



Whitesbog Preservation Trust

NEWSLETTER

2nd Quarter

www.whitesbog.org

2011

Birthplace of the Highbush Blueberry - Historic Center for Cranberry Innovation

The Modern Highbush Blueberry Industry

by Mark Ehlenfeldt



This Quarter we divert from Whitesbog history and concentrate on the Present. The blueberry industry today is a dynamic and changing business, but few of the changes are apparent to the average consumer. The single biggest change for consumers occurred in about 2000 when the industry converted virtually overnight from pulpboard packages to plastic clamshells. Despite the fact that most other changes are invisible, the industry is changing, and it is changing fast. The following is a brief review of some salient points.

First, some factoids - The industry is booming. In the last 10 years, total U.S. highbush blueberry production has increased almost 3-fold, going from 140 million pounds in 2001 to 413 million pounds in 2010. In the last 5 years (2005-2010), total acreage went from 48,310 to 86,410, and yields increased from 4,810 lb/acre to 6,040 lb/acre. Market value in this same period increased \$324 million to \$590 million.

As recently as 2007, New Jersey was the second only to Michigan in blueberry production, at about 7,500 acres harvested. In the last five years, however, the situation has changed dramatically. Georgia has more than doubled its acreage from 6,000 to 13,000 acres, and has become 2nd in production (at 58 million lbs.). During that same time,

Oregon increased both its acreage (from 3,800 to 6,100 acres) and its production so that it is currently 4th in acreage and 3rd in production (50.8 million lbs.). New Jersey is 4th in production at 49 million pounds, 3rd in acreage at a fairly steady 7,500 acres, and 4th in value at \$62.5 million. California, another state with rapidly increasing acreage, was up from 1800 to 3900 acres between 2005 and 2010. However, because of marketing windows, California is 2nd in value at \$76 million, despite being 7th in production at 28 million pounds. (For more charts from 2005 and 2010, see the Online Extras of this newsletter).

Other Blueberry Production in the Northern Hemisphere

In North America, the harvest moves from south to north as the season progresses. Prices decrease in step, as the harvest progresses and supplies increase. The main exception being price rebound at season's end for Michigan as supplies once again shrink. Florida and California, being southerly, are among the earliest U.S. producers and can command premium prices. Is it any wonder then that blueberries and other berry crops are being planted in the highlands of Mexico? Berries produced in Mexico can potentially beat most U.S. states to the market. In Mexico, crops such as raspberry are manipulated to produce

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multiple crops per year through the use of plant growth regulators. Similar experimentation is being done with blueberry.

The Chinese have plans to produce blueberries on a large scale. China has a range of climates and conditions that can potentially allow them to grow blueberry types ranging from lowbush to rabbiteye. Will China affect the U.S. market? It's hard to predict. Shipping costs will be considerable, but their production costs may continue to be cheap. Even if China cannot successfully compete for the internal U.S. fresh market, it can flood the process market with inexpensive fruit, and it can compete against the U.S. on the global fresh export market, a market that the U.S. currently dominates. Oversupplying either of these markets may cause prices to plummet. A number of years ago, China began producing large quantities of apples, and ruined the U.S. apple market in just such a manner. Recently, a Chinese researcher commented "China went into apple production and in 20 years became the world's largest producer. How long to become the biggest producer of blueberry? Maybe 15 years."

Production in the Southern Hemisphere

In the recent past, off-season blueberries have come from New Zealand (Australia also produces blueberries, but they are quarantined from U.S. import because of a fruit fly found in Australia). Today, most off-season fruit comes from Chile (as do so many fruits seen in U.S. supermarkets in winter). Argentina also produces blueberries, but its production is not yet as extensive as Chile's. Chile is not considered much of a threat to U.S. production since it occurs in our offseason, and in fact, such offseason production has helped blueberries to become a fruit that is available year round.

