Small Fruit News

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Clemson University
NC State University
University of Georgia
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In this Issue:

Research Reports

Forcing Holiday Strawberries for the Thanksgiving/Christmas Holiday Season

Robert J. Dufault and Brian Ward
Clemson Coastal Research and Education Center
Clemson University

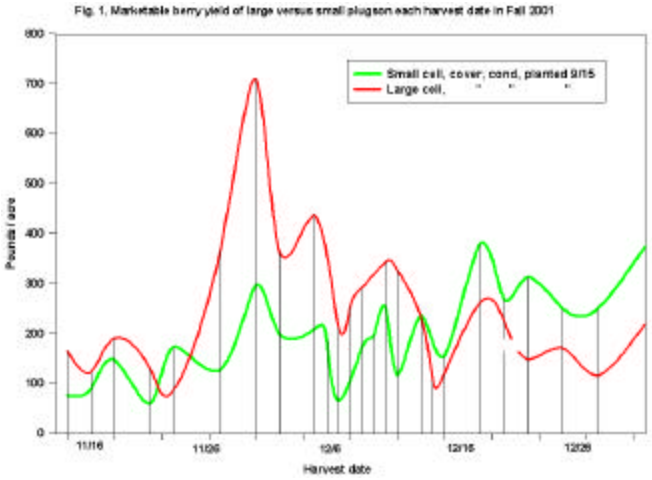
Our goal was to discover the effect of earlier planting in mid-September versus early October on yields of forced berries for both the Thanksgiving market and Christmas market. Also, we evaluated the effect of using larger plugs (38 cells/tray) to produce plants with more crowns and hopefully, more holiday berries than the traditional smaller plugs (58 cells/tray). In order to force our plants, we used artificial conditioning prior to field planting and row covers.

WHY. From late October through January, the supplies of strawberries are low and demand is high. Consequently, there is a very lucrative market for "holiday" strawberries. Market prices for holiday berries can be 3-4 times higher than spring berries. We have been working on the idea of forcing for the holiday market since 1999 and have had mixed success. We feel that the holiday berry concept has great economic potential to help small farmers, but abnormally cold or hot fall weather, can negate any growth enhancement we try to create using row covers.

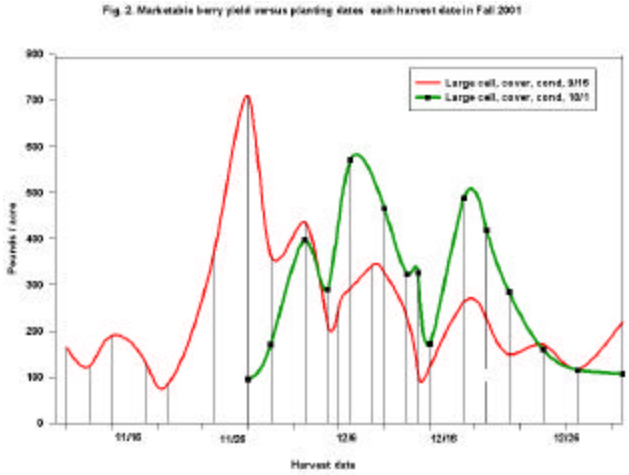
HOW. We grew our own high quality 'Sweet Charlie' plugs from Canadian daughter tips purchased from a distributor in 2001. Two planting dates (9/15 and 10/1) were evaluated, so daughter tips were started in the greenhouse on Aug. 1 and Aug. 15, respectively. After 4 weeks, we conditioned them in growth chambers for 2 weeks (75 / 55F day/night and a 12 hr photoperiod) to shift them from the vegetative to reproductive stage. Normally, plugs grown in the mountains of NC are naturally conditioned by shipment in fall. The plugs were hand-planted 9/15 and 10/1 and solid plastic row covers (Tufflite, 6-mil polyethylene film) were installed in early Oct. We vented daily to prevent excessive heat buildup. The first harvest was 11/12 and harvests occurred three times weekly for a total of 20 harvests ending on 12/31/2001. After the last harvest, row covers were pulled down and the plants allowed to recover (weekly fertigation stopped). To stimulate earlier spring production and utilize the row covers most efficiently, the same fall covered plots were covered again on about 2/1/2002. Harvesting began by 2/13 for a total of 26

harvests. Last harvest was 5/6 and coincided with a general lack of flowering in all plots.

