

## Undergraduate Essay Contest Winner

# An Analysis of the Potential for Increased Direct Marketing of Small Fruits and Vegetables in Three West Virginia Counties

Lewis W. Jett

### Introduction

Agricultural activities in three West Virginia counties were analyzed to determine their potential for increased direct marketing activities. For each county, the main type of agricultural enterprise was examined and compared with the direct marketing of small fruits and vegetables. The benefits of direct marketing combined with the present form of agriculture in these three West Virginia counties will be presented and discussed.

### Problem Statement

The three Northcentral rural West Virginia counties of Harrison, Marion and Monongalia, despite their hinderance of topography, appear to have a considerable amount of potential for the expansion of the direct marketing of small fruits and vegetables. With relatively large population centers, fair to good travers-able roads, adequate rainfall, and prolific silt-loam soil, more direct marketing activities than those currently existing seem to offer potential for increased economic returns for those who wish to take the initiative.

In order for direct marketing of small fruits and vegetables to be recognized and accepted as a viable type of agriculture by potential producers in these three counties, where change is not accepted readily, it has to be proven to be as profitable or more profitable than the current type of agriculture being practiced which is the production of feeder calves on a part-time basis. The purpose of this paper

is to evaluate the monetary benefits that direct marketing would provide a typical farmer raising feeder calves for market if he/she decided to integrate the production of selected horticultural crops for sale directly to the public in his/her existing farming operation.

### Current Agricultural Enterprises

With sloping land and adequate rainfall for lush pasture growth, West Virginia has been one of the leading states in feeder calf production in the Northeast. As Table 1 illustrates, this mode of agriculture continues to be very important as a source of income in the three counties under study. The farmers in these counties are mainly part-time farmers who are dependent upon off-farm income and need their farm incomes to supplement their earnings. This is of vital importance given the current high unemployment rates in these three counties (Table 2).

Since 72 percent of all the farmers in the three counties are classified as part-time farmers, and 70 percent are classified as part-time beef producers, it is not surprising that over 90 percent of all harvestable cropland is devoted to hay production (Table 2). In 1982, only 16, 15, and 10 acres were devoted to the production of vegetables in Harrison, Marion, and Monongalia Counties respectively. Undoubtedly, opportunities for expansion of the production of small fruits and vegetables that could be sold directly to the public in these three counties are available.

### Farm Budgets

To understand how direct marketing of small fruits and vegetables can be incorporated into

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Undergraduate Sophomore in Agricultural Economics, Division of Resource Management, College of Agriculture and Forestry, Morgantown, WV. This paper was the first place winner of the 1985 NAREA Undergraduate Essay Contest,

**Table 1. Selected Agricultural Characteristics of Harrison, Marion, and Monongalia Counties, West Virginia, 1982<sup>a</sup>**

Item	Harrison County	Marion County	Monongalia County
Number of Farmers	687	415	356
Percent of Part-time Farmers	66%	70%	80%
Percent of Farmers with Cow-Calf Operations	63%	69%	77%
No. of calves sold	2,992	1,465	1,792
Gross Farm Income	\$605,000	\$292,000	\$340,000
Harvestable acres	17,333	8,053	9,045
Percent of Harvestable acres in Hayland	99%	95%	89%
Number of Acres in Vegetables Production	16	15	10

<sup>a</sup> Source: U.S. Bureau of the Census, *1982 Census of Agriculture, Part 48, West Virginia*. AC 82-A-48 (Washington, DC: U.S. Government Printing Office, February, 1984).

the existing mode of agriculture in these three counties, case studies of three different farming operations were performed. The first farm was a beef cattle farm located in Marion County, West Virginia. It is a relatively large cow-calf farm engaged in the production of feeder calves for market in the fall.

The second farm is located in Harrison County. This farm represents an operation in transition from a single form of agriculture (beef cattle) to an integration with the production of vegetables for direct marketing. The third farm analyzed is located in Monongalia County and illustrates a farm that has reached a "balance" between beef cattle production and the production of pick-your-own small fruits.

