrigation Pump	Annual	995	0.05	50	_____
Cooler	Annual	900	0.05	45	_____
<u>Marketing</u>					
Packaging	Box	6	837	5022	_____
Marketing fees	Annual	800	0.05	40	_____
Transportation	Hrs	15	6.4	96	_____
<u>Machinery/Vehicles/Equipment</u>					
Fuel & Lube	Annual	9900	0.05	495	_____
Repairs	Annual	10511	0.05	526	_____
<u>Cash Overhead</u>					
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	1440	0.05	72	_____
Owner Management/Labor	Annual	30000	0.05	1500	_____
<u>Non Cash Overhead (Capital Recovery)</u>					
Machinery & Vehicles	Annual	20499	0.05	1025	_____
Buildings, Improvements & Equipment	Annual	9765	0.05	488	_____
Total Yearly Expense Per Acre				\$16,566	
Cash Inflows From Sales					
Wholesale Market Sales (20%)	Lbs	\$ 1.06	3,080	\$ 3,265	
Direct Market Sales (80%)	Lbs	\$ 2.23	12,320	\$ 27,474	
Net Returns-Year 6 (Per Acre)				\$ 14,172.88	
Cumulative Net Returns (Per Acre)				\$ (3,474.77)	

Table 9: Continued

Cumulative Net Returns (Per Acre)		
Year 6	\$	(3,475)
Year 7	\$	(4,671)
Year 8	\$	9,502
Year 9	\$	23,675
Year 10	\$	22,478
Year 11	\$	36,651
Year 12	\$	50,824
Year 13	\$	49,628
Year 14	\$	63,801
Year 15	\$	77,974
Year 16	\$	76,777
Year 17	\$	90,950
Year 18	\$	100,732
Year 19	\$	92,949
Year 20	\$	93,948

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 10 demonstrates a break-even analysis for the 20-acre 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 11 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 10: Break-Even Analysis^a - Returns Per Acre at Varying Prices

		Wholesale and Direct Market Prices (Pound)												
		<i>0.45</i>	<i>0.50</i>	<i>0.55</i>	<i>0.60</i>	<i>0.65</i>	<i>0.70</i>	<i>0.75</i>						
Wholesale														
Direct Market														
Pack-Out Rate Yield														
14000	\$	(4,703)	\$	(3,384)	\$	(2,066)	\$	(748)	\$	570	\$	1,888	\$	3,206
14500	\$	(4,279)	\$	(2,914)	\$	(1,548)	\$	(183)	\$	1,182	\$	2,547	\$	3,912
15000	\$	(3,855)	\$	(2,443)	\$	(1,031)	\$	382	\$	1,794	\$	3,206	\$	4,618
15500	\$	(3,431)	\$	(1,972)	\$	(513)	\$	947	\$	2,406	\$	3,865	\$	5,325
16000	\$	(3,008)	\$	(1,501)	\$	5	\$	1,511	\$	3,018	\$	4,524	\$	6,031
16500	\$	(2,584)	\$	(1,031)	\$	523	\$	2,076	\$	3,630	\$	5,183	\$	6,737
17000	\$	(2,160)	\$	(560)	\$	1,041	\$	2,641	\$	4,242	\$	5,842	\$	7,443

^a Assumes full production year and total annual per acre cost of \$16,566

Table 11: Break-Even Analysis^a - Returns Per Acre at Varying Pack-Out Yields

		Wholesale and Direct Market Prices (Pound)												
Wholesale		0.90	0.95	1.00	1.05	1.10	1.15	1.20						
Direct Market		1.89	2.00	2.10	2.21	2.31	2.42	2.52						
Pack-Out Rate Yield														
6500	\$	(5,550)	\$	(4,938)	\$	(4,326)	\$	(3,714)	\$	(3,102)	\$	(2,490)	\$	(1,878)
7000	\$	(4,703)	\$	(4,043)	\$	(3,384)	\$	(2,725)	\$	(2,066)	\$	(1,407)	\$	(748)
7500	\$	(3,855)	\$	(3,149)	\$	(2,443)	\$	(1,737)	\$	(1,031)	\$	(324)	\$	382
8000	\$	(3,008)	\$	(2,255)	\$	(1,501)	\$	(748)	\$	5	\$	758	\$	1,511
8500	\$	(2,160)	\$	(1,360)	\$	(560)	\$	240	\$	1,041	\$	1,841	\$	2,641
9000	\$	(1,313)	\$	(466)	\$	382	\$	1,229	\$	2,076	\$	2,924	\$	3,771
9500	\$	(466)	\$	429	\$	1,323	\$	2,218	\$	3,112	\$	4,006	\$	4,901