WHAT HAPPENED. Fall, 2001 was one of the warmest the Southeast has experienced in decades. Most strawberry growers who had not planned on producing fall berries, found beautiful marketable berries on their fall-planted strawberries! We found that the soil temperatures in row covered plots were only a few degrees higher with row cover systems, but black plastic mulch without row covers managed to increase soil temperatures at least 15 degrees. As the fall progressed, the row covers on average increased the air temperatures about 5 to 6 degrees, but the climate was so abnormally warm and ideal for plant growth, row covers were unnecessary to enhance early holiday berries.



Large versus small plugs. The yield of the 38 plug was greatly superior to the 58 plug with much higher Thanksgiving yields (Fig. 1). Comparing total holiday season yield, the 38 plugs produced 5,600 lbs/acre versus 4,600 lbs/acre for the 58 plugs. This 1,000 pound advantage occurred mostly around Thanksgiving with production leveling off after Thanksgiving with a higher production peak for the smaller plugs just before Christmas. Considering that the price of strawberries that 2001 fall season averaged about $28 per 12 pints, the added cost of larger plugs may have been warranted by higher price. These 2001 prices were lower compared to the 2000 holiday season probably due to the surplus of unexpected berries coming from many sources in the Southeast.



Sept. 15th versus Oct. 1st planting dates. The first harvest of holiday berries was on 11/11 for the 9/15th planting with peak production on about 11/27 (Fig.2). The 10/1 planting yielded later, missing the Thanksgiving holiday, but peaking twice around 12/7 and 12/18. Ultimately, the 9/15 planting produced about 4,600 lbs/acre versus 3,400 lbs/acre for the 10/1 planting. This data suggests that for production to capture both holidays, it is important to use more than one planting date. One major peak of berry production and usually a smaller peak are associated with these forced holiday berries. Although the 9/15th planting was ultimately more productive overall, the real advantage of the earlier planting was hitting the Thanksgiving holiday. Typically, the Thanksgiving price is higher than the Christmas price.

Row covers versus non-covered. The fall temperatures negated the need for row covers. Yield between the large conditioned plugs planted 9/15 were higher for the row covered plants with the major peak occurring about 11/26, but this advantage only equated to 900 lbs/acre over uncovered plots by the season's end. The utility of row covers is only potent if fall weather is cold, otherwise they have no value. Since no one can truly predict how temperature will occur months in advance, the

cost of row cover certainly would not be warranted in warm falls like 2001.

The ideal system for each holiday. The Fall 2001 weather was not typical and that weather pattern will probably not reproduce any time soon. Therefore, prediction and recommendation of a cultural system to implement commercially from this year's data seems bogus. After saying that, I can affirm that to capture both holiday seasons with a single cultural system may not be possible. The manipulation of planting dates, conditioning, cell size, tunnels, etc. can all be used to structure different peaks of productions and it will require at least two separate cultural systems to "hit" both holidays. Since Thanksgiving berries tend to have a higher value than Christmas berries, capturing the Thanksgiving holiday season requires all aspects (conditioning, large plugs, early planting, maybe row covers if convincing predictions of a cold fall exist) to insure the plugs can be stimulated into a very fast growth rate to make that market window. It is also certain that even with beautiful fall weather, unexpected and unwanted freezes can destroy highly marketable berries on one freak night. Therefore, the second aspect that is necessary for holiday berries is to plan to provide very efficient frost protection to shield the berries from freezes on those nasty nights.