### *The Marion County Farm*

The Marion County farmer is an operator of a cow-calf farm that is larger than the average Marion County cattle farm. This farmer considers beef cattle production to be the only feasible form of agriculture in Marion Coun-

ty's hilly terrain. Like most Marion County farmers, he works more than 200 days off the farm. This operator farms 915 acres. One hundred and fifteen acres are owned by the operator and the remaining 800 acres are rented. Of the total 915 acres, approximately 300 acres are devoted to pasture and 200 acres are in meadowland. In 1984, he had 72 brood cows; twelve of these cows were culled that fall after he sold his calf crop.

This farmer had an average yield of 1.7 tons of hay per acre during the 1984 hay harvest. His herd of 74 animals (72 cows + 2 bulls) required approximately 200 tons of hay for their winter feed requirements. In 1984, he had approximately 140 tons of hay remaining after the winter feeding of his cow herd. He retained this hay in storage for the next feeding period. It is evident that the harvestable cropland that this farmer uses exclusively for hay production provides him more hay than he needs to "winter" his beef herd during a normal year.

The enterprise budget for this farming operation is shown in Table 3. Variable and fixed costs exceed total revenue by \$3,389. With negative returns to his land, labor, capital, and management, this farmer should consider a more profitable form of agriculture.

Diversion of a fraction of his meadowland that yields surplus hay to vegetable or small fruit production would yield a greater return than he could earn by retaining the acreage in hay production. The Marion County beef farm represents the form of agriculture that is dominant in the three counties under study. This farm, with its single form of agriculture is the agriculture of today and generations past. The ensuing case studies represent what could be the agriculture in these three counties.

**Table 2. Unemployment Rates in Harrison, Marion, and Monongalia Counties, West Virginia, March, 1985<sup>a</sup>**

County	Unemployment Rate
Marion	14.6%
Harrison	10.6%
Monongalia	8.3%

<sup>a</sup> Source: Personal Communications with Personnel of the West Virginia Department of Employment Security, Morgantown, WV, April 16, 1985.

**Table 3. Enterprise Budget for a Marion County, WV Beef Cow Farm Operation, 1984<sup>a</sup>**

Item	Unit	Price (\$)	Amount (\$)
<b>Receipts:</b>			
Feeder Calf Sales:			
32 Steers (average wt. of 500 lbs.)	Cwt.	65.00	10,400
39 Heifers (average wt. of 450 lbs.)	Cwt.	50.00	8,775
Cull Cow Sales:			
12 Head (utility goods, average wt. of 900 lbs.)	Cwt.	35.00	3,780
Death Losses:			
1 Calf (at about 50% market wt.)	Cwt.	62.50	-156
Total Receipts			22,799
<b>Variable Expenses:</b>			
Mixed Grass Hay (2.5 tons per head) <sup>b</sup>	Tons	62.50	11,562
Improved pasture (2.1 acres per head) <sup>b</sup>	Acre	78.00	12,121
Salt and Mineral Mix <sup>b</sup>	Head	2.30	170
Veterinary and Supplies <sup>1</sup>	Head	5.00	370
Marketing and Trucking of Cull Cows	Head	9.00	108
Marketing and Trucking of Calves	Head	7.00	497
Total Variable Expenses			24,828
<b>Fixed Expenses:</b>			
Depreciation of Buildings and Equipment <sup>0</sup>	Head	7.30	540
Repairs of Buildings and Equipment <sup>d</sup>	Head	2.19	162
Depreciation of 2 Herd Sires	Head	6.67	480
Depreciation of Machinery			178
Total Fixed & Variable Expenses			26,188
Net Return to Land, Labor, Capital, Management			-3,389

<sup>a</sup> Source: Author collected this data from the case study farm with the help of Gerald V. Eagan, Extension Specialist, West Virginia University in March of 1985.

<sup>b</sup> The number of head of cattle used in computing these expenses was 74 (72 cows and 2 bulls).

