

Commercial Blueberry Inventory and Prospectus

Georgia, 2002



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Commercial Blueberry Inventory and Prospectus

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Introduction

Georgia's blueberry industry has grown rapidly in the past decade. The growth resulted from the strong demand for fresh and frozen blueberries. The consumption of blueberries has been noticeably increasing, while prices increase despite increasing production (USDA, 2004). Georgia natural conditions are conducive to blueberry production. Under proper management, blueberry production offers returns that can compete with returns on other crops.

Both rabbiteye and highbush blueberries are produced in Georgia. The plants can produce a commercially viable crop for years. The long-term nature of the investment in the blueberry orchard calls for periodic updates on the situation of the blueberry industry. Information about the location of plants, varieties, plant age, and the use of cultural practices are important in decisions to allocate resources. This report provides insights otherwise unavailable to the industry yet of important practical consequences. An overview of the Georgia blueberry industry helps to shape the production and marketing strategies that extend beyond the state boundaries. The major portion of the annual crop is shipped to markets outside the region. Furthermore, the increasing value of blueberry plants implies that any damage to the commercial blueberry industry has financial implications for growers and shippers. Summaries included in this report help in accurate assessment of potential economic losses from damages to blueberry plants and the feasibility of programs protecting the value represented by orchards.

Information in this report is presented in a format that compares the most recent figures with those from the previous survey. Therefore, the reader has an instant comparison of changes in the industry over time. The presentation of results from two surveys makes interpretation of the results easier.

Objectives

This study presents a summary of the commercial blueberry grower survey. The survey instrument probed growers for information about the production and marketing issues. The specific objectives are:

- 1) to inventory plants in commercial blueberry fields by age, cultivar and location (county);
- 2) to identify production problems encountered by growers;
- 3) to determine the use of cultural practices by growers;
- 4) to ascertain the primary marketing channels used by blueberry growers.

Procedure

Following the previous survey (Hubbard *et al.* 1992), the questionnaire was mailed to the Georgia blueberry growers in the first quarter of 2002. Subsequently, a reminder was sent about a week later. Two weeks later another mailing of the questionnaire took place directed at non-respondents. Despite these efforts, a number of growers did not respond and had to be reached by telephone. The telephone survey lasted through the latter part of 2002. Afterward, the number of growers responding to the survey was verified for selected counties to assure that all commercial blueberry growers were reached.

The original mailing list was based on the list used in the previous survey and the information obtained from the Cooperative Extension Service offices in all counties. This list was supplemented by a list of attendees of blueberry extension meetings and field days. Duplicate addresses were eliminated. The initial mailing included 364 growers.

During the survey implementation, a number of addresses were eliminated for several reasons. Addresses deemed insufficient for delivery by the postal service was a cause of not reaching 10 growers; 31 growers were no longer growing blueberries; 82 addresses were of residents misidentified as growers (often these individuals provided services to growers or sold agricultural inputs), 21 were duplicates, 1 grower refused to participate, and 23 did not respond to the survey. This report is based on answers provided by 196 growers or 89.1 percent who responded.

Number of Growers, Plants, and Acreage

Changes in grower number, plant number and the number of acres planted with blueberries are shown in Table 1 (page 11). Between 1991 and 2002, the number of growers declined in all three areas. The most significant decline took place in southwest Georgia. The percentage share of growers increased in the other two regions, especially in the southeastern part of the state. The changes in the number of plants have been even more dramatic than in numbers of growers (Table 1). Southeast Georgia dominates the blueberry industry and accounts for more than 97 percent of all blueberry plants. Despite a moderate change in the number of growers, north Georgia reported less than 1 percent of blueberry plants in commercial orchards in 2002. Acreage distribution among the three regions follows the distribution of plants. Southwest and north Georgia account for 3.2 percent of total acreage, with the balance located in the southeastern part of the state. Overall, the number of blueberry growers decreased by 32 percent, production acreage increased by 80.8 percent, and the plant number increased by 245.5 percent between 1991 and 2002 (Table 1).

The concentration of blueberry production is further illustrated with the county-level data (Table 2, page 11). Several counties, which reported from 4 to 14 growers in 1991, did not have any commercial growers in 2002. Three counties reported an increase in the number of commercial blueberry growers: Cherokee in North Georgia, and Bacon and Brantley in southeast Georgia. An examination of the number of plants by county shows a rapid growth of the blueberry industry in Appling, Bacon, Brantley, Clinch and Ware counties. Particularly high was the nearly tenfold increase in Appling county, which surpassed the fast growing number of blueberry plants in Clinch county. Bacon County continues to dom-

inate the blueberry industry in Georgia, producing 36.4 percent of 2002 total production (Georgia Farm Gate Value Paper, 2002).

Plant Variety and Age

Tifblue and Climax were reported most often (Table 3, page 12) among the oldest plants. The total number of plants with the first growing season represents about 22 percent of all blueberry plants in Georgia. A similar percentage is represented by plants with the first growing season in 2001 or 2002. The first half of the 1980s saw the largest expansion of blueberry orchards in North Georgia (10,670). Plantings since 1996 have been negligible in that part of the state. In southeast Georgia, the expansion of plantings was relatively slow between 1997 and 2000. More than 700,000 plants were introduced in commercial blueberry operations during the 1980s. Tifblue, Climax and Brightwell were planted most often. However, the popularity of Tifblue waned while Climax and Brightwell plantings became more frequent. This trend was particularly visible during the first half of the 1990s when the number of Brightwell and Climax plants was about three times higher than the number of newly planted Tifblue plants. Among new varieties that were more often planted between 1991 and 1995 than during the 1980s was Powderblue (Table 3). Since the mid-1990s varieties most often selected by commercial growers in southeast Georgia were Brightwell, Reveille, Premier, O'Neal, and Powderblue. During the same period, only 4,910 plants of Tifblue variety were planted in commercial orchards. Austin was a new variety planted in years 2001, 2002 and 2003. Overall, in terms of age, southeast Georgia gained about one million blueberry plants since 1996 (Table 3). Southwest Georgia saw an expansion of commercial blueberry plantings in the second half of the 1980s (Table 3). Two varieties, Climax and Tifblue, accounted for the majority of plants. In recent years, commercial plantings in southwest Georgia were sporadic.

Georgia experienced a rapid growth of commercial blueberry production at the beginning of the 21st century. According to the information provided by growers, 681,871 plants were planted in 1995 or preceding years. Between 1996 and 2000, a total of 366,081 blueberry plants were added to commercial orchards. In 2001 and 2002 alone, a total of 701,626 plants were added to the existing stock, primarily in the southeastern part of the state.

The concentration of blueberry production in Georgia is evident when growers are grouped according to the

numbers of operated plants (Table 4, page 15). In north Georgia, individual growers owned no more than 5,500 plants in 2002. In the southwestern region, the number of growers declined so precipitously that the distinction is of little informative value. However, in the southeast the numbers of large and small growers changed between 1991 and 2002. The number of large growers increased by 79 to 106, while the number of small growers decreased from 95 to 30, respectively.

The growing importance of large growers is further supported by the number of plants and acres in their orchards (Table 4). The number of plants operated by large growers increased 3.2 times, while acreage increased by 2.4 times. This trend toward greater concentration suggests that the commercial blueberry sector is now dominated by a group of growers who specialize, often exclusively, in the production of this crop.

Plant Spacing

Blueberry plant spacing is important because it directly affects the way in which cultural practices are performed. Furthermore, spacing determines harvesting. In north Georgia, where orchards are small, the most frequent spacings, 6x12 and "other," has not changed between 1991 and 2002. In southwest Georgia, small growers reported spacing their plants in the category 5x12 or 726 plants to an acre (59%) or "other" (33%). In 1991, the most often applied spacing was 6x12 feet or 605 plants to an acre (Table 5, page 16).

Among small growers in southeast Georgia, the most often used spacing in 1991, 6x12 feet, continues to enjoy its popularity. However, large growers showed a tendency to diversify spacings, which increased in all categories between 1991 and 2002 with the exception of the category 6x12 feet (Table 5).

Irrigation

Blueberry plants seem well adapted to periods of less than optimal water supply (Améglio *et al.* 1999) although supplemental irrigation is widely recognized as necessary to assure high yields of marketable quality fruit. Young southern highbush blueberries were found to be equally productive despite varying levels of irrigation, all of which were below the recommended irrigation rates (Byers and Moore 1987). However, some experts strongly recommend irrigation of young plants.

Supplemental irrigation of all crops proved to be invaluable in recent years in Georgia. The prolonged

drought from 1989 until the fall of 2002 severely impacted the volume and quality of agricultural production. Inadequate soil moisture lowers yields and quality of blueberries, directly affecting the bottom line. Table 7 (page 18) shows that growers, in general, recognize the importance of irrigation. The total share of growers reporting irrigation systems in their orchards increased from 71 percent in 1991 to 81 percent in 2002. The increase took place in all three regions. In north Georgia the increase was 10 percent, in southeast Georgia 9 percent, and in southwest Georgia 31 percent. The only group of growers who reported irrigating less were small growers in southeast Georgia. Because the number of small growers there also declined, it is likely that non-irrigated orchards will eventually withdraw from commercial production or will be harvested only if the weather and market conditions are favorable. Scherm *et al.* (2001) reported irrigation on 62.1 percent of the total planted area and attributed this relatively low figure to the tendency of abandoning irrigation of old plants.

When asked about the type of irrigation (Table 8, page 19), growers indicated a major change. Drip irrigation, which was the most popular irrigation type in 1991, was replaced to a large degree by overhead irrigation. In southeast Georgia, 25 percent of large growers resigned from drip irrigation, and 48 percent reported using an overhead irrigation system. The decline of drip irrigation systems in southwest Georgia was even more pronounced and amounted to 33 percent among large growers and 34 percent among small growers, respectively. In contrast to 1991, in the 2002 survey, growers did not use gun or sprinkler irrigation systems.

Cultural Practices

Table 9 (page 20) shows various cultural practices performed by Georgia commercial blueberry growers. In the northern part of the state, the use of pesticides declined with the exception of fungicides. A lower percentage of growers applied fertilizers, but a larger share of growers pruned their bushes. These changes in cultural practices reflect the general lower economic importance of blueberry production in north Georgia, marketing orientation, and the aging plants requiring selective cane removal. In southeast Georgia, growers used cultural practices with greater intensity in 2002 than in 1991 with the exception of two most often applied, *i.e.*, mowing and fertilizing, and cultivation under the plants.

