2022 COST ESTIMATES OF PRODUCING AND PACKING ORGANIC GALA APPLES IN WASHINGTON

Preface

The results presented in this WSU publication serve as a general guide for evaluating the feasibility of producing organic Gala apples in Washington in 2022. The primary use of this publication is in identifying inputs, costs, and yields considered typical of well-managed organic Gala apple orchards. This publication is not intended to be a definitive guide to production practices, but it is intended to be helpful in estimating the physical and financial requirements of comparable plantings. Specific budget assumptions were adopted for this study, but these assumptions may not represent the conditions in all production and marketing situations since production costs and returns vary across orchard operations, depending on the following factors:

- Capital, labor, and natural resources
- Crop yields
- Type and size of machinery, irrigation, and frost control systems
- Input prices
- Cultural practices
- Organic Gala prices
- Orchard size
- Management skills
- Biotic and abiotic orchard variables

Cost estimations in the enterprise budget also vary depending on its intended use. To avoid drawing unwarranted conclusions for any particular orchard, readers must closely examine the assumptions made in this guide and then adjust the costs, returns, or both as appropriate for their own orchard operation.

Organic Gala Production in Washington State

In 2020, there were 122,816 certified organic acres in Washington State; 39,021 (32%) of those were dedicated to tree fruit. Out of the 39,021 acres, 30,424 (78%) were dedicated to apples. According to a 2019 National Agricultural Statistics Service (NASS) survey, Washington produces 93% of the organic apples grown in the United States, with a value of $448 million (Granatstein 2021).

For the marketing year 2021–22, 12% (approximately 15 million 40 lb boxes) of all apples shipped from Washington were organic. The variety Gala is dominant in terms of volume; out of all organic apples shipped from Washington State, 32% (approximately 4.9 million 40 lb boxes) were from the variety Gala. A similar trend was observed during the last eight years. From 2014–15 to 2021–22, the highest volume of organic apples shipped out of Washington State was Gala with 35%, followed by Fuji at 21%, Honeycrisp at 14%, Granny Smith at 10%, and Cripps Pink at 7%. Figure 1 shows the annual changes of shipment volumes by different organic apple varieties. The volume of organic Gala apples has increased from 2014–15 at 2.952 million 40 lb boxes to 5.633 million 40 lb boxes in 2020–21. However, in 2021–22, the volume of organic Gala decreased to 4.881 million 40 lb boxes (Washington State Tree Fruit Association 2022).

Figure 2 shows the annual changes in the free on board (FOB) price of the different organic apple varieties. Considering the period 2014–15 to 2021–22, the largest FOB price was observed for organic Honeycrisp, with an average price of $67/40 lb box (hereafter, the prices in this paragraph are per 40 lb box). This was followed by organic Cripps Pink, with an average price of $44, other apples at $40.5, organic Granny at $38.5, organic Fuji at $37, and organic Gala at $36.7. During this same period, the price of organic Gala decreased from $40 in 2014–15 to $35.7 in 2021–22 (Washington State Tree Fruit Association 2022).

