

Dixie Blueberry News

Georgia Blueberry Growers Association Newsletter

Vol.4 No.1- Feb. 2004

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Gerard Krewer, 229-386-3410

**Georgia Blueberry Association
Spring Farm Tour and Meeting**

**Thursday, March 11, 2004
10:00 a.m. - 1:00 p.m.**

10:00 a.m. - Meet at Miles Blueberry Farm, about 5 miles west of Baxley on Zoar Rd. (Zoar Rd. starts at US 1 in Baxley, just a few blocks south of the courthouse, look for the 1st Methodist Church and head west). Miles Farm is on the southside of the road - look for the sign

1. Altman Farms - new large rabbiteye farm, extensive drainage improvements, interesting herbicide rig.

2. TBA

3. Miles Farm - highbush in spodic soil, rabbiteyes, packing facility.

4. Business Meeting and lunch at Miles Farm.

If possible, call and let Mr. James Clark, UGA Appling Co. Ext. know if you will be coming for lunch: 912-367-8130 or 367-8131.

President's Column

As another season rapidly approaches, I hope each of you are looking forward to a busy but fruitful season. Quality should be everyone's first goal and it starts now with the spray program. The University Extension Service has worked hard over the years putting together a very useful spraying guide. The guide contains information that can assist you in your individual spraying program and I hope you are using this information to your advantage.

Along with quality, there is another big challenge for our growers. This challenge is getting the best return on our investment. A key component in meeting this challenge head on is forecasting. We as growers over the years have learned the in's and out's of predicting the crop size and dates of harvesting for our own individual farm. In an effort to pull together this individual information so it can be used to benefit us as a whole, the Georgia Blueberry Growers Association Board of Directors will be appointing a committee to travel and observe the overall crop on March 15th or March 16th. The information will be used as a beginning point of a database that will be added to each year. Over the next three to five years, hopefully we can start to see trends develop and the data be used to help us better forecast our crops and get better returns.

When the Georgia Blueberry Growers Association was formed, our goal was to improve the quality of our blueberries and to stay on top of new research so that every grower in Georgia could have access to the best information available. I believe that our quality has improved because of the information contained in the spraying guide developed by the Extension Service and other information that has been shared. However, I also believe that we can further improve our chances of getting the best return on our investment by putting together the information needed to better forecast our crops. I hope that each of you will join me in the collection of the data needed to begin the process. If you have any questions or comments, you can reach me at 912-284-0266 (office), 912-285-3084 (home) or by e-mail at jcorn@accessatc.net

Joe Cornelius, Jr.

2004

COMMERCIAL

BLUEBERRY

IPM AND CULTURE GUIDE



Dan Horton, Entomology
Phillip Brannen, Plant Pathology
Danny Stanaland, Bacon County Extension Chair
Stanley Culpepper and Wayne Mitchem, Extension Weed Scientist
Gerard Krewer and Scott NeSmith, Horticulture

Cooperative Extension Service
The University of Georgia
College of Agricultural and Environmental Sciences

COMMERCIAL BLUEBERRY INSECT AND DISEASE SPRAY GUIDE

Dan Horton, Extension Entomologist
 Danny Stanaland, County Extension Chair, Bacon County
 Phil Brannen, Extension Plant Pathologist

TO CONTROL	CHEMICAL	AMOUNT PER ACRE	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
BEFORE FLOWER BUDS BREAK					
Phytophthora root rot	if needed Ridomil Gold 4EC	¼ pt./1,000 linear ft. in a 3ft band	12 hrs	before bud break	Apply Ridomil before the plants start to grow. One additional application may be made when conditions are favorable for root rot development per year.
	or Aliette WDG	5 lb	12 hrs	0 days	Apply Aliette as a foliar spray. Repeat applications can be made on a 14-21 day interval. Do not exceed 4 applications per acre per year.
Scale	if needed Superior Oil (70-second)	2 gal./100 gal. water/acre or 2 fl. oz./1 gal. of water	12 hrs	12 hrs.	Oil may be applied dormant or delayed dormant. Apply as needed for scale infestations. Do not apply oil when temperature are expected to be higher than 85°F or lower than than 40°F within 24 hours.
<p>Blueberry gall midge is a tiny fly. Blueberry gall midge maggots typically feed on vegetative buds. On most varieties vegetative feeding does little harm. On Rabbiteye cultivars flower feeding strains of blueberry gall midge occur sporadically. If present, gall midge that feed on flower bud are serious pests. Feeding injury destroys flower buds before bud scales open in the spring. Orchard sanitation in the form of an herbicide program to chemically mow the entire orchard floor or light cultivation as for mummy berry suppression, may offer helpful suppression. Producers are cautioned not to institute pre-bloom insecticide control programs for blueberry gall midge until its presence as a pest has been confirmed in your area.</p> <p>Gall midge lay eggs on warm winter days. Apply diazinon as-needed for gall midge between flower bud stages 1 and 2, as the most mature buds first show slight separation of scales. Repeat sprays during warm spells. Separation of bud scales may occur as early as Dec. 15. Premier is often particularly attractive, and is a good sentinel variety to monitor. These gall midge applications also provide a helpful degree of pre-bloom thrips suppression.</p>					
Gall midge	Diazinon AG500	1 pt.	24 hrs	7 days	
PRE-BLOOM, LEAF BUD SWELL UNTIL FIRST BLOOM					
<p>If mummy berry disease becomes established in your field, Indar is very important in pre-bloom sprays for cultivars that show leaf bud break before flower bud break. Start spraying when green tip occurs on the leaf buds or 1-5% open bloom (stage 6) occurs on the flower buds, whichever comes first. Continue sprays till all blooms have fallen.</p>					
Mummy Berry Twig Blight	Indar 75WSP (Section 18)	2 ozs./acre	12 hrs.	30 days	Do not make more than 5 applications or apply more than 10 oz. per acre per year. Do not make applications within 75 feet of streams, rivers, ponds, lakes or reservoirs.
<p>Flower thrips can be very damaging to flower buds and blooms. Thrip numbers typically increase dramatically as corollas opens and bloom progresses.</p> <p>Determining when or if blueberries should be treated for thrips is difficult. Treatment thresholds to indicate the need for insecticide use do not presently exist. Blueberries are a pollinations sensitive crop. Careless use of insecticide can easily impair pollination and ruin fruitset. Insecticide should not be applied during bloom. Some very provisional thrips treatment threshold concepts follow.</p> <p>Begin sampling bloom clusters for thrips at stage 3. Place flower bud clusters into sealed plastic bags and incubate them in a warm room or on a window sill. Less than 2 thrips per individual bloom during stage 3 is probably insignificant. However, 6 thrips per bloom is almost certain to destroy that flower. If thrips are found in blooms at stage 3, begin sampling two to three times a week. Take a minimum of five bags of bloom clusters per block each time. If more than 2 thrips per individual bloom are found, and the numbers are increasing, apply an an insecticide. Diazinon is the material of choice until 5 days pre-bloom. From five days pre-bloom until first bloom and during bloom the material of choice is SpinTor.</p>					
	Diazinon AG500	1 pt.	24 hrs.	7 days	Do not apply diazinon within 5 days of first bloom.
	or as-needed between 5 days and 1 day pre-bloom Spintor 25C	4-8 ozs.	4 hrs.	3 day	Spintor should be applied just before bloom. Spintor is quite toxic to bees until it is thoroughly dry.
DO NOT USE INSECTICIDE DURING BLOOM. BEES ARE NEEDED FOR POLLINATION AND FRUIT SET.					

