

# Dixie Blueberry News

Georgia Blueberry Growers Association Newsletter

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## Vol.3 No.3- July 2003

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Editor: Gerard Krewer, 229-386-3410

## Upcoming Meetings

Georgia Muscadine Twilight Field Day, 5 pm, Tuesday, Aug. 5, Tifton Conference Center (RDC), Tifton, Ga. Free meal and registration, call 229-386-3410

National Blueberry Meeting,  
November 12-13, 2003  
Grand Rapids Michigan  
Contact Number: 269-434-6791

Haygrove Grower Tour of England  
Ledbury, England  
September 29 to October 5, 2003  
\$999 per person  
Contact Number 866-HAYGROVE

Georgia Blueberry Conference (part of the 2004 Southeast Regional Fruit and Vegetable Convention), Savannah, GA, Jan. 8-1, 2004  
Contact#877-994-3842

## Blueberry Propagation Suggestions

Gerard Krewer<sup>1</sup> and Bill Cline<sup>2</sup>

Blueberries can be propagated by a variety of methods such as softwood cuttings, hardwood cuttings, suckers and tissue culture. Most small or new growers purchase their plants from a nursery, but once a field is established, on-farm propagation becomes feasible. Cuttings (softwood or hardwood) are the most

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commonly used method.

### **Important considerations**

One of the major problems with collecting propagation wood from other grower's fields is contamination of cutting wood, either with off-type cultivars or with diseases. Many farms have a small percentage of off-type cultivars mixed with their primary cultivars. This can create serious problems at harvest time if the off-type ripens at a different time than the primary cultivar. The off-type cultivar may also be of lower quality than the primary cultivar, and thus lower the grade of the packed fruit. When available, always purchase virus-tested, true-to-type plants to serve as propagation sources.

Diseases such as viruses may be transmitted via cutting wood taken from infected bushes. Although distribution of blueberry viruses appears to be limited at this time in the Southeastern US, avoid propagation from plants that have odd-looking or stunted foliage. They may be harboring a virus that could reduce yields. The Blueberry Stunt phytoplasma is common in NC, and can be transmitted via propagation. Stem Canker is a fungal disease causing swollen cankers that eventually kill infected canes. Avoid collecting cutting wood from infected plants.

Avoiding off-type or diseased cuttings during propagation is best accomplished by scouting the source field during the growing season prior to taking cuttings. Specific rows or individual bushes of uniform, healthy source plants can be most easily found and mapped during bloom and harvest, excluding visibly diseased or off-type bushes. This pre-propagation scouting is especially necessary when growers are

planning to take dormant, hardwood cuttings, since off-type or diseased bushes may not be easily identifiable in winter. Once your own field is established, you will be able to identify and remove off-type bushes over time and avoid contamination of your propagation material.

A final consideration is propagating plants legally. In recent years, most of the universities have started patenting their new cultivars to generate money to support the blueberry breeding programs.

### **What cultivars are patented?**

All of the University of Florida cultivars released since the early 1990's have been patented. A license fee of \$100 per cultivar plus \$.20 for each plant is charged. Contact the Florida Seed Foundation at 850-594-1068 for details. All UGA releases except the newest, 'Alapaha' and 'Ochlochnee', are not patented. 'Austin', 'Brightwell', etc. can be propagated at no cost. For information on 'Alapaha' and 'Ocklockonee' contact the Georgia Seed Development Commission at 706-542-5640. Older NCSU releases such as 'Premier', 'Powderblue', and 'Reveille' can be propagated at no cost. Newer cultivars such as 'Montgomery', 'Ira', 'Columbus', etc. are being assigned to certain nurseries for initial propagation. Contact Dr. Jim Ballington at 919-515-1214 for information.

### **Sanitation, Water Quality and Drainage**

Sanitation in the nursery is extremely important for good rooting of the cuttings and plant survival. The primary problems are death of cuttings during the rooting process from contaminated rooting media (caused by *Cylindrocladium* and other fungi) and infection of rooted plants with *Phytophthora* root rot. If recycled pots are used, they should be soaked

in a 10% chlorine bleach solution (9 parts water to 1 part household bleach). Never use recycled media for rooting. Use fresh clean media each time. *Phytophthora* root rot is caused by a fungus with a swimming spore that can be a serious problem on southern highbush blueberries. Avoid saturated conditions in the media during propagation. Growing one gallon plants on gravel beds in the nursery may also help avoid *Phytophthora*. When a propagation facility is used for the second year and after, clean up all debris and spray the area with a 10% chlorine bleach solution before sticking cuttings. *Phytophthora* can survive in pond water, and by this means can re-infect rooting beds or pots irrigated from ponds. For this reason, well water is recommended for all propagation.

Well water testing is recommended to make sure your water is suitable for plant propagation. In North Carolina, the Agronomic Division of the NC Department of Agriculture and Consumer Services charges \$4.00/sample. Water from deep wells in coastal counties may have high levels of sodium from saltwater infiltration, and this has caused total losses in some large cutting beds where the water was not tested beforehand.

If softwood cuttings defoliate before rooting occurs, results will be poor. Take cuttings only from the healthiest plants available and avoid taking cuttings with leaf spots, if possible. After sticking the cuttings, spray them several times two weeks apart with a dilute foliar fungicide appropriate for the leaf diseases present. See your county agent for identification of the leaf diseases present and recommended treatment.

In 2001 many outdoor softwood propagators

in Georgia reported lower rooting percentages that normal. Apparently, the heavy rains in June during the rooting process created conditions ideal for fungi to attack the cuttings. Use of a greenhouse-type structure that keeps the rain off the propagation beds would probably have been beneficial in 2001. However, normally, good results can be obtained in rooting softwood cuttings without a greenhouse. In North Carolina, overwatering and lack of adequate drainage are the most common causes of propagation failure. Even in the absence of disease, cuttings will quickly die in waterlogged rooting beds. Provision must be made for adequate drainage prior to sticking cuttings in the rooting bed.

### **Softwood Propagation**

Softwood propagation has been the method of choice for propagating rabbiteye and southern highbush blueberries in Georgia. Large numbers of cuttings can be taken at the same time and rooting percentages can be high (70-80% is common). In North Carolina, the use of softwood has replaced much of the traditional hardwood propagation because softwood propagated plants are more likely to be free of stem canker, and can be rooted much more quickly (6-8 weeks as opposed to 6 months for hardwood).

**Mist propagation system:** Softwood propagation requires a mist propagation system or similar set-up, but once constructed it will last for many years. To prevent cuttings from wilting, a mist system is used keep a film of water on the leaves during the day. This system consists of a day/night timer, mist timer (10 min. clock), solenoid valve, water filter, and mist nozzles suspended about the cuttings. The mist is applied in short intervals (5 to 10 seconds) every 2 to 10 minutes, only long enough to keep a thin film of water on the leaf

surface. The system is usually turned off at night. Use care to avoid waterlogging the rooting media; mist timing requirements vary through the season. A typical setting in a shady bed is five seconds every 10 minutes, but this will need to be adjusted for each situation. A better system uses a micro-leaf mist controller (Mist-O-Matic™, etc.). This is a piece of screen wire on a swing arm that turns on the solenoid for a few seconds each time the screen wire starts to dry. However, spiders are prone to build webs inside this device and cut off the flow of water, killing the cuttings. With either system it is highly recommended that the system be checked several times a day.

