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Constructing a Southwest Florida Bell Peppers Enterprise Budget[1]

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Enterprise budgets can assist with forecasting as well as help managers coordinate resources, make production decisions, carefully examine expenditures, and anticipate outcomes from changes in production practices. Once established, they become a standard for monitoring what happens in the operation. Enterprise budgets estimate revenues and expenses for a specific farm enterprise (product or commodity); they are constructed on a per-unit-of-production basis for one production cycle (or growing season) and can be used to compare the profitability of alternative enterprises, assist in development of a marketing plan, negotiate with the sources of credit, and plan adjustments to the operation. In essence, enterprise budgets can help producers determine what to produce, how many acres to produce, the cost of production, and the necessary price to be profitable. In this publication we describe the process used to create the 2019–20 enterprise budget for bell peppers in southwest Florida.

Overview

In 2019, Florida produced 31 percent of the US fresh-market bell peppers, making Florida the second largest production area in the United States (http://quickstats.nass.usda.gov). Florida growers harvested 11,800 acres of bell peppers during the 2018–19 growing season, a slight decrease (less than one percent) from the 2017–18 season. However, a 30 percent increase in price (from $14.17/bu to $18.43/bu) and no change in production levels resulted in the value of production increasing from $181 million in 2017–18 to $235 million in 2018–19 (Table 1). Yield (measured in 28-pound bushels) peaked in the 2014–15 season at 1,286 bushels per acre and averaged 1,100 bushels per acre over the following seasons (2015–16 to 2018–19); the recent average is 20 percent higher than the average yield of 913 bushels per acre observed from the 2002–03 to 2013–14 growing seasons. This could possibly be due to the development of more disease-resistant varieties (see Gordon 2015). Overall, the total nominal value of Florida's bell pepper crop has increased 66 percent since its low in the 2012–13 season.

Production Practices

Most bell pepper crops are transplanted in double rows on polyethylene-mulched raised beds using either drip or seep irrigation systems. Combinations of fumigants including: Telone, Pichlor 60 (1,3-D), Vapam, or KPam (metam sodium or potassium) and/or chloropicrin are applied prior to planting transplants for the management of soil insects, pathogens, nematodes, and weeds. Approximately 33 percent of the Florida growers use stakes and twine

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around the bed perimeter to construct "corrals" to contain the plants. Standard spacing is six feet between bed centers, with plants typically planted ten inches apart in the beds. Bell peppers need about 90 days between planting and harvest and are hand harvested at least twice during the growing season. South Florida pepper growers may harvest up to five times in profitable market conditions. Fertilizer can be applied during the plastic laying process, a portion during transplanting, and the rest throughout the season through the drip irrigation system.

Southwest Florida Bell Pepper Budget

Table 2 is a per-acre enterprise budget for a representative grower in southwest Florida. The budget breaks down the specific cost components used to estimate the total per-acre cost of production. Production costs for the budget are reported in two categories, variable costs and fixed costs. Variable costs include labor wages, fuel, chemicals, seed, materials, fertilizer, interest, and other costs that increase as planted land area usage increases. Fixed costs can include rent, building ownership, depreciation, taxes, repairs, and machinery; these are costs that do not vary with the level of output because they result from ownership of assets. (It should be noted that there are two types of variable costs: cash and noncash. Cash costs, such as fuel, pesticides, repairs, etc., are included in the budget. Noncash costs, such as farmer and family labor, are not included in the budget. Though not included, we urge growers to consider noncash costs in their decision-making process.)

The budget is intended to reflect the cost of production using representative production practices that are considered typical for bell peppers grown in southwest Florida. What constitutes a representative production practice is defined by a consensus of opinion of UF/IFAS field experts, industry experts, and various producers in the bell pepper production area. Cost estimates resulting from this process do not represent the average cost of production in a statistical sense, and production practices listed are not necessarily recommended production practices. The intent of these cost budgets is to establish a benchmark within a comprehensive range of potential costs that could be expected to produce the crop.

Assuming an anticipated yield of 1,100 cartons per acre, the production budget for 2019–20 indicates that pre-harvest variable costs for a representative bell pepper grower in southwest Florida totaled $10,524.55 per acre with 44 percent of the costs resulting from fertilizer (12 percent), fungicide (8 percent), tractors and equipment (15 percent), and wage labor (9 percent). Harvest and marketing costs totaled $4,356 per acre, of which 61 percent results from picking, packing, and hauling the fruit. The total cost of production is estimated to be $18,399 per acre or $16.73 per carton.

Methods

Production costs for the budget are reported in variable and fixed costs (Table 2). As in bell pepper budgets created in 2008–09 (see VanSickle et al. 2009), cost estimates are a combination of a consensus of opinion from industry experts, interviews with agriculture input retailors in the region, and applying an inflation factor to 2008–09 production costs. Two inflation factors were created to adjust 2008 fixed and variable values for those in 2020. The variable cost inflation factor is the average of the relative difference of 2008 and 2020 equipment prices. The machinery used in this estimate includes tractors and tractor implements from Mississippi State University production budgets (MSU 2019). The fixed cost inflation factor was calculated using the relative difference of the producer price index (PPI) for bell peppers in 2008 and 2019 (www.bls.gov/ppi).

