

2018

Staff Contact

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RESEARCH REPORT Enterprise Budget for Cherry Tomatoes

In a Nutshell:

- Two farms provided enterprise budgets for cherry tomato production in 2018.
- Yield, revenue, net income and details about expenses and labor are reported by each farm.

Key findings

- The two farms were similar in their net income per pound, with the Johnsons netting slightly less (\$1.79/lb) compared to Roller/Schintler (\$2.42/lb).
- Per square-foot, however, the Johnsons netted \$3.76/ft², while Roller/Schintler netted \$2.11/ft².
- The Johnsons harvested 2.10 lb of fruit per square-foot; over double that of Roller/Schintler at 0.87 lb/ft².
- Labor was the largest contributor to production expenses on both farms, accounting for 69% of total costs at Roller/Schintler and 74% of total costs at the Johnson's farm.
- At the Johnsons', harvest accounted for 42% of the total labor-hours; at Roller/Schintler's harvesting was 53% of total labor-hours.

BACKGROUND

Cherry tomatoes are popular with consumers, but are also a labor-intensive crop. In 2017, farmers at two farms each completed an enterprise budget to determine if the labor expense required for cherry tomatoes made sense for their farm.^[1] Both farms showed that cherry tomatoes were a profitable crop, but one of the farms, Eric and Ann Franzensburg of Pheasant Run Farm, decided that they could better use the space and labor time on crops that had higher profit potential, and dropped their cherry tomato production. The other farm, Emma and Marcus Johnson of Buffalo Ridge Orchard, went the other way; increasing their cherry tomato production, and opting to report a second year of enterprise budget data for cherry tomatoes. The Johnsons were joined in the present study by Derek Roller and Molly Schintler of Echollective Farm.

University extension programs offer enterprise budgets examples for tomatoes, but not for cherry tomatoes. Iowa State University provides a high tunnel budget example with slicer tomatoes, breaking down expenses and labor, showing a net income of \$3.14/ft².^[2] Practical Farmers' research cooperators have previously done enterprise budgets for high tunnels,^[3,4] cucumbers,^[5,6] cherry tomatoes^[1] and strawberries.^[7] Farmers have found the results useful to their bottom line, have improved farmer-to-farmer conversations about production and marketing, and helped them focus on finding and discussing labor inefficiencies. Producers still have questions about the differences in their variety choices

and management decisions, and how those variations by farm impact the bottom line.

Objective: In this enterprise budget report for cherry tomato production, revenue, expenses, net income, production practices and a breakdown of labor by task are shared for the two farms.

METHODS

Each farm planted and managed cherry tomatoes according to their own timing, markets and preferred practices. Data collected from each farm was standardized to provide insight into cost and labor efficiency at each farm. Planting and management details can be found in **Table 1**. The Johnsons and Roller/Schintler both tracked data on high tunnel



Marcus Johnson uses his height to install trellis strings on May 30.

TABLE 1. Seed varieties and information.

FARM	JOHNSON	ROLLER AND SCHINTLER
Varieties planted	Mountain Magic, Bellini, Juliet, Black Cherry, Chocolate Sprinkles	Sungold
Seeding date(s)	Custom grown by Stillwater Greenhouse	March 22
Transplant date(s)	May 10	June 1
Number of plants	124	400
In-row spacing (in.)	24	18
Between-row spacing (in.)	36	36
Plot area (ft ²)	844	2,280 (3, 3-ft-wide beds with 1-ft pathways, 190 ft-long rows)
Trellis style	Multi-leader (4 leaders per plant), 24 on 4x4 mesh, 100 on 4 strings	Overhead strings with two leaders
Harvest window	July 5 – Oct. 9	July 10 – Oct. 16

cherry tomatoes which are trellised to maximize space and lengthen the harvest window.

At Buffalo Ridge Orchard near Central City in Linn County, Emma and Marcus Johnson trellised multi-leader cherry tomatoes in their unheated, moveable high tunnel. This year, they grew five varieties: Bellini, Black Cherry, Chocolate Sprinkles, Juliet and Magic Mountain. These varieties are a variety of colors, sizes and shapes, but are all indeterminate and appropriate for trellising. The Johnsons sold cherry tomatoes at farmers market and to some larger institutional buyers.

Derek Roller and Molly Schintler of Echollective Farm near Mechanicsburg in Cedar County performed the enterprise budget for this study on their crop of Sungold cherry tomatoes; a favorite variety among customers, but with fruit prone to cracking. They trellised tomatoes on string, with two leaders per plant.

