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Economic Analysis of Rabbiteye Blueberry Production in Georgia Using Enterprise Budget

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Blueberries are experiencing a major increase in acreage in Georgia and the Southeast region. The demand for blueberry crop budgets is at an all-time high. Due to the world economic crisis, agricultural input prices are constantly fluctuating. The increase or decrease in input prices has a direct impact on productivity and profitability of blueberries. Unfortunately, the existing blueberry economic analyses in Georgia are outdated. The prices Georgia farmers receive given the existing market window for fresh rabbiteye and frozen blueberries have also been unstable. Since 2005 when the last economic analysis using enterprise budgets was developed, there have been huge changes in terms of input prices, agricultural practices, and production technologies. Consequently there is a high demand from stakeholders for new studies, as they provide marketing and price guidance and projected production costs in this rapidly growing industry. This study summarizes the resources and estimates current costs associated with producing blueberries in Georgia.

Blueberries were not grown in Georgia about a quarter of a century ago, but they are now the second most important fruit crop in the state in terms of farm gate value. Georgia's fruit industry as a whole is rapidly growing. Farm gate value increased from \$144 million in 2002 to \$366.3 million in 2009. Figure 1 shows that in 2009 pecans were rated first in farm gate value, contributing 46.7 percent of the total, followed by blueberries (28 percent) and peaches (16.3 percent). There has been a huge change in the dynamics from a decade ago, when pecans were number one with 61.5 percent, peaches were 18.9 percent, and blueberries were barely 10.5 percent (Boatright and McKissick 2010).

Economic analysis is a vital part of planning and analyzing risk for any agricultural production operation. The importance of a budget to agricultural businesses cannot be overemphasized. Agriculture businesses and operators are all interested in the cost estimates and resources provided by any kind of budget, enterprise or partial. Because the demands from these audiences for enterprise budgets are increasing daily, This study summarizes the resources and estimates current costs associated with producing rabbiteye blueberries in Georgia.

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There are three kinds of blueberry production systems in Georgia: rabbiteye, southern high bush, and high density. Although rabbiteye blueberry (*Vaccinium ashei*) is the most important type of blueberry grown in Georgia (Fonsah et al. 2008), it is subject to market distortions and price and yield fluctuations just like other fruits. Market volatilities depend on several factors, including the variety produced and sold (i.e., fresh or frozen), locality, aggregate productivity, targeted market, and timing, which makes it difficult to determine profitability.

Materials and Methods

This economic analysis is an update of the work previously done by Fonsah et al. (2008). To successfully accomplish our task we visited several farms and worked with blueberry growers who provided us with critical information to develop the variable-cost section of the budget and familiarized ourselves with new procedures involved in producing rabbiteye blueberries. We consulted with specialists, Extension Agricultural Economists, Horticulturists, Agricultural Engineers, and County Extension Agents to gather agronomic, irrigation, and equipment use data required for this estimate. We interviewed vendors of agricultural inputs (fertilizers, chemicals, and equipment) to obtain current prices needed to generate variable- and fixed-cost components. We also consulted USDA-ERS (2010) and other publications to obtain historical information on productivity, marketing, price, and overall outlook of blueberries. The risk-rated method which