Blueberry Varieties

In New Jersey, growers grow a minimum of 3 varieties without fail: 'Duke', 'Bluecrop', and 'Elliott'. Why these three? They cover the blueberry season and are consistently productive. 'Duke' is our early season blueberry, and is crisp

and mild (some say bland). 'Bluecrop' is our mid-season variety, and is what everyone classically thinks of when they think of highbush blueberry. 'Elliott' is our late season variety. It's often small and a bit on the tart side. Other varieties are grown in lesser quantities to bridge gaps in the season. Some newer varieties making inroads are: 'Draper' (second early), 'Legacy' (midseason), and 'Liberty' (mid-late season).

Varieties in Florida – Fast Turnover

Every region has an interest in new and improved varieties, but none more so than Florida. Florida varieties must perform under unique conditions of low chilling, high heat stress, and aggressive diseases, so growers grow varieties that are relatively specific to Florida. Moreover, because diseases creep in and varieties decline over several years, some growers are now on 4 year variety rotations. Plant, harvest, and gone in 4 years.

Specialty varieties

The major demand among commercial growers is for high-yielding standard production varieties; however, the landscape, culinary, pick-your-own, and home grower markets have driven demand for specialty varieties. In recent years several pink-fruited varieties have been named (see 'Pink Lemonade', currently in many garden catalogs), a few with dark, nearly black fruit have been released (see 'Summer Sunset' <http://www.smallfruits.org/Blueberries/production/OrnamentalBlueberryReport2010.pdf>), and several with unique and delicious flavors ['Razz' (raspberry overtones), 'Hannah's Choice' (sweet with peachy overtones), 'Cara's Choice' (sweet with balanced aromatic overtones)].

Drip irrigation, Overhead irrigation

In the last 10 years most large growers have installed at least some drip irrigation. This is a much more efficient way of watering as well as an irrigation method that conserves water resources. Considerable instigation for the installation of drip irrigation came from 50% subsidies from the Soil Conservation Service, but many growers recognized it would also produce a net economic return in healthier plants and lower irrigation costs. Overhead irrigation is still needed to some degree for springtime frost protection, however. As a compromise, some growers retain overhead sprinklers on low ground where cold air accumulates during frost events, and install drip irrigation on high ground which needs less frost protection and might benefit from more frequent irrigation.

The Rise of the Machines

New Jersey has traditionally been a fresh market state; that is, most of its fruit goes to the fresh market (not the process market). For many years it was considered typical that two-thirds of New Jersey's crop was hand-harvested and one-third machine-harvested. (It has been similarly estimated that this was the inverse of the U.S. as a whole). These machine-harvested fruit were usually the second or

third pickings of any given variety, and were usually destined for the process market. This situation, however, is changing very quickly. In 2010, many New Jersey growers found they had insufficient migrant labor, with estimates that the labor pool was reduced by 20-30%. Fast forward to 2011. Most growers found they could contract only about 50% of the labor they desired. It has given them little choice but to machine-harvest even first-pick fruit destined for the fresh market. Fortunately for growers, the local early-season variety, 'Duke', is very firm, and retains its quality on the bush, and thus is amenable to machine-harvesting. Seasonal labor began hand-harvesting 'Duke', at the same time some of the first-pick was also being machine-harvested. But by about the second week of the 2011 season, growers took most of the limited hand-harvest labor, and moved them from 'Duke' (which they could then continue to machine-harvest), to 'Bluecrop', our midseason cultivar, which is much less suited to machine harvest. It's unlikely that the labor situation will improve significantly in forthcoming years, hence it seems likely that in New Jersey and elsewhere, growers will take advantage of newer varieties more suited to machine-harvest, and will utilize improvements in harvester and packing technologies.

What is Black Ice™?

Black Ice™ is the newest idea in mechanical blueberry harvesters; a blueberry harvester that uses fans and air to shake berries loose. In theory it is gentler on fruit than traditional harvesters. Is this really the case? The jury is still out, but if it is true it may reap big profits for its manufacturer, BEI International, LLC. See it at www.youtube.com/user/beiharvester#p/a/u/2/mNyx-txe-Dg.