Spring production. Forced strawberry plants were allowed to recover from forcing and encouraged to produce spring yields. We used the row covers again to heat the plants up in February to encourage early berry production. We feel that since a grower made an investment in fall on row covers, to recoup some of his expenses, row covers should be used as much as possible to increase spring yields. Row covers were used in the late winter only in the same plots covered in fall. Spring yields in all plots were essentially equivalent. There was a tendency for the large, conditioned plugs planted on 9/15 to produce significantly lower total yields (combined fall and spring yields) and this may have been the aftermath of forcing which reduced crown vigor needed for high spring yields. This work suggests that even if the price isn't ideal for holiday berries, a grower can expect bonus spring production from this planting to help recoup his costs.

Final thoughts. Forcing holiday berries in this region will only be successful in a "normal" fall/winter climate. Unseasonably high temperatures in fall negate the success and profitability of row cover systems and if that occurs, a grower's only recourse would be using the covers to force the berries into production for early spring markets before the competition. In normal fall weather, we believe that row cover technology will produce higher yields of holiday berries, but this is always a gamble and the weather "holds all the cards".

'Ochlockonee': A New Rabbiteye Blueberry

Scott NeSmith
Georgia Station, Griffin, GA
University of Georgia

'Ochlockonee' (ok-LAHK-uh-nee) is a rabbiteye blueberry (*Vaccinium ashei* Reade) joint release by The University of Georgia College of Agricultural and Environmental Sciences, The University of Georgia Agricultural Experiment Station, and the United States Department of Agriculture's Agricultural Research Service. Named after the Ochlockonee River in south Georgia, 'Ochlockonee''s primary attribute is that it ripens late in the rabbiteye season along with 'Tifblue', yet, yields and berry size have been superior to the standard cultivar in south Georgia. Berries are medium-to-large sized, high quality, and can be mechanically harvested.

'Ochlockonee' has been primarily compared with the late season rabbiteye standard 'Tifblue'. In Alapaha, Ga. productivity of 'Ochlockonee' substantially exceeded that of 'Tifblue' in 3 out of the past 5 years for plants that were established in 1986 (Table 1). In addition to high yield, another important trait of 'Ochlockonee' as compared to 'Tifblue' is increased berry size, especially for first harvest berries. These two

properties alone make this selection desirable as a highly productive, late season rabbiteye cultivar.

Other attributes such as berry scar, berry color, berry firmness, plant vigor, etc. for 'Ochlockonee' are comparable to 'Tifblue'. 'Ochlockonee' generally ripens a few days later than 'Tifblue', and bloom dates are similar which is favorable for escaping spring freeze damage in the south Georgia area (Table 2). The estimated chill requirement of the new release is 600 to 650 h, which is similar to 'Tifblue'.

The bush type of 'Ochlockonee' is vigorous and upright, with a fairly narrow crown. Plants have an abundant production of fruiting wood each year, with only moderate cane growth. Some stem disease lesions (*Gloeosporium minus* and/or *Septoria albopunctata*) have been observed on an older planting of 'Ochlockonee' in south Georgia, but several years of observations have indicated this has caused no serious production problems. Propagation of 'Ochlockonee' has been easily accomplished from softwood cuttings.

As with most rabbiteye blueberry cultivars, it is recommended that 'Ochlockonee' be planted with another rabbiteye cultivar with a similar bloom time for cross pollination. In south Georgia, likely the cultivars Brightwell and Powderblue would be suitable pollinizers for 'Ochlockonee'. The new release is recommended for trial by growers interested in a late season, high producing rabbiteye cultivar.

Availability

A U.S. Plant Patent for 'Ochlockonee' has been applied for on behalf of the University of Georgia Research Foundation. Contact the Georgia Seed Development Commission, 2420 S. Milledge Ave., Athens, Ga. 30606, for information on plant source and availability. The phone number is 706-542-5460.