Some growers in Georgia have had good results using impact sprinklers and shrub watering heads to keep the cuttings wet in place of mist nozzles ( in North Carolina, this is the traditional method for watering hardwood beds). Some growers are even rooting cuttings with this system in full sun. However, if the system fails, the cuttings will rapidly dry out and die if no roots have developed. The advantage of this system is low cost and no requirement for a propagation structure since the droplet size produced by impact sprinklers and shrub watering heads is much larger than the droplet size produced by a mist system.

**Propagation house:** A propagation house is usually constructed to house the mist system. Normally it has a plastic skirt about four feet in height, to serve as a wind break and a top six to eight feet above the cuttings covered with 40 to 63% shade cloth. In the event of breakdown of the mist system, the shade cloth prevents rapid death of the cuttings. Some growers forgo the shade cloth top and use the filtered light of pine trees overhead to provide shade. A more

advanced system uses a greenhouse to house the mist propagation system. The floor of the propagation house must be very well drained. A layer of coarse sand covered with landscape fabric to control weeds is often used. If the rooting containers are placed on the floor of the house, a bed of gravel can be laid over the landscape fabric to improve drainage, if needed. Slats or spacers can also be used to keep the containers off the landscape fabric if drainage needs improvement. Benches of various heights made of treated wood with wire tops are often used to keep the containers off the ground and reduce disease problems. See your county agent for detailed information on construction of mist propagation systems and propagation houses. Ornamental nurseries use the same system.

**Rooting media and containers:** Many different rooting media have been used for propagation of blueberries including sand, peat moss, perlite, pine bark or various combinations of these. It is important that the rooting media be porous and well drained. It should also be acid, especially if alkaline well water will be used for propagation. Most of the deep well water in South Georgia has a pH of 7.2-7.8 (slightly alkaline). Mixtures of coarse sand, milled pine bark, and peat moss (1:1:1), peat and perlite (1:1), milled pine bark and perlite (1:1), milled pine bark, peat moss, and sand (8:1:1) and milled pine bark alone have all worked well. Mixtures which contain 50% peat moss produce extensive root systems, but media drainage must be carefully monitored. The most common propagation media currently used in Georgia is milled, composted pine bark, since it is low cost and widely available.

In North Carolina, large softwood propagation beds (8-10 inches high, 3-4 ft wide and 50 ft or more in length) are constructed using treated 2

x 8 or 2 x 10 lumber. The entire bed is built atop a 12-18 inch deep layer of coarse sand, and the rooting media is placed in direct contact with the sand to improve drainage. Contact of the rooting media with an underlying sand layer wicks away excess moisture and prevents saturation that would otherwise drown cuttings. Beds are filled with coarse, aged pine sawdust (30-40 years old) salvaged from huge piles left behind at old abandoned sawmill sites. Once common throughout coastal NC, such piles of “dust” have provided a free source of excellent propagation media for many years, but are now growing scarce.

Propagation can be conducted in many types of containers. Often a saturated zone occurs in the bottom of a container. If the container is too shallow, the bottom of cutting will be sitting in this saturated zone. This often results in poor rooting and the development of disease. Since most softwood cuttings are about five to six inches in length and stuck half-way in the media, the containers should be at least 4 ½ to five inches in depth to avoid placing the ends in the saturated zone. Flats with deep cells, one gallon nursery containers, two gallon nursery containers and blueberry picking lugs can be used. Growing plants in large beds is not recommended in Georgia. When disease strikes the cuttings, it may sweep through a large section of the bed. When disease strikes the plants in a one or two gallon container, it is not great loss just to discard the entire container.

**Selection of softwood cuttings:** Blueberry growth occurs in flushes. Cuttings are taken from the terminal five to six inches when the flush of growth has ceased and the terminal leaves are half-grown to almost mature. The stem should still be somewhat flexible, but

mature enough to be pushed into the propagation media without breaking. With low-chilling cultivars in South Georgia, the first window for propagation starts in late April or early May. Higher chilling cultivars should be ready by mid-May. Timing in North Georgia would be two or three weeks later. Cuttings taken from mature wood or second flush growth often do not root as well as first flush growth. In South Georgia, another good period for propagation is early September from the fall flush. The time period for North Georgia would probably be similar to North Carolina, early to mid-August. Most growers wait until August to propagate softwood cuttings in Southeastern North Carolina, since earlier growth flushes occur during harvest when they cannot take time off from picking berries. The cuttings need time to root before the return of cold weather; in North Carolina growers rarely take softwood cuttings later than the first week of September. Outdoor mist systems must be turned off during freezing weather.

Collect the first batch of cuttings early in morning, if possible. It is very important that the cuttings not be allowed to wilt. This can be prevented by immediately placing them in a bucket of water or a wet burlap sack while taking the cuttings. A vegetable pick sack and misting bottle can also be used. Cuttings should be five to six inches in length, although four inch cuttings can be used if propagation material is in short supply. Take cuttings from the upper part of the mother plant where the wood has a good diameter. Use very sharp bypass type clippers or florist scissors to take cuttings. Do not use clippers that crush and damage the wood at the base of the cutting. Practiced collectors of cutting wood in North Carolina rapidly gather large numbers of softwood cuttings without using clippers by simply breaking them off by hand. If the tips of cuttings are too succulent, the top of the

cutting may be broken or cut off as well.

**Preparing the cuttings for sticking:** After collecting the cuttings immediately spread them out under the mist system or cool them with ice water. If the cuttings must be transported, place them in an ice chest with slushy ice. If the ice is too cold it will freeze the cuttings it touches, so use sparingly.

Thoroughly wet the propagation media before sticking the cuttings. This can be accomplished by placing the containers and media under the mist several days before cuttings are stuck. Remove one-half the lower leaves from the cuttings, keeping 3 to 4 leaves. If cuttings are held overnight it is a good idea to recut the lower ends just below a node. Hormone treatment is not required for most blueberry cultivars, but may improve rooting and root development on certain cultivars. In Georgia, commercial alcohol-based formulations (such as Dip and Grow™) that are mixed with water are often used. A bundle of 10 to 20 cuttings is dipped into the solution for five seconds before sticking. Stick cuttings one-half their length into the media. Cuttings are usually stuck about two by two inches apart. Firm media around the base of the cuttings to avoid air pockets. North Carolina growers do not use rooting hormones and do not recut the lower end of cuttings held overnight.

**Rooting phase:** Roots should begin developing in about three weeks. This is the time at which the propagator must monitor watering most closely. In a well-drained rooting medium, a large percentage of cuttings will initiate rooting by formation of a mass of callus tissue on the cut end. By comparison, when cuttings are over-watered the mix becomes saturated, cuttings do not

form callus, have sparse, watery roots, and begin turning brown from the cut end upwards. This is evidence of poor aeration in the mix. If the saturated area is limited to the bottom of the cutting, roots may form further up on the cutting, leaving a dead segment of stem below the roots. If the medium is saturated throughout and remains so, cuttings will quickly die. Saturation of aged sawdust or bark can be estimated by picking up a handful and squeezing it. By squeezing as hard as you can, you should only be able force out 2-3 drops of water. As the root system develops, reduce the amount of mist the plants receive by cutting back on the hours of operation or adjusting the number of seconds the system is on. Once the plants are well rooted they should be transferred to a sunny area under sprinkler irrigation. Fertilize them lightly with a liquid fertilizer according to the manufacturers recommendation for salt-sensitive plants. Late-summer softwood cuttings stuck in August are generally not fertilized at all.