COMMERCIAL BLUEBERRY INSECT AND DISEASE SPRAY GUIDE (Continued)

TO CONTROL	CHEMICAL	AMOUNT PER ACRE	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
10-20% BLOOM UNTIL 80-90% BLOOM					
DO NOT USE INSECTICIDES DURING BLOOM – Spraying, particularly with insecticides, may kill or repel wild bees and honey bees needed for adequate pollination and fruit set.					
Botrytis flower blight and fruit rot	Switch 62.5WG	11-14 oz/acre	12 hrs	0 days	Make the first application during early bloom. Subsequent application should be made 7-10 days during bloom. Do not apply more than 56 oz of product per acre per year. Make no more than two sequential applications before using another fungicide with a different mode of action.
	Elevate 50WDG	1.5 lbs/acre	12 hrs	0 days	Begin application at 10% bloom. Applications should be made every seven days when conditions favor disease. Do not make more than two consecutive applications without switching to a fungicide with a different mode of action. Do not apply more than 6.0 lb product per acre per year.
	CaptEvate 68WDG	3.5-4.7 lbs/acre	72 hrs	0 days	CaptEvate is a combination product of Captan plus Elevate. Do not make more than two consecutive applications before switching to a fungicide with a different mode of action. Do not apply more than 21.0 lbs/A/season.
	Pristine WG	18.5-23 oz/acre	24 hrs	0 days	No more than 2 sequential applications of Pristine should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Pristine per acre per crop year.
	Endura	8 oz/acre	12 hrs	0 days	No more than 2 sequential applications of Endura should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Endura per acre per crop year.
Mummy Berry	Indar 75WSP	2 ozs.	12 hrs	0 days	Use Indar if mummy berry has been a problem in the field. If confident you do not have mummy berry, you may use Captan alone for flower & twig blight. Indar is available in GA only via a Section 18 label. Apply at green tip and every 10-14 days during bloom. Do not apply more than (5) 2 oz. 75WSP applications. Do not chemigate. A combination of Captan and Indar may be of value for control of berry rots, particularly in highbush blueberry production.
	or Captan 50WP	5 lb	4 days	30 days	

COMMERCIAL BLUEBERRY INSECT AND DISEASE SPRAY GUIDE (Continued)

TO CONTROL	CHEMICAL	AMOUNT PER ACRE	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
10-20% BLOOM UNTIL 80-90% BLOOM (continued)					
Alternaria and Ripe Rots	Abound	6.2-15.4 fl. ozs.	4 hrs.	4 hrs.	Repeat applications can be made on a 7-14 day interval. Do not apply more than two sequential applications before switching to a fungicide with another mode of action (i.e. Captan). Do not apply more than 1.44 quarts per acre per season.
	Switch 62.5WG	11-14 oz/acre	12 hrs	0 days	Applications can be made on a 7-10 day interval when conditions warrant. Do not apply more than 56 oz of product per acre per year. Make no more than two sequential applications before using another fungicide with a different mode of action.
	Cabrio EG	14 oz/acre	24 hrs	0 days	No more than 2 sequential applications of Cabrio should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Cabrio per acre per crop year.
	Pristine WG	18.5-23 oz/acre	24 hrs	0 days	No more than 2 sequential applications of Pristine should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Pristine per acre per crop year.
IMMEDIATELY AFTER BLOOM, PETAL FALL UNTIL ONE MONTH AFTER BLOOM					
Scout fields for cranberry fruitworm to determine if and when spraying is needed. Check for fruitworm twice a week from full bloom until 4 weeks after petal fall. Examine fruit clusters for tiny pin-sized holes in berries, with frass and premature ripening in more mature fruit. Break berries open to look for larvae and damage. Early varieties such as 'Climax' are normally infested first. Infestations should be caught in the 1st or 2nd berry in a cluster for sprays to give the needed control of this pest.					
Fruitworms	if needed malathion 0.57EC	1.5 pts.	12 hrs	1 day	Spray when 1 bush in 5 has infested fruit clusters.
Fruitworms	if needed malathion 0.57EC	1.5 pts.	12 hrs	1 day	Spray when 1 bush in 5 has infested fruit clusters.