WASHINGTON STATE UNIVERSITY
EXTENSION

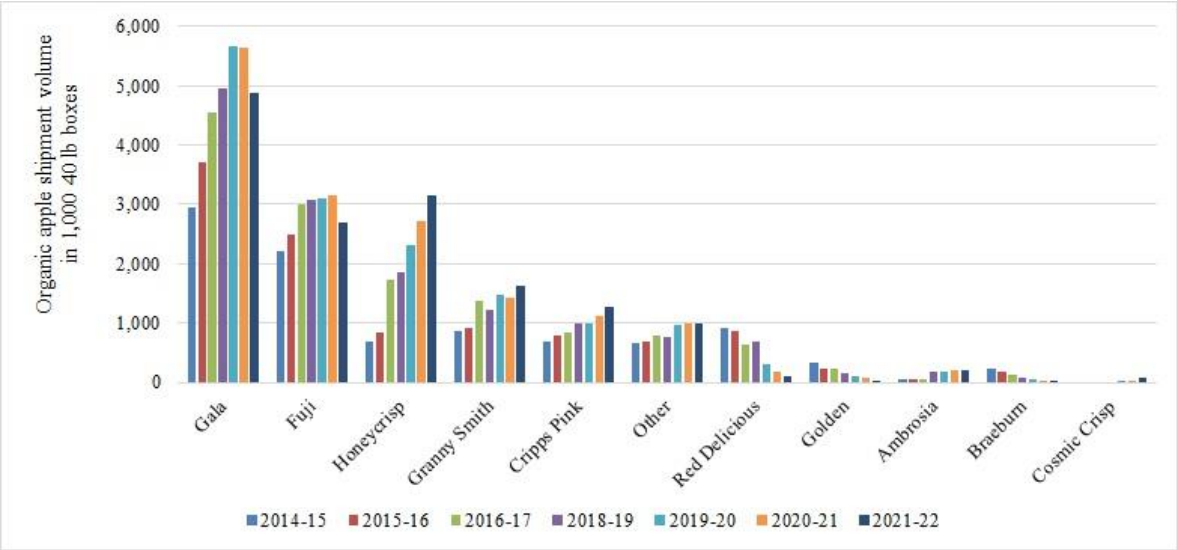

Figure 1. Organic apple shipment volume by variety, Washington State, 2014–15 to 2021–22. *Source*: Washington State Tree Fruit Association (2022).

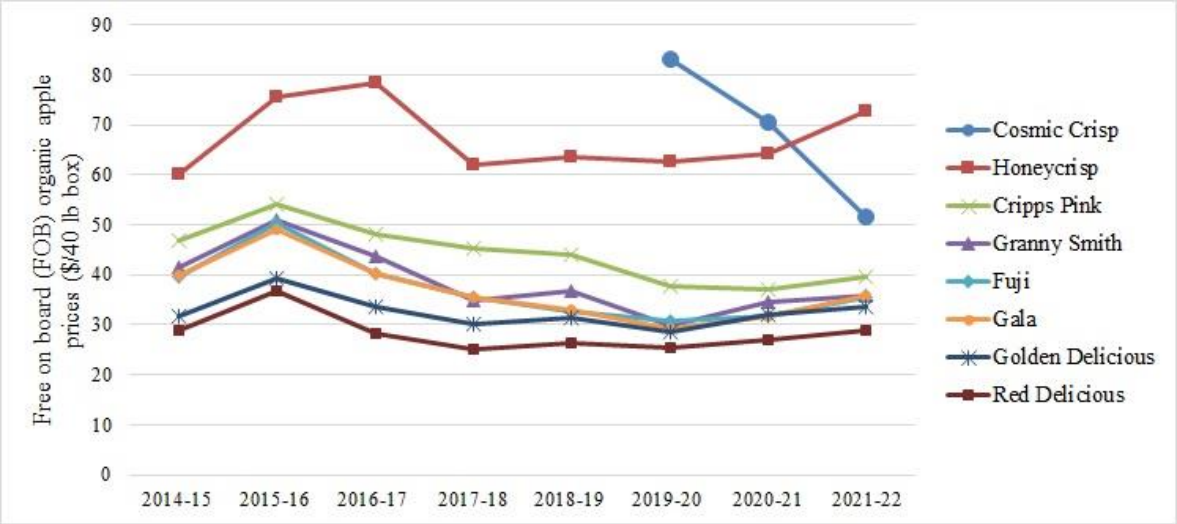

Figure 2. Organic apple FOB price by variety, Washington State, 2014–15 to 2021–22. *Source*: Washington State Tree Fruit Association (2022).

Study Objectives

This publication is designed to enable growers to estimate: (1) the costs of equipment, materials, supplies, and labor required to produce organic Gala apples, including packing costs, and (2) the ranges of price and yield at which Gala production would be a profitable enterprise.

