

# Enterprise Cost Analysis for Middle Georgia Peach Production



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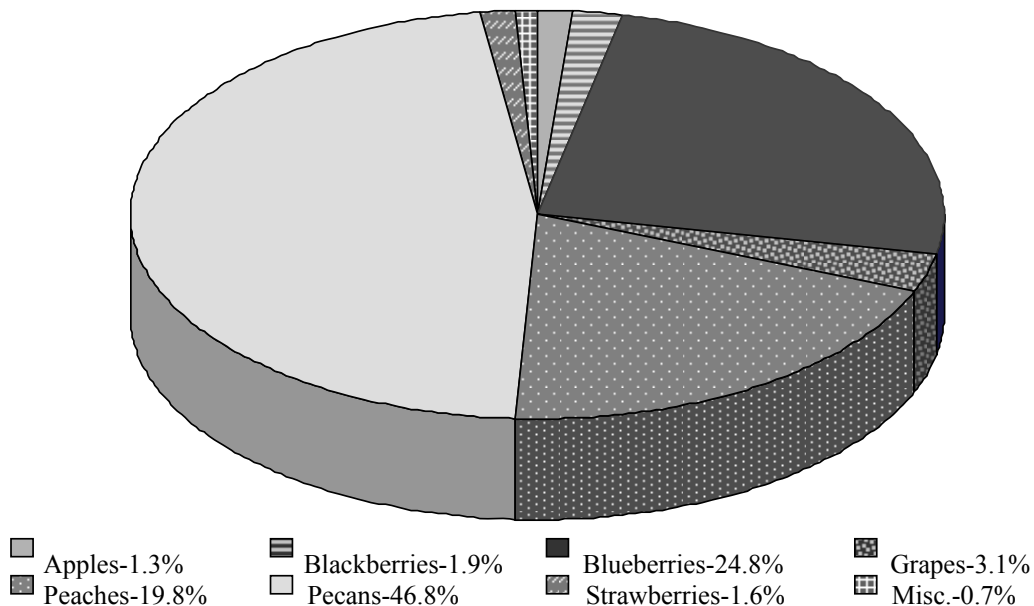
# Enterprise Cost Analysis for Middle Georgia Peach Production

## Introduction

Georgia is third in the United States in peach production. For many years peach was the second most important fruit or nut crop in farm gate value and acreage in the state, after pecans. Recently peaches have been challenged by blueberries (Fig. 1) for that position. Even so, the peach farm gate value has remained fairly level for the last two decades (Fig. 2).

In recent comparisons, from 1999 to 2003, the peach farm gate ranged from \$32 to \$49.9 million while blueberries ranged from \$12 to \$27 million during the same time period. However, from 2004 to 2006, peach farm gate value dropped below blueberry to an average of \$40.4 million due to market influences and to weather impacts on yield, while the blueberry average increased to \$61 million due to increased planting and to increased value per unit. The 2007 season saw losses in both crops: 50% in peach and 87% in blueberry due to a devastating freeze on Easter morning (Boatright and McKissick, 2006). All commodities are subject to the weather and to market events. In both cases, the 2007 season held prices on available fruit quite high due to the low supply not only in Georgia, but across the Southeast. Pecans continue to lead in the fruit and nut category as they have generated an average of \$142 million annually since 2004. Out of the \$306 million farm gate value generated by the fruit and nut industry in 2006, peach contributed nearly 20% compared to pecans at 47% and to blueberries at 25%. Other important crops were grapes, blackberries, apples and strawberries (Boatright and McKissick, 2006; Fonsah et al., 2007a; 2007b) (Fig. 1). It is probably more relevant to view the trends in production and market value, not over a short seven or eight year term, but more over a term

**Figure 1: Georgia Fruits and Nuts Percentage Contribution to the 2006 Farm Gate Value, (\$306 million).**



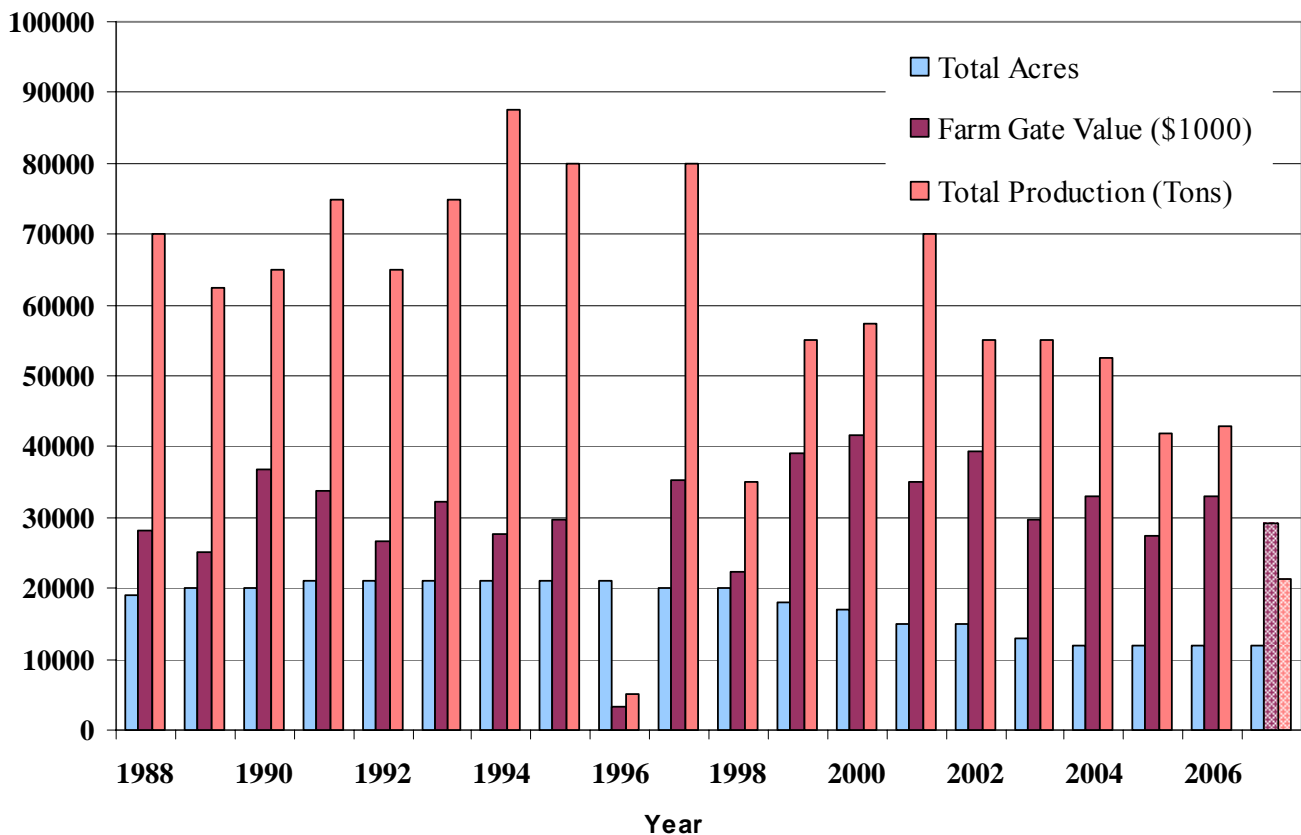
Boatright, S. R. and J.C. McKissick. 2006. 2006 Georgia Farm Gate Value Report. University of Georgia Area Rpt. AR-07-01.

of decades (Fig. 2). It has been nearly two decades since the last peach production cost analysis was produced, therefore that will be the focus of this discussion. The last two decades have been characterized by large fluctuations in yield from one year to the next.