Cuttings stuck in the spring, are often ready for transplanting by August into grow-out beds or quart pots (if plants will be set in the field the next winter). Since this is a time of great heat, irrigation must be carefully monitored. The cuttings can also be held over the summer in the original rooting containers and only fertilized enough to keep the plants healthy. Transplanting into grow-out beds or gallon pots occurs during the winter. Cuttings rooted in the fall are transplanted during the winter and are often planted directly into the field rather than potted.

**Grow-out phase:** Although some growers are planting rooted cuttings in the field or high density pine bark beds, most growers prefer to plant a larger plant. These may be produced in trade-gallon size containers (really three

quarts) or in grow out beds without containers. For a container nursery, landscape fabric is laid in a well drained area and an automatic sprinkler system is installed which applies about one-half inch of water per day during the heat of the summer. The availability of self-contained solenoid/time clocks that run off of batteries and screw into a household hose bibcock has made small-scale nursery production much simpler. These can be purchased for about \$30. For container production, a high grade of milled, composted pine bark should be used for a growing substrate. A complete, slow-release fertilizer should be blended with the pine bark according to the manufacturers recommendations. A top dressing of more slow release fertilizer is applied once or twice during the growing season as needed. Slow release fertilizer formulations vary in their longevity.

Grow-out beds are constructed by covering a well-drained area with about six inches of milled, composted pine bark. Over head sprinklers are used for irrigation. The rooted cuttings are set in rows 18 inches apart by 6 to 12 inches in the row. In-row spacing varies with the length of time the plants will be allowed to remain in the grow-out bed. If the plants are scheduled to remain in the bed for a full year an 8 to 12 inch spacing is suggested. Slow-release fertilizers are used to fertilize the grow-out bed based on manufacturers recommendations. Another option is to use premium grade 10-10-10 at the rate of about 150 pounds per acre every four weeks.

### **Hardwood Propagation**

Both rabbiteyes and southern highbush can be propagated from hardwood cuttings, however, results are more erratic than when softwood cuttings are rooted under mist. Another problem is the greater chance of picking up stem blight during propagation. The final limiting factor can be lack of good propagation wood for this system. Strong "whips" with many cuttings at least 1/6 inch in diameter are desirable for hardwood propagation and these can be difficult to obtain in low vigor plantings. Possible advantages to hardwood propagation are shifting the propagation season to a less busy time of the year and production of a medium-size plant suitable for field transplanting with a mechanical transplanter one year after cuttings are taken. Hardwood propagation has been used for decades in North Carolina as a less-intensive propagation system that will still result in a 60-70% stand of cuttings. However, some cultivars like the southern highbush 'Sampson' and rabbiteye 'Columbus' are more difficult to root by this method.

#### **Collecting wood and preparing the cuttings:**

Collect strong, healthy shoots or "whips" of the previous season's growth that are 18 to 36 inches long, in late January and early February. Use only the lower two-thirds or three-fourths of the whip and discard the tip. Cut each whip into sections four to six inches long. Cuttings can be stored in a refrigerator in plastic bags with moist peat moss or bark if not processed immediately. In North Carolina, large numbers of hardwood cuttings are collected in mid-winter, cut up, tied in bundles of 50 and packed in moist sawdust or bark until spring. If the winter chilling requirement for the cultivar has not been received by the time the cuttings are taken, they should be stored in a refrigerator until the chilling requirement is met. Cuttings should be 1/6 to 5/16th inch in diameter.

Larger diameter cuttings are more difficult to root, but once rooted produce a bigger plant. To speed the cutting-up process, the cuttings may be bundled together, then cut into sections using a bench saw with a fine blade. A better, but more time consuming method is to cut them into sections using a sharp knife. The bottom cut is made at a slant just below a node and the top cut ½ inch above a bud. When handling the cuttings, be sure to keep them oriented in the same direction, as cuttings stuck upside down will not root.

**Sticking the cuttings:** Cuttings are usually stuck in April, and are left in the rooting beds until the following winter. In North Carolina, cuttings are often stuck in sawdust beds under the shade of pine trees with sprinkler irrigation. However, use of a greenhouse or a poly cold frame with bottom heat may improve rooting. Bottom heat is provided by a heating cable set at 68-73 degrees F buried in the bed. Rooting bed frames typically three by six feet in length with hardware cloth on the bottom are used to contain the media. The same medias and rooting beds used for rooting softwood cuttings can be used for hardwood cuttings. Rooting hormones are normally not needed, but may improve the rooting of some hard-to-root cultivars. Cuttings are stuck on a 1 ½ inch by 1 ½ inch spacing with only one bud exposed.

**Rooting phase:** Hardwood cuttings normally break bud and develop leaves before rooting. This means there is a critical period where plants are very susceptible to desiccation before root development. Mist systems as described for softwood cuttings, or impact sprinklers are used to keep the leaves wet until root development. In the case of impact sprinklers, hardwood cuttings

are watered for 3-4 hours per day, usually in mid-morning and early afternoon. Watering frequency depends on many factors, including the rooting medium used and the degree of shade.

**Grow out phase:** Hardwood cuttings are normally left in the rooting bed frames for one growing season. After the plants are well rooted they are fertilized periodically with a light dose of liquid fertilizer such as 15-30-4 or 13-36-13. In North Carolina, growers are advised to apply 1 lb. diammonium phosphate (18-46-0) dissolved in 4 gallons water per 100 sq. ft. of bed beginning when cuttings are well-rooted (July 1-15) and repeated every 2 weeks until mid-August. By fall, many of the plants should have a root system about six inches in diameter. The following winter they can be transplanted into one or two gallon containers or transplanted into a grow-out bed. However, often they are transplanted directly into the field.

**Suckers:**

Suckers are blueberry shoots that arise from the ground several inches from the main crown of the plant. Some rabbiteyes like ‘Tifblue’ produce significant numbers of suckers, especially when mulched. After the suckers have been growing for at least two seasons they may be separated from the mother plant with a sharp shovel during the winter. Normally suckers have a large top and a small root system after separation from the mother plant. If the top is not pruned back severely, the plant will usually perform poorly or die. Suckers can be transplanted to a permanent location in the field or lined out in a nursery bed for one season before transplanting to the field.

*Sources of information and additional reading*

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**‘SOUTHERN BELLE’  
Southern Highbush  
Blueberry**

**Paul Lyrene, Univ. of Florida**

(Editor’s note: This is the recent release notice on ‘Southern Belle’. ‘Southern Belle’ has been around for quite a while. While it can be very productive, it is very susceptible to *Phytophthora* root rot. I suggest you plant it only on a small trial basis until you learn how well it will grown on your farm.)