^aAssumes full production year and total annual per acre cost of \$16,566

Summary

Peach production has the potential to be profitable for producers in Northern Utah under the assumptions outlined in this publication. The peach orchard in this

publication is profitable starting in year 8. Table 12 illustrates the costs, revenues, returns, and cumulative net returns for each of the 20 years. When discounted at a 5% rate, cumulative net returns per acre in year 20 are \$47,204.

Table 12: 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	\$10,264	\$0	(\$10,264)	(\$10,264)
Year 2	\$6,875	\$0	(\$6,875)	(\$17,139)
Year 3	\$6,928	\$0	(\$6,928)	(\$24,067)
Year 4	\$10,487	\$8,782	(\$1,705)	(\$25,772)
Year 5	\$13,832	\$21,956	\$8,124	(\$17,648)
Year 6	\$16,566	\$30,738	\$14,173	(\$3,475)
Year 7	\$16,566	\$15,369	(\$1,196)	(\$4,671)
Year 8	\$16,566	\$30,738	\$14,173	\$9,502
Year 9	\$16,566	\$30,738	\$14,173	\$23,675
Year 10	\$16,566	\$15,369	(\$1,196)	\$22,478
Year 11	\$16,566	\$30,738	\$14,173	\$36,651
Year 12	\$16,566	\$30,738	\$14,173	\$50,824
Year 13	\$16,566	\$15,369	(\$1,196)	\$49,628
Year 14	\$16,566	\$30,738	\$14,173	\$63,801
Year 15	\$16,566	\$30,738	\$14,173	\$77,974
Year 16	\$16,566	\$15,369	(\$1,196)	\$76,777
Year 17	\$16,566	\$30,738	\$14,173	\$90,950
Year 18	\$16,566	\$26,347	\$9,782	\$100,732
Year 19	\$16,566	\$8,782	(\$7,783)	\$92,949
Year 20	\$16,566	\$17,565	\$999	\$93,948
NPV (5%)				\$47,204