## Production and Bearing Acreage

Although peach production fluctuates vastly from year to year (from 87,465 tons in 1994 to 5,040 tons in 1996), the farm gate value for the crop remains relatively level (Fig. 2), averaging \$31,944,000 over the past two decades and ranging from \$22,440,000 to \$41,703,000. The median farm gate value for this period is \$33,017,000. The farm gate has remained stable during the last decade, despite the reduction in bearing acreage from 20,000 acres in 1998 down to 12,000 acres in 2007 (Fig. 2) and the challenges presented by weather and markets during this period (Table 1). This suggests the producers that remained in business found ways to improve total production. In fact during 1988-1997, production averaged 6487 lbs/acre and earned \$1507/acre and during 1998-2007, production averaged 6657 lbs/acre, earning \$2259/acre. Further, this data suggests the production practices, and likely, the costs of those practices have changed over the period. The enterprise analysis was undertaken to support the changes in practices and trends of peach production in Georgia.

**Figure 2: Total Bearing Acres, Farm Gate Value and Peach Production, 1988 – 2007.**



Sources: Noncitrus Fruits and Nuts, 1989-2007 Summaries, FrNt 1-3 (1989-2007)

<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1113>

Georgia Farm Report Vol. 06-Number 03, Vol. 05-Number 11, <http://www.nass.usda.gov/ga/>

The patterned bars in 2007 are early estimates for that season, based on the Market News Reports from the USDA-AMS at <http://www.ams.usda.gov/fv/mncs/weekship.htm> and grower interviews.

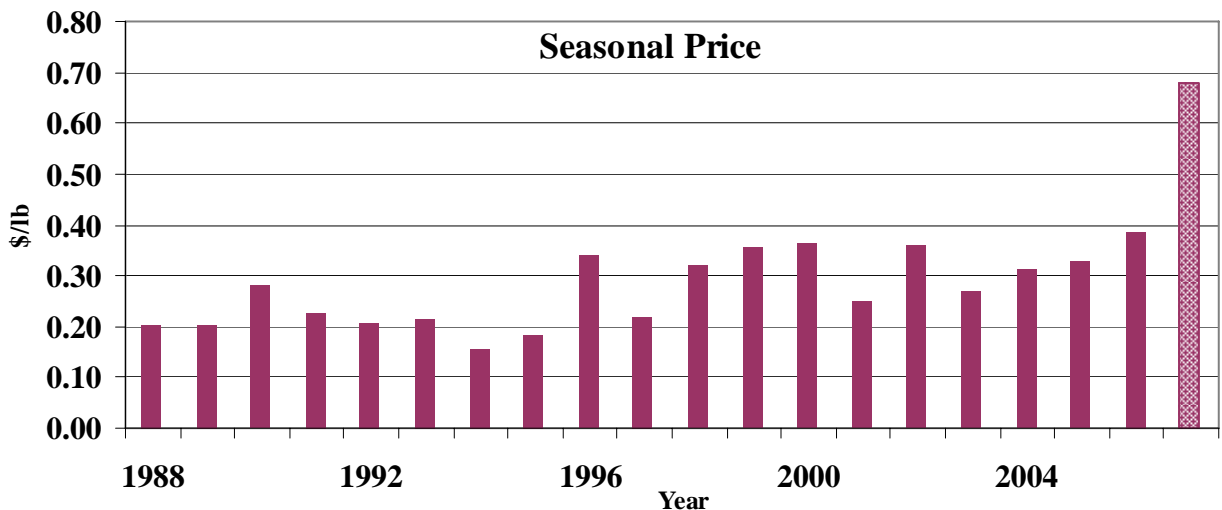
**Table 1. Events Affecting Peach Yield and Farm Gate Values from 1988-2007**

Winter/Spring 88/89	Chill hour accumulation was 92% of requirement reducing fruit set and size, frost event thinned crop approximately 10%
Summer 94	Hurricane Alberto produced flooding rains that reduced tree health but improved yield and reduced peach prices 18%
Spring 95	A thinning frost occurred March 9-11 that did not reduce the crop
Spring 96	A frost occurred March 9-13 reduced the crop 94%; peach prices increased nearly 67%
Spring 98	March 11-13 freeze reduced Georgia's crop by 50%
Winter 98/99	Chill hour accumulation was 78% of requirement
Summer 01	Ideal winter and spring conditions followed by summer rains resulted in 113% crop that dampened peach prices by 26%
Winter/Spring 01/02	Chill hour accumulation was 88% of requirement, reducing fruit set and two Mar/Apr frost events that thinned crop approximately 15%
Summer 03	Ideal winter and spring conditions followed by summer rains resulted in 115% crop that dampened peach prices by 27%
Summer/Fall 04	Remnants of Hurricanes Francis and Ivan caused tree loss/damage with long term future impact on yield; consumer trends reduced prices 13%
Spring 05	Spring rain and high wind resulted in fruit disease that reduced crop 30%
Summer 06	Drought reduced fruit size and numbers, resulting in a 25% crop loss
Spring/Summer 07	Freeze then drought reduced crop by 50%; peach prices rose 52%

**Seasonal Average Price**

During the last two decades average seasonal prices (across all regions of the state and early through late seasons) for fresh peaches ranged from a low in 1994 of 15.7 cents/lb to a high of 38.5 cents/lb in 2006 (Fig. 3). Early indications are that the 2007 prices will be even higher at 67.8 cents/lb. Prices rose until 2000 when they dropped again.