Information Sources

The data used in this study were collected from information shared by a group of experienced organic Gala apple growers in Washington in 2022. They are mostly representative of the Columbia Basin and North Central Washington. Their production practices and input requirements form the baseline assumptions that were used to develop the enterprise budget. Additionally, the data represent what these owner-operators anticipate would occur over an orchard's life if no unforeseen failures occur. The pesticide programs are based on what most growers were spraying for and the most common products they used for each purpose.

Given that many factors affect production costs, pack-out, and returns, individual growers can use the Excel Workbook (available at the WSU School of Economic Sciences' Crop Enterprise Budgets website) to make necessary modifications and estimate their own costs and returns.

Budget Assumptions

1. The area of the total farm operation is 300 acres of mixed conventional and organic tree fruits. Bearing acres include: 225 acres of apples (75% of total area), 88 acres of which are organic and 137 acres are conventional; 48 acres of sweet cherries (16%); and 27 acres of pears (9%).
2. The total organic apple acreage in this farm is comprised of 55 acres of organic Gala and 33 acres of organic Honeycrisp.
3. This budget is based on a 55-acre organic Gala block within a 300-acre orchard. It is assumed that 2 acres of this block is dedicated to roads, pond, loading area, buildings, etc., rather than to fruit production. Therefore, the total productive area for this block is 53 acres. Table 1 shows the assumed organic Gala block specifications, which are generally accepted across all growers interviewed.
4. The total value of bare agricultural land (including water rights) is $20,000 per acre with annual property taxes of $200 per acre.
5. The irrigation system consists of overhead cooling and under tree drip lines, with two separate sub-mainlines. Water is provided through a public irrigation district.
6. The pond is installed in Year 1.
7. Cultural practices and harvest activities are done by using a combination of manual labor, ladders, and labor-enhancing equipment. The hourly manual labor rate is calculated using the Washington adverse wage rate for 2022 at $17.41/hour. In this analysis, we add 25% to reflect medical leave and all administrative costs for H2A employees, including housing, amounting to $21.76/hour. Activities such as chemical application, irrigation, and frost protection cost $23.01/hour (i.e., base of $18.41/hour plus 25%). Harvest labor rates follow the Department of Labor rates, plus 4% to account for mandated paid rest breaks. These labor rates are assumed the same for all years of production.
8. Weed control costs in this budget are based on flaming and hand weeding. An alternative weed control method is the use of fabric, which has 8–10 years of useful life and costs about $1,400/acre for materials and installation and $16/hour per acre for labor to close and open the fabric during the growing season. If this alternative is chosen, the fabric will be installed during Year 3 of production.
9. Conventional apple production practices are used in the first 2.5 years. Organic production practices begin in August of the third year so that by the fifth year, the harvested apples will be certified organic.
10. The organic certification process begins in Year 2 with the discontinuation of all prohibited materials before harvest. The application for transition status is submitted in January of Year 3 along with a new application fee ($375). A renewal fee, based on a range of gross annual income, is paid in Year 4 and onward.
11. The gross return or FOB price is $513/bin in Year 3 through Year 4, and $684/bin from Year 5 through full production (when apples are certified organic). The FOB price is based on 2021–2022 prices.
12. The average pack-out for organic Gala is 80%. The estimated net yields per acre (i.e., yield after pack-out) are 16 bins, 28 bins, 40 bins, and 64 bins from Year 3 to Full Production, respectively.
13. Warehouse packing charges assume a 950 lb bin.
14. Management is valued at $700 per acre.
15. Interest on investment represents a 5% opportunity cost to the enterprise. These are forgone earnings for investing money in orchard, equipment, and buildings rather than in an alternative activity. This also represents interest on funds borrowed to finance orchard, equipment, and building purchases.