Pre-cooling

A big secret to better berry storage is pre-cooling; removing field heat. If blueberries can be quickly cooled to about 40° F, their storage is dramatically improved. Larger grower/shippers today have large pre-cooling rooms where pallets of berries coming from the field can be stacked, and draped with close-fitting plastic curtains so that cool air can be forced uniformly through the perforated lugs from one side to the other, quickly cooling them to the desired temperature. Once berries are pre-cooled, efforts are made to keep them cool throughout all subsequent processes. Thus packing houses which were once kept at ambient temperatures are now often air-conditioned, more in concern for berry quality than for worker comfort (see photograph at the top of this article).

Machine Vision Sorting

About 5 years ago, almost every packer of any size got color sorters. These color sorters use machine vision (computers and cameras) at high speeds to pick out green and pink fruit and produce a better looking pack. Beginning within the last two years, and continuing today is the installation of firmness sorters. Firmness sorters make berries bounce on a narrow pressure sensor strip and reject

berries that stay in contact with the sensor for microseconds too long (these are the berries that are rotten or too soft). These two types of sorters have become increasingly important as the industry has moved to more machine harvesting.

Packaging

About 10 years ago, the blueberry industry converted almost universally within a 2 year period to plastic clamshell packaging. The reasons for this were several economies of packaging. Clamshell packing lines can very accurately and quickly weigh, fill, seal, and label these plastic containers. Clamshells allow visibility, have great ventilation, and have the ability to be stacked without crushing berries and overall, result in better shipping.

What is IQF?

IQF stands for Individually Quick Frozen (and is used specifically for berries for the process market). While not really a new concept, big growers and grower cooperatives in many areas now produce IQF berries. Berries are quick-frozen in liquid nitrogen and packaged such that berries stay as individuals, and don't freeze into a solid block. This is particularly needed if fruit is being used for baked goods or to produce a loose freezer pack for the grocery store market.

Antioxidants, price, supply, and the future of the industry

Antioxidants have played a large role in both the increase of per capita consumption and the profitability of blueberry growing. Per capita consumption has increased about 8.5% per year across the last 10 years, and per capita consumption in the U.S. in 2010 was 27 ounces (1.7 pounds). Although this may sound like a good number, it pales in comparison to the per capita consumption of strawberries (8.5 pounds in 2009) or grapes (about 8.6 *(continued on page 7)*





Jessica Shilling channels

Elizabeth White

Whitesbog is an exciting place not only because of its historical significance, but also because of the variety of people we meet. We come to know some of them when they visit Whitesbog; others are introduced over the phone. In late January, a call came in from Lewistown, Pa. The caller was Jessica Shilling, a high school sophomore who had to research an historical figure and portray this person at a high school assembly. Jessica chose our patron "saint", Elizabeth Coleman White, the Blueberry Queen. When Jessica was doing her research she became frustrated because she discovered that there was little public documentation regarding Elizabeth. She placed that phone call to Whitesbog to ask for help. Over the next few months there were many calls back and forth to Stephanie Schrader regarding her portrayal of Elizabeth. Both Stephanie and Albertine Senske provided Jessica with copies of articles about Elizabeth from Whitesbog's archives. The collaboration was a success and the efforts proved worthwhile when Jessica received superior grade for her portrayal and interpretation of "The Blueberry Queen". An added bonus - Elizabeth is now known in a new locale. Great job Jess!!! ■



Archive Cataloging Underway

Late last year the Whitesbog Preservation Trust applied for an archival grant to begin cataloging its many artifacts. Last spring, we were fortunate to receive \$6500 in Special Project Funds from the New Jersey Historical Commission, and in March, work on this process began in earnest. As part of this grant, the Trust has purchased a computer dedicated to the archives, as well as PastPerfect 5.0 cataloging software. The software has been installed, and two collections have been cataloged (Tru-Blu Cooperative artifacts, and Tru-Blu co-op grower Linda Palandrano member #309 artifacts). Management policies are being developed along with a software user guide for volunteers. Currently we are in the process of cataloging the files on the history and culture of the cultivated blueberry to coincide with the Centennial Celebration of highbush blueberry domestication. There are many steps in cataloging each artifact: research, writing descriptions for the catalog, photographing the item, data and photo entry into the computer, and labeling the artifact with a catalog number. If any of this piques your interest and you would like to participate in the archive cataloging project, contact Albertine Senske on Tuesday, Wednesday, or Friday between 10 a.m. and 4 p.m. at 609-283-0255. ■





Pie eating contest

Festival launches the Blueberry's Centennial!