**Figure 3: Seasonal Average Price of Peach, 1988-2007.**



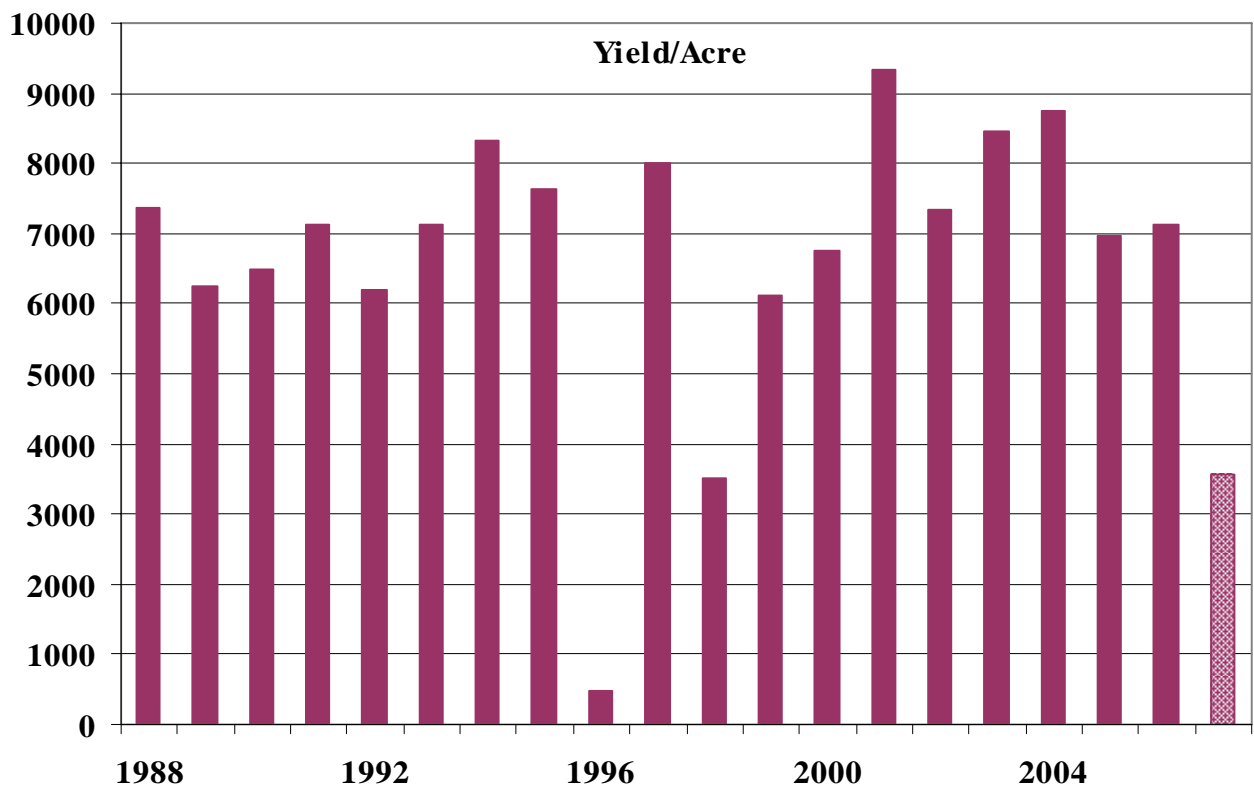
Sources: Noncitrus Fruits and Nuts, 1989-2007 Summaries, FrNt 1-3 (1989-2007)  
<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1113>  
 Georgia Farm Report Vol. 06-Number 03, Vol. 05-Number 11, <http://www.nass.usda.gov/ga/>

Excluding the price estimate for 2007, the average seasonal price, 32.7 cents/lb, for the past decade was 47% higher than the previous decade, 22.3 cents/lb. If the estimate for 2007 is correct, that average will increase to 36.2 cents/lb.

## **Yield**

Pack out yields per acre of 8,000 lbs or more occur only occasionally in Georgia (Fig. 4). This translates to approximately 84 lbs of fruit per tree (1.75 bu/tree) across the season. Generally South Georgia and early season Middle Georgia varieties produce 1.2 to 1.3 bushels/tree, while middle and late season varieties produce 3 and 6 bushels/tree, respectively. The higher yields generally occur in years of greater than average rainfall: 1994, 2001 and 2003. However, the very high yield in 1997 likely occurred because of the very low crop load in 1996 due to the nearly complete crop loss that year to frost. Freeze or frost events are the cause for major yield losses (years 1996, 1998, 2007). If the yields for frost years are removed from the average for the two decades, it increases 11% from 6647 to 7376 lb/acre. The average yield for 1988-1997 was 6502 lb/acre with a high of 8330 lb/acre in the 1994 flood year and a low of 480 lb/acre in the 1996 freeze year. But the next decade has seen an average of 7149 lb/acre, excluding the estimated data for 2007. If the 2007 data is included, the average becomes 6792 lb/acre, with a high of 9330 lb/acre in 2001 and a low of 3500 lb/acre in the 1998 frost year. The increased yield over the 20 year period is likely due to irrigation of more acreage and the addition of new varieties that have greater pack out due to fewer post harvest problems and greater size. These

**Figure 4: Georgia Peach, Yield Per Acre, 1988-2007.**



Noncitrus Fruits and Nuts, 1989-2007 Summaries, FrNt 1-3 (1989-2007)

<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1113>

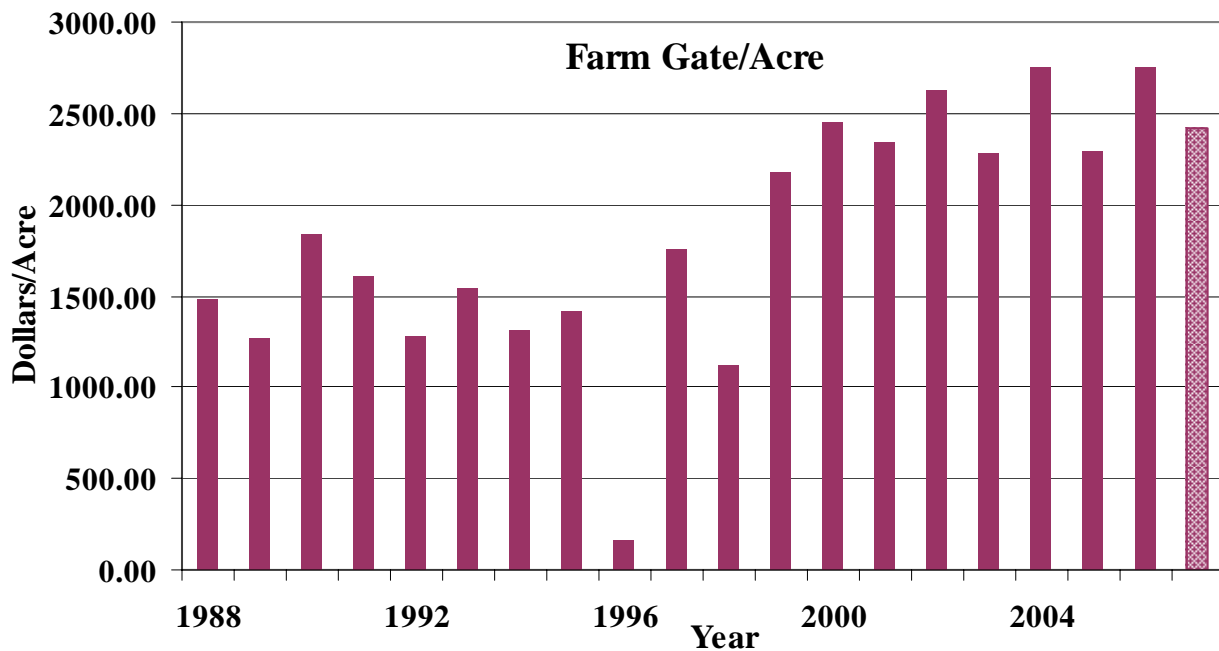
Georgia Farm Report Vol. 06-Number 03, Vol. 05-Number 11, <http://www.nass.usda.gov/ga/>

season long values for the entire state do not reflect the range of average yields from early season to late season of 6000 pounds to 25,000 (60 to 250 pounds of fruit per tree), respectively (personal communication, Taylor).