References

- Agrisupply. (2014). *Farm machinery implements*. Retrieved from <http://www.agrisupply.com/farm-machinery-implements/c/2001000/>
- Allen, Niel. (2014). *Irrigation costs*. Utah State University. Message to the author. 6 November 2014. Email.
- Commercial Truck Trader. (2014). *Refrigerated truck for sale in Utah*. Retrieved from <http://www.commercialtrucktrader.com/Refrigerated-Truck-For-Sale-In-Utah/search-results?category=Refrigerated+Truck%7C2000641&state=Utah%7CUT>
- Day, K.R., Klonsky, K. M., & De Moura, R. L. (2009). *Sample costs to establish and produce peaches*. University of California Cooperative Extension, San Joaquin, CA.
- Drollette, S. A. (2010). *Custom rates survey report 2009/2010*. Utah State University Fact Sheet, AG/ECON/2010-02RM.
- Galinato, S., & Gallardo, R. K. (2012). *2011 Cost estimates of establishing, producing, and packing honeycrisp apples in Washington*. Washington State University Extension Fact Sheet. FS077E-2012.
- Galinato, S., Gallardo, R. K., & Miles, C. (2014). *2013 Cost estimation of establishing a cider apple orchard in Western Washington*. Washington State University Fact Sheet. FS141E-2013.
- HOJ Forklifts. (2014). *Personal interview*. 8 October 2014.
- Intermountain Farmers Association, Country Stores. (2014). *Personal interview*. 15 September 2014.
- Mountain Land Sprinkler. (2014). *Personal interview*. 16 October 2014.
- Murray, M. and Alston, D. (2011). *The backyard orchardist fruit pests: Peach & nectarine*. Utah State University Extension and Utah Plant Diagnostic Laboratory. IPM-010-11. Retrieved from <https://extension.usu.edu/files/publications/factsheet/peach-pests.pdf>
- Norman, Steve. (2014). *Personal interview*. Farm Bureau Financial Services. 20 October 2014.
- Oberholtzer, L., Dimitri, C., & Greene, C. (2005). *Price premiums hold on as US organic produce market expands*. Washington (DC): US Department of Agriculture, Economic Research Service.
- Olsen, S. & Curtis, K. (2012). *Wasatch front mixed vegetable production costs and returns, 2012*. Utah State University fact sheet, Applied Economics/2012-13pr.
- Olsen, S., Curtis, K. Wagner, K., & Knudsen, T. (2014). *Utah urban small-scale mixed vegetable production costs and returns – 2 acres, 2014*. Utah State University Fact Sheet, Applied Economics/2014-02pr.
- Painter, K. (2011). *The costs of owning and operating farm machinery in the Pacific Northwest 2011*. Pacific Northwest Publication #346. University of Idaho, Washington State University, and Oregon State University.
- Reeve, J., Black, B., Ransom, C., Culumber, M., Lindstrom, T., Alston, D., & Tebeau, A. (2013). *Developing organic stone-fruit production options for Utah and the Intermountain West United States*. *Acta Horticulturae (ISHS)*, 1001, 65-72.
- Rocky Mountain Power. (2014). *Rocky mountain power electric service schedule no. 10: irrigation and soil drainage pumping power service*. Retrieved from https://www.rockymountainpower.net/content/dam/rocky_mountain_power/doc/About_Us/Rates_and_Regulation/Utah/Approved_Tariffs/Rate_Schedules/Irrigation_and_Soil_Drainage_Pumping_Power_Service.pdf
- Sharp, R. & Cooley, W. (2004). *The cost of growing peaches in Western Colorado*. Retrieved from <http://www.coopext.colostate.edu/ABM/costofgrowingpeaches.pdf>
- Smith Equipment Co. (2014). *Personal interview*. 8 October 2014.
- Toler, S., Briggeman, B. C., Lusk, J. L., & Adams, D. C. (2009). *Fairness, farmers' markets, and local production*. *American Journal of Agricultural Economics*, 91(5), 1272-1278.
- Ty Ty Nursery. (2014) *Fruit trees*. Retrieved from <http://www.tytyga.com/Fruit-Trees-s/1827.htm>
- U.S. Department of Agriculture. (2013). *Benefits of Organic Certification*. Retrieved from <http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=benefits-organic.xml>
- U.S. Department of Agriculture, Agricultural Marketing Service. (2014a). *Farmers' markets and local food marketing*. Retrieved from <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateS&navID=WholesaleandFarmersMarkets&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth&acct=frmrdirmt>
- U.S. Department of Agriculture, Agricultural Marketing Service. (2014b). *Farmers' market directory search*. Retrieved from <http://search.ams.usda.gov/farmersmarkets/>
- U.S. Department of Agriculture, Census of Agriculture. (2014). *2012 Census of agriculture-State data*. National Agricultural Statistical Service. Retrieved

from
<http://www.agcensus.usda.gov/Publications/2012/>
U.S. Department of Agriculture, National Agricultural
Statistics Service. (2014). *QuickStats*. Retrieved
from [quickstats.nass.usda.gov/#BEEF4543-4765-
33CE-B3D5-9975480FB7E2](http://quickstats.nass.usda.gov/#BEEF4543-4765-33CE-B3D5-9975480FB7E2)

Utah Department of Agriculture and Food. (2006). *Utah
fruit & berry survey 2006*. Salt Lake City, UT.
Utah State University. (2014). Stakeholder Roundtable
on the Future Needs of Organic Tree Fruit
Production in Utah, Colorado and Washington.
Kaysville Education Center, UT. 17 June 2014.

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