‘Southern Belle, tested as “V-2” and “Little-B”, is a low-chill southern highbush blueberry being released by the University of Florida breeding program in Gainesville. Southern Belle appears to be best adapted from Gainesville north into southeastern Georgia. Results from tests south of Gainesville indicate that it does not receive enough chilling in an average winter to leaf and flower sufficiently at the desired time. In Gainesville, Southern Belle leafs well if sprayed with Dormex and leafs medium-well in most years without Dormex. With Dormex, Southern Belle opens nearly all of its flower buds from Gainesville north, with flower bud abortion uncommon. Without Dormex, it will abort some flower buds after a normal winter in Gainesville and many flower buds after a warmer-than-normal winter. Because Southern Belle is one of the latest-flowering of the Florida varieties, it could be tested in warmer areas of North and South Carolina and along the Gulf Coast to southeastern Texas. As with other early-ripening southern highbush blueberries, overhead irrigation is essential to prevent excessive freeze damage to the flowers and young fruit during February and March. Southern Belle is capable of producing high yields of large, high-quality blueberries, but it requires nearly ideal blueberry soil and

excellent management to make the variety survive and produce well. It requires moist, well-drained soil with abundant organic matter, and should be planted on substantial, raised beds to reduce plant losses from Phytophthora root rot. Because Southern Belle produces a very large number of flower buds, young plants during the establishment years must be pruned during the winter to balance the flower-bud number with the plant's carrying capacity..

**Origin.** Southern Belle is a seedling from the University of Florida blueberry breeding program, although its exact pedigree is unknown. The selection was first tested, under the designation V-2, in a plot established in 1986 by Jerry Vanerwegen on his commercial blueberry farm near Homerville in southeast Georgia. Its high yield potential, large berry, and high berry quality were first recognized by Mr. Vanerwegen. By June, 2000, more than 10,000 plants had been harvested for the third time on this farm. A plot of 8 plants was established at the University of Florida Horticultural Unit in Gainesville in 1992. A 20-plant plot was established in pine bark in a commercial planting at Windsor, Florida, in January 1996, and a 70-plant plot was established at the same farm in January, 1997. The plots at Windsor have been observed during each fruiting season through 2001.

**Characteristics.** Southern Belle is intermediate in growth habit between upright and spreading. It produces numerous canes and lateral fruiting branches and forms a dense, wide bush, but it does not tend to produce weak, twiggy wood. This bush structure, and the fact that it forms large numbers of flower buds per fruiting terminal, give it a very high yield potential.

Also contributing to the high yield potential of Southern Belle is the fact that the berries are quite large if the plant is healthy, is not stressed by disease or soil conditions, and has leafed well. Southern Belle normally produces an abundance of new leaves early in the spring if grown from Gainesville north and if sprayed with Dormex about January 1. In warmer areas and without Dormex, poor leafing can be a problem if a heavy crop has been set.

The average date (sample years 1999, 2000, 2001) of 50% open flowers on Southern Belle at Windsor was March 1, compared to the following values for other varieties at the same location: 'Sebring': Feb. 15; Sharpblue: Feb. 16; Sapphire: Feb. 18; Emerald: Feb. 19; Jewel: Feb. 20; Millennia: Feb. 20; Santa Fe: Feb. 22; Misty: Feb. 24; Star: Feb. 27; 'Windsor': Feb. 27; Bluecrisp: March 1. The average date of 50% ripe berries on Southern Belle at Windsor (1997, 1999, 2000) was April 28, compared to the following dates for other cultivars grown at the same location: Star: April 25; Millennia: April 25; Sapphire: April 25; 'Windsor': April 30; Jewel: May 1; 'Sebring': May 1; Santa Fe: May 2; Emerald: May 3; Sharpblue: May 3; Misty: May 7.

On healthy, leafy bushes, Southern Belle produces berries that are large to very large with excellent scar and excellent firmness. The berry color is medium blue. The flavor is good, but as with all highbush blueberries, the plant must be leafy at the time the fruit ripens if it is to produce high-quality fruit. Over-cropped plants with insufficient leafing produce fruit that is somewhat "bland" (low in sugars and acids), especially in hot or cloudy weather. The berry has unusually good packinghouse qualities, with very few soft or stemmy berries. The picking rate (pounds per hour) for hand harvesters is high compared to most other southern highbush varieties.

Southern Belle appears to have medium to good resistance to the common leaf-spotting fungi. On poorly-drained soil, or if stressed by drought, poor leafing, or over-cropping, the plants lack resistance to lethal root rots and/or stem blight. The plants have lower survival in sub-optimal blueberry soils than most southern highbush varieties. The plants propagate readily from softwood cuttings. Nurserymen should be very careful that the plants not be exposed to sources of Phytophthora spores or mycelia during propagation and growing-on in the nursery. The plants should not be allowed to fruit the first year they are in the field.

Southern Belle is being patented on behalf of the University of Florida Agricultural Experiment Station by Florida Foundation Seed Producers, Inc., and a license is required to propagate the cultivar, no matter what the source of the cutting-wood. Information regarding licensing can be obtained from : Florida Foundation Seed Producers, Inc., P.O. Box 309; Greenwood, FL 32443. Phone: 904-594-4721; FAX 904-594-1068; e-mail: seed@digitalexp.com

## **Blueberry Industry Conducts Election of Regional Council Members for U.S. Highbush Blueberry Council**

August 4, 2003—Members of the cultivated blueberry industry are being asked to select representatives to fill regional council member and alternate positions of the U.S. Highbush Blueberry Council (USHBC). Voting begins August 11, 2003 and continues for a 35-day period. Voters are being asked to complete their ballot and

send it back to the U.S. Highbush Council (USHBC) to be received no later than by close of business on September 15, 2003.

The USHBC is mailing ballots to those blueberry growers who received nomination applications. Those who do not receive a ballot by August 15, 2003 can obtain a copy by contacting the USHBC office at (916) 983-0111 (phone) or (916) 983-9022 (fax). Ballots can also be downloaded from the USHBC website at [www.ushbc.org](http://www.ushbc.org).

Votes are being cast for nominees for 4 regional council member positions. Eligible voters are those who produced 2,000 pounds or more of cultivated blueberries in the United States during the period of January 1, 2002 through December 31, 2002.

Nominations for regional council positions were conducted from May 5, 2003 to June 9, 2003. Candidates identified during this nomination process are listed on the final ballot. Space is also made available on the ballot for write-in candidates.

Those receiving the most votes for each producer seat will be recommended to the U. S. Secretary of Agriculture as council members. Those who earn the second most votes for each position will be recommended as the alternate. Those who receive the third and fourth most votes will also be reported to the U.S. Secretary of Agriculture for consideration. Council members and alternates will serve for a term of three years starting in January of 2004 and are allowed to serve a maximum of two consecutive terms.

Voters from each of the four regions (West, Midwest, Northeast and South) will select from nominees for their specific region.

USHBC programs are open to all individuals without regard to race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. It is USHBC policy that membership on the Council and its committees reflect the diversity of individuals served by its programs. To accomplish this objective, the USHBC will strive to attain representation of growers and other industry participants from diverse backgrounds on the Council and USHBC committees. To this end, the USHBC strongly encourages women, minorities and persons with disabilities to seek nominations to the USHBC and to participate in Council and USHBC committee activities.