## **Farm Gate Value**

The record high farm gate value for the last two decades was nearly \$42 million in 2000 (Fig. 2). Since then, with the reduction of acreage, weather and market pressures, the value has trended downward. The lowest farm gate values were recorded in 1996, 1998 and 2007 when the crop was significantly injured by frost. During the new millennium the farm gate has remained above \$27 million. Even considering the losses in frost years, the average farm gate value is over \$30 million. Despite the ups and downs in farm gate values, the industry remains strong, viable and lucrative, with potential for further growth. The industry has experienced five significant frosts since 1955, giving the industry viable crops more than 90% of the time. Since 1999, the farm gate value per acre has averaged \$2453.17 compared to an average of \$1460.09 the previous 11 years, excluding 1996, when the industry experienced nearly a total loss (Table 5).

**Figure 5: Georgia Peach, Farm Gate/Acre, 1988-2007.**

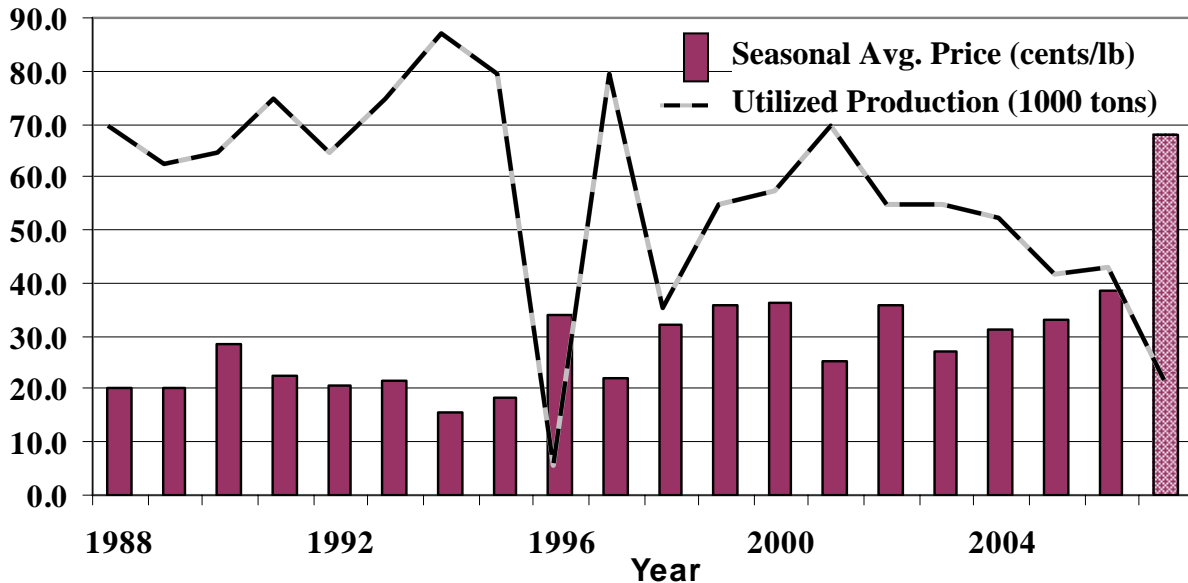


## **Utilized Production and Seasonal Average Price**

Utilized production was at its best in 1994, 1995 and 1997. Again, 1996, 1998 and 2007 were the lowest during the last 20 years. The drastic fall in production, yield and farm gate value in those years was due to frost events rather than market shifts. There was a slight increase in 2001, but not high enough to compete with the production of the mid 90s. A decline since 2001 is the result of market and weather pressures. Despite this, the acreage has remained stable after leveling off in 2002 (Fig. 2). Seasonal prices have been consistent with the demand and supply or economic theory, i.e. increase in supply and fall in price. The lowest price in 1994 was as a

result of the highest utilized production (and yield/acre) in the decade, while industry highs in pricing occurred in years of severe production reductions in 1996 and 2007 (Figure 6).

**Figure 6: Georgia Peach: Utilized Production and Seasonal Average Price, 1988-2007.**



Noncitrus Fruits and Nuts, 1989-2007 Summaries, FrNt 1-3 (1989-2007)  
<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1113>  
 Georgia Farm Report Vol. 06-Number 03, Vol. 05-Number 11, <http://www.nass.usda.gov/ga/>