Diseases are a potential problem for blueberry growers in the southeastern United States. Mummy berry and

fruit rot were found to inflict an economically significant loss on highbush blueberry yields in North Carolina (Cline and Milholland 1995). The susceptibility of various cultivars differed, however. O'Neal and Reveille, two cultivars planted in larger numbers in recent years in Georgia, were mostly free of mummy berry disease but showed about average frequency of fruit rot. The importance of breeding cultivars resistant to mummy berry and other diseases is recognized and reflected in experiments testing the resistance of existing cultivars in search for suitable parental material (Stretch and Ehlenfeldt 2000; Stretch *et al.* 2001). In Georgia, some experts recommend controlling mummy berry with timely sprays.

According to the survey summary, the use of insecticides and fungicides increased substantially. It is likely that the application of both these chemicals is primarily to address local insect infestations or disease incidence. Neither insecticides nor fungicides are used on a prescribed schedule but on "as needed" basis. Both insects and diseases were listed by growers, with any meaningful frequency, as a tertiary problem (Table 6, page 17).

It has been observed that the productivity of blueberry plants declines as canes age. Old canes produce fewer shoots and the berry size is reduced (Siefker and Hancock 1987) leading to lower production and earnings. Moderate pruning is viewed as helpful in maintaining fruit size without the yield reduction. Pruning of old plants may be cumbersome and labor-intensive. Experiments to hedge blueberry plants showed that the way in which plants are hedged and the timing of hedging influenced the yield but led to an increased berry size (Austin 1997). Overgrown plants prevent handpicking of berries, especially at the pick-your-own operations, but too tall plants also prevent mechanical harvesting. Pruning was reported by nearly three-quarters of growers, and the share of growers indicating this practice was 9 percent higher than in 1991. The relative changes in the application of cultural practices in southwest Georgia were very similar to the described changes in the southeastern part of the state (Table 9, page 20).

Production Problems Encountered by Georgia Growers

Overall, production problems reported by growers are related to pest presence and damage, weather conditions, or plant growth (size). In recent years, the drought has been the primary problem for many agricultural producers as well as for the majority of Georgia residents and

businesses. Until the fall of 2002, drought conditions played havoc with almost all agricultural or horticultural enterprises in the Southeast, leading to substantial losses. Even the indigenous crop such as blueberries experienced stress related to inadequate moisture. However, among the primary problems named by growers, freeze damage was ranked highest by growers from northern and southeastern regions. Freeze damage was ranked as the second most important problem by the southwestern growers, edged only by weed control (Table 6). Weed control was also often listed among the top three production problems by northern and southwestern growers. Vegetation control was found important, especially for the growth and establishment of young rabbiteye blueberry plants (NeSmith and Krewer, 1995). The latter group also listed problems with pollination, which has seldom been perceived as a problem by growers from other regions. In contrast, northern and southeastern, but not southwestern, growers reported the size of plants as a problem. Some of the planted bushes have been producing for three or more decades. If pruning was not regularly performed, plants may have grown to the size that prevents harvesting by either hand or combine.

Diseases were sporadically mentioned as a problem, although 21.1 percent and 9.4 percent of all cultivars in Georgia, respectively, are represented by Tifblue and Premier, which are susceptible to ripe rot (Smith, Magee and Gupton, 1996). It is possible that the dry weather in years preceding the survey contributed to low incidence of diseases. The incidence of mummy berry on Tifblue, for example, has been increasing when cool, rainy weather occurred during bloom (Krewer *et al.*, 1986). Insects were mentioned more frequently than diseases, especially by southwestern growers. It is interesting, however, to see a greater use of fungicides and insecticides by growers. Although growers in north Georgia infrequently reported fungicide and insecticide use, growers in the two other regions increased their use as compared to the percent of growers applying them in 1991. Fungicide applications are recommended if cool and wet conditions persist in the field for several days (Smith, 1998).

Marketing Alternatives

Growers show an increasing concentration of sales for processing (freezing). Reports of blueberry sales for processing were reported by 62 percent of growers for southeast Georgia and 36 percent of growers from southwest Georgia, respectively (Table 10, page 21). Sales of

blueberries for the fresh market decreased from 40 percent in 1991 to 37 percent in 2002. However, given the overall large increase in blueberry plants in Georgia, the absolute volume of blueberries sold for fresh market and processing dramatically increased.

Blueberry sales for juice and at roadside markets almost ceased by 2002. Pick-your-own sales remained the domain of the north Georgia growers (Table 10). Large growers did not report any sales as pick-your-own in 2002. It is possible that some pick-your-own blueberry orchards have been established in recent years in response to the strong demand by urban and suburban residents of the Atlanta metropolitan area. Among the top 10 counties in terms of the number of blueberry plants was Cherokee county in 2002. Although the plant number is very small, the opportunities for pick-your-own sales exist.

Summary

This report is based on the survey of commercial blueberry growers of Georgia conducted in 2002. The plant numbers include plantings for the season 2002/2003 if growers supplied such information outside the original request. The state was divided into three areas (north, southeast, and southwest). Growers were classified into two groups with large growers defined as operating more than 5,500 plants and small growers operating 5,500 or fewer blueberry plants.

Since the last inventory, which provided plant numbers for 1991 (Hubbard *et al.* 1992), the number of blueberry plants in commercial operations increased by more than 200 percent. Expanding blueberry fields were consistent with the expectations of new plantings expressed by growers in the previous survey.

The industry has become more concentrated geographically and in terms of the size of an operation. Southeastern Georgia dominates the production of blueberries. Concentration of commercial operations stretches from Clinch through Ware to Bacon, Appling and Pierce counties. Southeastern Georgia accounts for 97 percent of all plants in the state. The number of commercial growers in the state has decreased since 1991. Only small growers can be found in north Georgia, while their number has decreased substantially in the other two regions.

The share of growers irrigating their plants has increased since 1991. The recent drought, which lasted several years, likely contributed to the installation of the irrigation equipment in the fields. Although blueberry plants can produce berries at water supply levels far below the recommended rate, the volume and quality of

berries is improved when dry spells are prevented. Growers, who invested in the plants, likely want to minimize any risk of damaging the crop due to insufficient moisture and may treat irrigation as a risk-avoiding measure.

North Georgia blueberry growers sold 95 percent of their crop as fresh. The share of the volume sold as fresh in the other two regions decreased in 2002 as compared to 1991. However, the poundage of blueberries sold either as fresh or frozen likely increased because of the large increase in the total blueberry production in the state.

The growth in the Georgia blueberry industry will continue. The strong demand for blueberries is consistent with consumer preferences emphasizing fresh produce consumption translating into relatively competitive prices for blueberries. Recent developments in Georgia suggest an expansion of the necessary distribution infrastructure which will facilitate fruit shipment reducing a technical barrier to blueberry industry growth.

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Table 1. Blueberry Growers, Plants, and Acreage in Georgia, by Area, 2002 Survey Results

Area	Growers		Plants		Acreage ^a	
	1991	2002	1991	2002	1991	2002
	----- number / percent -----					
North Georgia	45/17	35/19	74,097/3	34,967/1	119/3	93/1
Southeast Georgia	174/65	136/75	1,849,129/81	5,270,070/97	2,685/81	5,802/97
Southwest Georgia	47/18	10/6	357,455/16	111,984/2	517/16	108/2
Georgia	266/100	181/100	2,280,681/100	5,417,021/100	3,321/100	6,003/100

^a Number of acres.

Table 2. Blueberry Growers, Plants, and Acreage in Counties with Four or More Growers, Georgia, 2002 Survey Results

County	Growers		Plants		Acreage ^a	
	1991	2002	1991	2002	1991	2002
	----- number -----					
Appling	14	14	87,389	871,007	133	970
Atkinson	4	-	26,900	-	44	-
Bacon	61	70	778,312	2,691,330	1,148	3,160
Brantley	4	7	13,532	103,500	21	108
Bulloch	4	-	4,800	-	8	-
Camden	7	-	5,652	-	9	-
Cherokee	-	4	-	8,784	-	31
Clinch	14	13	304,942	886,192	374	632
Coffee	10	-	42,635	-	66	-
Franklin	4	-	4,825	-	6	-
Long	11	4	57,589	37,179	95	77
Lowndes	6	-	72,204	-	105	-
Pierce	9	9	167,783	263,816	243	326
Ware	9	8	91,634	264,143	140	315
Wayne	14	-	157,601	-	224	-

^a Number of acres.

Table 3. Number of Blueberry Plants in Commercial Orchards in Georgia, by Area, Variety, and Age, 2002 Survey Results

Area/ variety	First growing season												Total		
	Unknown	1951- 1969	1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001		2002	2003
North Georgia															
Bluebelle	406	-	-	670	220	-	-	-	-	-	-	-	-	-	1,296
Brightwell	108	-	-	260	50	180	-	-	-	150	173	25	-	-	946
Briteblue	-	-	160	520	50	-	-	-	-	-	-	-	-	-	730
Climax	769	-	847	1,020	632	1,632	-	-	13	150	40	25	-	-	5,128
Delite	440	-	210	1,470	345	-	-	-	18	-	-	6	-	-	2,489
O'Neal	-	-	-	-	-	-	-	-	-	150	-	-	-	-	150
Powderblue	-	-	-	-	-	-	-	-	-	-	40	-	-	-	40
Premier	-	-	160	140	320	1,433	-	-	-	-	33	-	-	-	2,086
Rabbiteye ^a	1,000	-	750	-	-	-	-	-	-	-	-	-	-	-	1,750
Tifblue	630	300	817	4,980	1,120	1,642	-	-	9	150	73	-	-	-	9,721
Woodard	362	-	597	1,610	70	-	-	-	-	-	-	-	-	-	2,639
Total	3,715	300	3,541	10,670	2,807	4,887	-	-	40	600	359	56	-	-	26,975
Southeast Georgia															
Alice	-	-	-	1,085	4,868	-	-	-	-	-	-	-	-	-	5,953
Austin	1,524	-	-	-	-	-	300	-	-	-	5,178	83,205	5,023	-	95,230
Becky Blue	-	-	-	9,253	-	-	-	-	-	-	-	-	-	-	9,253
Blue Gem	-	-	-	-	2,000	3,000	400	-	-	-	-	-	-	-	5,400
Bluebelle	-	-	1,108	1,513	-	-	-	-	-	-	-	-	-	-	2,621
Brightwell	4,812	-	2,874	59,563	107,047	232,353	11,083	15,681	17,120	8,469	77,330	158,386	18,371	-	736,622
Briteblue	-	-	805	5,143	-	-	-	-	-	-	-	-	-	-	5,948
Climax	4,812	-	192,808	69,592	129,780	225,254	11,083	7,840	10,465	8,544	4,156	7,785	1,331	-	680,407
Delite	-	-	4,913	11,334	1,481	-	-	-	-	75	-	-	-	-	17,803
Georgia Gem	-	-	303	-	-	-	300	908	-	-	-	-	-	-	1,511
Highbush ^a	-	-	-	-	-	-	-	-	-	-	2,995	-	-	-	2,995
O'Neal	-	-	-	-	-	-	10,890	227	2,500	10,769	51,605	53,326	-	-	136,269
Powderblue	-	-	-	20,381	12,587	31,419	73,603	-	-	3,630	45,877	432	5,000	-	192,929

Table 3. Number of Blueberry Plants in Commercial Orchards in Georgia, by Area, Variety, and Age, 2002 Survey Results (Cont.)