RESULTS AND DISCUSSION

Net income

Revenue, costs and net income were analyzed three ways: per pound sold, per pint sold and per square-foot in production. As seen in **Figure 1**, cherry tomatoes were profitable for both farms, and Roller/Schintler earned more net income per pound and per pint compared to the Johnsons. The two farms were similar in their net income per pound, with the Johnsons netting \$1.79/lb compared to Roller/Schintler netting \$2.42/lb. This ratio is the same as per pint, as both farms assume pints weigh 0.75 lb. Per square-foot, however, the Johnsons had a higher net income with \$3.76/ft², while Roller/Schintler netted \$2.11/ft².

Yield and revenue

Looking at the enterprise budgets in **Table 2**, differences in yield and expense categories begin to emerge. As detailed in the top portion of **Table 2**, the Johnsons harvested 2.10 lb of fruit per square-foot; more than double the yield of Roller/Schintler's, at 0.87 lb/ft². This indicates that the Johnsons were very productive with their use of space in the high tunnel. Their prices, however, were lower, and expenses were \$0.38/ft² higher than Roller/Schintler's. Harvest windows were nearly identical, from July through October.

Variety matters when picking small fruit by hand. In 2017 the Johnsons trialed four new cherry tomato varieties; only one of those, Black Cherry, they continued growing in 2018. Some of their varieties in 2018 were smaller-fruited (0.5 – 0.7 oz/fruit), including Black Cherry and Sunpeach. Esterina and Juliet have slightly larger fruits (0.5 – 1.0 oz), while Mountain Magic are much larger: 2.0 oz/fruit. In comparison, Roller/Schintler did their enterprise budget work only on their Sungold production, which accounts for 60% of their total cherry tomato production. Sungolds are notorious for splitting, and are quite small: 0.5-0.7 oz/fruit.

Roller/Schintler's overall revenue was higher per pound and per pint; they averaged \$3.00/pt in revenue compared to \$1.97/pt at the Johnsons' (**Table 2**). Emma Johnson noted the difference in revenue per unit received between the farms, and the difference was likely related to their markets. "We sell some cherry tomatoes at farmers



The Johnsons grew five varieties of cherry tomatoes in 2018, ranging in size from 0.5 oz to 2.0 oz.



Sungold cherry tomatoes harvested at Roller/Schintler's in 2018.

Net Income by Unit

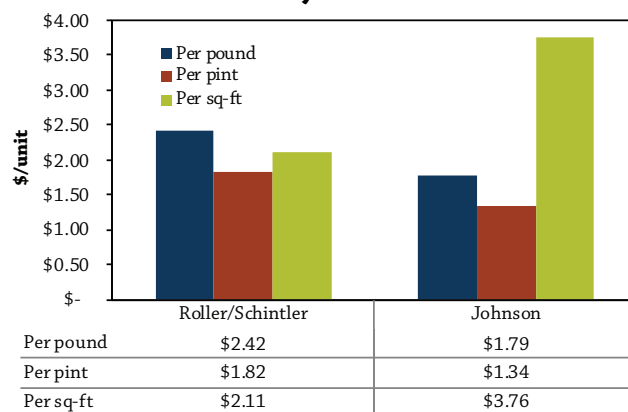


FIGURE 1. Net income (gross revenue – total costs) from cherry tomatoes calculated per pound, per pint and per ft² for both farms in 2018.

market," she said, "but we grow them for wholesale and we sell them to wholesale, which is why our price is so low." Additionally, both growers agreed that because of the difficulty of growing Sungolds, they rightfully sell at a premium price.

TABLE 2. Enterprise budget overview by farm.