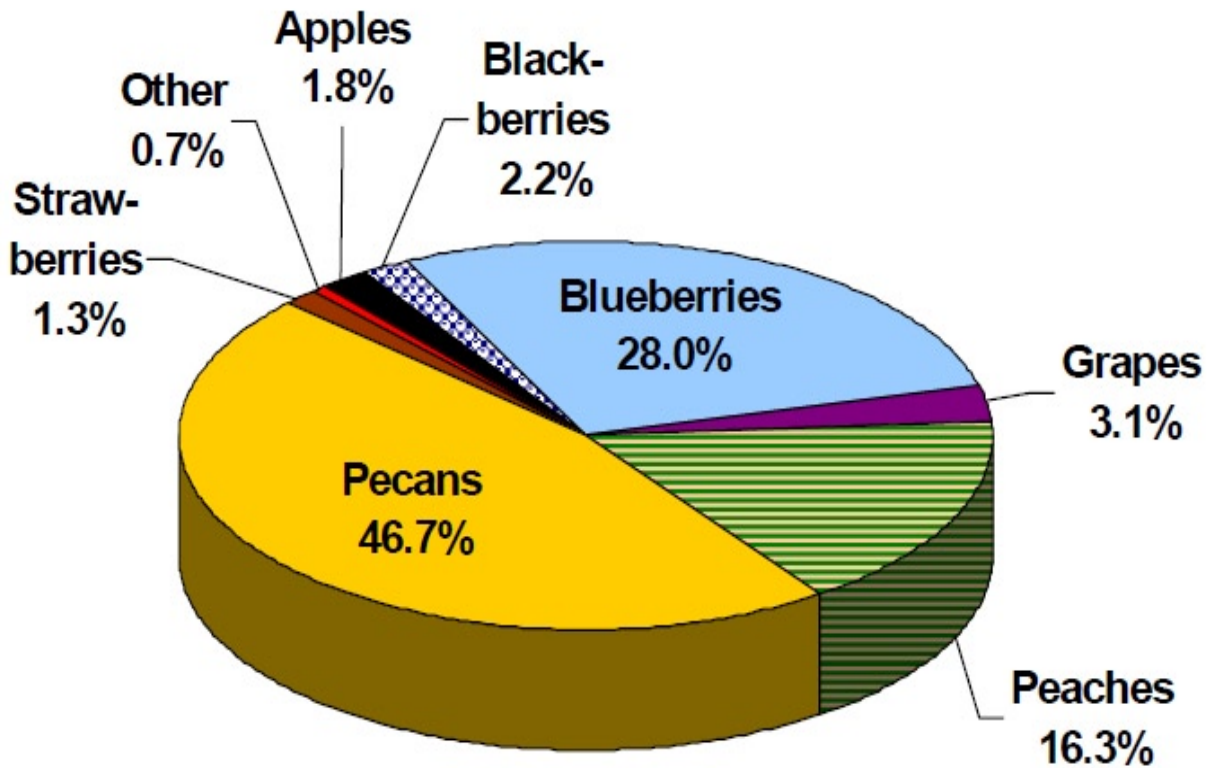


Figure 1. Percentage Breakdown of Georgia Fruit and Nut Industry, 2009.

Source: Boatright and McKissick (2010).

assigns five categories of yield and price per pound of rabbiteye blueberry (“Best,” “Optimistic,” “Median,” “Pessimistic,” and “Worst”) was adopted from previous work (Fonsah et al. 2007, 2008; Fonsah 2006, 2007).

Results

Yields

The average or median yield obtained by Georgia rabbiteye blueberry producers was 6,000 pounds per acre in the fifth year, which is considered full production. The best yield was 8,000 pounds per acre, farmers who obtained this yield are those who did everything right and followed all the recommendations from the University of Georgia Scientists. The

optimistic, pessimistic, and worst yields were 7,000 pounds, 5,000 pounds, and 4,000 pounds, respectively (Table 1). Worst yield could be zero during extreme situations like natural disaster or extreme weather conditions (Fonsah 2006, 2007).

Prices

There were two sets of prices, for fresh and processed blueberries. The average/median price for fresh blueberries was \$1.50, compared to \$0.80 for processed blueberries. Fifty percent of rabbiteye blueberries were sold as fresh and the other 50 percent as processed. The best and worst fresh prices were \$1.90/lb. and \$1.10/lb., respectively (Table 1).

Table 1. Risk-Rate Yields, Fresh and Processed Rabbiteye Blueberries in Georgia, 2011.

	Best	Optimistic	Median	Pessimistic	Worst
Yield (lbs.)	8000	7000	6000	5000	4000
Fresh price per lb. (\$)	1.90	1.70	1.50	1.30	1.10
Price per I process (\$)	1.00	0.90	0.80	0.70	0.60

Pre-Variable Costs

Total pre-variable cost was \$1,274/ac in the full production year (fifth year). The major pre-variable costs were fertilizers, weed control, insect and disease control, bee hives, and interest rates on operation costs (Table 2).

Harvesting and Marketing Costs

Harvesting and marketing costs included custom harvesting, packing, cooling, handling, and brokerage (Table 3). Custom harvesting was \$0.18 per pound. Custom packing was \$0.62 for fresh blueberries and \$0.20 for frozen blueberries. Total harvesting and marketing cost was \$3,916. Total variable cost, which is the sum of pre-variable cost and harvesting and marketing cost, was \$5,190 per acre.