Producers and importers of cultivated blueberries approved the establishment of the national promotion program through a referendum conducted by the USDA's Agricultural Marketing Service in 2000. In this referendum, 67.8 percent of those who voted favored implementation of the order. Those who voted in favor represented 73.2 percent of the volume of cultivated blueberries represented in the referendum.

The program is funded by an assessment of \$12 per ton on domestic cultivated blueberries and \$12 per ton on fresh and processed imported cultivated blueberries.

## **Blueberry Council Recipe Development Project**

The attached recipes were developed especially for use by the NC Blueberry Council and the North Carolina Department of Agriculture and Consumer Services. Plans are made to print some new recipe brochures. Professional photographs of some of the recipes were made and are available for use by the NC Blueberry Council and its members. We hope you will enjoy these new ways to use our versatile North Carolina Blueberry!

*picture*

For further information contact:

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Marketing Specialist  
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**2002 North Carolina**

**North Carolina Blueberry Vidalia Onion**

## Citrus Salad

Those tangy sweet onions from Georgia blend with North Carolina's plump, juicy blueberries to make this side salad a perfect accompaniment to any meat entrée, particularly grilled ones. Next time you're tempted to make a sweet slaw or pasta salad, skip those and make this.

- 2 cups blueberries North Carolina Blueberries
- 4 navel oranges
- 1 medium Vidalia onion
- 1/3 cup olive oil
- 3 tablespoons cider vinegar
- 2 tablespoons honey
- 1 teaspoon minced garlic
- 1 tablespoon celery seed
- 1 tablespoon fresh chopped basil
- 1 teaspoon dried oregano

Wash blueberries. Peel oranges and cut into chunks. Slice onions very thinly. Combine fruit with onions in a medium glass bowl. In a separate bowl, whisk together oil, vinegar, honey, garlic, celery seed, basil and oregano. Pour over salad, toss and refrigerate 1 to 2 hours before serving. Do not make too far ahead. Serves 6-8.

## Stars and Stripes Fruit Salad

A patriotic salad featuring blueberries, strawberries and kiwi kids will love to both make and devour.

- 2 kiwi
- 1 pint North Carolina blueberries
- 1 pint strawberries

Prepare Creamy Lime Dressing and refrigerate.

Wash fruit. Peel and slice kiwi. Using the tip of a paring knife, cut the entire kiwi into a fun star shape, then slice it into 1/4 inch pieces. Remove green caps from strawberries and slice in half. Combine with blueberries in a serving bowl. Cover and refrigerate. Carefully stir in dressing just before serving. Serves 6.

## Creamy Lime Dressing:

- 1/3 cup sour cream
- 1 1/2 tablespoons honey
- 2 tablespoons fresh lime juice
- 1 teaspoon lime zest
- 1/4 teaspoon salt
- 1 tablespoon chopped fresh mint leaves

In a small bowl combine all ingredients and refrigerate at least 1 hour before serving.

## Grilled Grouper with North Carolina Blueberry and Melon Salsa

Grilled grouper gets a refreshing dollop of a unique fruit salsa featuring North Carolina blueberries. Utilize the salsa with tortilla chips and other grilled chicken or pork entrees.

- 4 grouper fillets (1 1/2 pounds)
- salt and pepper to taste
- olive oil
- North Carolina Blueberry and Melon salsa

Buy fairly thick fish fillets and remove ribs and large bones. Brush both sides with olive oil. Salt and pepper to taste. Grill over medium hot coals, 5 minutes per side, per inch thickness of fillets. Serve with salsa. Serves 4.

## North Carolina Blueberry and Melon Salsa:

- 2 cups North Carolina blueberries
- 1 1/2 cups small diced cantaloupe
- 1/2 cup finely chopped red onion
- 1/2 cup finely chopped red bell pepper
- 2 tablespoons chopped fresh cilantro
- 1 tablespoon honey
- 2 tablespoons fresh lime juice
- 1 teaspoon lime zest

Wash blueberries. Combine with cantaloupe, onion, red pepper and cilantro. Combine honey and lime juice and zest, and stir into salsa. Leave out at room temperature for 1 hour, then either serve or refrigerate for later use.

## Fresh North Carolina Blueberry Scones

Freshly baked treats never tasted so good! You'll find comfort in these delightful, old-fashioned scones.

- 2 cups flour
- 2 tablespoons sugar
- 2 teaspoons baking powder
- 1/4 teaspoon salt
- 1/2 cup unsalted butter, chilled, cut into

- cubes
- 1/2 cup chopped fresh North Carolina blueberries
- 3/4-1 cup heavy cream, divided

Preheat oven to 350°.

In a large bowl combine flour, sugar, baking powder, and salt. By hand mix in butter until mixture is course and even-grained. Do not overmix.

With a spoon fold in blueberries, then add 3/4 cup cream. Carefully stir to just moisten the flour. Over mixing will make scones tough. Knead dough briefly on a lightly floured surface. Roll out or beat dough into a circle 12-inches to 14-inches in diameter. Cut into 12 1/2-inch thick wedges. Separate wedges and place on a baking sheet lined with parchment paper about 1/2-inch apart. Brush tops with remaining 1/4-cup cream. Bake 20 minutes or until lightly browned on top.

### Summer North Carolina Blueberries over Lemon Cream Shortcakes

A creamy biscuit dough sweetened with lemon zest becomes the base for the blueberry version of strawberry shortcake. Make the dessert even more festive by using a heart-shaped cutter, after all blueberries are heart-healthy and full of those cancer fighting antioxidants.

- 2 cups all-purpose flour
  - 1 tablespoon baking powder
  - 6 tablespoons sugar, divided
  - zest from 1 large lemon
  - 1/2 teaspoon salt
  - 5 tablespoons cold butter, cut into 1/2 tablespoon pieces
  - 1 cup plus 2 tablespoons heavy cream, divided
  - 2 cups fresh North Carolina blueberries
  - 2 cups whipped cream
- Preheat oven to 425°.

Place flour, baking powder, 3 tablespoons sugar, lemon zest and salt in bowl of food processor fitted with metal blade. Blend. Add butter 1 piece at a time with processor running until all butter is mixed into flour. Turn off and add 1 cup heavy cream. Pulse on and off until dough comes together in a wet ball. Do not over mix. Remove dough and place on a lightly floured work

surface. Knead a couple of times and with fingertips press out into a rectangle 1/2-inch thick. Cut out shortcakes with a 2 1/2-inch heart-shaped cutter. Place on ungreased cookie sheet. Brush tops with remaining 2 tablespoons cream, and sprinkle with 1 tablespoon sugar.

Bake for 10-12 minutes until golden on top.

In a medium bowl mix blueberries with remaining 2 tablespoons sugar. Set out at room temperature for 1/2 hour.

To serve: Split biscuits, layer with blueberries and top with frothy whipped cream.  
Serves 6-8.

### Roasted Pears with Quick North Carolina Blueberry Sauce

An all-fruit dessert featuring pears and blueberries is a nice change of pace for an after dinner treat.

- 4 medium pears
- 3 tablespoons unsalted butter
- 1 cup whipped cream
- quick North Carolina blueberry sauce

Preheat oven to 450°.

Peel, core and half pears. In an ovenproof dish or skillet (large enough to hold the pears), melt butter on medium high. Add pears and brown evenly over medium heat about 10 minutes. Transfer pan or dish to oven and cook 7-9 minutes until tender. Let cool. Make quick blueberry sauce, recipe below.