FARM	ROLLER/ SCHINTLER	JOHNSON
Marketable harvest (lb)	1,983	1,774
Marketable harvest (pint)	2,644	2,365
Marketable lb/ft ²	0.87	2.10
Marketable pint/ft ²	1.16	2.80
GROSS REVENUE	\$ 7,932.00	\$ 4,650.00
Revenue per lb	\$ 4.00	\$ 2.62
Revenue per pint	\$ 3.00	\$ 1.97
Revenue per ft ²	\$ 3.48	\$ 5.51
Transplant supply costs	\$ 286.00	\$ 40.50
In-field supply costs	\$ 252.50	\$ 211.55
Marketing cost	.	\$ 40.10
Machinery cost	\$ 49.35	\$ 6.75
Building/structure cost	\$ 350.00	\$ 77.50
Land cost	\$ 30.00	\$ 3.20
Total labor cost	\$ 2,160.00	\$ 1,098.90
TOTAL COSTS (ANNUAL)	\$ 3,127.85	\$ 1,478.50
Cost per lb	\$ 1.58	\$ 0.83
Cost per pint	\$ 1.18	\$ 0.63
Cost per ft ²	\$ 1.37	\$ 1.75
Efficiency ratio (costs / revenue)	0.39	0.32
NET INCOME	\$ 4,804.15	\$ 3,171.50
Net per lb	\$ 2.42	\$ 1.79
Net per pint	\$ 1.82	\$ 1.34
Net per ft ²	\$ 2.11	\$ 3.76
Net income ratio (net / gross)	0.61	0.68

Each farm tracked yield, revenue, and expenses to complete an enterprise budget for cherry tomatoes in 2018.

Roller and Schintler were curious about their Sungold profitability, and in future years, are considering comparing the profitability of Sungolds (for which they charge a premium), to other varieties of cherry tomatoes. Said Roller, “We grow enough Sungolds for our markets, and do try to sell larger cherry tomatoes as we can. It does make a huge difference in the end, picking each one by hand. As more markets develop, we will try to do less of the Sungolds and more of the larger cherries.”

Production costs

Labor was the largest contributor to production expenses on both farms, accounting for 69% of total costs at Roller/Schintler’s, and 74% of total costs at the Johnsons’. In-field supplies were the next largest expense category for the Johnsons; structures, in-field supplies, and transplant supplies were the remaining bulk of expenses at Roller/Schintler’s. This breakdown can be seen in actual dollar amounts in **Table 2**, and by proportion in **Figure 2**.

Overall, Roller/Schintler had the higher costs per pound and per pint, but the Johnsons had the higher cost of production per square-foot (**Table 2**). Both farms had strong net income ratios for their cherry tomatoes; 0.39 for Roller/Schintler and 0.32 for the Johnsons (**Table 2**). According to Iowa State University, net income ratios of 0.35 and higher are considered excellent.^[8]

Labor for cherry tomato production

As discussed in the enterprise budget section, labor is the primary cost for each farm’s cherry tomato production. Are these hours well spent? **Figure 3** provides the gross revenue and net income per labor-hour by farm. Gross revenue per labor-hour, shown in blue, ranges from \$36.70 for Roller/Schintler to \$46.50 for the Johnsons, while net income (shown in red) ranges from \$31.70 per labor-hour for the Johnsons to \$22.20 for Roller/Schintler. By these numbers, both farms are profitably using their time.

“We were really concerned about the amount of labor for cherry tomatoes; especially the time spent harvesting,” said Marcus Johnson. By percent of total time spent on labor at each farm, harvesting accounted for the bulk of labor with cherry tomatoes (**Figure 4**). On the Johnson farm, harvesting accounted for 42% of the total labor; at Roller/Schintler’s harvesting was 53% of total labor hours. Financially, harvest labor costs \$0.33/lb for Johnsons, and \$0.45/lb at Roller/Schintler’s. Emma Johnson notes that the quality of the worker and speed of harvest is important for cherry tomatoes, and that on their farm, no one is a better

Expenses per Pound Produced

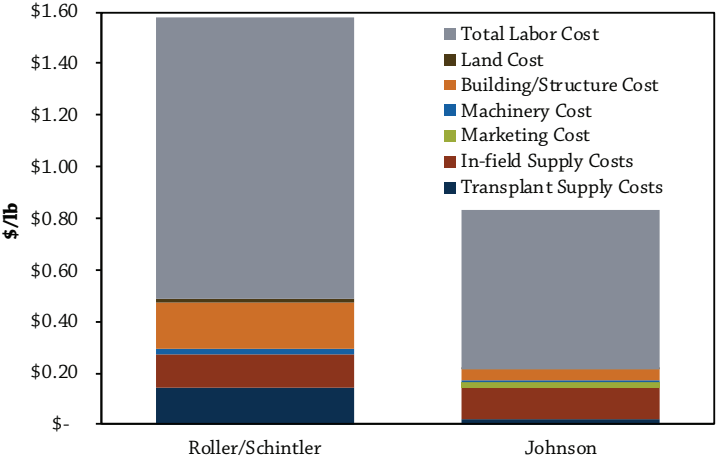


FIGURE 2. Enterprise expenses per pound of cherry tomatoes produced, by expense category on each farm.