Area/ variety	First growing season													Total	
	Unknown	1951- 1969	1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001	2002		2003
Premier	-	-	6,600	23,318	32,085	18,937	76,623	9,534	605	-	2,722	44,270	74,481	-	289,175
Reveille	-	-	-	-	1,512	-	19,935	9,080	726	175	2,722	47,553	31,391	2,420	115,514
Tifblue	150	-	418,159	129,854	82,126	54,484	2,420	-	605	75	1,815	-	-	-	689,688
Woodard	-	-	50,460	21,587	2,531	-	-	-	-	75	-	-	-	-	74,653
Total	11,298	-	678,030	352,623	376,017	565,447	206,637	43,270	32,021	31,812	44,701	278,964	409,006	32,145	3,061,971
Southwest Georgia															
Bluebelle	-	-	-	50	-	-	-	-	-	-	-	-	-	-	50
Brightwell	236,550	-	-	325	4,800	-	-	-	-	-	-	-	-	-	241,678
Climax	202,181	-	-	15	12,896	-	-	-	-	-	-	-	-	-	215,092
Delite	14,066	-	-	150	-	-	-	-	-	-	-	-	-	-	14,216
Highbush ^a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,200
O'Neal	40,578	-	-	-	-	-	-	-	4,200	2,800	-	1,000	-	-	41,578
Powderblue	59,485	-	-	-	-	-	-	-	-	-	-	50	-	-	59,535
Premier	49,572	-	-	-	4,800	-	-	-	-	-	-	-	-	-	54,372
Tifblue	177,037	-	-	400	25,792	-	-	-	-	-	-	-	-	-	203,229
Woodard	20,194	-	-	25	-	-	-	-	-	-	-	-	-	-	20,219
Total	799,663	-	-	965	48,288	-	-	-	4,200	2,800	-	3,850	6,400	-	866,166
Georgia															
Alice	1,815	-	-	1,085	4,868	-	-	-	-	-	-	-	-	-	7,768
Austin	33,742	-	-	-	-	-	300	-	-	-	-	5,178	86,205	5,023	130,448
Becky Blue	-	-	-	9,253	-	-	-	-	-	-	-	-	-	-	9,253
Blue Gem	-	-	-	-	2,000	3,000	400	-	-	-	-	-	-	-	5,400
Bluebelle	406	-	1,108	2,233	220	-	-	-	-	-	-	-	-	-	3,967
Brightwell	241,470	-	2,874	60,148	111,897	232,533	11,083	15,681	17,120	8,469	23,683	77,503	158,411	18,371	979,243
Briteblue	11,690	-	965	5,663	50	-	-	-	-	-	-	-	-	-	18,368
Climax	207,762	-	193,655	70,627	143,308	226,886	11,083	7,840	10,465	8,557	7,107	4,196	7,810	1,331	900,627
Delite	14,506	-	5,123	12,954	1,826	-	-	-	-	93	-	-	6	-	34,508

Table 3. Number of Blueberry Plants in Commercial Orchards in Georgia, by Area, Variety, and Age, 2002 Survey Results (Cont.)

Area/ variety	First growing season													Total	
	Unknown	1951- 1969	1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001	2002		2003
Georgia Gem	-	-	303	-	-	-	300	908	-	-	-	-	-	-	1,511
Highbush ^a	-	-	-	-	-	-	-	-	4,200	2,800	-	5,795	6,400	-	19,195
O'Neal	40,578	-	-	-	-	10,890	227	2,500	10,769	7,102	52,605	53,326	-	177,997	
Powderblue	59,485	-	-	20,381	12,587	31,419	73,603	-	3,630	-	45,967	423	5,000	252,495	
Premier	49,572	-	6,760	23,458	37,205	20,370	76,623	9,534	605	2,722	44,303	74,481	-	345,633	
Rabbiteye ^a	4,235	-	750	-	-	-	-	-	-	-	-	-	-	4,985	
Reveille	5,937	-	-	-	1,512	-	19,935	9,080	726	175	2,722	47,553	31,391	2,420	121,451
Tifblue	177,817	300	418,976	135,234	109,038	56,126	2,420	-	605	84	1,965	73	-	902,638	
Woodard	20,556	-	51,057	23,222	2,601	-	-	-	75	-	-	-	-	97,511	
Total	869,571	300	681,571	364,258	427,112	570,334	206,637	43,270	36,221	34,652	45,301	283,173	418,453	32,145	4,012,998

^a Not a variety. Respondents provided only indication of the blueberry type.

Table 4. Number and Proportion of Blueberry Growers, Plants, and Acreage in Large and Small Size Classifications, by Area, Georgia, 2002 Survey Results

Area/Size ^a	Growers		Plants		Acreage	
	1991	2002	1991	2002	1991	2002
	- - - - - number / percent - - - - -					
North Georgia						
Large	2/4	0/0	20,800/28	0/0	36/30	0/0
Small	43/96	35/100	53,297/72	34,968/100	83/70	93/100
All	45/100	35/100	74,097/100	34,967/100	119/100	93/100
Southeast Georgia						
Large	79/45	106/78	1,628,182/88	5,195,288/99	2,335/87	5,648/97
Small	95/55	30/22	220,947/12	74,782/1	350/13	154/3
All	174/100	136/100	1,849,129/100	5,270,070/100	2,685/100	5,802/100
Southwest Georgia						
Large	16/34	4/40	300,750/84	105,988/95	424/82	84/78
Small	31/66	6/60	56,705/16	5,996/5	93/18	24/22
All	47/100	10/100	357,455/100	111,984/100	517/100	108/100
Georgia						
Large	97/36	110/61	1,949,732/85	5,301,276/98	2,795/84	5,732/95
Small	169/64	71/39	330,949/15	115,745/2	526/16	271/5
All	266/100	181/100	2,280,681/100	5,471,021/100	3,321/100	6,003/100

^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

Table 5. Spacings of Blueberry Plants in Georgia, by Area and Size of Operation, 2002 Survey Results

Area/Size ^a	Spacings (ft)														Total	
	6x12		5x12		4x10		4x12		5x10		2x10		Other		1991	2002
	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002
North Georgia																
Large	28	NA	0	NA	0	NA	0	NA	0	NA	NA	NA	72	NA	100	NA
Small	39	35	10	13	4	0	2	0	8	6	NA	0	37	46	100	100
All	36	35	7	13	3	0	1	0	6	6	NA	0	47	46	100	100
Southeast Georgia																
Large	49	27	25	11	7	11	7	15	3	4	NA	7	9	25	100	100
Small	74	68	11	5	0	0	5	0	0	6	NA	4	10	17	100	100
All	52	28	23	11	7	11	7	15	2	4	NA	7	9	24	100	100
Southwest Georgia																
Large	43	0	24	0	2	0	3	0	8	0	NA	0	20	100	100	100
Small	65	0	0	59	3	0	20	0	1	0	NA	0	11	33	100	100
All	46	0	21	1	2	0	5	0	7	0	NA	0	19	99	100	100
Georgia																
Large	48	26	25	10	6	11	6	14	4	4	NA	7	11	28	100	100
Small	67	55	9	10	1	0	7	0	1	5	NA	2	15	28	100	100
All	50	26	22	10	6	11	7	14	3	4	NA	6	12	29	100	100

^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

Table 6. Production Problems Encountered by Georgia Blueberry Growers, by Area, 2002 Survey Results

	North Georgia		Southeast Georgia		Southwest Georgia	
	1991	2002	1991	2002	1991	2002
----- % -----						
Primary problem						
Freeze damage	61	31	60	32	39	36
Drought	12	14	20	30	15	0
Weed control	7	17	10	12	39	36
Drainage	-	11	-	0	-	18
Insects	10	3	0	6	0	0
Disease	2	6	2	5	2	0
Pollination	0	0	4	15	0	0
Bush size	-	11	-	0	-	10
Other	7	8	4	0	4	0
Secondary problem						
Freeze damage	12	5	17	25	17	33
Drought	34	57	37	16	29	22
Weed control	29	10	19	10	24	22
Drainage	-	0	-	7	-	0
Insects	0	5	1	16	0	0
Disease	2	5	5	3	7	0
Pollination	0	0	10	18	5	0
Bush size	-	19	-	3	-	0
Other	10	0	4	1	4	22
Tertiary problem						
Freeze damage	10	25	6	5	7	17
Drought	5	5	13	6	10	17
Weed control	17	20	16	28	22	17
Drainage	-	0	-	6	-	0
Insects	12	0	2	17	5	17
Disease	12	10	9	16	2	0
Pollination	0	10	17	9	17	0
Bush size	-	20	-	13	-	33
Other	5	10	4	0	4	0

Note: The total in each problem category may not equal 100 due to rounding.