Summary of Study Results

The estimated annual cost and returns for a 53-acre block of organic Gala apples in Washington are shown in Table 2. Production costs are classified into variable costs and fixed costs. Variable costs comprise orchard operations, harvest activities, materials, maintenance and repairs, and packing costs. Fixed costs are incurred whether or not organic Gala are produced. These costs will generally be calculated for the whole farm enterprise and allocated across each unit of production. The fixed costs include depreciation on capital, interest, taxes, insurance, management, and amortized establishment costs. Management is treated as a fixed cost rather than a variable cost because, like land, management has been committed to the production cycle of the crop.

This study assumed that an organic Gala apple orchard could achieve full production in the sixth year. Based on the above assumptions, the total returns per acre during the first two crop years (Year 3 and Year 4) when the orchard is in transition to organic are $8,028 and $14,364, respectively. The total costs are about $18,051 per acre in Year 3 and $25,106 per acre in Year 4, which respectively generate net losses of about $9,843 per acre and $10,742 per acre.

When organic Gala is certified starting Year 5, the FOB price increases from $513 to $684 per bin. The total returns in Year 5 and full production year are $27,360 per acre and $43,776 per acre, respectively. The respective total production costs are estimated at $31,936 per acre and $45,389 per acre, which then generate net losses of about $4,576 per acre in Year 5 and $1,613 per acre during full production.

Table 3 shows the estimated net returns per acre at various prices and yields of organic Gala during full production. For this analysis, the FOB prices considered are $604–$764 per 950-pound bin, and the net yields are about 48–84 bins per acre, given an 80% pack-out. A gross yield-price combination of 90 bins per acre or greater and $684 per bin or higher would result in positive net returns for the owner-operator based on the study's production and cost assumptions.

Table 4 shows the break-even return given different yield levels during full production. As of 2022, the first break-even return of organic Gala apples was about $565 per bin. This is the minimum return needed for the owner-operator to cover the operation's variable costs. Returns lower than this figure suggest that it is more profitable not to operate (shutdown price) than to produce organic Gala. The second break-even return is about $573 per bin, which is needed to cover the total cash costs and to be economically viable in the short run. The third break-even return is $590 per bin, which is needed to cover the cash costs plus depreciation of machinery and buildings. This return must be realized for the operation to be financially viable in the long run. The fourth break-even return is about $709 per bin. When this return is received, the owner-operator would recover all out-of-pocket expenses plus realize a competitive return on equity capital invested in land, organic Gala apple orchard, machinery, equipment, and buildings. Failure to obtain this break-even return level means that the owner-operator will not receive a return on capital contributions equal to what could be earned in alternative uses.

Table 1. Organic Gala block specifications.

Architecture	Randomly trained with 18-inch radius from tree center
In-row Spacing	4 feet
Between-row Spacing	10 feet
Rootstock	Geneva series—G969, G210, G890, G41
Productive Block Size	53 acres
Life of Planting	20 years
Tree Density	1,089 trees per acre
Trellis System	Vertical trellis system

Table 2. Cost and returns per acre of producing organic Gala apples on a 53-acre orchard block in Washington.

	Establishment Years					Full
	Year 1	Year 2	Year 3	Year 4	Year 5	Production[a]
Estimated Net Production (bins/acre)[b]			16.00	28.00	40.00	64.00
Estimated FOB Price ($/bin)[c]			513.00	513.00	684.00	684.00
Total Returns ($/acre)			8,208.00	14,364.00	27,360.00	43,776.00
Variable Costs ($/acre):						
Establishment						
Soil Preparation	1,367.01					
Trees (including labor)	11,110.85					
Orchard Activities						
Pruning and Training[d]	304.64	631.04	739.84	652.80	826.88	1,196.80
Thinning[e]	108.80	278.38	343.66	670.06	1,322.86	1,523.20
Chemicals[f,g]	532.00	597.00	1,484.70	1,500.41	1,516.11	1,531.82
Fertilizer[f,g]	150.00	219.03	219.03	369.03	519.03	669.03
Weed Control[d]	609.28	609.28	609.28	609.28	609.28	609.28
Irrigation Water and Electric Charge	350.00	350.00	350.00	365.00	365.00	365.00
Irrigation Labor[g]	230.10	230.10	230.10	230.10	230.10	230.10
Sunburn Protection[h]				800.00	800.00	800.00
Frost Protection (labor)[g]			23.01	23.01	23.01	23.01
Beehives			65.00	65.00	65.00	65.00
General Farm Labor[i]	225.00	225.00	225.00	225.00	225.00	225.00