COMMERCIAL BLUEBERRY INSECT AND DISEASE SPRAY GUIDE (Continued)

TO CONTROL	CHEMICAL	AMOUNT PER ACRE	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
MID-SEASON - MID-MAY THROUGH HARVEST					
Phytophthora root rot	Ridomil Gold 4EC	¼ pt./1,000 linear ft. in a 3 ft band	12 hrs	Not specified	Only 1 application of Ridomil can be made at this time of year.
	or Aliette WDG	5 lbs	12 hrs	12 hrs	Apply Aliette as a foliar spray. Repeat applications can be made on a 14-21 day interval. Do not exceed 4 applications per acre per year.
<p>Blueberry maggots (BBM) are established in some rabbiteye orchards. BBMs are serious mid-and late-season fruit pests. BBM may go undetected at harvest, so one can easily ship infested fruit. Thorough field by field scouting is needed to find BBMs early and minimize loss. Monitor BBM by hanging one or more yellow, sticky traps baited with ammonium carbonate per cultivar. Trap catches indicate when BBM adults are present and when adults are becoming more or less common. Traps should be hung in orchards by mid-May. See your County Agent for ID pictures and further reference.</p> <p>If your orchard has been damaged by BBM infestation before, spray as soon as adult BBMs are trapped.</p> <p>If your orchard has not been damaged by BBM infestation before, and adult BBMs are trapped, either:</p> <ol style="list-style-type: none"> 1. spray immediately, or accept more risk by following option 2. 2. begin daily examination of fruit for larval infestation, and spray immediately if any larval injury is found. <p>Once spraying for BBM begins it is very important to spray every 7-14 days until all the fruit has been harvested. Materials and spray intervals are listed below.</p>					
Blueberry Maggot	Imidan 70WP (GA label)	1.3 lbs.	24 hrs.	7days	Imidan is the material of choice. Repeat every 10-14 days. Do not apply more than 2 times.
	or Sevin 80S or	1-2 lbs.	12 hrs	7 days	Sevin's residue life is short. Repeat every 5-7 days.
	malathion 57% EC	1.5 pts.	12 hrs	1 day	Malathion is safe to use, but its residual effectiveness is short. Repeat every 5-7 days through harvest.
PRE-HARVEST - HARVEST					
<p>Fire ants are nuisance pests, especially in pick-your-own orchards at harvest. Growers may elect to treat for them. Fire ant treatment should not be an automatic treatment, as fire ants feed on pest insects. Treatments will vary in their effectiveness according to conditions. Use of preventative post-harvest and pre-bloom fire ant treatment will provide optimal control. Repeat treatment of mounds is often necessary. Slowly apply mound drenches, using 1 gal. of dilute mixture to each mound.</p>					
Fire ants	if needed malathion 57% EC	1 pt.	12 hrs.	1 day	Malathion is a modestly effective foliar rescue treatment. May be applied to plants one day before harvest to discourage ants from foraging on the plants. This is a stop-gap treatment to get ants off the plants. Rely on aggressive post-harvest fire ant controls to suppress fireants in blueberries.

Alternaria and Ripe Rots	Abound	6.2-15.4 fl. ozs	4 hrs	4 hrs	Repeat applications can be made on a 7-14 day interval. Do not apply more than two sequential applications before switching to a fungicide with another mode of action (i.e. Captan). Do not apply more than 1.44 quarts per acre per season.
	Switch62.5WG	11-14 oz/acre	12 hrs	0 days	Applications can be made on a 7-10 day interval when conditions warrant. Do not apply more than 56 oz of product per acre per year. Make no more than two sequential applications before using another fungicide with a different mode of action.
	Cabrio EG	14 oz/acre	24 hrs	0 days	No more than 2 sequential applications of Cabrio should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Cabrio per acre per crop year.
	Pristine WG	18.5-23 oz/acre	24 hrs	0 days	No more than 2 sequential applications of Pristine should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Pristine per acre per crop year.

COMMERCIAL BLUEBERRY INSECT AND DISEASE SPRAY GUIDE (Continued)

TO CONTROL	CHEMICAL	AMOUNT PER ACRE	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
POST-HARVEST					
<p>Blueberry bud mite, an eriophyid mite so tiny (1/125 inch long) that it can not be seen without magnification. Blueberry bud mite is an occasional pest in Georgia blueberries. Injury may be more visible in late spring. Infested plants are recognized by a clustering or rosetting of buds, which may be abundant. Infested buds become succulent, fleshy, closely packed, on stems in clusters or rosettes, and they may redden. Bloom on infested plants is reduced. Affected berries are small, roughened and may have small reddish pimples or blisters on the fruit surface.</p> <p>Blueberry bud mite numbers increase during late summer into fall. Next year's flower and leaf buds are infested. Sanitation by aggressive, timely pruning of infested branches can be helpful. Never propagate from bushes that may be infested with blueberry bud mite.</p> <p>Chemical control is necessary if injury persists. Use high volume (300 gal/A), high pressure (200 psi) applications of a post-harvest insecticide/miticide and dormant oils. Dormant oil applications will provide helpful control. In blocks infested with blueberry bud mite make two post-harvest (July and August) applications of endosulfan.</p>					
blueberry bud mite	endosulfan 3EC plus superior oil	2 qts./300 gal/water/A 1 gal	24 hrs	post-harvest only	Apply post-harvest (hopefully NLT July) and again in August. Do not apply more than 4 qts. endosulfan 3EC per season.
<p>Treat if serious defoliation and pests are present. These pests are more injurious to young orchards. If control is needed, spray before larvae approach maturity.</p>					
Yellownecked caterpillars	if needed malathion 0.57EC or Dipel DF	1.5 pts. 0.5-1.0 lb.	12 hrs 4 hrs	1 day 0 days	Foliage feeding caterpillars become more difficult to control as they mature.
Leaftiers	or Confirm 2F	4-8 fl. ozs.	4 hrs	14 days	
Spanworms	or for large worms Asana XL	4.8-16 ozs.	12 hrs	14 days	Asana is a salvage treatment for large worms. Use may encourage scale and/or mites.