Table 7. Proportion of Georgia Blueberry Plants Irrigated, by Area and Size of Operation, 2002 Survey Results

Area/Size ^a	Irrigated		Non-irrigated		Total
	1991	2002	1991	2002	
----- % -----					
North Georgia					
Large	28	0	72	0	100
Small	77	73	23	27	100
All	63	73	37	27	100
Southeast Georgia					
Large	76	81	24	19	100
Small	40	26	60	74	100
All	72	81	28	19	100
Southwest Georgia					
Large	70	100	30	0	100
Small	56	82	44	18	100
All	68	99	32	1	100
Georgia					
Large	75	82	25	18	100
Small	49	44	51	56	100
All	71	81	29	19	100

^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

Table 8. Percentage of Irrigated Blueberry Plants in Georgia, by Type of Equipment, Area, and Size of Operation, 2002 Survey Results

Area/Size ^a	Type of equipment												Total
	Drip		Gun		Sprinkler		Overhead		Both		Other		
	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	
----- % -----													
North Georgia													
Large	0	NA	100	-	0	-	-	NA	-	NA	0	NA	100
Small	82	69	4	-	14	-	-	31	-	0	0	0	100
All	72	69	16	-	12	-	-	31	-	0	0	0	100
Southeast Georgia													
Large	72	47	15	-	7	-	-	48	-	3	6	2	100
Small	64	43	12	-	20	-	-	54	-	3	4	0	100
All	72	47	15	-	7	-	-	48	-	3	6	2	100
Southwest Georgia													
Large	86	53	5	-	9	-	-	47	-	0	0	0	100
Small	58	24	24	-	18	-	-	76	-	0	0	0	100
All	82	52	8	-	10	-	-	48	-	0	0	0	100
Georgia													
Large	74	47	14	-	7	-	-	48	-	3	5	2	100
Small	67	55	13	-	18	-	-	44	-	1	2	0	100
All	73	47	14	-	8	-	-	48	-	3	5	2	100

^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

Table 9. Proportion of Georgia Blueberry Growers Using Various Cultural Practices, by Area and Size of Operation, 2002 Survey Results

Area/Practice	Size ^a					
	1991 Survey results			2002 Survey results		
	Large	Small	All	Large	Small	All
	----- % -----					
North Georgia						
Insecticides	0	26	25	NA	16	16
Herbicides	50	72	71	NA	42	42
Fungicides	0	18	17	NA	19	19
Mow	100	100	100	NA	97	97
Cultivate between rows	NA	NA	NA	NA	3	3
Cultivate under plants	0	18	18	NA	19	19
Fertilize	50	95	93	NA	61	61
Prune	100	63	65	NA	74	74
Herbicide between rows	NA	NA	NA	NA	7	7
Southeast Georgia						
Insecticides	30	11	20	70	50	66
Herbicides	77	52	64	82	64	78
Fungicides	42	8	24	78	57	74
Mow	96	91	93	92	93	92
Cultivate between rows	NA	NA	NA	34	21	31
Cultivate under plants	64	29	45	32	7	27
Fertilize	96	95	95	96	86	94
Prune	70	60	65	74	79	75
Herbicide between rows	NA	NA	NA	68	43	63
Southwest Georgia						
Insecticides	7	17	14	33	17	22
Herbicides	53	55	55	100	50	67
Fungicides	7	17	14	33	17	22
Mow	100	97	98	67	100	89
Cultivate between rows	NA	NA	NA	0	0	0
Cultivate under plants	64	14	30	33	0	11
Fertilize	93	97	95	67	83	78
Prune	67	59	61	100	67	78
Herbicide between rows	NA	NA	NA	100	17	44
Georgia						
Insecticides	26	16	20	68	26	47
Herbicides	72	58	63	83	49	53
Fungicides	36	12	21	76	29	53
Mow	97	94	95	91	96	93
Cultivate between rows	NA	NA	NA	32	8	20
Cultivate under plants	62	23	38	32	14	23
Fertilize	95	95	95	94	71	83
Prune	70	61	64	76	75	75
Herbicide between rows	NA	NA	NA	70	18	44

^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

Table 10. Marketing Alternatives by which Georgia Blueberries were Sold in 2002, by Area and Size of Operation, 2002 Survey Results

Area/Size ^a	Fresh market shipment		Processed (fresh frozen)		Juice		Pick-your-own		Roadside market		Other		Total
	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	1991	2002	
North Georgia													
Large	0	0	0	0	0	0	73	0	0	0	27	0	100
Small	9	16	0	5	0	0	83	75	6	3	2	1	100
All	7	16	0	5	0	0	81	75	5	3	7	1	100
Southeast Georgia													
Large	34	27	61	61	4	1	1	0	0	0	0	1	100
Small	44	10	47	88	2	1	6	1	1	0	0	0	100
All	36	36	58	62	4	1	1	0	1	0	0	1	100
Southwest Georgia													
Large	85	62	13	38	0	0	1	0	1	0	0	0	100
Small	34	0	38	0	0	0	24	100	2	0	2	0	100
All	72	60	20	36	0	0	7	4	1	0	0 ^b	0	100
Georgia													
Large	40	39	55	59	4	1	1	0	0	0	0	1	100
Small	38	12	39	55	1	1	19	31	2	1	1	0	100
All	40	37	52	59	3	1	5	2	0	0	0	1	100

^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

^b Less than 0.5.

Appendix Table 1. Number of Blueberry Plants in Commercial Orchards in Counties with Four or More Producers, by Variety and Age, Georgia, 2002 Survey Results

County/ variety	Season unknown	First growing season										Total			
		1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001		2002	2003	
----- number -----															
Appling															
Austin	23,750	-	-	-	-	300	-	-	-	-	-	-	-	-	24,050
Blanton	-	-	-	-	-	16,335	-	-	-	-	44,649	-	-	-	60,984
Bluebelle	-	908	-	-	-	-	-	-	-	-	-	-	-	-	908
Bluecrisp	-	-	-	-	-	5,445	-	-	-	-	-	-	-	-	5,445
Brightwell	31,050	-	15,125	-	45,582	4,270	-	-	-	-	54,450	5,940	-	-	156,417
Briteblue	800	-	1,210	-	-	-	-	-	-	-	-	-	-	-	2,010
Climax	1,600	12,100	-	-	33,241	4,270	-	-	-	-	-	6,435	-	-	57,646
Delite	-	1,986	303	-	-	-	-	-	-	-	-	-	-	-	2,289
Emerald	-	-	-	-	-	-	-	-	-	-	-	1,450	-	-	1,450
Georgia	-	303	-	-	-	300	908	-	-	-	-	-	-	-	1,511
Gem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Home Belle	-	-	151	-	-	-	-	-	-	-	-	-	-	-	151
Misty Blue	-	-	-	-	-	-	-	151	-	-	-	-	-	-	151
O'Neal	-	-	-	-	-	10,890	227	-	-	-	43,560	6,895	-	-	61,572
Powderblue	23,750	-	-	-	22,956	69,610	-	-	-	-	43,560	-	-	-	159,876
Premier	23,750	-	-	-	8,436	70,210	9,534	-	-	-	43,560	6,435	-	-	161,925
Reveille	300	-	-	-	-	19,935	9,080	-	-	-	35,937	1,450	-	-	66,702
Sharp Blue	-	-	303	-	-	-	-	-	-	-	-	-	-	-	303
Southland	-	-	151	-	-	-	-	-	-	-	-	-	-	-	151
Star	300	303	-	-	-	5,445	-	-	-	-	6,534	6,895	-	-	19,477
T-105	-	-	1,815	-	-	-	-	-	-	-	-	-	-	-	1,815
T-19	-	605	600	-	-	-	-	-	-	-	-	-	-	-	1,205
Tifblue	800	6,865	32,416	-	19,601	-	-	-	-	-	-	-	-	-	59,682
Woodard	-	1,308	8,969	-	-	-	-	-	-	-	-	-	-	-	10,277
Total	106,100	24,378	61,043	-	129,816	207,010	19,749	151	-	272,250	35,500	-	-	-	855,997
Bacon															
Alice	-	-	1,085	3,630	-	-	-	-	-	-	-	-	-	-	4,715
Austin	2,016	-	-	-	-	-	-	-	-	2,040	48,357	3,023	-	-	55,436
Baldwin	-	-	-	-	-	-	-	-	-	-	3,600	-	-	-	3,600
Becky Blue	-	-	4,715	-	-	-	-	-	-	-	-	-	-	-	4,715
Blanton	-	-	-	-	-	-	-	-	-	-	3,401	-	-	-	3,401
Bluecrisp	-	-	-	-	-	-	5,872	-	5,200	-	7,623	-	-	-	18,695

Appendix Table 1. Number of Blueberry Plants in Commercial Orchards in Counties with Four or More Producers, by Variety and Age, Georgia, 2002 Survey Results (Cont.)

County/ variety	Season unknown	First growing season												Total					
		1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001	2002	2003						
Bonita	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,356	4,356
Brightwell	24,923	4674	28,360	61,412	108,449	6,413	9,631	7,260	5,444	17,725	18,592	112,958	11,371	417,212					
Climax	11,797	132,415	45,375	60,355	107,118	6,413	4,815	4,235	5,444	5,505	3,796	1,134	1,331	389,733					
Crunchy ^a	-	-	-	-	-	-	-	-	-	-	3,949	8,450	2,178	14,577					
Delite	3,176	2,117	5,283	1,331	-	-	-	-	-	-	-	-	-	11,907					
Emerald	-	-	-	-	-	-	-	-	-	-	-	21,106	2,178	23,284					
Hot Plant	-	2,000	-	-	-	-	-	-	-	-	-	-	-	2,000					
Little B's	-	-	-	-	-	-	-	-	-	-	-	6,534	-	6,534					
Magnolia	-	-	-	-	-	-	-	-	-	-	1,630	-	-	1,630					
Millenium	-	-	-	-	-	-	-	-	-	-	-	26,682	2,178	28,860					
Mixed	-	-	-	4,800	-	-	-	-	-	-	-	2,178	72,540	79,518					
O'Neal	-	-	-	-	-	-	-	-	5,872	11,552	1,045	41,349	-	59,818					
Powderblue	-	-	11,343	1,037	-	3,993	-	-	3,630	-	1,597	-	-	21,600					
Premier	3,176	-	23,318	23,392	4,267	6,413	-	605	-	2,722	-	55,125	-	119,018					
Reveille	-	-	-	-	-	-	-	-	-	2,722	12,712	9,976	2,420	27,830					
Southern Belle	-	-	-	-	-	-	-	-	-	-	-	10,876	-	10,876					
Star	-	-	-	-	-	-	-	-	5,872	5,200	12,549	72,101	2,178	97,900					
Tifblue	16,474	338,627	33,907	61,518	1,108	2,420	-	605	-	1,815	-	-	-	456,474					
VI	-	-	-	-	-	-	-	-	-	-	3,111	21,997	-	25,108					
Windstar	-	-	-	-	-	-	-	-	-	-	-	2,600	-	2,600					
Woodard	5,934	33,334	2,938	2,531	-	-	-	-	-	-	-	-	-	44,737					
Unspecified or unknown	-	-	-	1,300	650	-	-	-	-	-	800	-	-	2,750					
Total	67,496	513,167	156,324	221,306	221,592	25,652	14,446	12,705	32,134	52,441	61,821	456,047	103,753	1,938,884					
Brantley																			
156	-	-	-	-	-	-	-	-	-	-	360	216	-	576					
Brightwell	-	-	-	-	-	-	-	-	-	-	1,800	980	-	2,780					
Climax	-	-	200	-	-	-	-	-	-	-	360	216	-	776					
O'Neal	1,934	-	-	-	-	-	-	-	-	-	-	-	-	1,934					
Power Blue	-	-	-	-	-	-	-	-	-	-	720	432	-	1,152					
Premier	-	-	-	-	-	-	-	-	-	-	360	216	-	576					

Appendix Table 1. Number of Blueberry Plants in Commercial Orchards in Counties with Four or More Producers, by Variety and Age, Georgia, 2002 Survey Results (Cont.)

