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Special Reports:

Berries as One of "Ten Riskiest Foods"?

Reprinted from the December 2009
Strawberry Grower Newsletter

On October 6, the Center for Science in the Public Interest released a report of the ten foods it considered most dangerous for food-borne illness. The foods were 1) Leafy greens, 2) eggs, 3) tuna, 4) oysters, 5) potatoes, 6) cheese, 7) ice cream, 8) tomatoes, 9) sprouts, and 10) berries.

The report quickly raised a storm of criticism from the produce industry, which noted that the study did not differentiate between outbreaks originating during production or distribution of produce and the incidences that occur due to improper food handling during preparation in food service settings or home kitchens, which are far more common. For example, while potato salad is a food often associated with food-borne illnesses, it is not the potatoes that are the problem but usually eggs or mayonnaise and improper handling.

The National Berry Crops Initiative, of which the NC Strawberry Association is a member, sent a letter of strong concern to CSPI. Some of the main points of this letter are below:

- The CSPI Report omits the most important fact in food safety – the nearly universal role played by improper handling and preparation of food after it leaves the farm. In fact, a 2007 FDA report published in the federal register documented that as much as *99.5 percent of all food-borne outbreaks came from non-farm sources* from 1996 to 2006.
- The CSPI Report creates an inappropriate "berries" category that exists nowhere in public health databases. Rather, the Report lumps all berries together, creating an

exaggerated and inflated ranking.

- Berry crops are highly differentiated and cannot be compared with one another for food safety purposes. There are no shared production practices or food safety risks that warrant such a categorization – blueberries are long-lasting bushes, raspberries and blackberries are multi-year plantings grown on trellises, strawberries are an annually planted row crop, and cranberries are grown in bogs.
- The methodology of the CSPI Report is badly flawed. Even if berries are incorrectly combined, they still don't rank 10th. For example, CSPI's own Outbreak Database indicates that one other commodity has 50% more outbreaks and another commodity has 38% more outbreaks than all berries combined [neither was listed in the Top 10].
- The report exaggerates the number of outbreaks and illnesses associated with berries by including unproven associations, double-counting incidents, listing incidents outside the U.S., and other errors.
- While several outbreaks have been associated with strawberries and raspberries, a review of the CDC database suggests that 80 percent of these outbreaks are caused by handling/food preparation and the other 20 percent are from imports. No domestic farms appear to be the source of the contamination.

Public Perception – Talking Points

Unfortunately this report may lead people to avoid healthful foods. Google “10 Riskiest Foods” for example, and you will see how widely disseminated it is. (See illustration below.)

If your farm or market receives questions about this report, you may want to keep the points made by NBCI in mind – especially the fact that if you separate “berries” into each kind, *none* of them would be in the “Top 10.” You can use the discussion as an opportunity to explain the many ways your farm is working to keep your fruit safe to eat and remind consumers of their own important role in preventing food-borne illnesses.

To see the CSPI report and database, visit www.cspinet.org/new/200910061.html. For a copy of the NBCI letter to CSPI, contact the NCSA office or visit the Members Only section of www.ncstrawberry.com.



‘Suziblue’: A New Southern Highbush Blueberry Variety from The University of Georgia

D. Scott NeSmith

‘Suziblue’ was selected in 2002 at the Georgia Experiment Station in Griffin, Ga. from a group of seedlings of the cross ‘Star’ X TH-474 planted in a nursery in Griffin in 1999. Tested as selection TH-730, ‘Suziblue’ has a pedigree involving multiple *Vaccinium* species, including *V. corymbosum*, *V. darrowi*, and *V. ashei*. ‘Suziblue’ has been tested in plantings in south and middle Georgia since 2003.

‘Suziblue’ is an early season southern highbush blueberry flowering and ripening about the same time as ‘Star’, but 1 week later than ‘Rebel’. ‘Suziblue’ berries are similar in appearance to ‘Star’ and ‘Rebel’. In 3-year trials, berry weight of

‘Suziblue’ has been greater than ‘Star’, averaging 1.8 to 2.8 g compared to 1.5 to 2.2 g for ‘Star’. ‘Suziblue’ flavor is noticeably sweeter than ‘Rebel’, which has a mild to bland flavor. The new variety has an estimated chill hour requirement similar to that of other early season southern highbush, in the range of 450 hours or less.

Table 1 presents multi-year fruit and plant data for ‘Suziblue’, ‘Star’, and ‘Rebel’ from a high density pine bark production system at Alapaha, Ga. ‘Suziblue’ has performed equal to ‘Star’ in many regards, and has shown better berry firmness and overall better cropping than the older standard. When compared to ‘Rebel’ in this test, ‘Suziblue’ typically had larger berry size and better overall flavor ratings.

In addition to the Alapaha test site, plants of ‘Suziblue’ and ‘Star’ were established under field conditions with pine bark soil amendment at Griffin, Ga. in 2003. Average fruit and plant evaluations for this test site from 2005, 2006, and 2008 are presented in Table 2. At this location, ‘Suziblue’ and ‘Star’ generally flowered and ripened at the same time on average, and had many similar attributes. However, ‘Suziblue’ berry size, berry firmness, and overall cropping were greater than ‘Star’.