Fleabeetles	as needed			
	malathion 0.57EC	1.5-3 pts.	12 hrs.	1 day
	or			
	Sevin 80S	1-2 lbs.	12 hrs.	7 days
	or			
	Diazinon AG500	1 pt.	1 day	7 days

LATE SEASON (PREHARVEST) AND AFTER HARVEST FOLIAGE MANAGEMENT

During fruit maturation and/or immediately following harvest, fungicide applications may be warranted for control of leaf spot and suppression of dieback diseases. Start applications as soon as leaf spots are first observed.

Septoria leaf spot (only)	Aliette WDG	5 lb	12 hrs	12 hrs	Apply Aliette as a foliar spray. Repeat applications can be made on a 14-21 day interval. Two or three fungicide applications following harvest are generally sufficient to prevent major outbreaks of Septoria leaf spot. Assuming that hedging is conducted immediately following harvest, this is a good time to consider an application. Do not exceed 4 applications per acre per year.
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COMMERCIAL BLUEBERRY INSECT AND DISEASE SPRAY GUIDE (Continued)

TO CONTROL	CHEMICAL	AMOUNT PER ACRE	REENTRY INTERVAL	PREHARVEST INTERVAL	REMARKS
LATE SEASON (PREHARVEST) AND AFTER HARVEST FOLIAGE MANAGEMENT (continued)					
Septoria leaf spot (only) (continued)	Abound	6.2-15.4 fl. ozs.	4 hrs	4 hrs	Repeat applications can be made on a 14 day interval. Apply immediately following harvest. Two or three fungicide applications following harvest are generally sufficient to prevent major outbreaks of Septoria leaf spot. When hedging is conducted immediately following harvest, this is a good time to consider an application. Do not exceed 1.44 quarts per acre per season, and do not apply more than two sequential applications of Abound before switching to a fungicide with another mode of action.
	Switch 62.5WG	11-14 oz/acre	12 hrs	0 days	Applications can be made on a 7-10 day interval when conditions warrant. Do not apply more than 56 oz of product per acre per year. Make no more than two sequential applications before using another fungicide with a different mode of action.
	Cabrio EG	14 oz/acre	24 hrs	0 days	No more than 2 sequential applications of Cabrio should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Cabrio per acre per crop year.
	Pristine WG	18.5-23 oz/acre	24 hours	0 days	No more than 2 sequential applications of Pristine should be made before alternating with fungicides that have a different mode of action. Do not apply more than four applications of Pristine per acre per crop year.

COMMERCIAL BLUEBERRY WEED CONTROL

A. Stanley Culpepper, Extension Agronomist-Weed Science
Wayne Mitchem, Extension Associate-Weed Science

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	LBS ACTIVE INGREDIENT	
PREPLANT			
glyphosate acid (numerous brands) 4 SL 5 SL 5.5 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz	0.5 to 1.5	Apply to emerged weeds before transplanting. Perennial weeds may require higher rates of glyphosate. Some formulations of glyphosate may require the addition of an adjuvant. Do not allow glyphosate to contact green stems or leaves.
PREEMERGENCE			
napropamide (Devrinol) 50 WDG	8 lb	4	Use for control of annual grasses and small seeded broadleaf weeds. Rainfall or overhead irrigation is needed within 24 hours of application. Apply as a directed spray to base of plants. May be used on first-year plantings. NOTE: Use only half this rate the first year if root pieces are planted.
oryzalin (Surflan) 4 AS (Oryzalin) 4 AS	2 to 4 qt	2 to 4	Use for control of annual grasses and small seeded broadleaf weeds. Use low rate for short-term control (2 to 4 months); high rate for long-term control (6 to 8 months). DO NOT apply to a newly established planting until the soil has settled and no cracks are present. DO NOT APPLY ORYZALIN TO LOWBUSH BLUEBERRIES. Apply before annual weeds emerge or tank mix with labeled burndown herbicides. Do not apply when fruit is present.
diuron (Direx 4 L) (Karmex) 80 DF (Various generic formulations)	1.2 to 1.6 qt 1.5 to 2.0	1.2 to 1.6	Use for residual control of annual broadleaf weeds <u>ONLY</u> under plants established in the field for at least 1 year. Apply in the spring before weeds emerge, or if small weeds are present then apply with a surfactant or crop oil to improve contact activity. A repeat treatment may be made after harvest. DO NOT use on sand, loamy sand, gravelly soils, or on exposed subsoils.
simazine (Princep, Simazine) 90 DG (Princep, Simazine) 4 F (Various generic formulations)	2.2 to 4.4 lb 2 to 4 qt	2 to 4	Use for control of annual broadleaf weeds and some annual grasses. Provides good control of annual ryegrass. Apply 2 to 4 lbs ai/A in the spring or make a split application with spring and fall applications. Rotation of spring and fall herbicides will usually control a broader weed spectrum. On plantings less than 6 months old, use ½ rate. <u>DO NOT</u> use on gravelly, sand, or loamy sand soils. DO NOT apply when fruit is present. Tank mix with oryzalin or Solicam for improved annual grass control.
terbacil (Sinbar) 80 W	0.5 to 3 lb	0.4 to 2.4	Use for broad spectrum annual weed control <u>only</u> under plants established in the field for at least 1 year. Apply a single application in spring or after harvest in the fall before weeds emerge or after weeds emerge but are less than 2 in. tall. <u>DO NOT</u> use on sand, loamy sand, or gravelly soils with less than 3% organic matter. <u>DO NOT</u> use on any soils with less than 1% organic matter. Apply to the ground beneath the bushes, avoiding contact of foliage and fruit. Recommended rates are lower than those on the label; see label.
norflurazon (Solicam) 80 WDG	2.5 to 5.0 lb	2.0 to 4.0	Use for control of annual grasses, some broadleaf weeds, and suppression of some perennials. Apply as a directed spray in the fall or early spring when dormant--fall applications control a broader weed spectrum than spring applications. <u>DO NOT</u> apply to blueberry plants established less than 6 months. Use the low rate on coarse textured soils; higher rates on fine textured soils. Make only 1 application per year. <u>DO NOT</u> use on nursery stock. Temporary bleaching or chlorosis may occur. 60 days preharvest interval.
pronamide (Kerb) 50 W	2 to 4 lb	1 to 2	Apply as a single directed spray in established blueberries only for early postemergence control of susceptible winter annual weeds, perennial grasses, and chickweed and for preemergence control of these and other weeds. DO NOT APPLY ON NEW PLANTINGS UNTIL ESTABLISHED. Do not exceed maximum rate listed per year. Apply in late fall or winter when soil temperature is 55 F or less.