Resources

Interactive Budget Workbook

Interactive workbooks containing data used to create the UF/IFAS bell pepper budget in Table 2 are available at https://fred.ifas.ufl.edu/extension/commodity-production-budgets/. These workbooks can be used to produce cost estimates broken down by specific groups. Included are pesticide, herbicide, insecticide, fungicide, and fumigant worksheets; machinery worksheets listing the machinery cost coefficients so that users can estimate fixed and variable costs of machinery; and a comparative budget designed for users to compare UF/IFAS estimates with their own. Users are encouraged to input their own prices and quantities.

Common Bell Pepper Varieties for Commercial Production

• Bell Pepper Varieties: Antebellum, Aristotle, Autry, Boca, Crusader, Green Machine, HM 2641, PS 9928302, PS 09979325, Seedway 48, SV3255PB, SV6420PB, Vanguard.

• Specialty Varieties: Aruba, Boris, Natasha, Sunakku Ichigo (red), Yummy Red, Right on Red, Sopron, Yellow Sparkler, Yes to Yellow, Yummy Orange, Orange You Sweet, Sunakku Mikan (orange).

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Table 1. Florida pepper acreage, fresh market production, and value for crop years 2002–03 to 2018–19

Season	Planted Acres	Harvested Acres	Yield/Acre 28-lb bushels[1]	Production (1,000 bushels)	Unit Value ($/ bushel)	Total Value ($1,000)
2002/03	17,800	17,700	1,000	17,700	10.05	177,920
2003/04	18,500	18,300	1,107	20,261	10.78	218,411
2004/05	19,400	19,000	861	16,357	13.05	213,428
2005/06	19,800	16,500	876	14,450	12.96	187,330
2006/07	18,000	17,500	803	15,500	11.82	183,148
2007/08	19,000	18,800	1,000	17,800	14.23	253,187
2008/09	18,900	18,200	880	16,007	12.41	176,934
2009/10	18,800	17,700	821	14,539	20.34	247,130
2010/11	18,700	17,600	893	15,714	15.77	187,198
2011/12	13,000	12,400	893	11,071	12.89	142,600
2012/13	13,000	12,300	893	10,982	12.89	141,450
2013/14	12,400	11,900	928	11,050	14.87	164,291
2014/15	12,400	12,200	1,286	15,650	14.06	220,478
2015/16	13,500	12,900	1,053	13,591	15.43	209,711
2016/17	12,500	12,000	1,196	14,357	13.17	188,940
2017/18	12,400	11,900	1,071	12,750	14.17	180,642
2018/19	12,200	11,800	1,081	12,750	18.43	234,968

Source: USDA/NASS, https://quickstats.nass.usda.gov

[1] Yield was converted from cwt/acre to 28-lb bushels/acre

Table 2. Estimated costs of producing one acre of bell peppers in southwest Florida, 2019–20

Your Anticipated Yield (cwt)	***1,100 cartons***			
	Unit	**Quantity**	**Price**	**Your Cost/Acre**
Pre-Harvest Variable Costs				
Transplants (cost of seed and growing transplant)	plants	14,500	$0.17	$2,465.00
Fertilizer mixed and lime	acre	1.00		$1,293.00
Fumigant and nematicide	acre	1.00		$558.11
Herbicide	acre	1.00		$101.86
Insecticide	acre	1.00		$715.12
Fungicide	acre	1.00		$844.03
Tractors and equipment—operation and maintenance	acre	1.00		$1,548.26
Farm trucks cost (driver cost INCLUDED in overhead and management expense)	acre	1.00		$33.75
General farm labor (does not include harvesting)		1.00		$901.00
Tractor driver multiplier (to account for re-tooling, re-fueling and travel time.)	acre	1.00	1.17	
Tractor driver labor expense	acre	1.00		$466.83
Scouting	acre	1.00		$50.00
Drip tube	acre	1.00		$255.00
Plastic mulch	acre	1.00		$372.00
Stakes	acre	1.00		$72.00
Plastic string	acre	1.00		$24.84
String and stake removal	acre	1.00		$245.50
Pull and bundle mulch	acre	1.00		$69.00
Dumpster contract	acre	1.00		$40.00
Interest on operating capital as a % of operating capital for this crop (Rate=8%; Time=6 months)	acre	1.00	8%	$469.25
Total Pre-Harvest Variable Costs EXCLUDING Pre-Harvest Interest Expense				**$10,055.30**
Total Pre-Harvest Variable Costs INCLUDING Pre-Harvest Interest Expense				**$10,524.55**
Pre-Harvest Fixed Costs				
Tractors and equipment	acre	1.00		$311.21
Land rent	acre	1.00		$694.00
Your overhead and farm management cost (as a % of total variable costs)	acre	1.00	25%	$2,513.82
Total Pre-Harvest Fixed Costs EXCLUDING Interest on Fixed and Overhead				**$1,005.21**
Total Pre-Harvest Fixed Costs INCLUDING Interest and Overhead Expenses				**$3,519.04**
Your Total Pre-Harvest Costs INCLUDING Total Fixed and Variable Expenses				**$14,043.58**
Harvest and Marketing Costs:				
Pick, pack, and haul	carton	1,100	$2.40	$2,640.00
Sell	carton	1,100	$0.61	$671.00
Containers	carton	1,100	$0.95	$1,045.00

Other harvest and marketing costs	carton			$0.00
Your Total Harvest and Marketing Costs			**$3.96/bu**	**$4,356.00**
Cost per Unit and Total Costs per Acre	carton	1,100	**$16.73**	**$18,399.58**