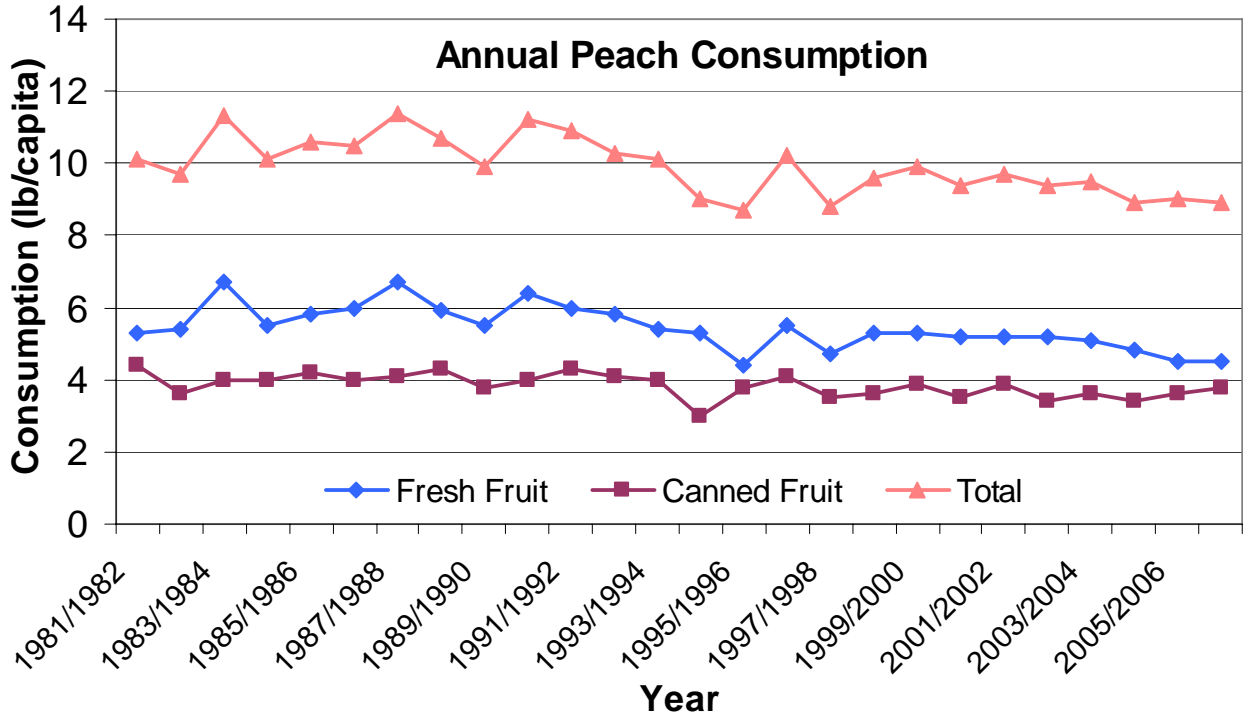
### **Per Capita Consumption**

Figure 7 shows although the per capita consumption of fresh peaches has been above 5 lbs since 2000, this figure is higher than the per capita consumption of processed and fresh-weight, respectively (Figure 7). This simply means people eat more fresh peaches than processed. The good news is the difference in per capita consumption is not significant over the period. The closer and higher consumption will increase demand which is a good sign for the industry.

### **National Price Trend**

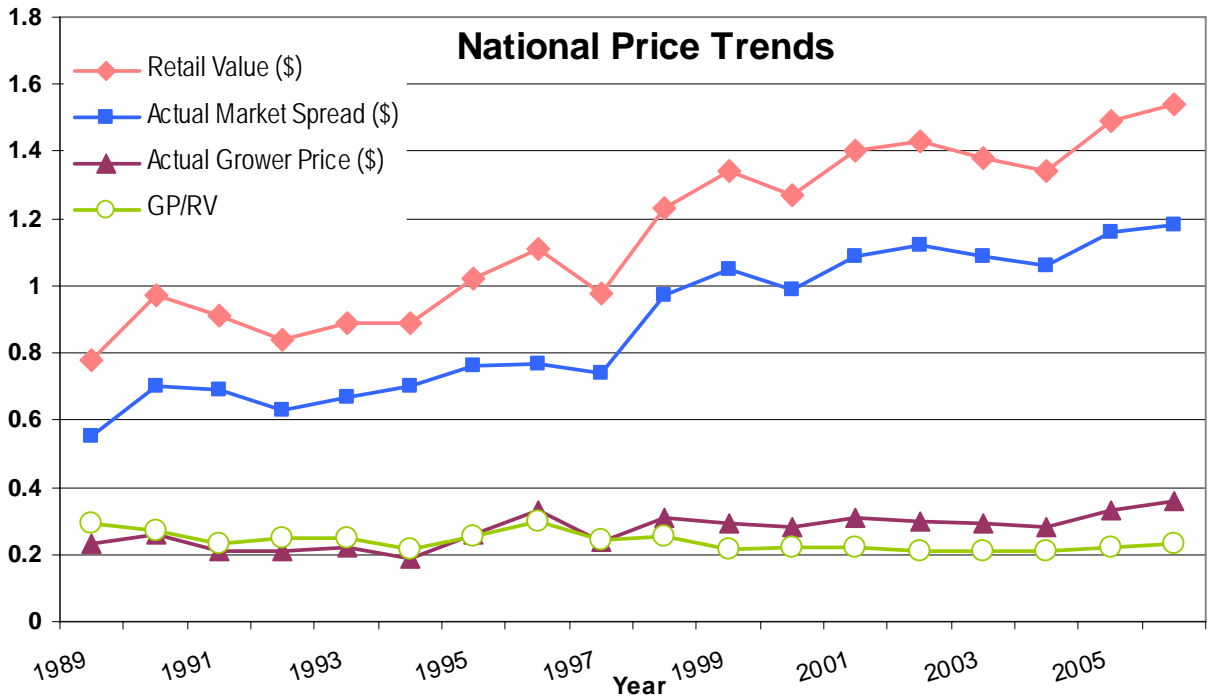
Figure 8 shows growers still receive a much lower share of the retail price for peaches. Nationally, the grower price averaged only 23.9 cents the first half of the 1989-2005 period and only 6.7 cents more the second half, with a range over the period of 19 cents in 1994 to 36 cents in 2006. Over this period, Georgia growers received 17% more per pound than the national average. Actual market spread prices increased from \$0.55 per pound in 1989 to \$1.18 per pound in 2006. The retail price nearly doubled over the same period, increasing from \$0.78 to \$1.54 per pound (Figure 8). Over this period the national ratio of grower price to retail value decreased 21% from 0.29 in 1989 to 0.23 in 2006, whereas the Georgia ratio decreased only 3.8% from 0.26 to 0.25. In general, Georgia peaches are fairing better in the marketplace than the national average. Despite this, there remains a price disparity relative to the actual market spread and the retail value. Where growers adopt direct marketing schemes, this disparity can be reduced. Another strategy is for growers to adopt any added value technique that would eliminate middlemen.

**Figure 7: Peach Per Capita Consumption, 1981/82 – 2005/06.**



Source: GASS, 2006. <http://www.nass.usda.gov/ga/>

**Figure 8: Fresh Peach: U.S. Monthly retail price, marketing spread and grower price, 1989-2006.**



Source: Pollack, S. and A. Perez (2007) Fruit and Tree Nuts Situation and Outlook Yearbook/FTS-2007/October, ERS/USDA.

## **World Production**

Table 2 shows the U.S. is ranked 3<sup>rd</sup> in world production of peach. China and Italy are ranked 1<sup>st</sup> and 2<sup>nd</sup> respectively. The gap between number 4, Spain, and the U.S. is very slim. The U.S. produced 8.7% of the world peach production in 2005 while number 1, China, produced 38.5% of the 17.3 million short tons in 2005. Since 2001, the U.S. has been consistent in its production (Table 2).

**Table 2. Peach Production in Leading Countries and the World, 2001-2006 (1,000 short tons).**

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
China	5,055	5,798	6,812	6,426	6,647
Italy	1,883	1,749	1,296	1,874	1,919
United States	1,479	1,568	1,533	1,576	1,509
Spain	1,193	1,406	1,401	1,010	1,246
Greece	1,040	815	275	872	751
Others	4,802	5,052	5,110	5,107	5,205
World	15,453	16,388	16,426	16,865	17,277

Source: Pollack, S. and A. Perez (2007) Fruit and Tree Nuts Situation and Outlook Yearbook/FTS-2007/October, ERS/USDA, p.39.