Table 1. Yield data of 'Ochlockonee' and 'Tifblue' rabbiteye blueberries for 5 consecutive years. Data are from single bush, replicated plots at Alapaha, Ga. Yields are total fruit weight from multiple harvests.

	Kg/bush		
Year	Ochlockonee	Tifblue	Significance [Z/]
1998	6.6	2.9	**t**
1999[Y/]	2.4	1.4	NS
2000	12.0	8.0	**t**
2001	8.0	7.6	NS
2002	9.5	3.0	**t**
5 year avg.	7.7	4.6	

[Z/] Significantly different at the 5% probability level (**t**), or not significantly different (NS).

[Y/] An out break of flower thrips during 1999 caused low yields on late blooming selections and cultivars.

Table 2. Chill hours, bloom dates and ripening dates of 'Ochlockonee' and 'Tifblue' rabbiteye blueberries. Data are from replicated plots at Alapaha, Ga.

	Date of 50% ripening			
Year / Chill hours[Z/]	Ochlock-onee	Tifblue	Ochlock-onee	Tifblue
1998 / 620	29 Mar	28 Mar	1 Jul	26 Jun
1999 / 363	4 Apr	30 Mar	26 Jun	22 Jun
2000 / 697	24 Mar	20 Mar	30 Jun	18 Jun
2001 / 916	14 Mar	11 Mar	30 Jun	23 Jun
2002 / 574	31 Mar	26 Mar	20 Jun	19 Jun
5 year avg.[Y/] / 634	27 Mar a	23 Mar a	28 Jun b	22 Jun a

[Z/] Chill hours are hours below 7 C for the period from October 1 thru February 15. Data were from the Tifton weather station.

[Y/] The same lower case letter indicates the dates for the 5 year average were not significantly different at the 5% probability level for bloom time and ripening time.

Pests and Diseases

Strawberry Mites and their Management in Berry Fields

Kenneth A. Sorensen
North Carolina State University

Some questions asked about mites with comments.

With the low winter temperatures this year will mites survive?
Yes. Mites are present and exist in Canada, Europe and in areas of the North in the United States. They can and will survive winter temperatures well into single digits. They pass the winter as eggs in microhabitats and as adults who have metabolized nutrients in the fall and converted them to alcohol (antifreeze). Fluctuating temperatures are more detrimental to mites and they get "tricked" into converting to spring too early. This happens with trees and strawberries in those years. In 2003 things are sitting tight and should break at a proper time.

Do I have mites and how can I be sure?
Assume you have mites! But check plants for mite stages using a 10X hand lens. You can also use a dissecting microscope. Several county extension offices have these scopes and can assist you. We looked at leaves from 5 sites in Rockingham County this week and only found one mite and several aphids (living and dead). I looked at several leaves last week at a field in Wake County and only found aphids living.

How to take a sample for mites?
Remove the older leaves laying flat on the plastic. Do not examine new, unfolding leaves. You can mix the sample with old lower leaves and old leaves in the middle of the plant. Mites at this time have been confined to the older leaves contacting the black plastic around the base of the plant where temperatures are the highest.

How many mites or plants containing mites means I need to do something?
As a rule 5 % of the plants with mites means be prepared to spray. It is not necessary to count all the mites on a leaf, but rather just presence or absence of mites is sufficient. Be sure to record the number sampled with the date.

Should I take samples every week?
Only if you want to stay completely on top of mite development. Sample and when 5% level is reached monitor the weather and get the sprayer ready and the miticides out.

Why monitor the weather?
Mites can pass through a complete cycle (adult to adult) in about 7 days at temperatures of 80 and 50 day / night. Warm weather, bright sun, low wind and no rain are favorable for mite development. The degree of favorable conditions and the duration will determine how fast mites will build up.

Why worry about mite build-up?
Once mites are completing cycles within the population you have all stages overlapping and the effectiveness of miticides and the frequency of applications and the spray intervals will change and the level of control will vary and never be complete. Once you have mites and webbing and damage to the foliage you are behind the 8 ball, the fire is ragging and the horses are out of the barn! To prevent this from happening with mites keep weekly records, monitor the weather and spray and pray!