<sup>c</sup> The buildings and equipment include: a hay storage building of 665 square feet valued at \$1995 (\$3.00 per square foot); cattle handling facilities consisting of a corral, sorting pen, work alley, squeeze and loading chutes valued at \$2250; a salt and mineral feeder valued at \$85; and an oiler valued at \$50. The total value of building and equipment is \$4,380 and is being depreciated over a 20 year time period.

<sup>d</sup> The costs of annual repair of buildings and equipment is computed at 1.5 percent of their total undepreciated value.

<sup>e</sup> Assuming 2 herd sires with a value of \$1000 are replaced every 2 years for \$400 above their cull value.

### *The Harrison County Farm*

The second farming operation is that of a Harrison County farmer that is integrating vegetable production with his existing beef herd. This farm, which is located along a major thoroughfare, consists of 300 acres that are farmed by the operator. This farmer owns 200 acres and rents the remainder. Of the 300 acres, 115 acres are in pasture; 50 acres are in meadowland and the remainder is wooded. This farmer decided to engage in vegetable production for three reasons: 1) declining returns to his labor and management from cattle; 2) an excellent location for the direct marketing of an easily marketable vegetable product such as sweet corn; and 3) the potential to be the only commercial producer of sweet corn in the County.

This farmer, like the Marion County cattle producer, works more than 200 days off the farm. According to his calculations, he will need approximately 80 tons of hay to feed his

herd of 40 animals during the ensuing winter months. His well-limed meadows normally yield 2 tons of hay per acre, for a total of 100 tons of hay annually. By diverting 6 acres of his meadowland to sweet corn production, the production of hay is reduced by 12 tons per year. However, deducting what his cattle require, he still has 8 tons of hay remaining at the end of a normal year. This farmer retains this surplus hay as a "buffer" against future shortages or potential supplemental feeding needs. The budget for this farmer's sweet corn enterprise is shown in Table 4. On a per acre basis, he will receive a net profit in the range of \$488.97 to \$801.47. For his total 6 acres, he will receive a net profit in the range of \$2,933.82 to \$4,808.82. The 12 tons of surplus hay the farmer would have received from this acreage would have a market value of \$750.00 (average WV price of \$62.50/ton in 1984-85). Therefore, the operator gained income by his decision to divert the 6 acres of surplus hay to sweet corn production.

Item	Amount Per Acre (\$)
Fixed Expenses:	102.00
Land <sup>b</sup>	
Taxes	8.00
Insurance	6.00
Interest (for operating capital)	25.50
Total Fixed Expenses	141.50
Variable Expenses:	
Land Fitting	
Tractor and Plow (2 hours @ \$5.00/hour)	10.00
Tractor and Disk (2.5 hours @ \$4.00 hour)	10.00
Labor (5 hours @ \$4.00/hour)	20.00
Fertilizer (1,200 lbs. of 10-10-10)	70.88
Herbicide (Atrazine)	13.00
Planting:	
Tractor and Planter (1 hour @ \$5.00/hour)	5.00
Seed Corn (12 lbs. @ \$5.20/lb.)	62.40
Labor (1 hour @ \$4.50/hour)	4.50
Spraying:	
Tractor and Sprayer (0.5 hours @ \$5.00/hour)	2.50
Materials	3.00
Labor (0.5 hours @ \$4.00/hour)	2.00
Picking (25 hours of labor @ \$4.00/hour) <sup>c</sup>	100.00
Trucking (15 miles @ .25/mile) <sup>d</sup>	3.75
Total Variable Expenses	307.03
Total Fixed and Variable Expenses	448.53
Gross Receipts (750-1,000 dozen per acre @ 1.25/dozen)	937.50 to 1,250.00
Net Profits	488.97to 801.47

<sup>a</sup>The data for this sweet corn enterprise budget were obtained from the author's records from his own sweet corn production.

<sup>b</sup> Land expense was included since the land used by the individual producer is part of a family farm operation. The soil type is Westmoreland silt loam.