To serve: Spoon a small amount of sauce on each plate. Place 1 pear half in center and fill with a large dollop of whipped cream. Slice remaining halves 1/2-inch lengthwise and fan around the side of each plate. Drizzle the sauce decoratively over pears and serve. Serves 4.

### North Carolina Blueberry Sauce

- 2 cups fresh blueberries
- 1/2 cup sugar
- juice of 1 lemon
- 2 tablespoons brandy

Wash and drain blueberries. Combine sugar, lemon juice and brandy in a food processor. Puree until liquid. Set aside at room temperature.

### North Carolina Blueberry Biscotti

A twice-baked Italian cookie that's first baked as a loaf, then sliced and then the slices are baked into delightfully crunchy long rectangles.

- 1 1/2 cups all-purpose flour
- 1/2 cup whole wheat flour
- 1/2 cup sugar
- 1/2 cup brown sugar
- 1 teaspoon baking soda
- 1/2 teaspoon salt
- 1 cup fresh North Carolina blueberries, chopped
- 1/2 cup chopped pecans
- 3 eggs
- 1/2 teaspoon vanilla extract

In a large mixing bowl combine flours, sugar, brown sugar, baking soda and salt. Add chopped blueberries and pecans. In a small bowl beat eggs with vanilla. Using a rubber spatula stir eggs into dry ingredients. Stir until dough just starts to come together (you will have a fair amount of dry ingredients not yet incorporated).

Turn mixture out onto a flat work surface, and using your hands and a dough scraper work dough together into a short wide log. As soon as dough becomes uniform stop (it does not need to be pretty). The dough will be sticky but refrain from adding more flour as it will make the biscuits tough.

Measure a piece of wax paper 18-inches long and lay out on counter. Place dough on top lengthwise. Fold wax paper over and, using hands, smooth out the dough, lengthening the log to about 16-inches. Place in freezer for 1-2 hours to firm up.

Preheat oven to 350°. Remove dough from waxed paper and place on ungreased cookie sheet. Bake 30-35 minutes. Remove from oven, and allow to cool briefly on cookie sheet. Remove loaf to rack and cool 5 minutes. While still warm, cut dough into 3/4-inch thick slices. Half each slice crosswise. Return to cookie sheet and bake another 8-10 minutes. Cool completely then store in an airtight tin.

### **Smoked Turkey, North Carolina Blueberries and Plum Salad**

A beautifully composed salad featuring fresh North Carolina blueberries and plums, feta cheese and smoked turkey enhanced by an Asian dressing.

- 6 cups mixed baby greens
- 1 cup fresh North Carolina blueberries
- 2 large ripe plums, pitted and sliced
- 1/2 pound smoked turkey, julienned
- 4 ounces feta cheese, crumbled
- 1/4 cup chopped pecans, toasted
- 1 small red onion, sliced
- Asian Dressing
- 2 tablespoons sesame oil
- 1 tablespoon olive oil
- 2 tablespoons soy sauce
- 2 tablespoons cider vinegar
- 1 tablespoon minced fresh ginger
- 1/2 teaspoon salt
- 2 teaspoons sugar

Compose salads on four plates in order of ingredients listed. Combine Asian dressing ingredients in a small bowl and whisk to blend. Drizzle over salads and serve. Serves 4.

### **North Carolina Blueberry and Grilled Chicken Salad**

A summery salad featuring fresh blueberries and crowd-pleasing grilled chicken. Serve on a bed of greens for a light lunch or in a pita pocket for a portable picnic.

- 2 boneless chicken breasts
- 1/2 cup lowfat Italian dressing
- 1 cup small diced red bell pepper
- 1 bunch scallions, chopped
- 3/4 cup small diced celery
- 1 cup diced peeled cucumber, seeds removed
- 1 cup North Carolina blueberries
- North Carolina blueberry thyme vinaigrette

Marinate chicken breasts in Italian dressing in the refrigerator for 2-3 hours. Remove from marinade and grill. Cool slightly and dice.

Combine chicken in a medium bowl with red bell pepper, scallions, celery, cucumber and blueberries. Toss with Blueberry Vinaigrette. Serves 6.

### **North Carolina Blueberry Thyme Vinaigrette**

- 1/4 cup red wine vinegar
- 1/2 teaspoon salt
- 1 teaspoon fresh thyme leaves

- freshly ground pepper
- 1/2 cup olive oil
- 2 tablespoons blueberry preserves  
(made from your favorite recipe with North Carolina blueberries)

In a small bowl combine vinegar, salt, thyme and pepper. Whisk in olive oil and preserves.

### **Pork Tenderloin with Savory North Carolina Blueberry Sauce**

An oven-roasted pork tenderloin is adorned with a flavorful blueberry sauce cooked with a hint of crème de cassis, an inexpensive black-currant flavored liqueur.

- 1 1/2-2 pound pork tenderloin
- 1 tablespoon olive oil
- 1/4 cup crème de cassis
- 1/3 cup chopped red onion
- 1/4 cup heavy cream
- 1 cup fresh North Carolina blueberries
- salt and white pepper

Preheat oven to 325°. Trim fat and cut string from tenderloin. Place in a baking pan and coat with olive oil. Salt to taste. Roast for 20 minutes per pound. When internal temperature reaches 145°, remove from oven and transfer to warm platter.

On top of the stove deglaze roasting pan with crème de cassis and sauté red onion in pan juices for 3 minutes. Add cream, bring to a boil and let cook until thickened, 2-3 minutes. Stir in blueberries and heat through. Salt and pepper to taste. Slice pork tenderloin, spooning sauce over each portion. Serves 4.

### **Pan-Seared Trout with Fresh Berry Relish**

A savory combination of fresh fish with a mixed berry relish featuring three North Carolina agricultural delicacies – farm-raised trout, scuppernong wine and fresh, plump blueberries. An excellent topping for smoked fish, grilled chicken, pork and, of course, this pan-seared trout. Indulge!

- 4 trout fillets
- 1 tablespoon olive oil
- salt
- freshly ground pepper
- 2 tablespoons fresh dill
- Fresh Berry Relish

For best results, make relish a day ahead.

Heat olive oil in a large sauté pan over medium high heat. Sear trout on both sides 2-4 minutes starting with flesh side down. When you turn the fillets over, sprinkle with salt, pepper, and fresh dill. Transfer to warm plates and serve with Fresh Berry Relish. Serves 4.

### **Fresh Berry Relish**

- 1 cup cider vinegar
- 1 1/4 cups light brown sugar
- 1/4 cup scuppernong wine
- 1 red bell pepper, finely diced
- 1 cup North Carolina blueberries, washed
- 1 cup raspberries, washed

In a small saucepan reduce vinegar to 1/4 cup. Add brown sugar and cook until it dissolves. Cool to room temperature. Add wine, red pepper and berries to vinegar sauce. Cover and refrigerate overnight.

## **Odwalla Takes Center Stage at Expo** (Source: Coca-Cola Co. Newsletter, Odwalla is a Coke Subsidiary)

Odwalla featured its newest fruit juice blend, Blueberry B Monster, earlier this month at the National Products Expo-West in Anaheim, Calif. The beverage has quickly become a top seller for America's leading natural health beverage brand, which offers juices, smoothies, dairy free shakes, food bars and certified organic juices.