Gross and Net per Hour

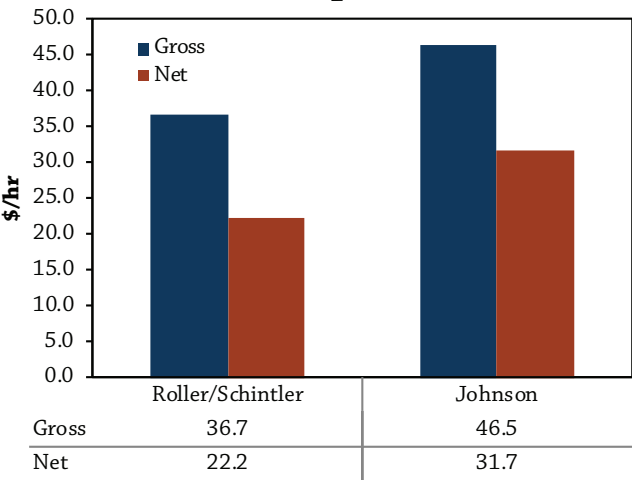


FIGURE 3. Gross revenue and net profit per labor-hour on each farm.

TABLE 3. Time and costs associated with labor categories for cherry tomatoes per pound sold, pint sold and square-foot of production.

FARM	CATEGORY	HOURS	ANNUAL COST	% OF TOTAL LABOR	MIN./LB	MIN./PINT	MIN./FT²	\$/LB	\$/PINT	\$/FT²
ROLLER/SCHINTLER	Field maintenance	48	\$480	22%	1.5	1.1	1.26	\$0.24	\$0.18	\$0.21
	Harvest	90	\$900	42%	2.7	2.0	2.37	\$0.45	\$0.34	\$0.39
	Packhouse and delivery	21	\$210	10%	0.6	0.5	0.55	\$0.11	\$0.08	\$0.09
	Planting and transplanting	16	\$160	7%	0.5	0.4	0.42	\$0.08	\$0.06	\$0.07
	Trellising and pruning	41	\$410	19%	1.2	0.9	1.08	\$0.21	\$0.16	\$0.18
	TOTAL	216	\$2,160	100%	6.54	4.90	5.68	\$1.09	\$0.82	\$0.95
JOHNSON	Field maintenance	13.5	\$148	13%	0.45	0.34	0.96	\$0.08	\$0.06	\$0.18
	Harvest	53.2	\$585	53%	1.80	1.35	3.78	\$0.33	\$0.37	\$0.69
	Packhouse, marketing and delivery	17.3	\$190	17%	0.59	0.44	1.23	\$0.11	\$0.12	\$0.23
	Transplanting	2	\$22	2%	0.07	0.05	0.14	\$0.01	\$0.01	\$0.03
	Trellising and pruning	14	\$154	14%	0.47	0.36	1.00	\$0.09	\$0.10	\$0.18
	TOTAL	100	\$1,099	100%	3.38	2.53	7.10	\$0.62	\$0.66	\$1.30

Labor per Pound Produced

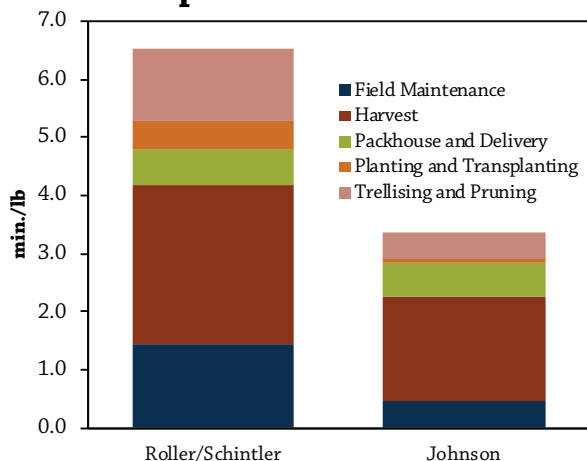


FIGURE 4. Amount of labor (minutes) spent on each task per pound of cherry tomatoes produced on each farm.

harvester than her mom, Mary Zahradnik: “Other people would not work as efficiently; she picks a flat – about 20 pounds – in an hour.”