Beautiful weather and the beginning of the highbush blueberry's 100th Birthday Celebration drew thousands to Whitesbog on June 25th to enjoy the 28th Annual Whitesbog Blueberry Festival. Record crowds enjoyed the Centennial Art Exhibit, which featured 250 works of blueberry art by 3rd, 4th, and 5th grade students from the Harold J. Van Zant Elementary School, in Marlton, NJ and poetry written by 4th graders from Veteran's Memorial Elementary School, in Brick, NJ. Funding for the exhibit, and the Festival (in part), was made possible by the New Jersey State Council on the Arts/ Department of State, a Partner Agency of the National Endowment for the Arts through a grant to the Burlington County Board of Chosen Freeholders.

If you missed the festival, you missed a great day! Children were everywhere this year, searching for the Jersey Devil along the Old Bog Trail, composing poetry for "Miss Lizzy" in Suningive's garden with Paula Newcomer, enjoying the arts, crafts & environmental activities provided by PINES, picking the biggest, best crop of blueberries ever, and packing the Blueberry Pie Eating Contest with a record number of contestants.

A special thank you to all of Whitesbog's devoted volunteers! All of you, and the Festival, got rave reviews and a multitude of "thank you so much, we had a wonderful time" remarks from everyone – visitors, vendors, and very happy Festival participants.

As the Trust's major fund raiser, we are also delighted to report that this year's Festival income exceeded last year's. No small feat, given the economy. Thank you all for your dedication, hard work, and support on behalf of Whitesbog!

The Whitesbog Preservation Trust Board of Trustees, and our members and volunteers offer our sincere thanks to the

many organizations that helped us to make this year's Festival such a success: Brendan T. Byrne State Forest, Department of Environmental Protection, Division of Parks and Forestry for their support and services prior to, during, and following the Festival; the Pinelands Institute of Natural & Environmental Studies (PINES) of Burlington County College for the children's arts, crafts & activities, as well as all the festival's tables & chairs, the Pinelands Antique Engine Association for their fabulous engine exhibits, wagon rides, and help with set-up & take down, the Pemberton Township Office of Emergency Services and the Pemberton Township Fire Company for their first-aid assistance and support services, the New Jersey Youth Challenge Academy for their traffic control, parking, set-up/take down, and overall festival support, the White Dotte Dairy Bar for their famous ice cream & blueberry sundae supplies, DiMegilio Septic Services for facilities for the handicapped, the Pemberton Township Public Works Department for providing our traffic barriers, and finally, the Browns Mills Burger King® for the ice that kept everything cool. Without the generous support of our Festival partners, the unique history of Historic Whitesbog Village might be lost to the pages of history. Many, many thanks for your ongoing commitment, dedication, and service.

The Whitesbog Preservation Trust also thanks our very special 2011 Blueberry Festival Silver Sponsors: Joseph J. White, Inc., Pine Island Cranberry Company, Inc., David Lerner Associates, and ING Financial Services; Bronze Sponsors: Beneficial Bank, Burlington County College, Deborah Heart & Lung Center, Dietz & Watson, Inc., Joe Smolarski & Son, J.W. Jenkins & Sons, The Kokes Organization; Red Lion Diner, Sun National Bank, and Centennial Sponsors: Albright Electric LLC, Pemberton Solar System, and Primerica.