County/ variety	Season unknown	First growing season											Total					
		1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001	2002		2003				
Star	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,640
Tifblue	-	-	200	-	-	-	-	-	-	-	-	-	-	-	354	-	-	200
V1	2,741	-	-	-	-	-	-	-	-	-	-	-	-	-	1,647	1,647	2,800	18,291
V24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	-	-	130
V5	2,741	-	-	-	-	-	-	-	-	-	-	-	-	-	1,229	221	430	4,621
Unspecified or unknown	-	-	-	-	48,400	-	-	-	-	-	-	-	17,424	-	-	-	-	65,824
Total	7,416	-	400	-	48,400	-	-	-	-	-	-	-	17,424	-	4,326	4,930	103,500	
Cherokee																		
Climax	-	-	500	322	9	-	-	-	-	-	-	-	-	-	-	-	-	831
Delite	-	-	1,000	325	-	-	-	-	13	-	-	-	-	-	-	-	-	1,338
Mixed	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	320
Tifblue	-	-	3,500	750	18	-	-	-	-	-	-	-	-	-	-	-	-	4,286
Woodard	-	-	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000
Unspecified or unknown	-	-	1,000	-	-	-	-	-	9	-	-	-	-	-	-	-	-	1,009
Total	320	-	7,000	1,397	27	-	-	-	40	-	-	-	-	-	-	-	-	8,784
Clinch																		
Austin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,000
Becky Blue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blue Gem	-	-	-	2,000	3,000	400	-	-	-	-	-	-	-	-	-	-	-	5,400
Bluecrisp	72,019	-	-	3,000	-	-	-	-	-	-	-	-	-	600	-	-	-	75,619
Brightwell	82,643	-	7,557	7,400	6,090	400	-	-	-	2,000	-	-	-	-	-	-	-	113,090
Climax	59,411	10,900	2,350	8,200	14,500	400	-	-	-	2,000	-	-	-	-	-	-	-	97,761
Crunchy	-	-	-	3,380	-	-	-	-	-	-	-	-	-	-	-	-	-	3,380
Emerald	42,326	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000	-	-	46,326
JU1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000	-	-	3,000
Little Bs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500
Millenium	24,140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26,140
O'Neal	8,823	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,423

Appendix Table 1. Number of Blueberry Plants in Commercial Orchards in Counties with Four or More Producers, by Variety and Age, Georgia, 2002 Survey Results (Cont.)

County/ variety	Season unknown	First growing season												Total			
		1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001	2002	2003				
Powderblue	27,831	-	-	3,800	3,200	-	-	-	-	-	-	-	-	-	-	5,000	39,831
Rabbiteye ^b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Southern Belle	97,066	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-	98,066
Star	192,041	-	-	-	-	-	-	-	-	-	-	-	-	10,000	-	-	203,041
Tifblue	10,406	10,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21,306
V1	1,500	-	-	-	-	-	-	-	-	3,000	-	-	-	-	-	-	4,500
Unspecified or unknown	-	-	20,000	7,000	3,500	-	50,000	-	-	-	-	-	-	44,000	-	726	125,226
Total	618,206	21,800	29,907	34,780	30,290	1,200	50,000	4,000	-	2,700	3,000	64,000	14,726	874,609			
Long																	
Brightwell	-	-	4,500	1,663	-	-	-	-	-	350	-	-	-	-	-	-	6,513
Climax	-	654	3,000	1,663	-	-	-	-	-	-	-	-	-	-	-	-	5,317
Delite	-	600	-	150	-	-	-	-	-	-	-	-	-	-	-	-	750
Powderblue	-	-	4,500	-	-	-	-	-	-	-	-	-	-	-	-	-	4,500
Premier	-	-	-	-	-	-	-	-	-	-	350	-	-	-	-	-	350
Tifblue	-	9,920	6,000	150	-	-	-	-	-	-	-	-	-	-	-	-	16,070
Woodard	-	3,679	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,679
Total	-	14,853	18,000	3,626	-	-	-	-	-	350	350	-	-	-	-	-	37,179
Pierce																	
Austin	1,452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,452
Bluecrisp	10,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10,600
Brightwell	51,919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51,919
Climax	85,691	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85,691
O'Neal	19,821	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,821
PowderBlue	2,904	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,904
Premier	12,852	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,852
Star	8,204	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8,204
Tifblue	89,152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89,152

Appendix Table 1. Number of Blueberry Plants in Commercial Orchards in Counties with Four or More Producers, by Variety and Age, Georgia, 2002 Survey Results (Cont.)

County/ variety	Season unknown	First growing season										Total											
		1970- 1980	1981- 1985	1986- 1990	1991- 1995	1996	1997	1998	1999	2000	2001		2002	2003									
Unspecified or unknown	2,396	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,396	
Total	284,991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	284,991
Ware																							
86-19	-	-	-	-	-	1800	4000	2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,800
Becky Blue	-	4538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,538
Bluecrisp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2995	-	-	-	-	-	-	-	2,995
Brightwell	-	4538	18339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22,877
Choice	-	-	-	3086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,086
Climax	-	12948	23439	7865	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44,252
Crunchy	-	-	-	-	3000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,000
Dixie	-	-	4538	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,538
Highbush ^b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2995	-	-	-	-	-	-	-	2,995
JBI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7986	7,986
O'Neal	-	-	-	-	-	-	-	-	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500
Powderblue	-	4538	6238	2995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,771
Premier	-	-	4925	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,925
Southern Belle	-	-	-	-	3000	-	-	3000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,000
Star	-	-	-	-	1500	-	-	4500	-	-	-	-	-	3086	-	-	-	-	-	-	-	-	17,072
Tifblue	-	8788	4725	6020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,533
Woodard	-	605	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	605
Unspecified or unknown	-	-	-	18000	-	-	-	-	-	-	520	-	-	-	-	-	-	-	-	-	-	-	18,520
Total	-	35,955	62,204	37,966	9,300	4,000	12,000	520	-	-	9,076	-	-	-	-	-	-	-	-	-	-	-	186,993

^a Name provided by respondents. Apparently this is the same variety as "Bluecrisp."

^b Not a variety. Respondents indicated the type.

Appendix Table 2. Blueberry Growers with Membership in a Blueberry Marketing Organization in Counties with Four or More Growers, Georgia, 2002 Survey Results

1991 Survey Results			2002 Survey Results					
County/ Size ^a	Number	Percentage	County/ Size ^a	Number	Percentage	County/ Size ^a	Number	Percentage
Appling			Coffee			Appling		
Large	3	75.0	Large	1	50.0	Large	5	83.3
Small	6	60.0	Small	6	75.0	Small	NA	NA
All	9	64.3	All	7	70.0	All	5	83.3
Atkinson			Franklin			Bacon		
Large	1	33.3	Large	c		Large	32	78.0
Small	1	100.0	Small	1	25.0	Small	7	100.0
All	2	50.0	All	1	25.0	All	39	81.3
Bacon			Long			Brantley		
Large	33 ^b	94.3	Large	4	100.0	Large	3	50.0
Small	20	80.0	Small	3	42.9	Small	0	0.0
All	53	88.3	All	7	63.6	All	3	42.9
Brantley^d			Lowndes			Cherokee		
Large	0	0.0	Large	2	50.0	Large	NA	NA
Small	1 ^c	50.0	Small	0	0.0	Small	0	0.0
All	1	33.3	All	2	33.3	All	0	0.0
Bulloch			Pierce			Clinch		
Large			Large	2	50.0	Large	3	75.0
Small	0	0.0	Small	2	40.0	Small	1	100.0
All	0	0.0	All	4	44.4	All	4	80.0
Camden^d			Ware			Ware		
Large	-	-	Large	3	50.0	Large	2	100.0
Small	2	28.6	Small	2	66.7	Small	0	0.0
All	2	28.6	All	5	55.6	All	2	66.7
Clinch			Wayne					
Large	10	100.0	Large	3	75.0			
Small	4	100.0	Small	7	70.0			
All	14	100.0	All	10	71.4			

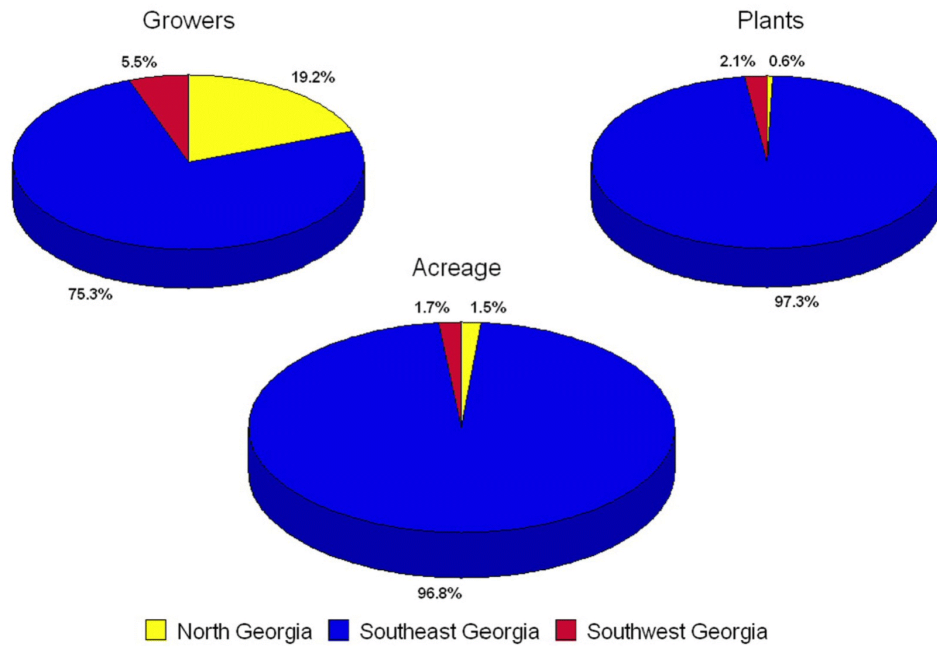
^a "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

^b One large grower did not answer this question.

^c One small grower did not answer this question (Huber *et al.*, 1992.).