Barr Hogen, Odwalla's health and wellness chef and creator of Blueberry B Monster, says she was inspired to "combine gorgeous, natural color that really shouts from the refrigerator shelf with a fabulous flavor

blend that dances in the mouth.”

The antioxidant-rich juice contains blueberry puree, assorted fruit juices, mango and banana purees topped off with an array of B vitamins.

Odwalla is famous for its quirky product names. The Blueberry B Monster is an extension of Odwalla’s successful C Monster and Strawberry C Monster drinks, which combine the taste and health of fruit juices and purees with doses of Vitamin C. It joins such favorites as Mo’ Beta, Femme Vitale, Superfood, Serious Energy and Glorious Morning.

## **Ouachita Blackberry**

**John R. Clark and James N. Moore**  
**University of Arkansas**

Ouachita is the eleventh blackberry variety release from the University of Arkansas, and the fourth thornless variety. It is being released to add to the array of thornless, high-quality fruit choices for blackberry growers and home gardeners. The major characteristics of Ouachita are:

### ***Ripening Date:***

Average June 12, at Clarksville, Ark., June 5 at Hope, Ark. Other testing: ***Griffin, Ga., June 5***; Jackson, Ky., June 24; West Lafayette, Ind., July 1; Benton Harbor, Mich., July 15. Ripening in Arkansas indicates that Ouachita ripens **about 7 days after Arapaho, and 7 days before Navaho.**

### ***Fruit Yield:***

Comparable or higher than Apache or Navaho in most research comparisons; exceeds Arapaho consistently.

### ***Fruit Size:***

Average across many years of 6 g, 1 to 1.5 g

larger than Navaho and Arapaho but smaller than Apache.

### ***Fruit Quality:***

Excellent. Fruit is sweet, firm and attractive. Storage evaluations by Dr. Penny Perkins-Veazie, USDA, Lane, Okla. **indicate comparable to Navaho so is exceptional in this area. In 2003 it was observed to perform better in a rainy season than most selections and varieties in the Arkansas program, and similar to that of Navaho in these conditions. However in very rainy periods fruit firmness is reduced. Sunburn was observed to be substantially less than that of Apache.** Soluble solids (sweetness) average 10%, and can be up to 12%, just under the average for Navaho. Flavor rated similar to Apache, just under that of Navaho. Seed size similar to Navaho, slightly smaller than Apache.

### ***Plant/Cane***

#### ***Characteristics:***

Very erect canes, similar to Apache in erectness, more erect than Navaho. Vigor rated intermediate between Apache and Navaho. Plant health observed to be very good. Plant hardiness not well tested due to recent mild winters, but has produced full crops following 1F (-17.4C); hardiness appears to be slightly less than Navaho, similar to Apache, and hardier than Arapaho in observations thus far.

#### ***Pest Resistance:***

**Resistant to double blossom/rosette;** no orange rust observed on any plants. Mostly resistant to anthracnose with fruit infections very rare except under high rainfall conditions. No white drupelets observed on berries at maturity compared to Apache in 2002; this is assumed to be caused on Apache from insect feeding. Very slight white drupelets seen in 2003 but this may have been due to rainfall/sunburn combination.

**Root Cutting**

**Sprouting:**

Averages 60% sprouting from root cuttings, generally lower than thorny varieties but similar to other Arkansas thornless.

**Chilling**

**Requirement:**

Not fully determined, but in two occurrences of approximate 600 hours of chilling at Hope, Ark. Ouachita broke buds fully, comparable to Arapaho and Kiowa, while Apache and Navaho had reduced bud break due to lack of chill..

**Miscellaneous:**

Parentage is Navaho x A-1506; cross made in 1990; selected in 1993, tested as A-1905T. A single application of liquid lime sulfur was the only fungicide applied to plants in any trials. Can be grown in an unsupported hedgerow if primocanes tipped at approx. 45 inches, but beneficial to support canes during fruiting to avoid fruit loss from leaning canes.

**Plant Availability:**

Patent application has been filed for Ouachita. Licensed nurseries will be allowed first access to tissue-cultured, virus-tested nursery stock in fall, 2003 from Sakuma Brothers Farms and Cedar Valley Nursery. It is anticipated that initial sales of limited quantities of plants to the general public will be possible in spring, 2004. The website for licensed propagators of Arkansas blackberry is:

<http://www.aragriculture.org/commhort/fruits/Blackberries/licensedprop.asp>

**Supplemental Labeling for Spintor**

**ATTENTION:**

- **It is a violation of Federal law to use this product in a manner inconsistent with its labeling.**
- **This labeling must be in the possession of the user at the time of application.**
- **Read the label affixed to the container for Spin Tor\*2SC Naturalyte\* insect control before applying. Carefully follow all precautionary statements and applicable use directions.**
- **Use of Spin Tor 2SC according to this supplemental labeling is subject to all use precautions and limitations imposed by the label affixed to the container for Spin Tor 2SC.**

**Directions for use:**

Spin Tor\* 2SC Naturalyte\* insect control may be used to suppress the listed pests infesting bushberries (including but not limited to blueberry, currant, gooseberry, huckleberry, and elderberry, salal, and lingonberry.

Refer to product label for Spin Tor\* 2SC Naturalyte\* insect control for General Use Precautions, Mixing and Application instructions.

**Pest Application Rates:**

Pests	Application Rate <sup>†</sup>	
	Active Ingrid. (lb/acre)	Product (fl oz/acre)
army worms		
blueberry magot	0.062-0.094	4-6

cherry fruitworm	
cranberry fruitworm	
currant fruitworm	
currant fruitfly	
fireworms	
leafrollers	
loopers	
sparganothis fruitworm	
thrips	

† The amount of Spin Tor 2SC per acre will depend on plant size and volume of foliage present and pest pressure. Choose a lower rate for light infestations and/or small plants and a higher rate for heavy infestations and/or larger plants.

**Specific Use Directions:**

Application timing: Treat when pests appear, targeting eggs at hatch or small larvae. Heavy infestations may require repeat applications but follow resistance management guidelines. Consult your Dow AgroSciences representative, extension service specialist, certified crop advisor or your state agricultural experiment station for any additional local use recommendations for your area.

Resistance Management: Do not apply SpinTor 2SC more than 3 times in any 30 day period. Whenever Spin Tor 2SC is applied three times in succession, this should be followed by no use of Spin Tor 2SC for a 30 day period or rotation to another insecticide class.

**Restrictions:**

- Do not apply more than a total of 29 ounces of Spin Tor 2SC (0.45 lb ai of spinosad) per acre per crop or make more than 6 applications per

calendar year.

- Minimum Treatment Interval: Do not make applications less than 6 days apart.
- Pre-harvest Interval: Do not apply within 3 days of harvest.

Note: This product is highly toxic to molluscs.