hexazinone (Velpar) 80 DF	1.3 to 2.6 lb	1 to 2	Apply as directed spray to soil and weeds before blueberry leaf emergence in plantings established for 3 years or more . Do not apply within 90 days of harvesting highbush blueberries or within 450 days of harvesting lowbush blueberries.
dichlobenil (Casoron) 4 G	100 to 150 lb	4 to 6	Apply in early winter to plants that have been established one year or more. Use from December to mid February.

COMMERCIAL BLUEBERRY WEED CONTROL (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	LBS ACTIVE INGREDIENT	
POSTEMERGENCE			
paraquat (Gramoxone Max) 3 SL (Boa) 2.5 SL	1.5 to 2.7 pt 1.6 to 3.2 pt	0.5 to 1 0.5 to 1	Use for broad spectrum, contact control of emerged weeds. Apply as a high volume (50 GPA), coarse directed spray with 1 to 2 qt surfactant/100 gal of spray solution. Avoid drift. Apply before emergence of new canes or shoots as injury to these plant parts can occur. Apply as a coarse spray to avoid crop injury from fine spray mist. May be tank mixed with certain preemergence herbicides for postemergence and residual weed control. Avoid contact with green growth and desirable crop growth.
glyphosate acid (numerous brands) 4 SL 5 SL 5.5 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz	1 to 2	Use for broad spectrum control of emerged weeds, both annuals and perennials. Apply as a directed spray under bearing and non-bearing bushes. DO NOT allow spray to contact foliage or green bark. Refer to product label for rates to control specific weeds. Allow a minimum of 14 days between last application and harvest. May be tank mixed with certain preemergence herbicides to provide postemergence and residual weed control. Blueberry growing in bark beds or other soil-less media are susceptible to glyphosate injury.
bentazon (Basagran) 4 SL	1.5 to 2 pt	0.75 to 1	Apply as postemergence-directed spray to emerged weeds. Add two pints of crop oil concentrate in 20 to 50 gallons of water per acre. NONBEARING PLANTS ONLY . Do not apply within 1 year of harvest.
clethodim (Select) 2 EC	6 to 8 fl oz	0.09 to 0.125	Controls annual and perennial grasses in NON-BEARING bushes that will not be harvested within 1 year of application. Sequential applications will be necessary for controlling perennial grasses like bermudagrass and johnsongrass. Use higher rates for perennial grasses. Add crop oil concentrate (1 qt/A). Make application to johnsongrass-12 to 18 in. tall; bermudagrass-3 in. tall or with 4 to 8 in. runners; annual grasses-2 to 8 in. tall. Does not control nutsedge(s).
fluazifop (Fusilade DX) 2 EC	16 to 24 fl oz	0.25 to 0.38	Controls annual and perennial grasses in NON-BEARING bushes (harvest not expected within 1 year). Sequential applications will be necessary for perennial grass control. Low spray volumes (10 GPA) generally improve control. Add crop oil concentrate (1 qt/acre). Make application to johnsongrass-12 to 18 in. tall; bermudagrass-3 in. tall or with 4 to 8 in. runners; annual grasses-2 to 8 in. tall. Does not control nutsedge(s).
sethoxydim (Poast) 1.53 EC	1.5 to 2.5 pt	0.3 to 0.5	Use for control of annual and perennial grasses under both bearing and non-bearing bushes. Sequential applications will be necessary for controlling perennial grass weeds like bermudagrass and johnsongrass. Low spray volumes (10 GPA) generally improve control. Add crop oil concentrate (1 qt/acre). For annual grasses up to six inches tall, 1 to 1.5 pt/acre should be adequate. For annual grasses taller than six inches and perennial grasses, use up to 2.5 pt/acre. Do not use more than 5 pt/acre per season and the last application must be made at least 30 days prior to harvest. Does not control nutsedge(s).