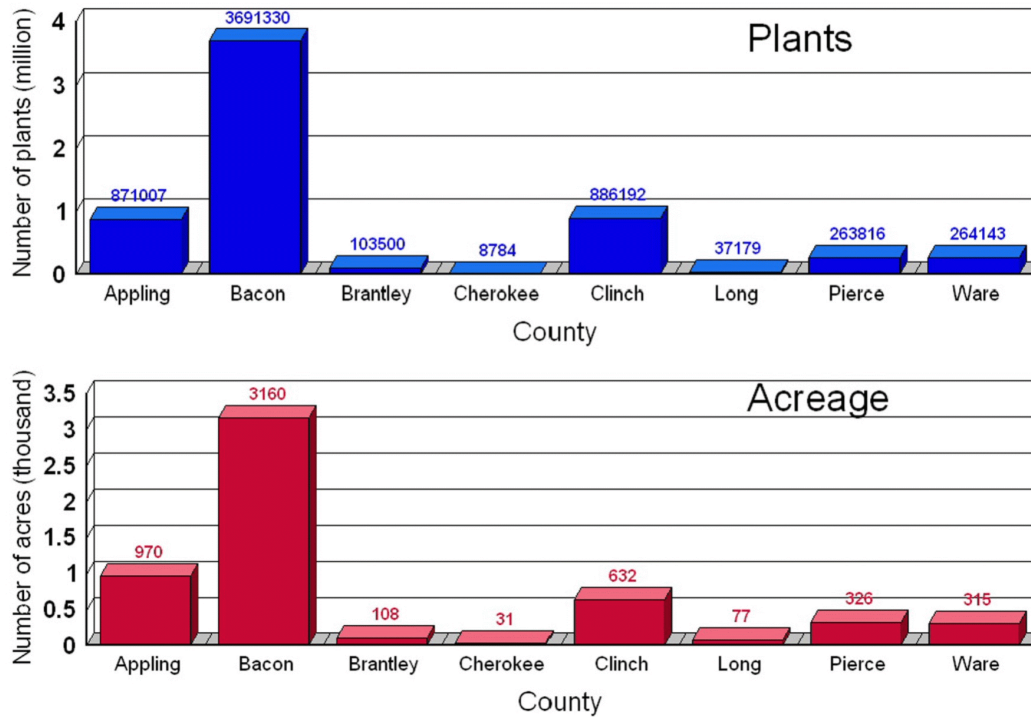
^d County has no large growers.

Figure 1. Blueberry Growers, Plants, and Acreage in Georgia, by Area, 2002 Survey Results



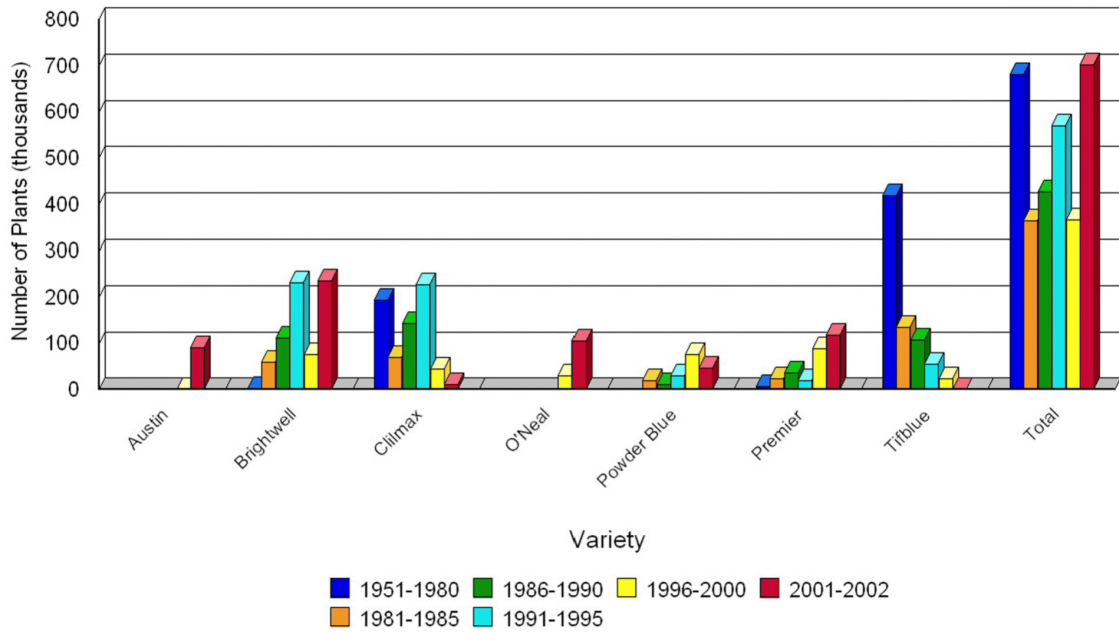
Source: Florkowski, W. J., University of Georgia.

Figure 2. Blueberry Plants and Acreage in Counties with Four or More Growers, Georgia, 2002 Survey Results



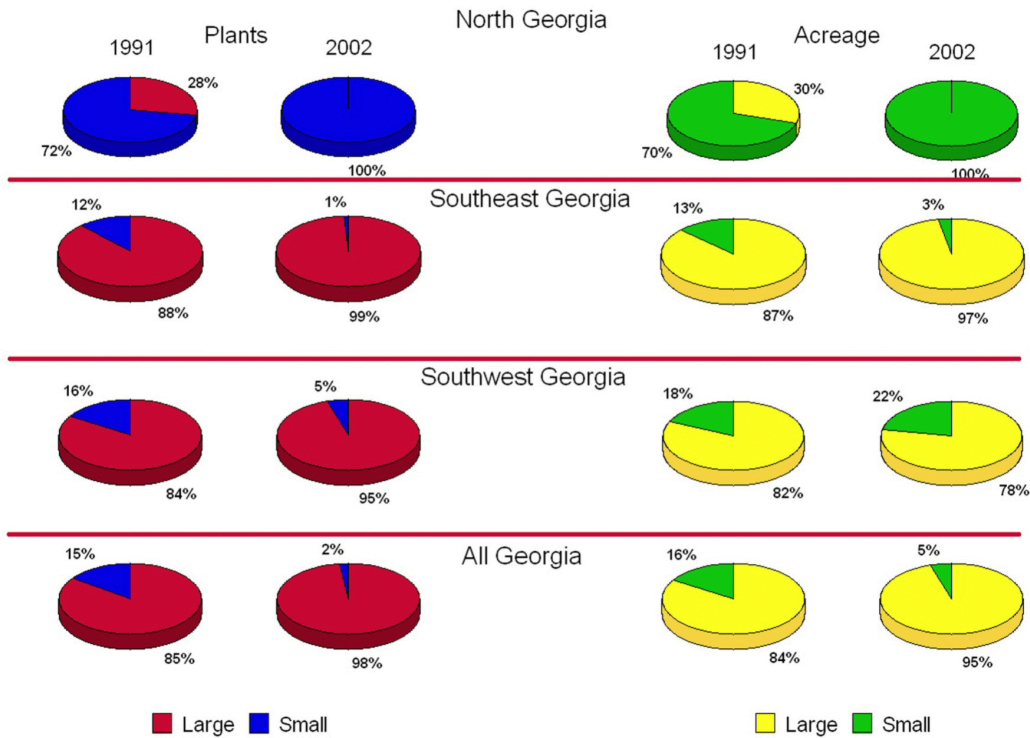
Source: Florkowski, W. J., University of Georgia.

Figure 3. Selected Blueberry Varieties by First Growing Season and Area, Georgia, 2002 Survey Results



Source: Florkowski, W. J., University of Georgia.

Figure 4. Plants and Acreage on Large and Small Blueberry Farms in Georgia, by Area, 1991 and 2002 Survey Results



Source: Florkowski, W. J., University of Georgia.

Note: "Large" represents growers operating 5,500 or more plants. "Small" represents growers operating fewer than 5,500 plants.

Figure 5. Spacings of Blueberry Plants in Georgia, by Area and Size of Operation, 1991 and 2002 Survey Results

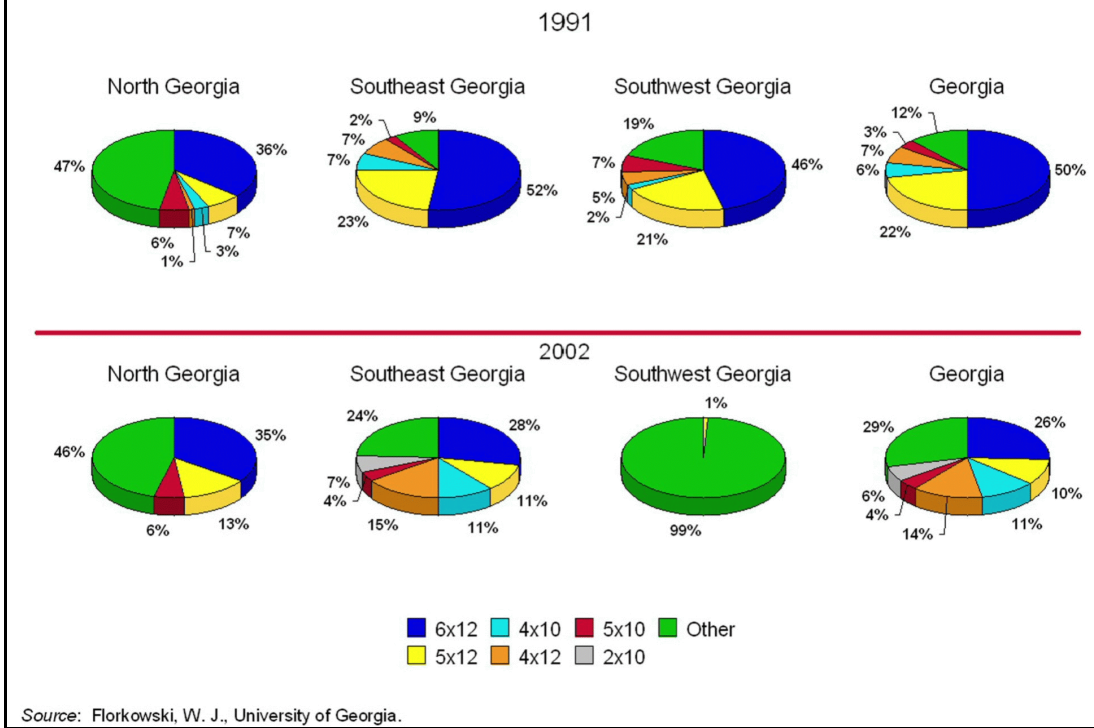


Figure 6. Production Problems Encountered by Georgia Blueberry Growers, by Area, 2002 Survey Results