	Establishment Years					Full
	Year 1	Year 2	Year 3	Year 4	Year 5	Production[a]
Harvest Activities[j]						
Picking Labor			562.20	983.85	1,405.50	2,248.80
Other Labor (checkers, tractor drivers, supervisors)			160.00	280.00	400.00	640.00
Hauling Apples			140.00	245.00	350.00	560.00
Warehouse Packing Charges[k]			5,340.00	9,345.00	13,350.00	21,360.00
Maintenance and Repairs						
Maintenance and Repair	295.00	295.00	330.00	330.00	330.00	330.00
Fuel and Lube	240.00	270.00	280.00	320.00	360.00	360.00
Other Variable Costs						
Organic Certification Fees			7.00	50.00	75.00	100.00
Crop Insurance			375.00	375.00	375.00	375.00
Overhead (5% of Variable Costs)[l]	776.13	185.24	555.09	850.68	1,134.89	1,660.60
Interest (5% of Variable Costs)[m]	814.94	194.50	601.95	914.46	1,214.13	1,307.72
Total Variable Costs	17,113.75	4,084.57	12,640.86	19,203.67	25,496.79	36,180.36
Fixed Costs ($/acre):						
Depreciation						
Irrigation System	152.00	152.00	152.00	152.00	152.00	152.00
Sunburn Protection—Reflective Ground Cloth	160.00	160.00	160.00	160.00	160.00	160.00
Machinery, Equipment, and Building	261.92	261.92	261.92	261.92	261.92	261.92
Mainline and Pump	30.00	30.00	30.00	30.00	30.00	30.00
Pond	48.00	48.00	48.00	48.00	48.00	48.00
Trellis	350.00	350.00	350.00	350.00	350.00	350.00
Wind Machine			120.49	120.49	120.49	120.49
Interest						
Irrigation System	114.00	114.00	114.00	114.00	114.00	114.00
Sunburn Protection—Reflective Ground Cloth	80.00	80.00	80.00	80.00	80.00	80.00
Land[n]	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Machinery, Equipment, and Building	92.04	92.04	92.04	92.04	92.04	92.04
Mainline and Pump	22.50	22.50	22.50	22.50	22.50	22.50
Pond	60.00	60.00	60.00	60.00	60.00	60.00
Trellis	175.00	175.00	175.00	175.00	175.00	175.00
Wind Machine			90.37	90.37	90.37	90.37
Establishment Costs (5%)		1,041.46	1,483.54	1,975.67	2,512.75	
Other Fixed Costs						
Miscellaneous Supplies	190.00	190.00	190.00	190.00	190.00	190.00
Land and Property Taxes	200.00	200.00	200.00	200.00	200.00	200.00

	Establishment Years					Full
	Year 1	Year 2	Year 3	Year 4	Year 5	Production[a]
Insurance Cost (all farm)	80.00	80.00	80.00	80.00	80.00	80.00
Management Cost	700.00	700.00	700.00	700.00	700.00	700.00
Amortized Establishment Costs[o]						5,282.54
Total Fixed Costs	3,715.46	4,756.92	5,409.85	5,901.99	6,439.07	9,208.86
TOTAL COSTS	20,829.21	8,841.49	18,050.71	25,105.66	31,935.86	45,389.22
ESTIMATED NET RETURNS	(20,829.21)	(8,841.49)	(9,842.71)	(10,741.66)	(4,575.86)	(1,613.22)
Accumulated Establishment Costs	20,829.21	29,670.70	39,513.41	50,255.08	54,830.94	