At the Johnsons’, work in the packhouse, marking and delivery accounted for 17% of the labor; trellising accounted for 14% of the labor, and field maintenance was 13%. At Roller/Schintler’s, trellising and pruning took 19% of their labor, and field maintenance and prep accounted for 22% of labor. A detailed breakdown of the time spent on labor can be found in **Table 3** and **Figure 4**.

The Johnsons, with less area planted but higher yields (in part due to larger-fruited varieties), used less total labor-time per pint (2.53 min./pint) and per pound (3.38 min./lb) than did Roller/Schintler (4.90 min./pint and 6.54 min./lb) as shown in **Figure 5**. Per pint, the Johnsons were nearly twice as efficient with labor. To achieve these high yields, the Johnsons did use more labor per square-foot. When farmers think about how to measure

their efficiency, they need to consider labor, money, and high-value growing space like high tunnels.

CONCLUSIONS AND NEXT STEPS

Cherry tomatoes were a profitable crop at both farms, netting \$1.79/lb at the Johnsons’ and \$2.42/lb at Roller/Schintler’s. Labor was the highest expense for cherry tomatoes at both farms, and most of the labor (in time and cost) was spent on harvesting. The Johnsons had more efficient harvest (less labor per pound and per pint) and high yields, which earned them higher profits per square-foot. Both farms were pleased with the numbers in their enterprise budgets. Said Derek Roller, “This data supports what we felt – that Sungolds were good money for us.”

From 2017 to 2018, the Johnsons made a few changes to their cherry tomato production., Particularly, the removal of the straw from their high tunnel and custom-grown transplants

Labor Time per Unit

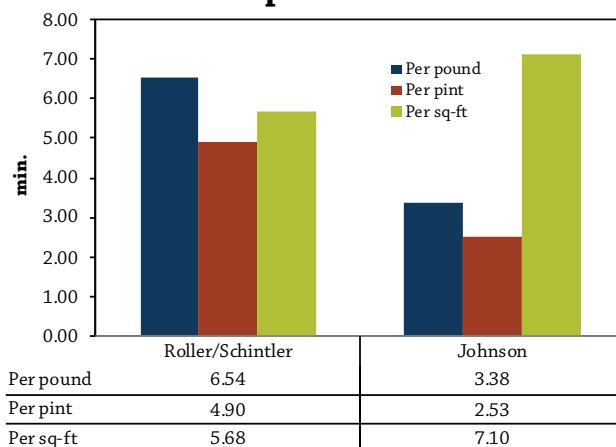


FIGURE 5. Amount of labor (minutes) spent per pound sold, pint sold and square-foot of production.

from Stillwater Greenhouse were successful for them. Said Emma Johnson: “We had in the past used the straw to reduce compaction from foot traffic but also to retain moisture. We suspected the straw also kept the soil temperature too cool in May and early June.” About the transplants, Emma Johnson said, “We are going to continue to have our plants custom grown because we felt we saw some yield benefits, it is cheaper for us and we don’t have to heat our greenhouse in February. I am sure Stillwater did a much better job of making sure the plants had supplemental light and heat during the grey cool days of winter when we are normally distracted with pruning apple trees.”

The opportunity to discuss the results between the farms also gave each farm nuanced insight into different pricing strategies, production, and marketing goals. Both farms plan to increase their cherry tomato production for 2019.

APPENDIX – WEATHER CONDITIONS

TABLE A1. Weather data for 2018 and historical averages.

MONTH	JOHNSON: CEDAR RAPIDS				ROLLER & SCHINTLER: TIPTON			
	GROWING DEGREE DAYS (BASE 50 °F)		DAILY HIGH TEMP °F		GROWING DEGREE DAYS (BASE 50 °F)		DAILY HIGH TEMP °F	
	2018	AVG.	2018	AVG.	2018	AVG.	2018	AVG.
April	137	217	56	63	126	185	53	61
May	574	423	81	74	576	388	80	72
June	699	623	85	82	688	589	83	81
July	717	737	86	85	703	690	84	84
August	710	685	85	83	711	635	83	82
September	518	480	78	77	517	444	77	76
October	206	241	62	64	191	221	61	63

Monthly growing degree days and monthly high temperatures for the current year and historical averages are reported from the nearest weather station. Climate data were accessed from Cedar Rapids and Tipton weather stations.^[9] Historical data include years 1980-2018.

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