Table 1: Average ratings of some fruit and plant characteristics of ‘Suziblue’ and southern highbush standard cultivars Star and Rebel from 2005-2008 in a high density pine bark bed growing system at Alapaha, Ga. These plants were established in 2003. A severe freeze in 2007 prevented evaluations for that year.

Berry and plant attributes	Cultivar		
	Suziblue	Star	Rebel
Berry size	8.5	8.5	8.0
Berry scar	8.0	8.0	8.5
Berry color	8.0	7.5	7.7
Berry firmness	8.0	7.3	8.0
Berry flavor	7.8	7.2	6.8
Cropping	6.7	5.3	7.3
Plant vigor	9.0	8.5	8.8
Date of 50% flowering	Mar. 1	Mar. 1	Feb. 23
Date of 50% ripening	May 9	May 8	May 2

Table 2: Average ratings of some fruit and plant characteristics of 'Suziblue' and the southern highbush standard cultivar Star during 2005-2008 for field grown plants at Griffin, Ga. These plants were established in 2003. A severe freeze in 2007 prevented evaluations for that year.

Berry and plant attributes	Cultivar	
	Suziblue	Star
Berry size	8.7	8.1
Berry scar	8.1	7.7
Berry color	7.9	7.3
Berry firmness	8.0	7.1
Berry flavor	7.8	7.2
Cropping	5.8	4.0
Plant vigor	7.8	7.9
Date of 50% flowering	Mar. 16	March 16
Date of 50% ripening	May 19	May 19

'Suziblue' (Figs. 1-3) is recommended for trial where low to medium chill southern highbush blueberries are successfully grown. The variety is self-fertile, but planting with a companion variety for cross pollination is encouraged. 'Star' and 'Rebel' should be suitable companion varieties. Propagation rights are controlled by University of Georgia Research Foundation, Technology Commercialization Office, GSRC Boyd Bldg, Athens, Ga. 30602-7411 (www.ovpr.uga.edu/tco/). For a list of nurseries licensed to propagate and sell 'Suziblue', visit: http://www.gsdc.com/SUSIBLUE_LICENSEES.htm.



Figure 1. 'Suziblue' plants during flowering in a high density bark bed.



Figure 2. 'Suziblue' berries during ripening.



Figure 3. 'Suziblue' plants at the beginning of ripening in the 2nd growing season in a field planting with pine bark mulch.

Prime-Ark 45, a New Blackberry Variety

John R. Clark, University Professor
University of Arkansas

Officially released in late August, 2009, Prime-Ark® 45 blackberry is the latest release from the UA Division of Agriculture fruit breeding program. This is the third of the unique primocane-fruiting type varieties. A top priority in the Arkansas blackberry breeding program is fruit quality, and Prime-Ark® 45 is considered a substantial advance in quality over Prime-Jan® and Prime-Jim®. In fact, as far as postharvest handling, Prime-Ark® 45 is a quicker advance than I was anticipating based on the quality of the parents being used in breeding in 1999, the year its parents were crossed. How broadly adapted is this variety? That is always a big question with any new release. It has shown promise in tests in Arkansas, North Carolina, Pennsylvania, Oregon, California, and a few other places. But, as always with a new release, not to mention one of a "new" crop such as primocane-fruiting blackberries, there

is much to learn in the area of true commercial value. I have confidence that if this plant can be grown successfully in your location it will provide a good quality berry that could greatly diversify production, expand markets, and of great importance, increase grower profits. Here are a few comments on various aspects of Prime-Ark® 45.

Origin: The initial seedling plant of Prime-Ark® 45 was selected in June, 2002 in a seedling field at the University of Arkansas Fruit Research Station, Clarksville, during the floricanes fruiting season. It was tested as selection APF-45. At the time of selection it was noted to be the firmest fruit of any primocane-fruiting selection found at the time in the primocane-fruiting blackberry breeding program.

Fruit Quality: Prime-Ark® 45 is the first shipping-quality primocane-fruiting blackberry. In comparative storage trials, Prime-Ark® 45 has been rated very good for firmness, lack of leakage and mold, and retention of black color (see Table 1). Data show that it is in the same category of postharvest handling as University of Arkansas thornless varieties in most comparisons. In an overall calculation of marketability, it was similar to Ouachita in all years of evaluation. It should be noted that fruit used for postharvest evaluations was collected from plants (in Arkansas) that did not have fungicides applied and rains were common during the harvest period in each year. Data provided were collected on floricanes fruits. Primocane fruits harvested in North Carolina and California (a dry climate) had very good postharvest handling capability also. Even though many growers do not ship blackberries, it is hoped that this improved handling capability will enhance farmers market, on-farm, and other sales opportunities. (Note: the table includes postharvest evaluations for 2008 and 2009 of Tupy, the famous Brazilian variety grown primarily in Mexico. These are the first data we have collected to compare this variety with the Arkansas releases in a rainy climate.)