[a] The full production year is representative of all the remaining years the orchard is in full production (Year 6 to Year 20).
[b] Estimated net production considers an average pack-out of 80% or about nineteen 40 lb boxes per bin.
[c] These prices reflect the return before any expenses are subtracted. Bin size is 950 lb. The estimated FOB price jumps from $513 in Years 3 and 4 to $684 in Year 5 due to the completion of the process to certify the apples as organic.
[d] Hand labor rate is $21.76/hour and includes all applicable taxes and benefits.
[e] Hand thinning and chemical thinning labor cost.
[f] Includes materials and labor.
[g] Tractor/machinery, irrigation, and frost protection labor rate is $23.01/hour and includes all applicable taxes and benefits.
[h] Labor cost to install and pull back.
[i] General farm labor rate is a lump sum per acre and applied to miscellaneous/all other labor. Rate includes applicable taxes and benefits.
[j] Picking rate = $28.11/bin; checkers and tractor drivers' rate = $9.75/bin; hauling rate = $7/bin (hauling refers to transportation cost from the orchard to the warehouse). It is assumed that the warehouse will cover additional transportation expenses (if any) when the orchard is located in remote areas.
[k] Packing charges include receiving charges per bin plus total box charges per bin. Pack-out number of boxes per bin is about 20.

Table 3. Estimated net returns[a] per acre at various prices and yields of organic Gala during full production.

Gross Yield (bins/acre)[b]	Net Yield (bins/acre)[b]	FOB Packinghouse Door Price Equivalent ($/bin)				
		$604	**$644**	**$684**	**$724**	**$764**
		Estimated Net Returns ($/acre)				
60	**48**	-$9,641	-$7,721	-$5,801	-$3,881	-$1,961
65	**52**	-$8,914	-$6,834	-$4,754	-$2,674	-$594
70	**56**	-$8,187	-$5,947	-$3,707	-$1,467	$773
75	**60**	-$7,460	-$5,060	-$2,660	-$260	$2,140
80	**64**	-$6,733	-$4,173	-$1,613	$947	$3,507
85	**68**	-$6,006	-$3,286	-$566	$2,154	$4,874
90	**72**	-$5,279	-$2,399	$481	$3,361	$6,241
95	**76**	-$4,553	-$1,513	$1,527	$4,567	$7,607
100	**80**	-$3,826	-$626	$2,574	$5,774	$8,974
105	**84**	-$3,099	$261	$3,621	$6,981	$10,341
Overhead Cost		*5%*				
Interest Cost		*5%*				

Note: Shaded area denotes positive net returns based on the combination of net yield and price.
[a] Includes amortized establishment costs. Net return is what the grower receives after all costs (for example, production expenses and packing costs) have been accounted for.
[b] Assumes a 950-pound bin. Considers an average pack-out of 80%.

Most of the budget values given in Table 2 are based on more comprehensive underlying cost data, which are shown in Tables 5 through 8. Table 5 presents the annual capital requirements for a 53-acre organic Gala block. Table 6 specifies the machinery and building requirements for the 300-acre multi-crop orchard. Interest costs and depreciation are listed in Tables 7 and 8, respectively. Interest costs represent the required return on investments. They can be actual interest payments on funds borrowed to finance farm operations and physical capital investments, an opportunity cost (a return that would have been received if the investment had been in an alternative activity), or a combination of the two. Depreciation costs are annual, non-cash expenses that are calculated over the asset's useful life. These expenses represent the loss in an asset's value due to use, age, and obsolescence.

The key results of this enterprise budget are formed by production-related assumptions established for the study. Production costs and returns for individual owner-operators may differ; thus, the results cannot be generalized to represent all organic Gala apple operations in Washington. An interactive Excel Workbook, described below, is provided to enable individual owner-operators to estimate their returns based on the costs of their production.

Table 4. Break-even return of organic Gala apples for different levels of enterprise costs during full production.