## **Import Trade**

Despite the level of domestic production, the U.S. still imports peaches from Chile, Mexico, Spain and Canada. Almost 99% of peaches imported from other countries come from Chile. For instance, the U.S. imported 717.7 million lbs of peaches between 2002 and 2006 from Chile, while the second greatest volume of U.S. peach imports came from Mexico over the same period, at 4.9 million lbs (Table 3.)

**Table 3. Volume of U.S. Peach Import from Top Countries, 1995-2006 (1,000 lbs).**

	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Chile	99,850	96,262	89,842	76,220	105,712	95,839	119,508	125,954	142,404	163,321	155,360	130,684
Mexico	365	281	137	624	241	517	483	176	526	655	2,045	1,455
Spain	0	0	76	0	0	0	0	0	0	132	150	0
Canada	513	1,005	699	592	980	1,300	841	450	322	348	48	349
Others	73	40	78	104	67	139	291	282	202	116	11	129
World	100,801	97,587	90,833	77,540	106,999	97,795	121,123	126,862	143,454	164,573	157,644	132,617

Source: Pollack, S. and A. Perez (2007) Fruit and Tree Nuts Situation and Outlook Yearbook/FTS-2007/October, ERS/USDA, pg. 180.

## **Export Trade**

The U.S. exports most of its peaches to Canada, Taiwan, Mexico, Hong Kong (China) and New Zealand. Canada remains one of our largest markets for peaches. Over 120 million lbs equivalent to almost 52% of all peaches exported from the U.S. in 2005 were sold to Canada, whereas 26.8%, equivalent to 62.2 million lbs, were sold to Taiwan (Table 4).

**Table 4. Volume of United States Fresh Peach Export to Top Countries, 1995-2006 (1,000lbs).**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Canada	89,542	92,852	114,540	89,016	109,077	110,546	122,300	134,352	131,588	125,325	120,441	100,252
Taiwan	21,682	35,625	58,236	39,815	69,951	89,886	110,813	85,846	70,150	57,852	62,190	52,040
Mexico	25,736	19,403	35,618	33,708	24,003	34,165	38,808	34,973	38,401	32,628	33,090	22,916
H.Kong (China)	2,482	6,071	8,393	4,894	7,423	3,579	5,492	4,834	3,283	4,778	3,948	3,029
New Zealand	416	2,190	1,780	737	2,579	1,850	1,244	2,879	5,743	2,151	3,161	2,830
Others	7,260	10,957	12,237	8,286	8,417	14,835	13,912	9,093	22,090	10,757	9,503	9,465
World	147,117	167,098	230,804	176,456	221,451	254,861	292,568	271,977	271,256	233,491	232,333	190,533

Source: Pollack, S. and A. Perez (2007) Fruit and Tree Nuts Situation and Outlook Yearbook/FTS-2007/October, ERS/USDA, pg. 184.

### **Assumptions**

Although there are several ways of preparing a budget, this study adopted the risk rated method. The risk rated return assumes five different yields and prices per pound at the top of the budget, namely: “Best”, “Optimum”, “Median”, “Pessimistic” and “Worst”. The “Best” and “Worst” yield or price levels were expected to occur once in at least ten years. The “Median” yield and price level were expected 50% of the time. The “Optimistic” level would be surpassed about one year in six, while the “Pessimistic” level would occur one year in six (Fonsah and Hudgins, 2007; Fonsah et al, 2007a; 2007b). The season average yield and price for peaches shipped from Middle Georgia in recent years was 13,000 lbs at \$0.43/lb, serving as the Median basis for this analysis.

It was assumed that economic yield begins in year 4 while full production would actually be reached at about years 8-9. Tree spacing was assumed to be 18' by 20'. Variable interest rates of 7% of total operating/variable costs were used for each year. The cost for hired labor was estimated to be \$8.50 per hour. Harvesting yields were calculated based on seasonal and cultivar averages. Brokerage fees were 7.5%. Overhead and management fees were 15% of total operating/variable cost. Compounded recaptured costs were based on 7% fixed interest rate and the expected productive-span of the orchard under Georgia conditions was 12 years.

### **First Year Estimated Establishment and Maintenance Cost**

Total operating cost in the first year of producing peaches in Middle Georgia was \$891.20 per acre. Preplant field preparation (the sum of sub-soiling, lime and DAP application, preplant harrowing, orchard layoff and fumigation) was \$299. Planting costs included the cost of 120 trees per acre (\$360), tree preparation and planting (\$24.40) and post plant harrowing (\$24.00). Orchard floor management costs (the sum of mowing, pre and post emergence weed control plus application) were \$68.50 per acre in total. Total fixed cost which included overhead and management, and land leasing was \$233.68 per acre. Total establishment cost, which is the sum of total operating cost and total fixed cost, was \$1,124.88 per acre (Table 5).

**Table 5. First Year Estimated Establishment and Maintenance Cost Per Acre of Producing Peach in Middle Georgia Peach, 2007.**

Items	Appl.	Unit	Quant.	Price	Amount	Your Cost
<b>Land prep</b>						
Subsoiling		Acre	2	15	30.00	
Lime (Dolomite)		Ton	1.50	28.00	42.00	
DAP		Acre	100.00	0.17	17.00	
Preplant harrowing		Acre	2.00	12.00	24.00	
Orchard layoff		Acre	2.00	3.00	6.00	
Pre-plant fumigation		Acre	1.00	180.00	180.00	
Trees		Acre	120.00	3.00	360.00	
Tree prep		Acre	1.00	14.40	14.40	
Planting (18' x20')		Acre	1.00	10.00	10.00	
Postplant harrowing		Acre	2.00	12.00	24.00	
Post plant fertilizer (19-19-19)		lbs	90.00	0.18	16.20	
Nitrogen	2/yr	lbs	120.00	0.22	26.40	
Fertilizer Application		Acre	3.00	4.80	14.40	
<b>Weed Control</b>						
Mowing	5/yr	Acre	5.00	7.50	37.50	
Pre-emergence	2/yr	Acre	2.00	7.00	14.00	
Post -emergence	1/yr	Acre	1.00	5.00	5.00	
Application	3/yr	Acre	3.00	4.00	12.00	
Interest on Operating Costs		\$	832.90	0.07	58.30	
<b>Total Operating Costs</b>					<b>891.20</b>	
<b>Fixed Costs</b>						
Overhead & Management		\$	891.20	0.15	133.68	
Land Leasing		Acre	1.00	100.00	100.00	
<b>Total Fixed Costs</b>					<b>233.68</b>	
<b>Total Establishment Costs</b>					<b>1124.88</b>	

**Second Year Estimated Establishment and Maintenance Cost**

Total operating cost in year 2 was \$260.55 per acre. This amount is 3.4 times less than year 1. Dormant pruning contributed 23% of total operating cost while orchard floor management contributed 27%. At this point insect and disease control is a small portion of the overall operational costs at 10%. Total fixed cost was \$139.08 per acre which included overhead and management and land leasing. Total establishment cost in the second year was \$399.63 per acre (Table 6).