<sup>c</sup> Assuming that one man can pick 30 to 40 dozen per hour and the yield per acre is 750 to 1000 dozen.

<sup>d</sup> A portion of the sweet corn was sold directly to consumers at the farm and the remainder was transported to Clarksburg, WV (the largest city in Harrison County) where it was direct marketed to consumers via tailgate and roadside market sales.

### *The Monongaiia County Farm*

The third farm analyzed is located in Monongaiia County. Like the previous farms, this farmer also has a job that requires him to work more than 200 days off the farm. The farm is a pick-your-own strawberry operation. This farmer has reached an efficient point of integration between raising a small herd of beef cattle and operating a profitable direct marketing operation.

The total size of this farm is 85 acres. Fifteen acres of the 85 acres are used for pasture combined with 25 acres rented from a neighboring farm. The total beef cow herd numbers 10 brood cows. Approximately 10 acres of this farm are devoted to crop production. Five acres are currently in strawberry production with the remaining 5 acres in rye. These two crops are rotated every three years.

The 14 acres of meadowland yield 2.5 tons of hay per acre for a total annual yield of 35

tons of mixed hay. His beef cattle need 20 to 25 tons of hay for their winter ration. Therefore, he has approximately 10 to 15 tons of hay remaining that he can either sell or retain for future use.

If he had kept the 10 acres of cropland in hay production, he would have had a surplus of 30 to 35 tons of hay. The returns from his strawberry acreage economically justified his decision to divert the 5 acres to small fruit production (Table 5).

This operator has made direct marketing work. He specifies his goal as the production of high quality fruit which will attract customers and provide a good return for his investment (Yoder). His location, which is very important in direct marketing, is one mile from an interstate highway system and midway between the two largest towns in Marion and Monongaiia Counties. This successful direct marketing operation represents only a fraction of the potential for direct marketing of small

**Table 5. Pick-Your-Own Strawberry Enterprise for a Monongalia County, WV Farm, 1985<sup>a</sup>**

Item	Amount Per Acre (\$)
Fixed Expenses:	
Land	85.00
Machinery and Equipment	363.00
Operator's Labor Charge (75 hours @ \$4.50/hour)	338.00
Interest (5 year loan at 10.25%)	207.50
Total Fixed Expenses	1,093.50
Variable Expenses:	
Preplant Fumigation (custom hired) <sup>b</sup>	266.50
Plants (9,250 plants per acre; spacing of 18" x 3'; matted rows) <sup>b</sup>	300.00
Fertilizer (300 lbs. of PK <sup>&gt;</sup> <sup>5</sup> and 1,200 lbs. of 10-10-10) <sup>b</sup>	116.00
Chemicals Dacthal at 12 lbs. per acre at \$19 per 4 lbs.)	57.00
Fungicide (20 lbs. per acre at \$1.70 per lb.)	34.00
Insecticide (6 lbs. per acre at \$7.85 per 4 lbs.)	11.78
Containers (10,000 quart cups at \$0.05 per cup)	500.00
Miscellaneous (including advertising)	30.00
Hired Labor (50 hours at \$4.50 per hour)	225.00
Fuel, Oil and Grease	67.00
Repairs	83.00
Total Variable Expenses	1,690.28
Total Fixed and Variable Expenses	2,783.78
Gross Receipts	6,290.00
Receipts Above Variable Costs	4,599.72
Receipts Above Total Costs <sup>c</sup>	3,506.22

<sup>a</sup> The data used to develop this budget are a combination of information from the case study farm, from the author's own strawberry production, and from various farm supply dealers. The information and format from the following article was also used: John Tammen, "U-Pick Strawberries," *Enterprise Farming* (Troy, Michigan: Ford Motor Co., 1983), pp. 76-80.

<sup>b</sup> These costs were incurred in the year of establishment and prorated over 3 years.