Fixed Costs

Total fixed cost included tractor and other equipment, overhead and management, irrigation, and recaptured costs (Table 4). The use of tractor and other equipment was \$695 per acre. Recaptured cost from year one to the full production was \$654 per acre. Total fixed cost was \$1,756 per acre. Total budgeted cost per acre—the sum of variable and fixed costs—was \$6,946 (Table 4).

Returns over Total Cost

The return over total cost was calculated based on a risk-rated scenario. A grower who did everything perfectly could obtain the best return of \$4,810 per acre five percent of the time, whereas he/she might also obtain -\$866 per acre seven percent of the

time if recommended agricultural practices were not strictly followed during a natural disaster or extremely unfavorable weather conditions. In this study, the base budgeted net revenue was \$2,054, with an 86 percent chance of obtaining profit (Table 5).

Conclusion

Generally, blueberries are the most rapidly growing crop in the Georgia fruit and nut industry. For the past decade the state blueberry industry has grown in acreage, production, yields, and farm gate value. Blueberry is the second most important fruit and nut crop in Georgia, after pecans, and contributed 28 percent of Georgia 2009 farm gate value for fruit and nut crops. However, rabbiteye, which is the favorite blueberry of Georgia growers, is losing share in favor of the southern high bush blueberry cultivar for several reasons. The southern highbush is sold fresh only, and fresh berries obtain a premium price compared to frozen. As a result, profit margin is maximized with southern high bush blueberries, making rabbiteye blueberries less attractive to growers, some of whom are gradually switching to southern high bush production. A shortage of migrant labor has been another discouraging factor that has negatively impacted the production of rabbiteye blueberries in Georgia.

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Table 2. Pre-Variable Cost of Producing Rabbit-eye Blueberry in Georgia.

Item	Application	Unit	Quantity	Price	\$Amt/ac
Fertilizers					
Fertilizers	yr	lbs.	56.00	1.87	104.72
Weed control (4' band)					0.00
Pre-emergence	2/yr	Acre	2.00	50.00	100.00
Post-emergence	3/yr	Acre	3.00	25.00	75.00
Tractor & sprayer	5/yr	Hrs.	5.00	12.00	60.00
Labor	5/yr	Hrs.	5.00	9.00	45.00
Insects & disease control					
					0.00
Fungicide	5/yr	Acre	5.00	52.71	263.55
Insecticide	4/yr	Acre	4.00	12.00	48.00
Tractor & sprayer	9/yr	Hrs.	9.00	12.00	108.00
Labor	9/yr	Hrs.	9.00	9.00	81.00
Pollination					
Bee hives	1/yr	Acre	2.00	45.00	90.00
Gibberelic acid (growth regulator)	2/yr	Ozs	48.00	1.50	72.00
Tractor & sprayer	2/yr	Hrs.	2.00	12.00	24.00
Pruning					
Pruning (manual)	1/yr	Acre	1.00	75.00	75.00
Drip irrigation	yr	Acre	1.00	44.63	44.63
Interest on operation costs		\$	1190.90	0.07	83.36
Total pre-variable costs					1,274.26

Table 3. Harvesting and Marketing Costs of Producing Rabbit-eye Blueberries in Georgia.

Operations	Unit	Quantity	Price	Total
Custom harvesting	lbs	6,000	0.18	1,080.00
Custom packing - fresh	lbs	2,850	0.62	1,767.00
Custom packing - frozen	lbs	2,850	0.20	85.50
Cooling, handling, & brokerage (15 percent)	lbs	855	1.15	983.25
Total harvesting & marketing costs				3,915.75
Total variable costs				5,190.01

Table 4. Fixed Cost of Producing Rabbiteye Blueberries in Georgia, 2011.

Description	Unit	Quantity	Price	Amount
Tractor & equipment	Acre	1.00	695.18	695.18
Overhead & management	\$	1274.26	0.15	191.14
Drip irrigation	Acre	1.00	215.98	215.98
Recaptured costs	Acre	1.00	653.53	653.53
Total fixed costs				1755.83
Total budgeted cost per acre				6945.84

Table 5. Risk-Rated Returns Over Total Cost of Producing Rabbiteye Blueberries in Georgia.

	Best	Optimistic	Expected	Pessimistic	Worst
Returns (\$)	4,810	3,995	2,854	1,287	211
Chances (%)	5	16	48	75	84
Chances (%)	95	84	52	25	16
Chance for profit =	86%				
Base budgeted net revenue =	\$2,054				

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