**Table 6. Second Year Estimated Establishment and Maintenance Cost Per Acre of Producing Peach in Middle Georgia Peach, 2007.**

Items	Appli	Unit	Quant	Price	Amount	Your Cost
<b>Fertilizers</b>						
Spring Fertilizer (19-19-19)	1/yr	Trees	120.00	0.18	21.60	
Nitrogen(N)	1/yr	Trees	120.00	0.22	26.40	
Application	2/yr	Appl'n	2.00	4.80	9.60	
<b>Pruning</b>						
Dormant Pruning	1/yr	Trees	120.00	0.50	60.00	
Fruit & sprout removal	1/yr	Acre	120.00	0.10	12.00	
Tree Replacement	1/yr	Trees	6.00	3.00	18.00	
Replant	1/yr	Trees	6.00	2.50	15.00	
<b>Weed Control</b>					0.00	
Mowing	5/yr	Acre	5.00	7.50	37.50	
Pre-emergence	2/yr	Acre	2.00	7.00	14.00	
Post-emergence	1/yr	Acre	1.00	5.00	5.00	
Application	3/yr	Acre	3.00	4.80	14.40	
<b>Insect &amp; Disease Control</b>						
Trunk spray, material & labor	1/yr	Acre	1.00	10.00	10.00	
Interest on Operating Costs		\$	243.50	0.07	17.05	
<b>Total Operating Costs</b>					<b>260.55</b>	
<b>Fixed Costs</b>						
Overhead & Management		\$	260.55	0.15	39.08	
Land leasing		\$	1.00	100.00	100.00	
<b>Total Fixed Costs</b>					<b>139.08</b>	
<b>Total Establishment Costs</b>					<b>399.63</b>	

### **Third Year Estimated Establishment and Maintenance Cost**

In the third year, tree culture, which includes dormant and summer pruning and thinning, contributed almost 30% of total operating or variable cost as \$216 was spent for these operations. Another major expenditure was on insect and disease control, which amounted to \$262, equivalent to almost 36% of total variable costs. However, this amount also included machinery, material and labor (Table 7).

Since a few fruits were picked in year three, total harvesting and marketing costs, which included harvesting, custom packing (fludioxinil, wax, and cooling), brokerage fee and packing operating, cost was \$344.64. Total fixed cost was \$1,236.48 and included packing equipment, overhead and management, drip irrigation and land leasing. The total gross establishment cost for the third year was \$2,298.98, minus returns from receipt of \$825.60 in fruit sales, giving a total net establishment cost of \$1,473.38 (Table 7).

**Table 7. Third Year Estimated Management Cost per Acre of Producing Peaches in Middle Georgia, 2007.**

Items	Appl.	Unit	Quantity	Price	Amount	Your Cost
<b>Fertilizers</b>						
Nitrogen (N) + Potash	2/yr	Acre	2.00	24.00	48.00	
Application	2/yr	Acre	2.00	2.50	5.00	
<b>Pruning</b>						
Dormant Pruning	1/yr	Trees	120.00	0.75	90.00	
Summer pruning	1/yr	Trees	120.00	0.30	36.00	
Thinning	1/yr	Trees	120.00	0.75	90.00	
<b>Weed Control</b>						
Mower	7/yr	Acre	7.00	7.50	52.50	
Pre-emergence	2/yr	Acre	2.00	19.00	38.00	
Post-emergence	1/yr	Acre	1.00	5.00	5.00	
Application	3/yr	Hrs	3.00	4.80	14.40	
<b>Insect and Disease Control</b>					0.00	
machinery, material and Labor	Season	Acre	1.00	262.00	262.00	
Irrigation		Acre	1.00	30.00	30.00	
Interest on Operation Costs		\$	670.90	0.07	46.96	
<b>Total Operating Costs</b>					<b>717.86</b>	
<b>Harvesting &amp; Marketing Costs</b>						
Harvesting /bushel		lbs	2400.00	0.03	72.00	
Custom Packing (Fludioxinil/wax/cooling)		lbs	1920.00	0.09	172.80	
Brokerage		lbs	1920.00	0.032	61.44	
Packing operation costs		lbs	1920.00	0.02	38.40	
<b>Total Harvesting &amp; Marketing Costs</b>					<b>344.64</b>	
<b>Total Variable Cost</b>					<b>1062.50</b>	
<b>Fixed Costs</b>						
Packing Equipment		lbs	1920.00	0.02	28.80	
Overhead & Management		\$	717.86	0.15	107.68	
Drip irrigation		Acre	1.00	1000.00	1000.00	
Land leasing		\$	1.00	100.00	100.00	
<b>Total Fixed Costs</b>					<b>1236.48</b>	
<b>Total Gross Establishment Costs</b>					<b>2298.98</b>	
Returns from receipt		\$	1920	0.43	825.60	
<b>Total Establishment Costs</b>					<b>1473.38</b>	

## Fourth Year – Economic Production Cost

The fourth year (Table 8) variable and/or operating cost was \$1,062.40 per acre. Out of this cost 42.4% or \$450 was for tree culture (dormant and summer pruning, and thinning). Furthermore, insect and disease control contributed \$295, equivalent to 27.8 % of total operating cost, while orchard floor management was \$109.90, equivalent to 10.34% of total operating cost. Total harvesting and marketing cost was \$1794.00. Summing operating, harvesting and marketing costs resulted in a total variable cost of \$2856.40 per acre. Total fixed cost was \$946.35, while total cost (total variable cost plus total fixed cost) was estimated at \$3,802.75 per acre.

**Table 8. Risk rated Budget for Producing Peaches in Middle Georgia:  
Full Production (4<sup>th</sup> Year), 2007.**

	<b>Best</b>	<b>Opti- mistic</b>	<b>Median</b>	<b>Pessi mistic</b>	<b>Worst</b>	
*Yield (lbs)	24000	17000	<b>13000</b>	9000	4000	
*Price per lb.	0.63	0.53	<b>0.43</b>	0.33	0.23	
<b>Item</b>	<b>Appli- cation</b>	<b>Unit</b>	<b>Quant.</b>	<b>Price</b>	<b>\$Amt/A</b>	<b>Your Cost</b>
<b>Variable Costs</b>						
<b>Fertilizers</b>						
Nitrogen (N) + Potash	2/yr	Acre	2.00	24.00	48.00	
Application	2/yr	Acre	2.00	2.50	5.00	
<b>Pruning</b>						
Dormant Pruning	1/yr	Trees	120.00	1.50	180.00	
Summer pruning	1/yr	Trees	120.00	0.25	30.00	
Thinning	1/yr	Trees	120.00	2.00	240.00	
Orchard removal & maintenance	1/yr	Acre	1.00	50.00	50.00	
<b>Weed Control</b>					0.00	
Mowing	7/yr	Acre	7.00	7.50	52.50	
Pre-emergence	2/yr	Acre	2.00	19.00	38.00	
Post-emergence	1/yr	Acre	1.00	5.00	5.00	
Application	3/yr	Acre	3.00	4.80	14.40	
<b>Insect and Disease Control</b>					0.00	
Material and labor	Season	Acre	1.00	295.00	295.00	
Machinery						
Irrigation - Drip system		Acre	1.00	35.00	35.00	
Interest on Operating Costs		\$	992.90	0.07	69.50	
<b>Total Operating Costs</b>					<b>1062.40</b>	
<b>Harvesting &amp; Marketing Costs</b>						
Harvesting		lb	13000.00	0.030	390.00	
Custom Packing		lb	10400.00	0.085	884.00	