**\*Trademark of Dow AgroSciences LLC**

**T6P / SpinTor 2SC / FPL Suppl IR-4  
Bushberries / 01-24-02  
D06-064-033  
EPA-accepted 01/22/02  
Initial printing.**

T6P / SpinTor 2SC / FPL Suppl IR-4  
Bushberries / 01-24-02  
file: D06-064-033 SpinTor IR4 Sec 3  
Bushberries et al 24Jan02f.doc

SpinTor\* 2SC  
EPA Reg. No. 62719-294

**Final printed supplemental label** for use of SpinTor 2SC for foliar insect suppression in bushberries (including but not limited to blueberry, currant, gooseberry, huckleberry, and elderberry), juneberry, salal, and lingonberry” based on EPA accepted copy dated January 22, 2002 with the following condition of acceptance:

1. Added following statement: “Note: This Product is highly toxic to molluscs.” This statement is on the main Spin Tor 2SC label and was acceptable per a September 27, 1999 e-mail communication from W.G. Sproat, Jr. (EPA) to R.F. Bischoff (Dow AgroSciences) confirming a September 23, 1999 discussion between them.

\*Trademark of Dow AgroSciences LLC

# Rainfastness for Postemergence Herbicides in Horticultural Crops

**Wayne Mitchem, Weed Control  
Specialist, UGA, NCSU and Clemson**

Herbicide	Time (hours) <sup>1</sup>
Aatrex <sup>2</sup>	1-2
Aatrex Nine-0 <sup>2</sup>	1-2
Aim	6 to 8
Alanap	4
Assure 11	1
Atrazine 90 WDG <sup>2</sup>	1-2
Basagran	4
Betamix	6
Boa	30 minutes
Defol 5	24
Fusilade DX	1
Glyphos	6
Glyphosate Original	6
Glyphosate	6
Gramoxone Extra	30 minutes
Gramoxone Max	30 minutes
Harmony GT	1
Matrix	4
Permit	4
Poast	1
Poast HC	1
Poast Plus	1
Prep	6
Pursuit	1
Pyramin DF	6
Pyramin SC	6
Reglone	30 minutes
Rely	4
Roundup Original	6
Roundup Ultramax <sup>2</sup>	1 to 6
Roundup WeatherMax <sup>2</sup>	1 to 6

There is some indication by manufacturer that this formulation may be more weather resistant than other Roundup formulations

Sandea	4
Select	1
Shadeout	4
Spin-Aid	6
Stinger	6
Touchdown	6
Touchdown 5	6
Touchdown Pro	6
2,4-D (amine formulations)	6 to 8
(low volatile esters)	1 to 2
UpBeet	6

<sup>1</sup> Minimum time in hours (unless otherwise noted) from application to rain or irrigation. Rain or irrigation occurring less than time in table may result in reduced activity.

<sup>2</sup> Taken from the web site  
<http://agguide.agronomy.psu.edu/pm/pdf/table%202-18.pdf>

# Controlling Annual Grasses with Graminicides

W.E. Mitchem, D.W. Monks, and R.B. Batts  
N.C.S.U. Weed Specialists

During this wet spring and summer annual grasses have been very prolific. Growing conditions have been ideal for annual grasses and grass pressure seems to exist at levels we have not seen in several years. As a result there is a greater need for post-emergence grass control this year than in years past. Under such conditions grasses grow very rapidly and the appropriate application window for control with graminicides (Assure II, Fusilade DX, Poast, and Select) is fairly narrow. Appropriate application stage can change within a matter of 1 or 2 days. The question is often posed “What is the difference between Assure, Fusilade, Poast and Select?” The common response is “they provide similar grass control as long as they are applied timely”. Timely is the critical word. Timeliness is specific to individual weeds for each herbicide. In the table below giant foxtail provides the best example across herbicides. For each of the four graminicides listed, the maximum height at application for giant foxtail control varies by 8 inches among the four herbicides. Therefore it is important to properly identify grass weeds early to insure success with post-emergence herbicides. Identification and grass size is critical for some species when choosing a post-emergence grass herbicide. An example would be realizing the need to control large crabgrass that has 4 inches of growth. In that situation Fusilade would not be your best option.

		Maximum Grass Height for Control with Graminicides				
Herbicide*	Rate**	Goosegrass	Large Crabgrass	Fall Panicum	Broadleaf Signalgrass	Giant Foxtail
Assure II	8-10 oz	6"	6"	6"	6"	4"
Fusilade DX	12 oz	4"	2"	6"	4"	6"
Poast	1.0 pt	6"	6"	8"	8"	8"
Select	8 oz	6"	6"	8"	6"	12"

\*All of these herbicides require the addition for crop oil concentrate for optimum results.

\*\*Application rate may be reduced if weed height is less than maximum recommended for control.

In addition with the increased growth in grass weeds from all the rainfall this year, it is likely that your growers will face grasses that are past optimum size. In this situation, a second application will often result in greatly improved control over one application.

For information on identification of grasses, see the following web site:

<http://www.ppws.vt.edu/weedindex.htm>

Also, remember that the registered use of these graminicides and crops on which each of these graminicides can be use differ. So, refer to the label for further information.

## **Membership Information**

To join the Georgia Blueberry Growers Association, mail a check payable to Georgia Blueberry Growers Association to our address:

Danny Stanaland, Sec./Treasurer  
Georgia Blueberry Growers Association  
Bacon Co. Ext. Service, 203 S. Dixon St.,  
Suite 3, Alma, Ga. 31510

The Association annual dues depend on which membership category you fit best. Jan. 1-Dec. 31, 2002 Membership:

1. Regular Georgia Member-\$25
2. Out-of-state member- \$25
3. Associate (industry) member-\$50
4. Education and research-\$10 (University and USDA personnel who do not grow blueberries commercially). Email newsletter free to education and research personnel. Send request to [jkrewer@uga.edu](mailto:jkrewer@uga.edu)

Blueberry Products and Services: Do you have blueberry plants, equipment or related items for sale? Call 229-386-3807 and we will list it in this newsletter. There is no charge for members for this service. Up to three lines free. Additional words \$.30 per word.

Blueberry Farm for Sale, 60 acres, 25 acres of blueberries, two-six inch wells, pond, 30x50 metal building, Dublin, Ga., Bennie Fitts, 478-275-1984

Southern Highbush plants for sale, Taking orders for fall planting, Nugent Nursery, 229-532-2009 after 6:00 p.m.

Rabbiteye plants for sale, 1 to 3 gallon, Bottoms Nursery, 770-884-5661, Concord, Ga.

Rabbiteye and southern highbush plants for sale, liners to 3 gallon, Alma Nursery, 912-632-5708, Alma, Ga.

Island Grove Ag Products: Don't buy plants until you have talked to us. We have all southern highbush varieties. We will grow specifically for your needs. Now taking orders. Call Ken Patterson (352) 481-5558

Sandy Run Farm and Nursery. Jubilee, Biloxi, Misty and Pearl River southern highbush for sale. Tim Goggans. 601-296-0630 or 601-286-7952.

Georgia-Florida Bark and Mulch. We offer a full line of pine bark products including, pine bark mulch, pine bark nuggets, pine bark fines and composted pine bark. Phone toll free: 1-888-744-9422

For Sale: 70 Acres blueberries located in Pierce Co., Georgia. Partially irrigated - Approx. 24 years old. Tift Blue, Woodard, Bluebelle and Climax 30% are Woodard. For information please call 912-367-6405 or 912-367-5451.