RABBITEYE BLUEBERRY AID FOR FRUIT SET IN POOR POLLINATION SITUATIONS

Gerard Krewer and D.Scott NeSmith, Horticulturist

Response	Material	Timing	Rate of Material	Remarks
Increase fruit set due to poor pollination.	Gibberellic acid - ProGibb 4% liquid concentrate or GibGro 4 LS or Gibbex 4%	First application: When at least 40-50% of the blooms are open. About 10% of the flower petals should have fallen. Second application: 10-18 days later.	24-32 oz./acre (4% gibberellic acid) or 24-32 grams gibberellic acid/acre applied twice. Total of 48-64 oz./acre in most cases.	<ol style="list-style-type: none"> 1. 40 gal. water/acre. 2. Add surfactant. 3. If solution is alkaline (pH greater than 8.0), lower the pH with a buffering agent. 4. Apply at night or during slow drying conditions.

Additional Considerations and Precautions for Using Gibberellic Acid

1. Gibberellic acid is expensive, but has been effective in increasing fruit set due to poor pollination. Poor pollination can be the result of cultivars not blooming together, cultivars which have low pollen compatibility, low bee activity, high night temperatures during bloom, excessively rainy weather during bloom, and maybe damage to the blooms from insects such as thrips. **Most large fields in south Georgia will benefit from gibberellic acid application in most years.**
2. Good results can be obtained with two applications of 24-32 oz./acre (48-64 oz./acre total) in 40 gallons of water per acre, spraying both sides of the bush each time. Another successful method is cultivar directed treatment (CDT). Where two varieties with different bloom dates are planted together (i.e. 'Climax' + 'Tifblue') this is the best method.

Using CDT, the first and second application of gibberellic acid are directed toward the first variety to bloom (i.e. 'Woodard' or 'Climax'). Some gibberellic acid will also reach the adjacent variety (i.e. 'Tifblue'), helping the early flowers to set. The third and fourth sprays are directed toward the later blooming variety (i.e. 'Tifblue'). The last 'Woodard' or 'Climax' flowers to open will benefit from spray drift from the 'Tifblues'. The total applied during the season is normally 48-64 oz. acre.

3. Apply gibberellic acid in about 40 gals. of water per acre. Since gibberellic acid activity is concentration dependant (150 p.p.m. or greater active ingredient is best) at least 6/10 ounce of ProGibb should be used per gallon of finished spray (i.e. 24 oz. in 40 gal., 30 oz. in 50 gal., or 36 oz. in 60 gal.).
4. Although common non-ionic surfactants can be used, it is recommended that X-77, Silwet L-77, Kinetic, or Flood be used with gibberellic acid. Follow label rates carefully. Silwet L-77 is used at the rate of only 3.2 oz./100 gal. of spray. Caution should be used in trying other surfactants, because they could burn blueberry blooms.
5. In past years, only night applications of gibberellic acid were recommended. However, several experiments in 1995 showed comparable fruit set occurred for both early day and night applications. In any case, it is best to apply gibberellic acid during periods of slow drying such as at night, in the late evening or very early in the morning.
6. Gibberellic acid should be compatible with most fungicides, but a small-scale trial is recommended to make sure settling or clabbering is not a problem. The spray solution pH should be checked to make sure the PH is not too alkaline (pH 8.0 or above). If the pH is 8.0 or above, add a buffering agent.
7. Do not apply within 40 days of harvest.
8. If possible, do not apply if rain is forecast within 12 hours.
9. Do not apply to bushes in a low state of vigor.
10. Excessive applications may reduce flowering the following year by setting more fruit than the bush can properly mature. This is especially true if the bushes are in a low state of vigor.
11. Some cultivars such as 'Brightwell', 'Premier' and 'Powderblue' usually set a good crop if planted with compatible cultivars for cross pollination. They seldom need applications of gibberellic acid unless bee activity is low or the blooms are damaged by spring freezes.
12. Southern highbush blueberries often set more fruit than they can properly mature. Gibberellic acid can increase this problem.
13. Part of the yield increase often seen with gibberellic acid is from smaller size, seedless or nearly seedless berries which ripen later in the season. If you are mechanical harvesting for the frozen market, this is not a problem, but it could pose a problem for hand picking of fresh fruit.
14. Blueberry fruit set and fruit size under natural conditions is determined in large part by number of seeds in the fruit. The seeds produce plant hormones that set the fruit and cause it to grow to maximum size. Low seed counts result in smaller, later ripening fruit. Gibberellic acid can set fruit, but will not fully substitute for total lack of seeds. Seedless fruit of 'Tifblue' set only with gibberellic acid usually produce berries about 2/3rds normal size. Seedless fruit of 'Climax' set only with gibberellic acid will produce berries about 1/4th normal size. Fruit set with a combination of gibberellic acid and some seeds develop better fruit size, so bee pollination is important even in fields treated with gibberellic acid.
 Growers should use honey bees (min. 2 strong hives per acre) if there are not large numbers of honey bees and wild bees such as bumble bees and southeastern blueberry bees present in the blueberry field. Most large fields do not have enough bees, so honey bees should be imported. Although, flowers are most receptive to fruit set with gibberellic acid at stage 5 (elongated but not yet open) and 6 (open), seedless fruit set just with gibberellic acid are smaller in size than partially seeded fruit set with the help of gibberellic acid. Allow at least 40 to 50% of the flowers to open and be worked by bees before gibberellic acid application. About 10% of the petals (corollas) should have fallen. Apply a second application of gibberellic acid 10 to 18 days later.

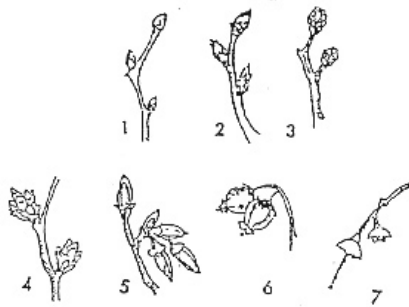


Fig. 1. Stages of flower bud development in rabbiteye blueberries: 1 = no visible swelling, bud scales completely enclose the flowers; 2 = visible swelling of bud, scales separating, flowers still completely enclosed; 3 = bud scales separated, apices of flowers visible; 4 = individual flowers distinguishable, bud scales abscised; 5 = individual flowers distinctly separated, corollas elongated but closed; 6 = corollas completely expanded and open; 7 = corollas dropped. Adapted from J. M. Spiers, 1978, J. Amer. Soc. Hort. Sci. 103 (4): 452-454.