A special thank you is due to Andrew Edwards, Josh Rubeo, and Tyler Reynolds, who all took turns as the Jersey Devil, and to everyone who helped to coordinate and manage the day by setting up vendors and friends groups, manning a station, welcoming guests, conducting lectures and tours, dipping ice cream, cutting pies, and selling books, blueberries, baked goods, plants, preserves, t-shirts, tickets, postcards and soda – THANK YOU for a real Blue Ribbon Day! ■

Thank you to our Funders

- The New Jersey Cultural Trust
- New Jersey Depart. Of Environmental Protection – Trail Grant
- The New Jersey Historical Commission – General Operating Support
- The New Jersey Historical Commission – Special Project Grant - Archives



WHITESBOG EVENT SCHEDULE

For more information call (609) 893-4646, e-mail us at WhitesbogPreservationTrust@comcast.net or visit us on the web at www.whitesbog.org.

August

6 Volunteer Workday 10 a.m. - 3 p.m.

Have fun with friends, working in the gardens, repairing trails, restocking the General Store and working around the Village. Lunch provided.

6 Whitesbog Village Tour 1 p.m.

Stroll the Historic Village, learn about Whitesbog's history, and visit Suningive, Elizabeth White's historic home, the worker's cottages and other buildings of Whitesbog's heritage. \$5 donation/person. \$5 donation/person

7 Quarterly Lecture Series 1 p.m.

"Elizabeth C. White and Migrant Worker Welfare", presenter: Albertine Senske. \$5 members, \$7 non-members, by reservation.

13 Moonlight Walk 7 p.m.

Sturgeon Moon. Listen to the night sounds of the Pines, learn about Whitesbog and experience the seasonal changes of the Pinelands. Walks are 3 5 miles long, and led by experienced leaders. \$5 donation/person, reservations requested. Join us to view the Perseids Meteor Shower.

September

10 Volunteer Workday 10 a.m. - 3 p.m.

(See August 6).

10 Whitesbog Village Tour 1 p.m.

\$5 donation/person. (See August 6).

10 Moonlight Walk 7 p.m.

Harvest Moon. \$5 donation/person, reservations requested. (See August 13 listing for details).

18 Quarterly Lecture Series 1 p.m.

"Families of Whitesbog: The Haines, Forts & Darlington's", by: Ted Gordon. \$5 members, \$7 non-members, by reservation.

October

1 Volunteer Workday 10 a.m. - 3 p.m.

(See August 6).

1 Whitesbog Village Tour 1 p.m.

\$5 donation/person. (See August 6).

8 Moonlight Walk 7 p.m.

Hunter's Moon. \$5 donation/person, reservations requested. (See August 13 listing for details).

9 Pinelands Discovery Festival 11 a.m. - 4 p.m.

Celebrate the history, ecology & unique culture of the Pinelands! Sponsored by Burlington County College's Pinelands Institute for Natural and Environmental Studies. Hosted by Whitesbog! Parking Fee.

15 Cranberry Industry Lecture and Harvest Tour 10 a.m.

\$10 donation/person, reservations required. View a modern wet-harvest and learn about the history and cultivation of cranberries in NJ.

22 Cranberry Industry Lecture and Harvest Tour (same as above) 10 a.m.

November

5 Volunteer Workday 10 a.m. - 3 p.m.

(See August 6).

5 Whitesbog Village Tour 1 p.m.

\$5 donation/person. (See August 6).

6 Quarterly Lecture Series 1 p.m.

"Blueberries – From Picking to Packing: Some Tools of the Trade from the Past", presenter: Millie Moore. \$5 members, \$7 non-members, by reservation.

12 Moonlight Walk 7 p.m.

Beaver Moon. \$5 donation/person, reservations requested. (See August 13 listing for details).