Which miticide is the best?
The one that works. All miticides have their place and you must select the one that fits your situation at the time. Acramite is the new one with unique chemistry and has not been used so resistance should not exist. It also is effective against all mite stages and has good residual activity. Try it and order early so your dealer has it on hand. Savey is another new miticide that has ovicide activity. It can only be used once a year. Then there is AgriMek, Kelthane, Vendex and etc. AgriMek label indicates two

applications. Kelthane is an old miticide that still works when not over used. Vendex is a selective miticide but it is slow.

Where do I find out how to use a miticide?
The label is the best source of information. For service consult with County agents, University Specialists, ask your dealer and ask your neighbor. Your experience counts too. Read spray guides and refer to handouts from meetings and various newsletters.

Help. I have difficulty in selecting a miticide.
Several factors can influence your decision. Experience, availability, cost, formulation, safe to the applicator, safety to good mites and insects, safety to the environment, size of container, shelf life, time limitations to harvest, re-entry interval, compatibility with other sprays, pH of my water, class of miticide, mode of action, when used last in my field, resistance level of mites in my field etc. It is not easy and simple to select one. But you gather information, integrate that information and make the best choice at the time.

For now the best advice is to check those fields, select the leaves, and examine for mites. Take leaves from 100 plants in your field. Only sample until you find 5% of those leaves infested. Once you find 5 leaves with mites, you know you have mites. Additional counts can indicate what areas of the field have mites. If you map this out, you could spot treat in those areas only that have mites. Mites and mite populations do start in hot spots in the field and you usually know where they are. Also monitor around edges of fields and even check a few of those broadleaf winter annual weeds. Keep records. Spray if needed and follow-up with more samples after 5 days to see how good you did and whether you need another spray.

We will have more to say about miticides and their application in the next newsletter.

Relative Effectiveness of Various Chemicals for Strawberry Mite Control

Miticide	Relative Control Rating for Spider Mite				
	Eggs	Larvae	Adults	Beneficial Mites	Other Pests
Agri-Mek 0.15 EC	-	++++	+++	+	-
Brigade 2 EC	-	++++	+++	-	+++
Kelthane	-	+++	++	-	-
Danitol 2.4 EC	-	+++	++	-	++
Savey 50 WP	+++++	+++	-	++	-
Vendex 50W	+	++	+	+++	-
M-Pede	-	+	+	+	+
Acramite 50W	+	+++	+++	+	-

Spray for coverage

- Most sprayers that will generate 200 psi and water volumes of 20-40 gallons of water to small – large plants will give mite control. Hollow cone nozzels to get miticide to undersides of leaves will give best control.
- Consider a surfactant to help.
- Calibrate sprayer and follow label directions.

Miticide selection

- Savey for once over early to control mite eggs.
- Acramite to control all mite stages and give good residual.
- AgriMek with 2 applications for general mite control.
- Danitol/Brigade for mites and other insects. A broad pest spectrum….good & bad !

When to spray

- 5 % infested plants/leaves is a good indicator. Presence / absence of mites is enough. Check 100 leaves per field. Stop & spray when 5 with mites are found.
- Hot, dry weather ahead.
- You can get into the field.
- Include with Fungicide spray perhaps.
- Observe mite colonies with eggs, small mites and larger mites.
- Spray well before brown leaves and webbing!

Using Miticides and Avoiding Resistance

Powell Smith
County Extension Agent – Lexington County, SC
Clemson University

As the temperatures rise in the spring, many people think of going to the lake or beach. Strawberry growers may think of those things, but they also think that mites will be following those warmer temperatures. Resistance will develop easily to our new effective miticides (and insecticides), if they are used improperly. They should be rotated among the different chemical classes and modes of action. I found the following table in the 2002 Proceedings of the Florida State Horticultural Society in a paper entitled "Pesticide Mode of Action Codes to Aid Strawberry Growers in Developing Control Programs to Manage Pest Resistance" by E. McCord, Jr., J. F. Price, and C. A. Nagel (Proc. Fla. State Hort. Soc. 115: 178 – 179. 2002). It is a good guide to this information for most if not all of the commonly used miticides and insecticides for strawberry.