**RABBITEYE BLUEBERRY AID
FOR FRUIT SET FOLLOWING SLIGHT
FREEZE DAMAGE**

Response:

Increase fruit set of flowers with slight freeze damage.

Material:

Gibberellic acid-ProGibb 4% liquid concentrate or GibGro 4 LS

Situations and timing:

The use of gibberellic acid for fruit set following freeze damage to rabbiteye blueberries is a recent discovery. Field and laboratory experiments indicate it may be used in several situations. **Actual damage suffered during a freeze depends on many factors including stage of bloom, cultivar, wind, low temperature, and duration of low temperature. Blossom temperatures during radiation freezes can be 2-3 degrees F lower than protected thermometer temperatures.**

As a general rule, blossom temperatures in the range of 26-32 degrees F will cause partial flower damage to flowers at stage 5 and 6 (see Fig. 2). If the freeze occurs during full bloom, this calls for the first gibberellic acid application soon after the freeze event. Apply a second application of gibberellic acid 10 to 18 days later.

Temperatures below 26 degrees F are likely to cause total death of flowers at stage 5 and 6. In this case, application of gibberellic acid starts when the slightly freeze damaged stage 3 and 4 flowers develop into stage 5 and 6. Note that freeze damaged flowers may never open properly or be receptive to bee pollination, so an application of gibberellic acid should be applied when a large percentage of the damaged blooms reach stage 5 and 6. Apply a second application of gibberellic acid 10 to 18 days later.

Situation I.

Partial flower damage. Flowers with damage similar to Fig. 2 (Blossom temperatures probably in the range of 26-32 degrees F during bloom)

Controlled experiments have been conducted during the last three years where blooms at stage 5 and 6 were subjected to temperatures in the range of 26-32 degrees F. At these temperatures flowers were slightly damaged and may be rescued with gibberellic acid. The first application of gibberellic acid for freeze rescue should be applied after the freeze while the flowers are still in stage 5 and 6. Once an abscission layer is formed, the flower will drop off regardless of gibberellic acid application. A second application should be applied 10-18 days later to further enhance fruit set.

Situation II.

Open and nearly open blooms killed. Flowers with damage similar to Fig. 3 (Blossom temperatures below 26 degrees F during bloom)

In 1993, temperatures in the range of 22-25 degrees F occurred during the early to mid rabbiteye bloom period in south Georgia. Flowers elongated but not yet open (stage 5) and open (stage 6) were killed (see Fig. 3). Flowers with corollas (petals) just emerging (stage 4) were damaged by the freeze but continued to develop. Many of these flowers had damaged corollas which never opened properly for bee pollination. When a majority of these flowers developed to stage 5 and 6 the first application of gibberellic acid was made. A second application of gibberellic acid was made 10-18 days later to enhance fruit set. Excellent results were seen on almost every farm.

In 1996 temperatures in the range of 20 degrees F occurred during the mid rabbiteye bloom period in south Georgia. Damage initially appeared to be similar to 1993, but results with using gibberellic acid for fruit set were much more erratic from farm to farm. Some growers had excellent results with gibberellic acid, but other growers had no apparent increase in fruit set. This may be due to increased shoot and fruit stem damage from the more severe freeze of 1996.

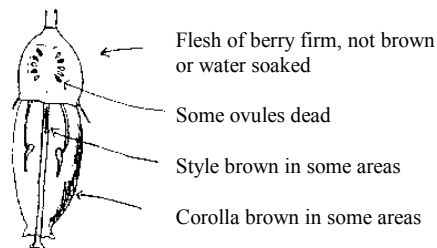


Figure 2. A flower showing several types of slight freeze damage.

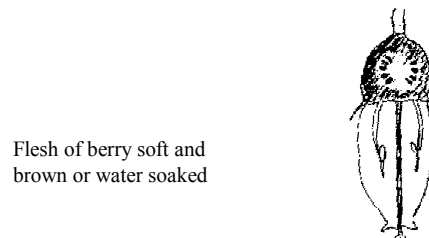


Figure 3. A flower with freeze damage too extensive to be rescued with gibberellic acid. Application of gibberellic acid should be delayed until flowers at stage 3 and 4 progress into stage 5 and 6.

Dormex® to Enhance Fruit Ripening of Certain Southern Highbush and Rabbiteye Blueberries