**Table 8 Continued**

Brokerage		Acre	10400.00	0.03	312.00	
Packing operating costs		lb	10400.00	0.02	208.00	
<b>Total Harvesting &amp; Marketing Costs</b>					<b>1794.00</b>	
<b>Total Variable Costs</b>					<b>2856.40</b>	
<b>Fixed Costs</b>						
Packing Equipment cost		lb	10400.00	0.015	156.00	
Overhead & Management		\$	1062.40	0.150	159.36	
Irrigation - Drip system		Acre	1.00	93.90	93.90	
Land Leasing		\$	1.00	100.00	100.00	
Recaptured Costs (\$)		Acre	1.00	437.09	437.09	
<b>Total Fixed Costs (\$)</b>					<b>946.35</b>	
<b>Total budgeted cost per acre (\$)</b>					<b>3,802.75</b>	

### Compounded and Recaptured Establishment Costs

The total establishment costs for years 1, 2 and 3 were \$1,812.26, \$455.57, and \$1,203.62, respectively. These costs were compounded using the University of Georgia Engineering calculations. The compounded establishment cost, based on 12 years payable time and 7% interest, rate was \$437.09 per acre (Table 9), (Fonsah and Hudgins, 2007; Fonsah et al., 2007a, 2007b).

**Table 9. Compounded and Recaptured Establishment Cost of growing Peaches in Middle Georgia, 2007.**

	<b>Compounded Rate</b>	<b>Estimated Costs</b>	<b>Total*</b>
<b>3 Years to Production</b>	1.23	1473.38	1812.26
<b>2 Years to Production</b>	1.14	399.63	455.57
<b>1 Years to Production</b>	1.07	1124.88	1203.62
<b>Compounded Establishment Cost</b>			<b>3471.44</b>
<b>RECAPTURED ESTABLISHMENT COST</b>			
Years	12		
Interest rate	0.07		
<b>Annual Cost</b>			<b>437.09</b>

\*Totals may not add up due to rounding error.

### Profit and Loss Statement

A profit and loss statement before debt services for Middle Georgia peach production shows total sales of \$5,590/acre. Gross profit after deducting total variable cost was \$2,712.80. Net operating profit after deducting total fixed cost was \$946.35 per acre. This statement also depicts 65.12% gross profit margin and 31.60% net operating profit margin, respectively (Table 10).

**Table 10. Profit and Loss Statement for Middle Georgia Peach Production Before Debt Service, 2007.**

Sales (\$)	5,590.00
Less: Variable Costs (\$)	2,877.20
Gross Profit (\$)	2,712.80
Less: Fixed (Overhead) Costs (\$)	946.35
<b>Net Operating Profit (Loss) (\$)</b>	<b>1,766.45</b>
<b>Profitability Indicators</b>	
Gross Profit Margin (%)	65.12
Net Operating Profit Margin (%)	31.60

### **Break-Even Analysis**

Table 11 shows that the break-even yield is 8,844 lbs while the break-even pre-harvest operating cost is \$0.08 per lb. On the other hand, the break-even harvesting and marketing cost per lb is \$0.14 and break-even variable cost is \$0.22 per lb. Finally the break-even fixed cost is \$0.07 while the break-even cost per lb is \$0.29 (Table 11).

**Table 11. Break-Even Analysis for Middle Georgia Peach Production, 2007.**

Break-Even Yield Per Acre (lbs)	8844
Break-Even Pre-harvest Operating Cost Per lb (\$)	0.08
Break-Even Harvest & Marketing Cost Per lb (\$)	0.14
Break-Even Variable Costs Per lb (\$)	0.22
Break-Even Fixed Costs Per lb (\$)	0.07
Break-Even Costs Per lb*((\$))	0.29

### **Risk Rated Expected Returns**

Table 12 shows the expected return or yield per acre for peaches produced in Middle Georgia was 13,000 lbs, based on the variety and season. Assuming an average price of \$0.43 per pound (2006 average) leaves a gross return of \$5,590 per acre (Table 12), (Fonsah and Hudgins, 2007; Fonsah et al., 2007a, 2007b).

**Table 12. Expected Returns Per Acre of Growing Peach in Middle Georgia, 2006.**

Acres	Expected Yield/Ac	Volume Marketed	Expected Price	Total Returns
1	13,000	13,000	\$0.43	\$5,590

## **Farm Input Prices**

There were several factors that could influence prices of inputs, total cost of production and profit margin. Many farmers in Middle Georgia need not invest in overhead irrigation materials or dig a new well, since they already have them available. If so, that would significantly increase profitability. Also tractor engine sizes (HP) were different depending on acreage. Quantity discounts for items such as packing supplies were factors that affected prices of inputs. The cost estimate in this budget reflects a combination of the current agricultural practices in Middle Georgia and recommendations from UGA specialists. The prices of input were actual prices from vendors around the counties servicing and supporting peach production and they excluded quantity discounts (Fonsah and Hudgins, 2007; Fonsah et al., 2007a; 2007b).

## **Conclusion**

Peaches are a major economic crop in the state of Georgia. Out of the \$306.1million farm gate value generated by the fruit and nut industry in 2006, peach contributed 19.8%. In year one total variable/operating cost amounted to \$891.20 while total fixed cost is \$233.68. In year two, total fixed cost was \$139.08 while total establishment cost was \$399.63. In the third year, total variable cost (total operating cost + harvesting and marketing costs) was \$1,062.50 while total fixed cost was \$1,236.48. Total gross establishment cost was \$2,298.98. After deducting the returns from receipt of \$825.60, total net establishment cost was \$1,473.38.

Production reached economic level in year four and full production is usually obtained in the 8-9 years. The fourth year total variable cost was \$2,856.40. Total fixed cost which included packing equipment, overhead and management, irrigation system, land leasing and compounded recaptured costs respectively was \$946.35. Total budgeted cost per acre which is the sum of total variable cost plus total fixed cost was \$3,802.75. Furthermore, compounded recaptured establishment cost based on 7% and 12 years pay back time was \$437.09. The profit and loss statement showed a net operating profit of \$1,766.45 per acre with a gross profit margin of 65.12%. The break-even yield per acre was 8,844 lbs while the break-even cost per lb was \$0.29. Overall, the Middle Georgia Peach industry is very lucrative and vibrant with potential for further growth.

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