The following paragraph from the paper is instructive for the use of the table:
"Table 1 shows codes, active ingredients, trade names, use, chemical class, and mode of action of products registered for use in Florida strawberries. We assigned simple code numbers to a list of products so that growers could select among products of interest, those in their chemical sheds, and compare modes of action. We encourage growers to limit the use of products with the same code during a growing season and to rotate among products with different codes."

Always make sure that the product that you choose is labeled in your state. These products are federally labeled for strawberry, but you should always read and follow all label instructions concerning the use of a crop protection material.

Table 1. Mode of action codes for strawberry insecticides and miticides.[z]

Code[x]	Active ingredient	Trade names	Use	Chemical class[w]	Mode of action and notes
1	Metaldehyde	Deadline®/Trails End®	Molluscicide	Acetaldehyde polymer	GABA system disrupter.
2	Abamectin	AgriMek®	Miticide	Macrocyclic lactone	GABA agonist, which opens chloride channels, preventing nerve re-polarization at neuromuscular junctions.
3	Carbaryl	Sevin®	Insecticide	Carbamate	Acetyl cholinesterase inhibitor.
3	Malathion	Malathion®	Insecticide	Carbamate	Acetyl cholinesterase inhibitor.
3	Methomyl	Lannate®	Insecticide	Carbamate	Acetyl cholinesterase inhibitor.
3	Azinphos-methyl	Guthion®	Insecticide	Organophosphate	Acetyl cholinesterase inhibitor.
3	Chlorpyrifos	Lorsban®	Insecticide	Organophosphate	Acetyl cholinesterase inhibitor.
3	Diazinon	Diazinon®	Insecticide	Organophosphate	Acetyl cholinesterase inhibitor.
3	Naled	DiBrom®	Insecticide	Organophosphate	Acetyl cholinesterase inhibitor.
4	Azadirachtin	Azatin®	Insecticide	Tetranortriterpenoid	Ecdysone metabolism inhibitor and blocks styloconic receptors.
5	*Bacillus thuringiensis kurstaki*	Javelin®/Lepinox® Biobit HP®/DiPel® Agree®	Insecticide	Unique biological fermentation product	δ-Endotoxin causes gut paralysis.
5	*Bacillus thuringiensis aizawai*	Xentari®	Insecticide	Unique biological fermentation product	δ-Endotoxin causes gut paralysis.
6	Endosulfan	Thiodan®/Phaser®	Insecticide	Organochlorine	Axonic poison (sodium channels leak sodium ions).
6	Dicofol	Kelthane®	Miticide	Organochlorine	Axonic poison (sodium channels leak sodium ions).
6	Methoxychlor	Methoxychlor®	Insecticide	Organochlorine	Axonic poison (sodium channels leak sodium ions).
6	Bifenthrin	Brigade®	Insecticide	Pyrethroid	Axonic poison (sodium channels leak sodium ions).
6	Fenpropathrin	Danitol®	Insecticide	Pyrethroid	Axonic poison (sodium channels leak sodium ions).
6	Pyrethrum + piperonyl butoxide	Pyrenone®	Insecticide	Pyrethrum	Axonic poison (sodium channels leak sodium ions).
6 & 7	Pyrethrum + rotenone	Pyrellin®	Insecticide	Pyrethrum	Axonic poison (sodium channels leak sodium ions) and inhibits electron transport.
7	Propargite	Omite®	Miticide	Organosulfur	Inhibits ATPase.
7	Fenbutatin-oxide	Vendex®	Miticide	Organotin	Oxidative phosphorylation inhibitor/uncoupler
8	Cinnamaldehyde	Cinnamite®	Insecticide	Unique	Specific mode of action unknown.
9	Hexythiazox	Savey®/Hexygon®	Miticide	Carboxamide	Ovicide/larvacide, specific mode of action unknown.
10	1,3-Dichloropropene	Telone II®	Soil fumigant	Organochlorine	Broad biological toxicant.
11	*Beauveria bassiana*	Botanigard® Naturalis® L	Insecticide	Unique biological agent	Unique fungal entomopathogen.
NC[y]	Refined petroleum distillate	Ultra-Fine Oil	Insecticide/ miticide	Refined petroleum distillate	Suffocation. Resistance to oil is unlikely.
NC	Clarified hydrophobic extract of neem oil	Trilogy®	Insecticide/ miticide	Botanical oil	Suffocation. Resistance to oil is unlikely.
NC	Potassium salt of fatty acid	M-Pede® Insecticidal Soap	Insecticide	Potassium salt of fatty acid	Pesticidal soap. Breaks cuticular surface tension causing insect to dehydrate. Resistance to soap is unlikely.

