

Agriculture's Contribution to The Wisconsin Economy: Fruit and Vegetable Farming

While Wisconsin is worthy of being called the “Dairy State”, one of the strengths of the Wisconsin agricultural economy is the diversity of products. In addition to dairy there is significant levels of fruit and vegetable production across the state. In 2017, there were 1,942 farms reporting fruit production and 3,184 farms producing vegetables. Combined fruit and vegetable farming generated about \$800 million in sales employing some 9,790 people. While the dollar value of vegetable production tends to be higher than fruit production, fruit farmers account for a higher percentage of jobs. But, typical employee compensation is much higher in vegetable than fruit production, \$51,200 and \$23,900 respectively. This latter difference is largely explained by large differences in sales per employee: \$126,200 for vegetable and \$47,600 for fruit farmers.

The typical fruit farm operation has about \$135,400 in sales and employees 2.8 people (including the farmer) and the typical vegetable farm operation has sales of \$169,200 but employees 1.3 people. These averages, however mask a large variation in the distribution of fruit and vegetable farmers: 59.6% of fruit farmers and 48.8% of vegetable farmers have less than 50 acres of production while only 10.7% of fruit farmers and 23.7% of vegetable farmers have more than 260 acres in production (Table 1).

Because of differences in land use intensity, acres may not be the right comparisons, whereas sales reflects the relative size of operators (Table 2).

Table 1: Fruit and Vegetable Farms by Size (Acres, 2017)

Acres	Fruits		Vegetables	
1.0 TO 9.9	425	21.9%	664	20.9%
10.0 TO 49.9	733	37.7%	889	27.9%
50.0 TO 69.9	158	8.1%	175	5.5%
70.0 TO 99.9	119	6.1%	218	6.8%
100 TO 139	118	6.1%	176	5.5%
140 TO 179	79	4.1%	130	4.1%
180 TO 219	45	2.3%	108	3.4%
220 TO 259	57	2.9%	69	2.2%
260 TO 499	94	4.8%	293	9.2%
500 TO 999	47	2.4%	218	6.8%
1,000 TO 1,999	43	2.2%	156	4.9%
2,000 OR MORE	24	1.2%	88	2.8%

For fruit farmers, 43.8% have sales of less than \$10,000 where as 42.8% of vegetable farmers have sales of less than \$25,000. Further, only 9.8% of fruit farmers have sales of greater than \$250,000 and 20.5% of vegetables farmers have sales in excessive of \$250,000.

Care must be taken using acreage to measure the scale of fruit and vegetable operations given the intensity of production processes. For some high value products significant revenues can be generated from relatively small parcels of land.

This wide distribution between a large number of smaller producers and a smaller handful of larger producers is typical for much of Wisconsin agriculture. But what these data cannot tell us is the diversity of on farm operations. Is it possible that a medium sized grain operator also produces fruits and vegetables as a way of diversifying production risks? The economic contribution analysis reported here cannot shed light on this possibility.

Farms impact the regional economy in three ways: (1) the farm operation itself, (2) non-labor related expenditures such as equipment, fertilizer, and contracted services, and (3) paying labor including the farmer. In terms of the economic contribution analysis this is sometimes referred to as the direct, indirect and induced effects. The sum of the three is the total contribution. Wisconsin fruit and vegetable production, contributes a total of \$1.3 billion to the economy, including 13,600 jobs, \$395.6 million in labor income (wages, salaries and proprietor income), and \$904 million in total income (labor income plus all other sources of income such as dividends, interest and rent). This economic activity also generates \$27.9 million in state and local government revenues. For every \$100 of sales in fruit and vegetable production, an additional \$63 will be generated through the multiplier effect (indirect plus induced). For every ten jobs, an additional 4 jobs are created elsewhere in the economy. Note that when one compares the relative sizes of the indirect and induced effects, it becomes clear that the multiplier or ripple effect is generally driven by the induced effects. This suggests that the labor intensity of the fruit and vegetable industry and the wages paid is driving much of the economic contributions.

Table 2: Fruit and Vegetable Farms by Size (Sales, 2017)

Sales/Revenue	Fruits		Vegetables	
LESS THAN \$1,000	147	7.6%	70	2.2%
1,000 TO 2,499	200	10.3%	217	6.8%
2,500 TO 4,999	186	9.6%	270	8.5%
5,000 TO 9,999	318	16.4%	349	11.0%
10,000 TO 24,999	361	18.6%	458	14.4%
25,000 TO 49,999	205	10.6%	333	10.5%
50,000 TO 99,999	150	7.7%	381	12.0%
100,000 TO 249,999	185	9.5%	454	14.3%
250,000 TO 499,999	75	3.9%	262	8.2%
500,000 TO 999,999	61	3.1%	207	6.5%
\$1,000,000 OR MORE	54	2.8%	183	5.7%

Table 3: Economic Contribution of Fruit and Vegetable Farming (2017)

	Industry Sales (000\$)	Employment	Labor Income (000\$)	Total Income (000\$)
Direct Effect	\$ 801,663.7	9,790	\$ 218,621.2	\$ 609,801.7
Indirect Effect	\$ 153,220.6	1,249	\$ 62,323.5	\$ 91,314.2
Induced Effect	\$ 349,181.0	2,567	\$ 114,656.8	\$ 202,854.4
Total Effect	\$ 1,304,065.3	13,606	\$ 395,601.5	\$ 903,970.3
Multiplier	1.627	1.390	1.810	1.482

For this analysis we use an input-output model of the Wisconsin economy. One can think of this model as a "spreadsheet of the economy" where buyers (demand) are across the columns of the spreadsheet and sellers (supply) are down the rows. Any individual cell of the spreadsheet captures the amount of money flowing from the seller to the buyer. Because supply must equal demand we can trace changes in one part of the economy (an interaction between supply and demand) throughout the whole of the economy. These changes are often referred to as the multiplier effects.

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