		Cost ($/acre)	Break-even Return ($/bin)[a]
1.	Total Variable Costs	36,180.36	565.32[b]
2.	Total Cash Costs[c] = Total Variable Costs + Land & Property Taxes + Insurance Cost + Miscellaneous Supplies	36,650.36	572.66[d]
3.	Total Cash Costs + Depreciation Costs	37,772.77	590.20[e]
4.	Total Cost = Total Cash Costs + Depreciation Costs + Interest Costs[f] + Management Cost	45,389.22	709.21[g]

[a] Break-even return is calculated as cost divided by net yield during full production.
[b] If the return is below this level, organic Gala apples are uneconomical to produce.
[c] If there are other cash costs on an individual's orchard, these costs must be identified and included in the cash cost break-even return calculation.
[d] The second break-even return allows the producer to stay in business in the short run.
[e] The third break-even return allows the producer to stay in business in the long run.
[f] Interest costs include some actual cash interest payments.
[g] The fourth break-even return is the *total cost break-even return*. Only when this break-even return is received can the grower recover all out-of-pocket expenses plus opportunity costs.

Table 5. Summary of annual capital requirements for a 53-acre organic Gala block.

	Establishment Years					Full
	Year 1	Year 2	Year 3	Year 4	Year 5	Production[a]
Annual Requirements ($)						
Land (55 acres)	1,100,000					
Trellis System	371,000					
Reflective Ground Cloth—Sunburn Protection				169,600		
Irrigation System	241,680					
Mainline and Pump	47,700					
Pond	127,200					
Wind Machine			191,580			
Operating Expenses[b]	969,039	278,492	731,976	1,079,805	1,413,340	1,979,569
Total Requirements ($)	2,856,619	278,492	923,556	1,249,405	1,413,340	1,979,569
Receipts ($)	0	0	435,024	761,292	1,450,080	2,320,128
Net Requirements ($)	2,856,619	278,492	488,532	488,113	(36,740)	(340,559)

[a] The full production year is representative of all the remaining years the orchard is in full production (Year 6 to Year 20).
[b] Operating expenses is the sum of the total variable costs, miscellaneous supplies, land and property taxes, insurance cost, and management cost.

Table 6. Machinery, equipment, and building requirements for a 300-acre diverse cultivar orchard.

	Purchase Price ($)[a]	Number of Units	Total Cost ($)
Housing for Manager	135,000	1	135,000
Machine Shop/Shed[b]	150,000	1	150,000
Tractor-70HP, 4WD	45,000	5	225,000
Tractor-40HP, 4WD	25,000	2	50,000
4-Wheeler	7,500	3	22,500
Speed Sprayer	25,000	5	125,000
Weed Spray Boom and Tank	7,000	1	7,000
Mower—Rotary (7 ft)	5,000	1	5,000
Flail Mower	8,000	1	8,000
Forklift	25,000	2	50,000
Bin Trailer	7,500	3	22,500
Pickup Truck	35,000	1	35,000
Ladder (8 ft)	100	100	10,000
Platforms	40,000	3	120,000
Miscellaneous Equipment[c]	50,000	1	50,000
Shop Equipment[d]	15,000	1	15,000
Total Cost			**1,030,000**

Notes: These are the machinery, equipment, and building requirements for the 300-acre farm, which includes organic Gala apples. The costs of fixed capital are allocated on the entire farm operation.

[a] Purchase price corresponds to new machinery, equipment, or building.

[b] Includes manager office, restroom, pesticide handling area and storage, dry storage, area for equipment cover, and shop bay for equipment work and repair.

[c] Includes two mobile portable toilets, box blade, straight blade, quick connect loader, mechanical weeder, detachable bucket for loading fertilizer, gopher baiter, soil aerator, utility trailer, and two ladder trailers.

[d] Includes compressor, welder, pressure washer, and miscellaneous tools.

Table 7. Annual interest costs per acre for a 53-acre organic Gala block.

