Blueberries: Maintaining a Competitive Advantage II

Thursday afternoon 1:00 pm

Where: Gallery Overlook Room A-B (upper level)

CCA Credits: IPM(1.5) PD(1.5)

Moderator: Eric Hanson, Horticulture Dept., MSU

1:00 p.m. Blueberry Production and Acreage in North and South America
  • Bernadine Strik, Horticulture Dept., Oregon State

1:40 p.m. Production and Acreage in Europe and the Pacific Rim
  • Rupert Hargreaves, Hargreaves Plants Ltd

2:10 p.m. Lowbush Blueberry Production Trends
  • David Yarborough, Horticulture Dept., Univ. of Mai

2:30 p.m. Strategies for Future Profitability - Industry Panel
  • Randy Adkin, Blue Ribbon Packing Company, South Haven
  • Mike DeGrandchamp, DeGrandchamp Farms, South Haven
  • Bob Carini, Carini Farms, West Olive
  • Tom Bodtke, Cornerstone Ag
Blueberry Production and Acreage Trends
North and South America, Highbush

Bernadine Strik¹ and Pilar Bañados²
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Casilla 306-22, Santiago

Blueberry production in North America has a long history with cultivation of rabbiteyes and northern highbush starting in the late 1800’s and early 1900’s. The first southern highbush blueberries were released by the University of Florida in 1975. The initial area planted to highbush blueberries was slow with less than 200 acres planted in 1930. However, by 1965 there were 20,000 acres of highbush.

Species of blueberries cultivated in North America were introduced to South America in the early 1980’s to evaluate their potential. By 1993, there were 1,430 acres planted in Chile and there were less than 10 acres in Argentina.

This presentation reports results of surveys conducted by Bernadine Strik (North America) and Pilar Bañados (South America) in 2003. We greatly appreciate all the contributions of our academic and industry colleagues without whom we would not have been able to provide such an accurate overview of how production has changed in the last 10 years. We will also report on projections for changes in the next 10 years.

For the purposes of this presentation, “highbush” includes northern and southern highbush cultivars and rabbiteye blueberries.

NORTH AMERICA

USA. The area planted to highbush blueberries increased from 48,790 acres in 1992 to 55,898 acres in 2003, a 15% increase. In 2003, the mid-western region accounted for 35% of the area planted. The southern, northeastern, and western regions accounted for 29%, 19%, and 13% of the planted area in 2003, respectively (Table 1). The relative importance of these production areas in the USA has changed relatively little since 1992, except the proportion of area in the western region increased from 6% to 13%; this increase was due to relatively little change or a decrease in area planted in the northeastern and mid-western regions as well as more plantings in the West. In fact the only two regions of the USA that have significant projected growth in the next five to ten years are the western and the southern regions (Table 1).

Specific states in the USA that had considerable growth in highbush blueberries planted from 1992 to 2003 were California, Mississippi, North Carolina, Oregon, and Washington.

There were an estimated 480 acres of highbush blueberries produced organically in the USA in 2003.

Typical yields for well-managed, mature highbush blueberry fields were reported as 3 to 4 tons/acre for the northeastern, southern, and southwestern regions, 4 to 4.5 tons/acre for the mid-western region, and 9
tons/acre for the western region (excluding Idaho where blueberries are less well adapted and California where there were few mature fields in 2003). Of course, yield amongst fields within a region is extremely variable due to effects of microclimate, cultivar, and management practices.

The area of highbush blueberries planted in the USA is expected to increase by 33% in the next 10 years (Table 1). Of particular note, is the huge projected increase in plantings in California to 8,000 acres in 2013. Planted area in Mississippi is expected to almost double in the next 10 years (to 3,500 acres).

**Canada.** The area planted to highbush blueberries increased 105% from 1992 to 2003 (Table 1). British Columbia continued to account for the majority of the area planted (91%), but there was also a large increase in highbush plantings in Quebec. There were an estimated 60 acres of organically produced highbush blueberries in Canada in 2003. In Canada, typical yields ranged from 5 tons/acre in Ontario and Quebec to 8 to 9 tons/acre in British Columbia. Planted area of highbush blueberries is expected to increase by 26% in the next 10 years in Canada (Table 1).

**Mexico.** There were an estimated 25 acres of blueberries in Mexico in 1992 (Table 1). Commercial blueberry plantings in Mexico were estimated at 70 acres in 2003. If projections are correct, planted area in Mexico will increase by almost 30 fold in 10 years (Table 1).

**SOUTH AMERICA**

Fruit are harvested, by hand, from the end of September through April depending on country and region. Most fruit are exported to markets in the northern hemisphere.