(Modern Blueberry Industry continued from page 3)

pounds in 2008, juice not included). Thus, blueberries have the potential to expand considerably. Will they? Many agricultural commodities undergo boom and bust cycles: profits go up, acres are planted, an oversupply develops, and prices crash. The blueberry industry in the U.S. today stands at a crossroads. Consumption has increased. The market could grow more if demand continues to grow, but many acres of blueberries have been planted all around the world, and much production is coming online. Growers are faced with the loss of readily available migrant labor, the industry is moving quickly toward mechanical harvesting. Mechanical harvesting can potentially reduce production costs, but mechanical harvesting is not without its own upfront investment costs, and fruit quality issues. Will efficiency win out against economic issues of oversupply? Will the U.S. industry thrive or will it contract? There is much cause for optimism, but only time will tell. ■

2011 Board of Trustees Meetings

Wednesdays at 6:30 p.m. (except as noted)
Aug. 24, Sept. 28, Oct. 26
Annual Membership Meeting, Sun. April 10 12 p.m.

Board of Trustees

Richard Prickett, President
Stephanie Schrader, Vice-president
John Joyce, 2nd Vice-president
Mark Ehlenfeldt, Treasurer
Christine Lipsack, Secretary
Ted Gordon Bart Amato
Joseph Darlington Diane Kelly
Jeffery Macechak Paul Dietrick

Staff

Susan B. Phillips, Executive Director
Program Coordinator (vacant)
Jennifer Rubeo, Bookkeeper/Assistant

Newsletter

Mark Ehlenfeldt & Susan Phillips – Editors

Committees – 2011

Buildings & Restoration – John Joyce

Finance – Mark Ehlenfeldt

Fund Development – Susan Phillips

General Store – Steve Young

Marketing & Public Relations – Mark Ehlenfeldt

Interpretative Education & Archives - Ted Gordon

Landscape and Garden – Mark Szutarski

Membership & Nominating - Stephanie Schrader

Personnel – Rick Prickett

Events – vacant

If you are interested in attending the meeting of any Committee, please call the Trust office for the scheduled meeting time.

The Mission of the Trust is to restore, protect and enhance the land, sites, and buildings at Whitesbog, and to provide educational and interpretive programs and materials about the history, culture, and natural environment of Whitesbog.



Reaching out to the community....

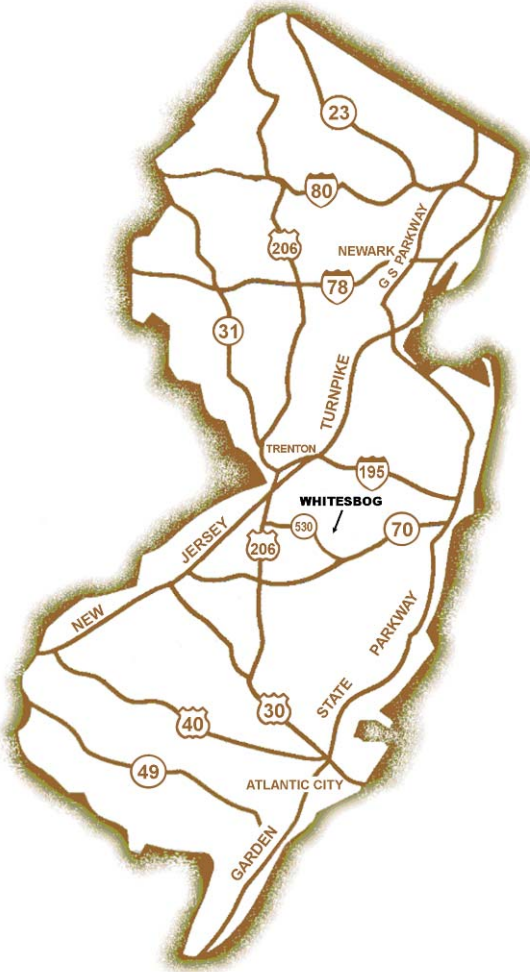
Whitesbog volunteers and staff have had a busy year reaching out to new audiences at venues throughout the area. Volunteers and staff attended 'Lines in the Pines', the New Jersey History Fair, the Browns Mills Water Carnival, and the Burlington County Farm Fair, with exhibits, membership materials, and a sampling of the Whitesbog General Store.