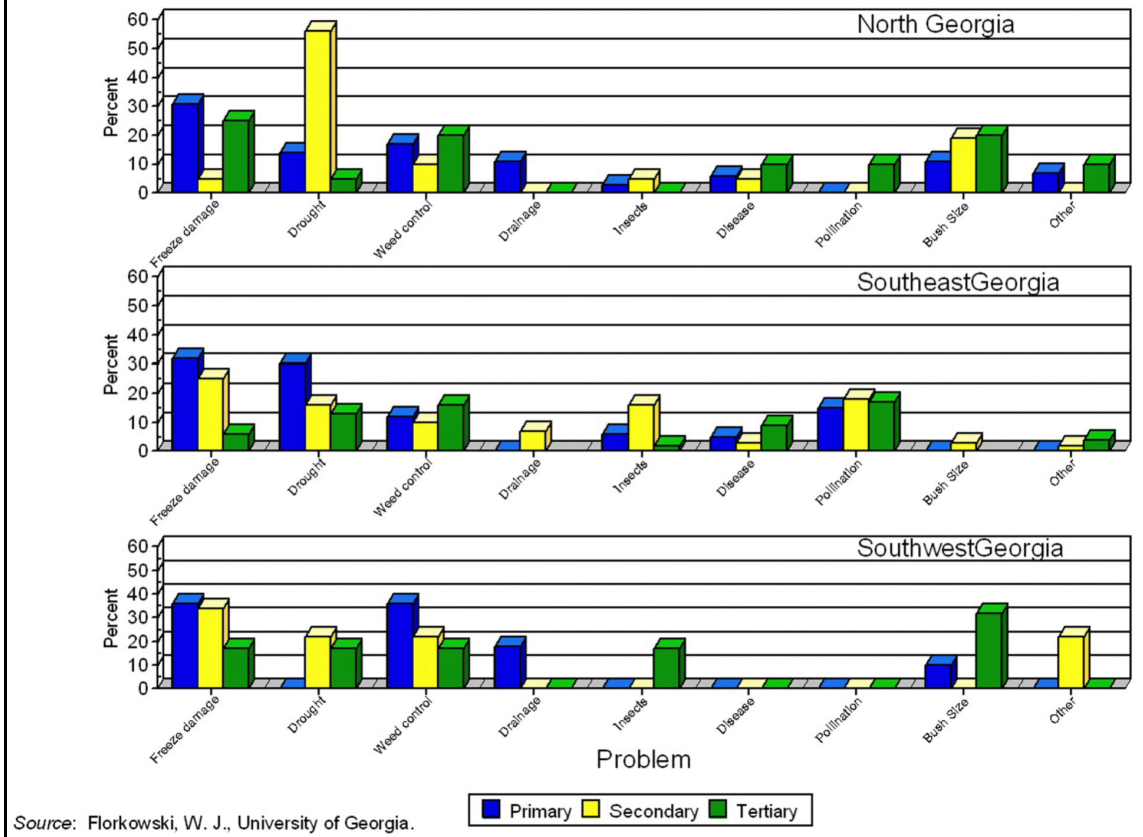


Figure 7. Proportion of Georgia Blueberry Plants Irrigated, by Area and Size of Operation, 1991 and 2002 Survey Results

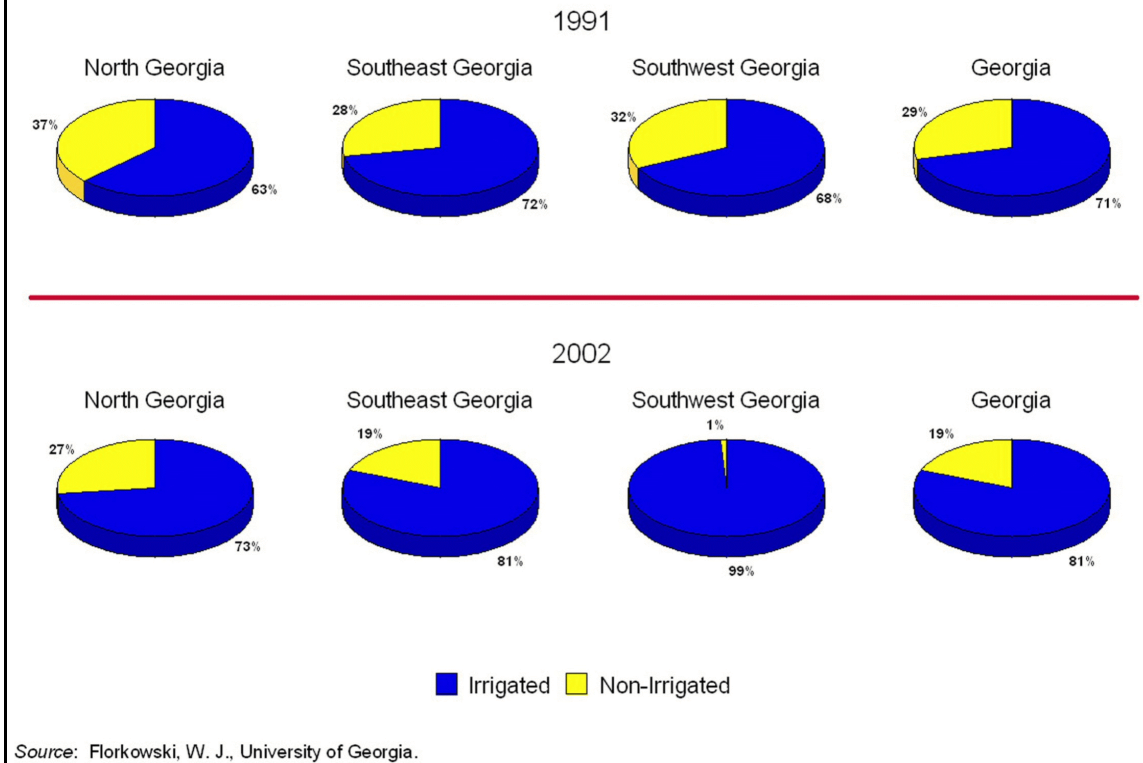


Figure 8. Percentage of Irrigated Blueberry Plants in Georgia, by Type of Equipment and Area, 2002 Survey Results

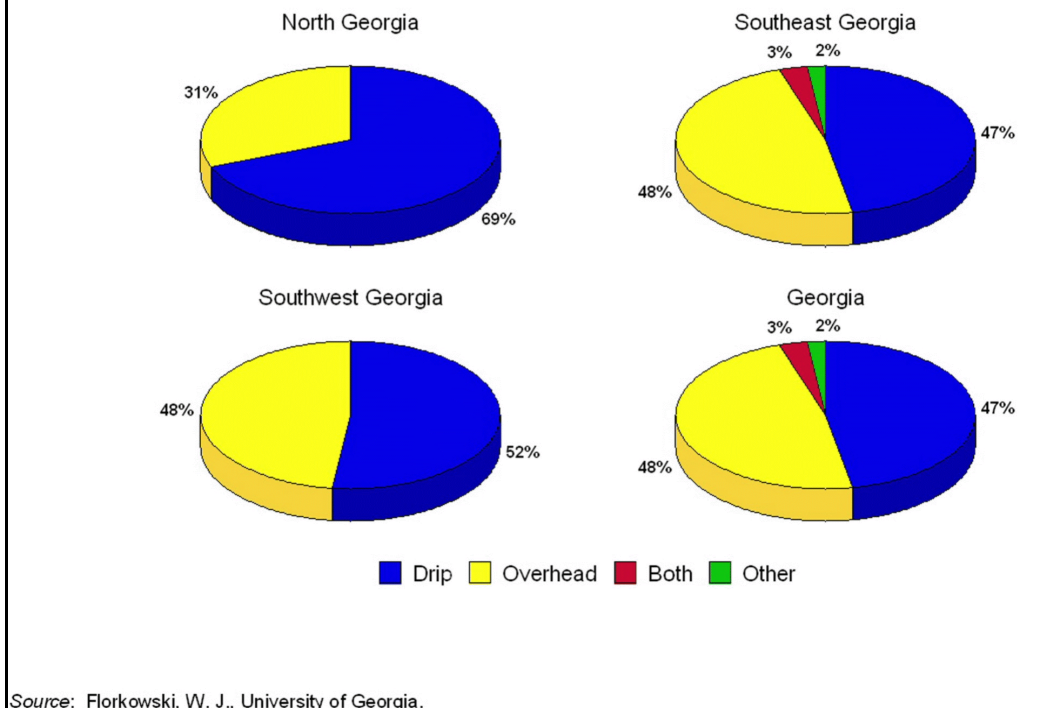
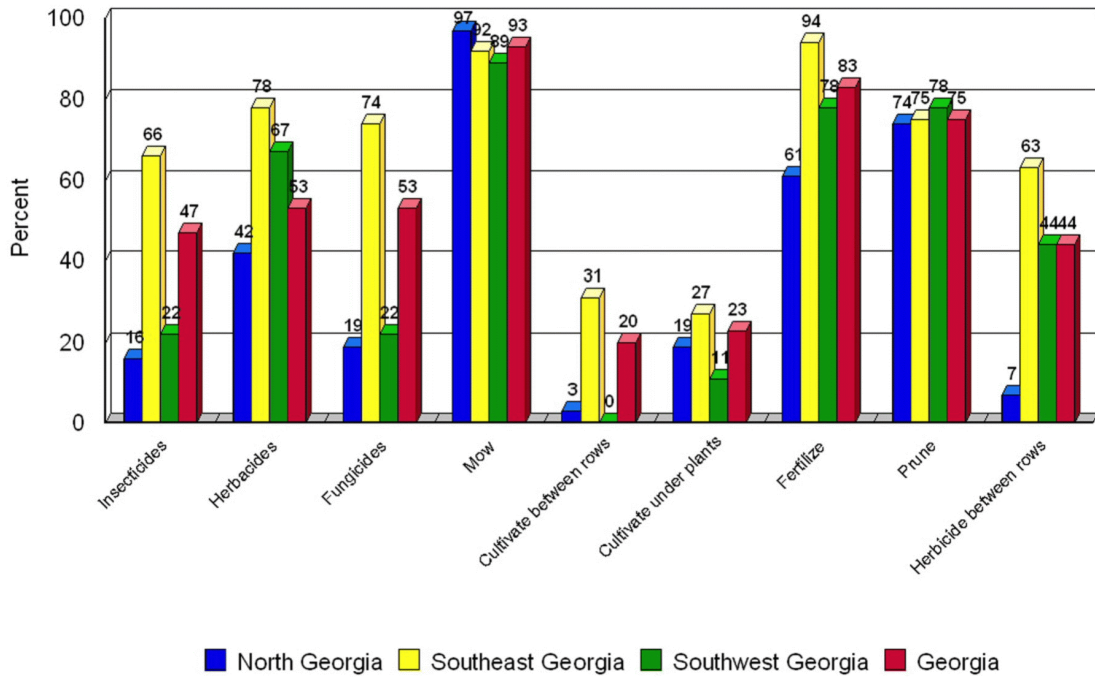
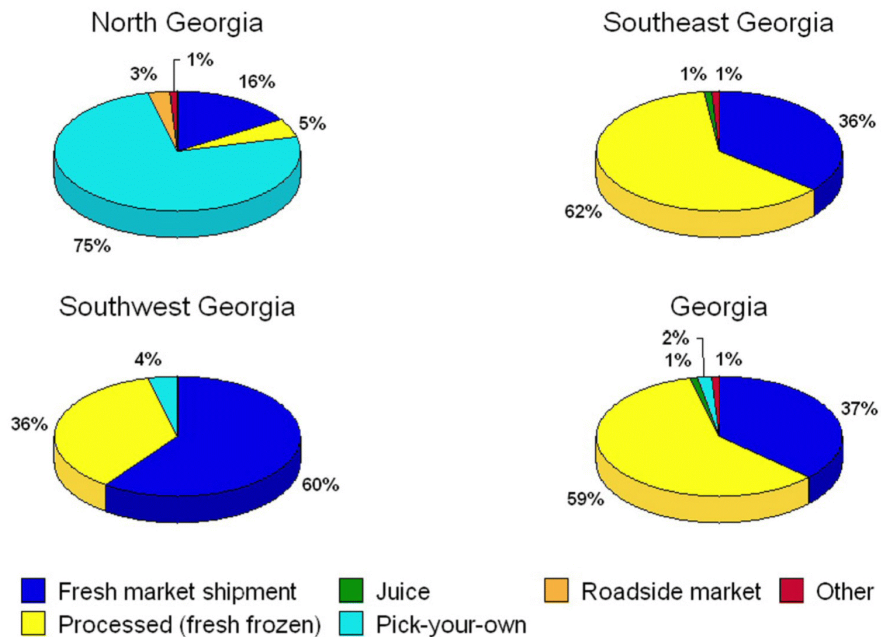