**Chile.** Blueberry production in South America started in Chile. Chile still accounts for 65% of the acreage and 90% of the total production in South America. Acreage increased four fold to 6,175 acres from 1993 to 2003 (Table 2). The projected increase is for 740 acres to be planted per year in this country for the next few years. About 55% of the cultivars are northern highbush, 35% southern highbush and the rest rabbiteye. Most of the production (70 to 75%) is from the first week of December to the last week of February. Typical yields in Chile are 4.5 to 5.5 tons/acre. In the 2003/04 fruiting season, Chile exported 10,650 tons of fruit, 97% fresh and 3% frozen. The USA is the main destination (86%) and Europe the next (10%).

**Argentina.** Blueberry production in this country started about 1991 near Buenos Aires. Most of the acreage increases have occurred since 2000. In 2003, there were an estimated 2,965 acres planted in Argentina (Table 2) with a production of 990 tons (2003/04). Production is expected to increase to 4,075 tons for the 2007/08 production season from higher production as existing plantings age and new plantings. Most cultivars planted are southern highbush. In 2003/04, 64% of production was exported to North American and 35% to Europe. Fruit need to be fumigated prior to shipping to eradicate fruit fly limiting shelf-life. Acreage is expected to double in the next five years.

**Uruguay.** Although blueberries were introduced to Uruguay in the mid 1980’s, acreage has only increased recently. In 2003, there were an estimated 250 acres and 65 tons produced (Table 2).

**Brazil.** Another country in South America with over 50 acres of blueberries in 2003 was Brazil (Table 2).

**SUMMARY**

In North America, acreage of highbush blueberries increased from 54,192 to 66,978 acres from 1992 to 2003 (a 24% increase). This increase was much more than what was predicted (14%) from 1992 to 2000 in Moore’s survey (1994). North America accounted for 75% of the acreage and 83% of total highbush
blueberry production in the world in 2003 (Brazelton, 2004). Total highbush blueberry production in North America in 2003 was 115,450 tons with approximately 60% sold for fresh market (NABC, 2004).

The proportion of total area planted to southern highbush blueberries has increased in the last 10 years (from 2% of the total acreage to 10% of the acreage); these blueberries, as well as the rabbiteyes, greatly increase the area in which blueberries are adapted and will likely increase further in proportion of total area planted in another 10 years. North American acreage is projected to grow another 33% in the next 10 years provided markets stay strong.

South America accounted for about 10% of the world’s highbush blueberry acreage in 2003. Acreage is expected to grow by 32% in the next three years and is predicted to be a total of 14,825 acres in 2008 (data not shown). This increase in acreage is due to high prices for fresh fruit in the off-season markets in the northern hemisphere and to increased demand for fruit worldwide.

**Literature Cited**


Table 1. The acreage of highbush blueberries (northern and southern highbush and rabbiteyes) from 1982 through 2003 and projections for the next 10 years. 1982 and 1992 data from Moore (1994).

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Table 2. The acreage of highbush blueberries in South American countries from 1987 through 2003 with projections for 2006.

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Lowbush Blueberry Production Trends

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Lowbush blueberries (Vaccinium angustifolium) are unique in that they are commercially grown in the State of Maine in the United States and in Quebec and the Atlantic Provinces in Canada. Maine has 65 thousand acres, Quebec has 40 thousand acres of improved fields plus hundreds of thousands of acres of Provincial Crown land; they are grown on 24 thousand acres in New Brunswick, on 37 thousand acres in Nova Scotia, 5,000 acres on Prince Edward Island (PEI) and 1,200 acres in Newfoundland. There are also minor areas of commercial production in New Hampshire, approximately 1000 acres; Massachusetts about 500 acres and Michigan about 200 acres. The wild producing acreage greatly exceeds the cultivated area with 71% of the acres but produces only 45% of the North American blueberry crop. Since only half of the lowbush blueberry fields are harvested because of the two-year pruning cycle and the unimproved varieties have a wide range of yielding potential, the yield is considerably less compared to cultivated plantings.

Approximately 40% of the lowbush crop is grown in Maine and 60% comes from Canada. The wild blueberry crop has increased by an average of five million pounds each year over the last 20 years and now averages 180 million pounds per year. Since 1980, approximately 10,000 new acres added in Maine, and over 15,000 acres have been added in New Brunswick and Nova Scotia; PEI has also developed more than 4,000 new acres. Projections for future increases are modest with only 5 to 10% increases in acres projected for the next 10 years. However, most of the gains in yield have come from improved management of the existing fields and not expansion of the fields.
Improvements in management practices have contributed to a four fold increase in the production of lowbush blueberries over the past 25 years. The catalyst for this increase in yield has been improved weed management. The registration of the broad-spectrum peremergence herbicides hexazinone and sinbar, postemergence wiper applications of glyphosate and selective grass control herbicides has resulted in effective weed suppression and more than doubling the yield.