	Total Purchase Price ($)	Salvage Value ($)[a]	Number of Acres	Total Interest Cost ($)	Interest Cost per Acre ($)[b]
Irrigation System[c]	241,680	0	53	6,042	114.00
Sunburn Protection—Reflective Ground Cloth[c]	169,600	0	53	4,240	80.00
Land	1,100,000	N/A	55	55,000	1,000.00
Machinery, Equipment, and Building[d,e]	1,030,000	74,500	300	27,613	92.04
Mainline and Pump[c]	47,700	0	53	1,193	22.50
Pond[c]	127,200	0	53	3,180	60.00
Trellis[c]	371,000	0	53	9,275	175.00
Wind Machine[c]	191,580	0	53	4,790	90.37
Interest Rate	*5.0%*				

[a] Not applied to land because land is not a depreciable asset.

[b] Interest cost is calculated as: (Total Purchase Price + Salvage Value)/2 × Interest Rate. For land, the calculation is: Total Purchase Price × Interest Rate, because there is no salvage value for land.

[c] The irrigation system and wind machine are used for the direct production of the fruit. Hence, their respective interest costs are divided by the production area (i.e., 53 acres) to get the interest cost per acre.

[d] Total area of the diverse cultivar orchard operation is 300 acres, and the machinery, equipment, and building are used in the entire farm. Thus, the corresponding interest costs are divided by the total area (i.e., 300 acres) to derive the interest cost per acre.

[e] See the Excel Workbook (Appendix 3) for a detailed calculation of the salvage value of the machinery, equipment, and building.

Table 8. Annual depreciation costs per acre for a 53-acre organic Gala block.

	Total Purchase Price ($)	Number of Acres	Total Value per Acre ($)	Years of Useful Life	Depreciation Cost per Acre ($/yr)[a]
Irrigation System	241,680	53	4,560.00	30	152.00
Sunburn Protection—Reflective Ground Cloth	169,600	53	3,200.00	20	160.00
Mainline and Pump	47,700	53	900.00	30	30.00
Pond	127,200	53	2,400.00	50	48.00
Trellis	371,000	53	7,000.00	20	350.00
Wind Machine	191,580	53	3,614.73	30	120.49
Machinery, Equipment, and Building[b]					261.92

[a] The depreciation cost is calculated as straight-line depreciation: (Total Purchase Price − Salvage Value)/Years of Use.
[b] See the Excel Workbook (Appendix 3) for a calculation of the depreciation cost of the machinery, equipment, and building.

Excel Workbook

The enterprise budget (Table 2) as well as associated data underlying the per-acre cost calculations (Tables 5 through 8 and Appendices 1 through 5 for establishment costs, full production costs, calculation of salvage value and depreciation costs, amortization calculator, and all production-related data) are available at the WSU School of Economic Sciences Extension website. Owner-operators can modify select values and thus use the Excel Workbook to evaluate their own production costs and returns.

Acknowledgments

The authors acknowledge the information provided by a group of anonymous organic Gala apple growers and packinghouse owners-operators, pesticide consultants, and WSU Extension educators. This study was funded by the project titled A Systems-Based Approach to Enhance Quality, Safety, and Shelf-Life of Organic Tree Fruit in the Pacific Northwest, funded by the U.S. Department of Agriculture, National Institute of Food and Agriculture, Organic Agriculture Research and Extension Initiative (USDA, NIFA, OREI). Award number 2021-51300-34913.

References

Granatstein, D. 2021. Current Status of Certified Organic Agriculture in Washington State: 2020. Washington State University Extension.

Washington State Tree Fruit Association. 2022. Annual Crop Summary: 2014–2022 Production and Marketing Season.

By
R. Karina Gallardo, Professor and Extension Specialist, School of Economic Sciences, Puyallup Research and Extension Center, Center for Precision and Automated Agricultural Systems, Washington State University
Suzette P. Galinato, Extension Assistant Professor, Agriculture and Natural Resources, Washington State University

WSU PEER REVIEWED

TB19E

WASHINGTON STATE UNIVERSITY
EXTENSION

 Published June 2016. Revised May 2023.