[z]Minimize repeated use of products possessing identical codes on any arthropod community.
[y]Mention of a product does not constitute a recommendation by the University of Florida, nor does it warrant or imply warranty of activity.
[x]Codes only apply to this table.
[w]Read and follow product labels.
[y]No Code. Plan does not restrict use.

Weed Control

Weed Control in Newly Planted Bramble, Blueberry, and Grape Crops

W. E. Mitchem and D. W. Monks
North Carolina State University

Weed control important to any crop, however is critical in the formative years of a perennial fruit crop. Poor weed control increases plant mortality and reduces crop growth resulting in reductions in future productivity and increased costs associated with replanting. A good weed management plan in newly planted bramble, blueberry, and grapes includes a preemergence herbicide application after planting followed by postemergence herbicide applications as needed during the summer for controlling escaped weeds.

Although the herbicides are limited, small fruit growers can effectively control weeds in newly planted crops. Surflan or FarmSaver Oryzalin can be applied as a directed spray to newly planted bramble, blueberry, and grape crops once soil has settled following transplanting. Generally one or two good rains and a few weeks after transplanting allows for adequate soil settling. Rainfall will be needed within 2 weeks of application for herbicide activation. If rainfall does not occur a half inch water applied with overhead irrigation will activate the herbicide. Devrinol is another option for small fruit growers. However Devrinol needs to be activated with rainfall or overhead irrigation within a few days of application or results will be poor. These herbicides provide preemergence control of annual grasses (crabgrass, goosegrass, etc.) and small seeded broadleaf weeds (pigweed, common lambsquarter, etc.).

Gramoxone Max or Boa can be used for postemergence weed control, however young plants MUST be protected or shielded from contact with the herbicide to prevent injury. In order for weed control to be successful in the establishment year, Gramoxone Max or Boa use is critical. Gramoxone Max or Boa controls large seeded broadleaf weeds, like morningglory, not be controlled with Devrionol, Surflan or FarmSaver Oryzalin. Usually at least two applications of Gramoxone Max or Boa are needed during the summer for postemergence weed control. Remember to include a non-ionic surfactant for adequate control.

Annual and perennial grass weeds can be controlled in newly planted small fruits with postemergence applications of Fusilade, Select, or Poast. In order to control perennial grass weeds like bermudagrass, two applications will be necessary. The initial application is made to bermudagrass with 4 to 6" of new growth in the spring. A second application is applied when regrowth occurs. It is essential that bermudagrass be growing when the second application is made or results will be less than optimum. Application size for annual grass weeds is species specific for each product, refer to product labels for optimum application timing information. The addition of crop oil is recommended for optimum results.

Bramble Chores

Winter/Spring Bramble Chores

Gina Fernandez
NC State University

Please review the winter/spring bramble chores to make sure that you have completed all tasks for winter. Here is a brief summary of chores for the next few months to prepare your brambles for the upcoming growing season. If you have any questions give me a call.