On another front, the Trust retained Heritage Consulting, Inc. to conduct an audience research study that will help Whitesbog to develop and improve our programming and services for visitors. The survey was launched during the Blueberry Festival, with a full evaluation and report, along with recommendations due back this fall. Thank you to everyone who participated and returned their survey via the internet. This project, along with funds to redesign and expand our Whitesbog website, was provided by the New Jersey Cultural Trust. Look for a new and improved www.whitesbog.org beginning this fall, with membership and reservation capabilities, and the General Store coming on-line just in time for the holiday season. ■

*Cranberry Industry
Car Caravan Tour*

October 15 & 22 10 a.m.

\$10 per person
Call for reservations
609 - 893 - 4646



Driving Directions:

From NJ Turnpike

Take Exit 7 to Rt. 206 South to intersection of Rt. 206, Rt. 38 and Rt. 530.
(Landmarks - Vincentown Diner and White Dotte)

Turn East onto Rt. 530 and follow to mile marker 13. (Landmarks – You will go through the towns of Pemberton & Browns Mills, passing Burlington County College on the right.)

Turn left onto Whitesbog Road. Parking lot on the left.

From PA Turnpike

Travel to NJ Turnpike North and follow above instructions.

From 206 South

Travel North to circle intersection with Rt. 70.

Travel East on Rt. 70 to Rt. 530. (Rt. 530 is between mile markers 33 & 34.)

Travel West on Rt. 530 for one mile to mile marker 13.

Turn right onto Whitesbog Road. Parking lot is on the left.

From 206 North

Travel South to intersection of Rt. 206, Rt. 38 and Rt. 530.

Turn East onto Rt. 530 and follow to mile marker 13.

Turn left onto Whitesbog Road. Parking lot is on the left.

From Philadelphia

From Ben Franklin Bridge, take Rt. 38 East, crossing over Rt. 206 and onto Rt. 530 East.

Travel East onto Rt. 530 and follow to mile marker 13.

Turn left onto Whitesbog Road. Parking lot is on the left.

The General Store is across from parking lot. Trust Offices are approximately 1/8 of a mile down the crossroad to the right (at Suningive).

Online extras start here!

Blueberry Production - 2005 State Rankings

<i>State</i>	<i>Acres</i>	<i>Yield / acre (lbs.)</i>	<i>Production (x 1000 lb.)</i>
Michigan	16,800	3,930	66,000
New Jersey	7,500	6,000	45,000
Oregon	3,800	8,530	32,400
Georgia	6,000	4,330	26,000
North Carolina	5,000	6,000	26,000
Washington	2,800	7,000	19,600
California	1,800	3,100	5,580
Florida	2,500	2,080	5,200
Indiana	600	5,830	3,500
New York	700	2,000	1,400
Arkansas	530	2,550	1,350
Total	48,310	4,810	232,550

Blueberry Production - 2010 State Rankings

<i>State</i>	<i>Acres</i>	<i>Yield / acre (lbs.)</i>	<i>Production (x 1000 lb.)</i>
Michigan	18,800	6,120	115,000
New Jersey	7,500	6,530	49,000
Oregon	6,100	8,330	50,800
Georgia	13,000	4,460	58,000
North Carolina	5,500	7,100	39,050
Washington	5,200	8,080	42,000
California	3,900	7,180	28,000
Florida	3,500	4,690	16,400
Indiana	670	5,370	3,600
New York	900	2,330	2,100
Arkansas	300	2,170	650
Total	68,410	6,040	413,030



Interior view of a conventional blueberry harvester. The vertical spindles rotate to allow bushes to pass through, and also vibrate by the action of offset counterweights (in red housings at top) to shake berries free. Scale-like catch plates at bottom are spring-loaded to “flow” around bases of blueberry bushes to minimize berry loss by droppage. Conveyor belts on either side of the catch plates carry berries to the rear of the harvester to be deposited into plastic lugs.



Exterior and interior view of a Black Ice™ blueberry harvester manufactured by BEI International, LLC (photographed 2010). Berries are separated from bushes by the action of four rotating fans mounted in each sidewall of the harvester. Catch plates and conveyor belts on bottom are similar to those in a conventional harvester.