The use of herbicides allowed for the addition of fertilizer to improve blueberry growth with out stimulating the weeds and reducing yield, as fertilizer will do without adequate weed control. A method of testing leaves to determine the levels of Nitrogen (N) and Phosphorus (P) and recommendations for the use of DAP or MAP fertilizers has been developed at the University of Maine and is used by growers to manage their fertilizer applications. Research has shown the use of DAP fertilizer increased stem length, flower buds and yield from 5,500 to 7,000 lb/a, when N or P was limiting. Soil samples are taken to determine the pH only, since no significant correlations with blueberry yield have been found with nutrient levels in the soil. A reduction in soil pH reduces available nutrients and increases metals which makes the environment more favorable for blueberries and less so for weeds. Since a reduction in the pH from 6.0 to 4.0 had no effect on the yield of wild blueberries, sulfur is being used as a cultural method to reduce the pH, thereby reducing herbicide inputs needed.

The use of imported honeybees has significantly increased over the past 20 years so that more than 60,000 honeybee hives are imported into Maine for the pollination of the lowbush blueberry crop. All of the Canadian provinces have increased their use of pollinators. There is some pollination from native bees, but this accounts for less than 1000 lb/a. In order to increase the yields beyond that it is estimated that one hive is needed for each 1000 lb/a increase in yield. The increase in lowbush blueberry production is strongly correlated with the use of honeybees.

When water becomes limiting, then interest in irrigation has increased. Research on wild blueberry irrigation on the crop year in the 1950's indicated a positive response. More recent research conducted in Maine in 2000-2001 has shown a 43% increase in yield with irrigation. Rainfall records over the past 35 years show there is less than a 20% probability of have one inch of rainfall per week in August. With 2,500 acres above-ground and 7,500 acres of in-ground irrigation systems Maine is the only lowbush blueberry growing area that has made a substantial investment in irrigation.
Periodic outbreaks of chewing insects, fruit fly infestations and or Monilina disease can cause substantial crop losses. Integrated Crop Management monitoring methods for insects include using traps, sweep nets and action thresholds that enable growers to determine when pest populations reach damaging levels and to apply pesticides only when needed. A method to predict the incidence and severity of Monilina allowed growers in Maine to reduce the use of fungicide application by half in 2001. The net result of this management is to reduce costs and to prevent loss in yield.

Prior to 1980 almost all wild blueberry fields were pruned by burning using straw or an oil burner. Research indicated that mowing to within an inch of the soil surface would produce equivalent yields to burning. With the increases in oil prices, this pruning technique was widely adopted on all fields flat enough to mow low enough. Although some field sanitation of surface insects and mummy berries are lost, the cost of pruning is substantially reduced, making production more efficient.

Land leveling with excavators removes rocks and smooths out knolls, which is required for in-ground irrigation, but also allows the land to be mowed for pruning and mechanically harvested, thereby reducing the two most expensive costs of production. Nova Scotia has land leveled over 20,000 acres, New Brunswick, over 10,000 acres, Maine, over 8,000 acres and PEI over 5,000 acres, and this process is still continuing. A surface mulch is also being used on some fields to increase rhizome spread and reduce soil erosion.

The quest to develop a mechanical harvester for wild blueberries has been going on since the 1950's. A successful harvester was developed by the Bragg Lumber Company in Collingwood, Nova Scotia in 1979 using an open reel head developed by the University of Maine. There are now more than 750 operating harvester heads and a 92% recovery of blueberry fruit may be obtained using a properly adjusted and operated Bragg harvester. In Canada most of the fields are now mechanically harvested and in Maine more than half are harvested mechanically. This trend is expected to continue. A smaller, more efficient harvester that produces fruit quality equivalent to hand-raking was just developed in Maine. Since harvesting is the largest cost of production, this trend to increased use of mechanical harvesters will reduce production costs and improve profitability.

Factors that are limiting lowbush production in Maine have been largely legal. The Federal listing of Atlantic salmon as an endangered species in Downeast rivers in Maine limits access to water for irrigation which is required for further production increases. A Class action lawsuit on price fixing that convicted
the three largest processors has resulted in $5 million dollar judgment for the growers, but I expect that less field management will be done by the processors for the smaller growers as a result. The National Environmental Law Center legal action resulted in Cherryfield Foods Inc., Maine’s largest grower, to agree to not spray pesticides by air in Maine. Most small growers are part time and many do not live on their fields. This will mean the smaller growers will have to make arrangements with custom applicators or spray themselves. Since most of the smaller growers do not actively manage their fields it is expected that many of the smaller fields, especially those that must be burned, will not be in production in the future. Government assistance and encouragement of the establishment of lowbush blueberry fields is expected to continue the trend of expansion of new fields in Canada.

For more information


WEB:

http://www.wildblueberries.maine.edu/

http://www.nsac.ns.ca/wildblue/

http://www.gov.ns.ca/nsaf/elibrary/archive/hort/wildblue/

http://www.gnb.ca/0171/10/017110index-e.asp