Gerard Krewer and D. Scott NeSmith, Horticulturists

Response	Material	Timing	Rate of Material	Remarks
<p>If properly used, Dormex® can stimulate more rapid leaf development in the spring, resulting in more concentrated ripening on the first two harvests on blueberry cultivars with poor spring leaf development in south Georgia. Both increased number of leaf bud breaks, and earlier leaf emergence occurs on poor leafing blueberry cultivars in response to Dormex®. Flower buds at stage 3 of bud development or beyond (see gibberellic acid bud stage section) are extremely vulnerable to chemical burn and/or injury when using Dormex®.</p>	<p>Dormex® -50% hydrogen cyanamide</p>	<p>NOTE: Timing of Dormex® applications is <u>extremely important</u> in order to achieve the desired response and <u>to avoid flower bud injury</u>. Apply during the dormant season after significant winter chilling has been received, but before significant flower bud swelling occurs. Apply before a significant number of flower buds reach stage 3 (see flower bud chart in gibberellic acid recommendations). Timing must be based on flower development, however, generally optimum time of application in lower south Georgia has been early January on low chilling requirement southern highbush. Generally, the best timing for rabbiteyes such as ‘Climax’ has been late January or early February. But again, plants must be examined for their stage of development. If excess floral bud swell and floral bud break has occurred, chemical injury to buds is highly possible.</p>	<p>Apply 1 to 1.5% Dormex® with non-ionic surfactant in 50 gallons of water per acre. This rate is two quarts to three quarts of Dormex® plus one quart of surfactant in 50 gallons of water. Some cultivars have dormant (early January) flower buds that are not tight, but “puffy”. Only use Dormex on a small scale, trial basis on these cultivars. A low rate of Dormex (1%) and half-rate of surfactant (one pint per 50 gallons) is suggested for small scale trial on these cultivars.</p>	<ol style="list-style-type: none"> 1. Dormex® is a toxic material and is registered for application only with closed cab tractors. Before use read all Dormex label sections carefully. 2. Do not consume alcoholic beverages prior to, during, and following (24 hours) handling the product. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 72 hours. 3. Dormex® is highly corrosive to equipment. Clean up thoroughly after application. 4. Avoid drift. Dormex® may be phytotoxic to green plants such as winter vegetable crops, shrubs, pets, livestock, etc. Use a spray pressure of 50 psi to reduce drift. 5. Flower buds sprayed at stage three or beyond may be killed by Dormex®, especially at concentrations of 1.5 %. When applied at the correct window, 1.5 % may give a better response than 1%. 6. Apply during dry weather. Slow drying may enhance Dormex® activity and cause more phytotoxicity if the buds are swelling. 7. Dormex® may advance flowering by several days, slightly increasing the risk of freeze damage. 8. Dormex® is not needed on cultivars with good leaf development such as ‘Sharpblue’, ‘Brightwell’, ‘Emerald’, etc. 9. The target organ is the flower buds, direct spray nozzles to the area with flower buds.

Ethephon for Bloom Delay on ‘Climax’ and Certain other Blueberry Cultivars

Gerard Krewer and Bob Boland

Response	Material	Timing	Rate of Material	Remarks
<p>Spring bloom delay if applied the previous Fall. Length of delay will vary with cultivar, number of applications and rate of ethephon applied. Delays of seven to 14 days are likely to occur with ‘Climax’, with seven to ten days being typical.</p>	<p>ethephon: Superboll (55.4% a.i.)</p>	<p>First application: mid-October</p> <p>Second application: early November</p> <p>If possible, apply when temperatures are in the range of 60 to 80 degrees F.</p> <p>One application will provide most of the bloom delay, a second application will lengthen the bloom delay.</p>	<p>Use 4.6 ounces per 50 gallons of finished spray solution. This will produce a 400 ppm solution of ethephon. Add a non-ionic surfactant at the rate of ½ pint per 50 gallons. Good coverage is needed for this material to work. Apply a minimum of 50 to 100 gallons of water per acre depend on bush size.</p>	<p>Fruit ripening will be delayed. Length of delay of fruit ripening is related to improved crop load and delayed flowering.</p> <p>Ethephon has been tested for a number of years on a number of cultivars blueberries. No damage plant or flower bud damage has been observed, but growers are cautioned to mix the material at the proper rate. Only healthy plants should be sprayed.</p> <p>In several trials, flower bud numbers have been increased. If a cultivar sets excessive flower buds already, use only a trial basis. Cultivars which have demonstrated appreciable bloom delay with ethephon are: ‘Climax’, FL86-19(“V1”), ‘O’Neal’, ‘Sharpblue’, and ‘Woodard’. Cultivars which have exhibited minimal bloom delay with ethephon are: ‘Bluebelle’ and ‘Tifblue’ (zero to two days delay in bloom).</p> <p>To improve bloom synchronization of ‘Climax’ planted with ‘Tifblue’ or ‘Brightwell’, spray only the ‘Climax’. Drift of ethephon spray from the treated rows of ‘Climax’ had minimal effect on bloom of ‘Brightwell’ in an airblast sprayer trial where a good stand (solid row) of ‘Climax’ was present. Adjust spray nozzles so primarily ‘Climax’ is sprayed.</p>

ATTENTION!

PESTICIDE PRECAUTIONS

1. Observe all directions, restrictions and precautions on pesticide labels. It is dangerous, wasteful and illegal to do otherwise.
2. Store all pesticides in original containers with labels intact and behind locked doors. "KEEP PESTICIDES OUT OF THE REACH OF CHILDREN".
3. Use pesticides at correct label dosage and intervals to avoid illegal residues or injury to plants and animals.
4. Apply pesticides carefully to avoid drift or contamination of non-target areas.
5. Surplus pesticides and containers should be disposed of in accordance with label instructions so that contamination of water and other hazards will not result.
6. Follow directions on the pesticide label regarding restrictions as required by State or Federal Laws and Regulations.
7. Avoid any action that may threaten an Endangered Species or its habitat. Your county extension agent can inform you of Endangered Species in your area, help you identify them, and through the Fish and Wildlife Service Field Office identify actions that may threaten Endangered Species or their habitat.

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Gale A. Buchanan, Dean and Director

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, 2004 Membership:

Gross Sales from Blueberries

Less than \$25,000.....	\$25.00
\$25,000 - \$50,000.....	\$50.00
\$50,000 - \$100,000.....	\$75.00
\$100,000 - \$150,000.....	\$100.00
\$150,000 - \$200,000.....	\$125.00
More than \$200,000.....	\$150.00
Allied Industry (supplies/affiliated companies & individuals).....	\$50.00
Out-of-State.....	\$25.00

Classifieds

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.

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.

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

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