PRUNING

-Should be completed by early spring
-Fall Bearing Raspberries: The simplest way to manage these varieties is to mow them off at ground level during the dormant season. Be sure to mow them off close to the ground so that new

shoots come from the roots and not from lateral buds on cane stumps.
-Blackberries and summer fruiting raspberries. These types of brambles bear fruit on second year canes. During the winter prune out the spent floricanes from the previous season.

HERBICIDES
-Apply preemergent herbicide in spring if not applied in fall. There are several chemicals that are labeled for use in NC depending on age of plating and time of application, see your states agricultural chemical recommendations.
-Apply post-emergent herbicides as needed. Be sure that the chemical you are using is labeled for bearing plants; many herbicides cannot be used beyond the first year. Please read the article Herb Stiles and I have posted on the web. It is about the effect of glyphosate on bramble growth. If you see new stunted growth this spring you may have glyphosphate injury. This can be mistaken for double blossom injury. See the images at the web site below.
http://www.smallfruits.org/Recent/AvoidGlyphosate.htm

INSECT AND DISEASE CONTROL
SEE BRAMBLE SPRAY SCHEUDLE (DISEASES)
See guides/schedules posted on:
http://www.smallfruits.org/GrowerInfo/brgro.htm and
http://ipm.ncsu.edu/agchem/chptr7.html

-Apply liquid lime sulphur or Bordeaux for control of anthracnose in late winter or early spring before new buds are less than 1/4" long.
-Crown borers can be a problem in the early spring, as well as aphids, thrips, Japanese beetle, fruitworm, rose chafer, stink bugs and psyllids. Catch these early w/ a prebloom spray; see your states agricultural chemical manual for recommendations.
-Prebloom and boom sprays are the most critical for protection against diseases and insects. Once fruit has started to ripen, the window for protection for many pests has already passed.

IRRIGATION
-Plan for the irrigation season. Bramble plants need about 1"-2" water/week.
- Consider installing an overhead system for evaporative cooling. We had very good luck preventing sunscald in our research plots using this method once or twice a day from 10 am to 3 pm for short periods of time (approx. 15 minutes). Do not use evaporative cooling in the late afternoon. You need to have the canopy dry going into the night to minimize disease problems that may arise due to wet canopy during the night. Contact me for details.

TRELLISES
-Make any last minute repairs to existing trellises before canes start growing

FERTILIZER
-Place nitrogenous fertilizers in row before new canes emerge in spring. *Raspberries:* Apply 500-800 lbs of 10-10-10 per acre in split applications. Apply half in Feb-March and the remainder in April-May. Spread uniformly across the row or side dress with half on each side of row in a 3-foot wide band.
Blackberries: In established plantings apply 60 to 80 lb/acre N. Nitrogen can be applied in split or single applications. If using a split application, apply the first portion at bud break and the remainder just after harvest. Ammonium nitrate is the most common form of N used on blackberries. The incorporation of P and K should be based on soil test recommendations.

If you are injecting your fertilizer through a drip system, use the above recommended amounts. Start in March and fertilizer in equal amounts every 2-3 weeks through early-mid May.

HARVEST AND MARKETING
-Make sure you have enough containers for your fruit
-Prepare advertising and signage for your stand
-Contact buyers to finalize orders
-Hire pickers
-Prepare signage for field orientation, it is easier to tell pickers where to go if rows are numbered

Focus

Small Fruit News Favorites
Compiled by Guido Schnabel
Clemson University

Methyl Bromide Phaseout continues in 2003, by Barclay Poling, NCSU. The Strawberry grower January 2003.

Raspberry cultivars vary in nutrient and cancer-fighting compounds. The Fruit Growers News, February 2003.

Assessing cold injury in grapes to evaluate bud damage before pruning, by Jack Watson, WSU. Goodfruit Grower, Jan 15, 2003.

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