<sup>c</sup> This is the second year in the production cycle. In the first year when no strawberries were sold, establishment costs were approximately \$2,600.

fruits such as strawberries in these three counties. In Monongalia County, there are only 12 acres of strawberries currently being grown. It has been estimated that it requires 2,500 people to support 1 acre of pick-your-own strawberries (Hardin). Using this estimate and

1980 Population Census data, these three counties potentially can support a total strawberry acreage exceeding 80 acres given that the combined population exceeds 200,000 inhabitants (Table 6). Monongalia County alone, could have 18 more acres of pick-your-own strawberries.

**Table 6. The potential Pick-Your-Own Strawberry Acreages in Harrison, Marion, and Monongalia Counties, WV, 1980**

### Summary and Conclusions

It is essential to understand the benefits that direct marketing provides to farmers. Why is direct marketing for three West Virginia counties? Several factors make direct marketing work. The paramount factor is location. All three of these counties have an excellent highway system to the city of Pittsburgh—an easy one to two hour drive for the farmer who wishes to sell his/her produce in Pittsburgh. Also, these counties are three of the ten most populated counties in West Virginia (U.S. Census Bureau, 1982). Being located in the Northeast is advantageous because one-fifth of the entire

<sup>a</sup> U.S. Bureau of the Census, *1980 Census of Population, Number of Inhabitants. Part 50, West Virginia*, PC80-1-A50 (Washington, DC: U.S. Government Printing Office, 1981).  
<sup>b</sup> "Potential PYO Acres" were computed using the assumption that it requires 2,500 people to support 1 acre of PYO strawberries. N. Carl Hardin, "Direct Marketing Opportunities," *Proceedings of the Direct Marketing Conference* for the Eastern Panhandle of West Virginia,

**Table 7. A Comparison of Consumer Ratings of the Quality of Fresh Fruits and Vegetables at Direct Markets and at Grocery Stores in West Virginia, 1981<sup>a</sup>**

Quality Rating	Direct Markets		Grocery Stores	
	Number	Percent <sup>b</sup>	Number	Percent <sup>b</sup>
Poor	8	1.3	41	5.5
Fair	43	6.9	319	42.5
Good	318	51.4	344	45.9
Excellent	249	40.3	46	6.1

<sup>a</sup> Source: Kitty Lou Blackburn and Robert L. Jack, *Consumers' Opinions, Attitudes and Use of Direct Markets in West Virginia*, Bulletin 686 (Morgantown, WV: West Virginia University Agricultural and Forestry Experiment Station, March 1984), p. 7. <sup>b</sup> Percentages were calculated using the total number of respondents for each type of market.

population of the United States lives within the Northeast (Butchelor).

The reason for direct marketing is simple. If one compares the between the farm gate and the retail food store, it is evident that the farmer's share of the consumer's dollar is relatively small. So, in order to gain a larger share of the consumer's dollar, the farmers must perform many of the merchandising functions currently being performed by the middlemen. When the final product is not significantly altered, there may be cost savings to the consumer and profits to the farmer through direct marketing.

Another benefit is that the West Virginia consumer has recognized the advantages of direct marketing. For example, the majority of the residents of these three counties are willing to travel 20 miles or more per round trip to pick-your-own operations according to respondents to a recent marketing survey of attitudes held by consumers (Jack and Blackburn). The majority of the respondents also ranked the quality of direct marketed fresh produce above the quality of the produce sold at grocery stores (Table 7).

Direct marketing offers many benefits to the three rural West Virginia counties. The ingredients for direct marketing exist. So, the question remaining to be answered is: As farmers engaged in a beef cattle enterprise facing declining returns to land, labor, capital, and management, in addition to reaping surplus hay yields from meadowland, why don't they consider integrating the production of small fruits or vegetables on just a fraction of this meadowland while simultaneously utilizing

uncultivable sloped pasture land with the beef cow herd? Coupled with increased consumer demand for home grown produce and awareness of higher quality and nutritional values, the Marion, Monongalia and Harrison County farmers that take the initiative to decide to integrate direct marketing with their existing beef herd, will receive the returns they deserve for their efforts.

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