Figure 9. Percentage of Georgia Blueberry Growers Using Various Cultural Practices, by Area, 2002 Survey Results



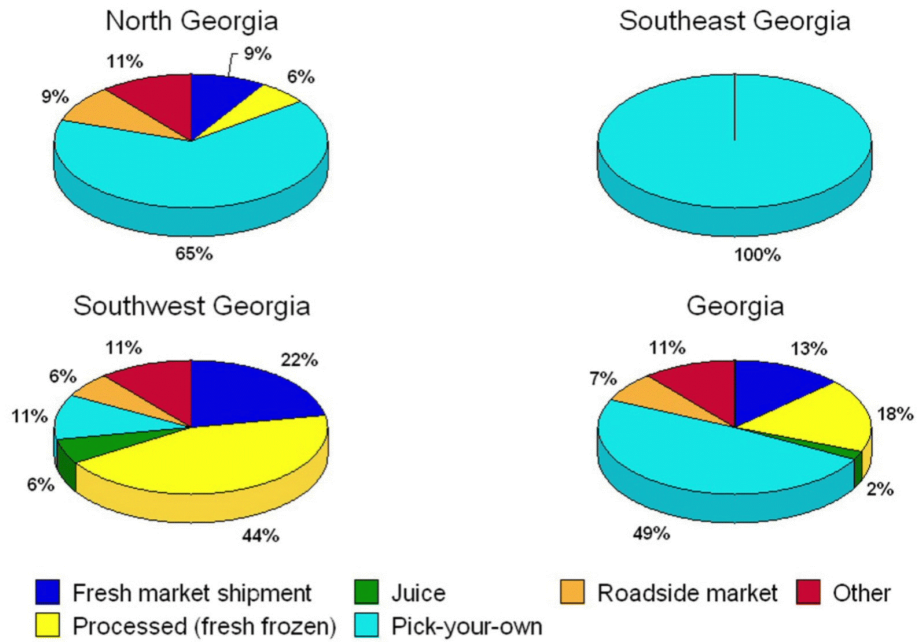
Source: Florkowski, W. J., University of Georgia.

Figure 10. Alternative Marketing Channels Used by Georgia Growers in 2002, by Area, 2002 Survey Results



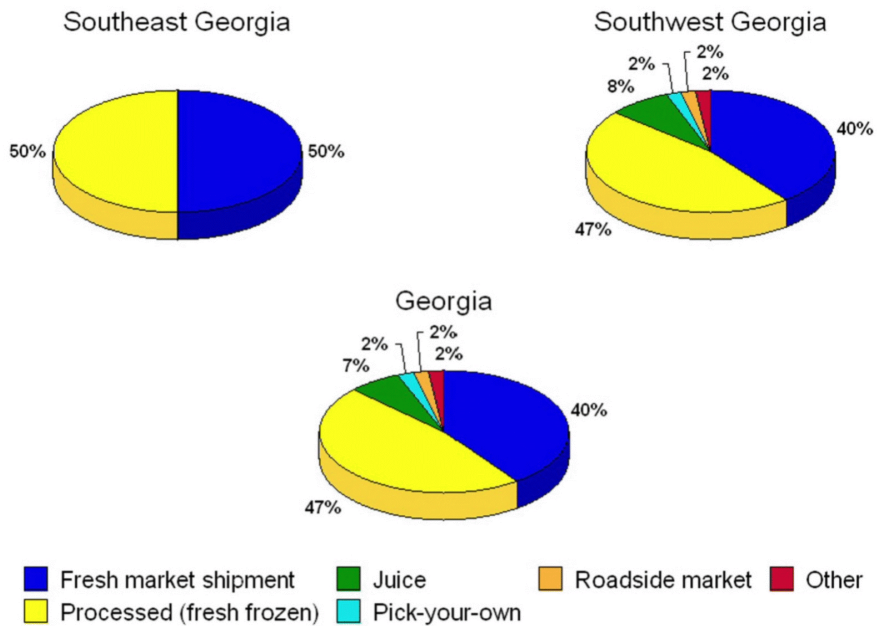
Source: Florkowski, W.J., University of Georgia

Figure 11. Alternative Marketing Channels used by Small Growers in Georgia in 2002, by Area, 2002 Survey Results

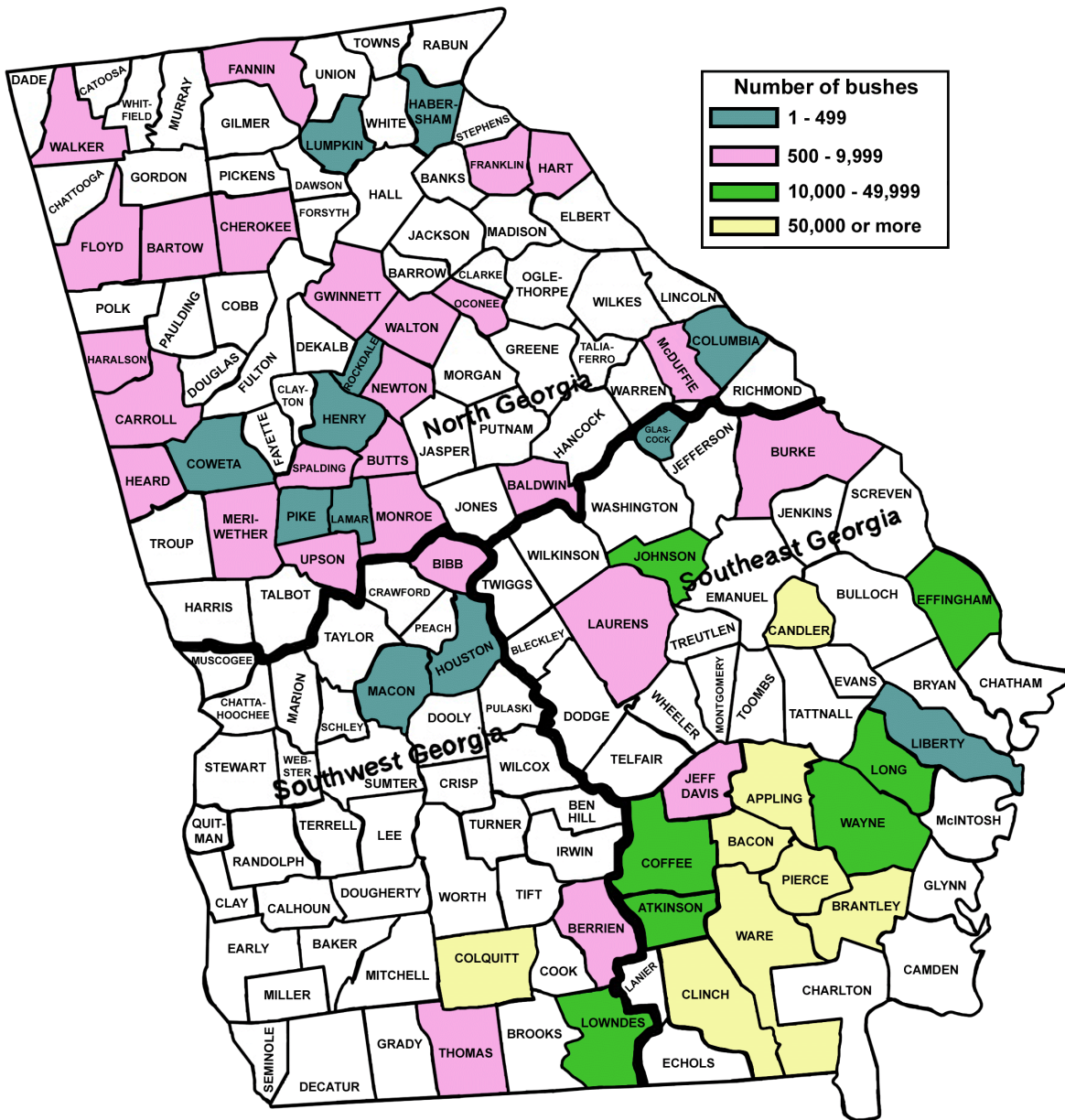


Source: Florkowski, W.J., University of Georgia

Figure 12. Alternative Marketing Channels used by Large Growers in Georgia in 2002, by Area, 2002 Survey Results



Source: Florkowski, W.J., University of Georgia



Distribution of blueberry plants by county, Georgia, 2002 survey results