Fruit Sweetness and Flavor: Average soluble solids (a measurement of sweetness) of Prime-Ark® 45 was 9.7%, just under that of Ouachita in Arkansas (Table 2). In additional measurements in other plantings and years, soluble solids of 10 to 11% have been measured on floricanes fruits of Prime-Ark® 45. Primocane fruit soluble solids levels have achieved 12%. Overall fruit flavor ratings for Prime-Ark® 45 were higher than the previous primocane-fruiting releases, and were near that of Ouachita (see Table 2).

Fruit Size: Fruits of Prime-Ark®45 are medium-large, averaging 6 g or more in most trials measuring floricanes fruits in Arkansas (see Table 3). In trials in Oregon and California, primocane fruits averaged just over 7 g and near 9 g, respectively. In Arkansas, primocane fruits are smaller, usually 4 to 5 g.

Fruit Yield: Fruit yields have been very good in trials of Prime-Ark® 45. Most of the yield evaluation in Arkansas has been done on floricanes, and in a 2007-established planting that fruited in 2008, floricanes yields of Prime-Ark® 45 exceeded Prime-Jim® and were comparable to thornless, floricanes-fruiting varieties at Clarksville, Ark. (Table 3). For primocane yields, data from Arkansas showed higher yields for Prime-Ark® 45 compared to Prime-Jim® (Tables 3 and 4). In observational plots in California and Oregon, primocane yields were very good. Prime-Ark® 45 out-yielded both Prime-Jim® and Prime-Jan® in California (the latter two varieties were not present for comparison in Oregon).

Fruit Ripening Periods: Floricanes first harvest date for Prime-Ark® 45 averaged June 9 at Clarksville, 4 days after Prime-Jim® and Natchez and 4 days before Ouachita. Primocane first bloom date for Prime-Ark® 45 was about 2 weeks later than that for Prime-Jan® and Prime-Jim® (Table 2). Likewise, primocane fruit ripened 2-3 weeks later for Prime-Ark® 45 compared to Prime-Jan® and Prime-Jim®, averaging August 8. In California, ripening of primocane fruit was in late August and in Oregon was mid September. It is very important to note the later flowering and ripening dates for primocane fruits for Prime-Ark® 45; its later flowering and fruiting dates must be considered if this variety is planted in upper Midwestern and northeastern states where fruit ripening prior to frost for Prime-Jim® and Prime-Jan® have been observed to not achieve completion. Of course, use of tunnels can greatly affect the fruiting season completion.

Fruit Set in Summer Heat: Overall performance in Arkansas of Prime-Ark® 45 on primocanes is improved over that of Prime-Jim® and Prime-Jan® (See Tables 3 and 4), in that yield and berry size is greater. However, damaging effects of heat have been seen on Prime-Ark® 45 in most years of observation in Arkansas. As has been a concern since the

first primocane-fruited blackberries were developed in Arkansas, summer heat during bloom and ripening continues to be limiting for this type of blackberry. In more moderate temperatures (middle to high 80s and lower) in the last two summers, set in the heat on Prime-Ark®45 has been quite good at Clarksville. Also encouraging is the increased yield over Prime-Jim® on primocanes.

Cane and Plant Characteristics: Canes of Prime-Ark® 45 are very erect, equal or exceeding comparison varieties. Cane health and vigor ratings were comparable to comparison varieties (Table 2). Disease resistance has been good, and no orange rust has been seen on the new variety. Anthracnose has rarely been seen on fruits or canes of Prime-Ark® 45. The variety has not been exposed to double blossom/rosette, so no information on susceptibility exists. Floricane hardiness has not been well characterized due to moderate winters during testing, but canes have fruited after winter lows near 10 to 12°F. It is a thorny plant.

Plant Availability: There will likely be a limited supply of Prime-Ark® 45 plants available for Spring planting in 2010. For a list of licensed nurseries, see this website:

http://www.aragriculture.org/horticulture/fruits_nuts/Blackberries/licensedprop.htm

Table 1: Postharvest evaluations of Prime-Ark® 45 blackberries from 2007- 2009 at the Fruit Research Station, Clarksville, compared with other named varieties (7 days in cold storage at -40°F or 5°C).

Variety	Marketability ^z	Red (%) ^y	Leak (%) ^x	Decay (%) ^w	Soft (%) ^v
<u>2007</u>					
Natchez	80.5 b ^u	29.4 a	12.5 b	0.0 a	29.7 ab
Prime-Ark®45	85.8 ab	2.8 b	14.9 b	0.0 a	39.6 b
Apache	88.3 ab	0.0 b	16.0 b	1.6 a	24.0 a
Ouachita	90.5 a	4.5 b	5.5 a	1.6 a	22.0 a
<u>2008</u>					
Natchez	91.8 a	66.6 ab	12.6 a	1.4 a	10.6 a
Prime-Ark®45	85.6 ab	25.3 bc	7.5 a	0.9 a	9.6 a
Apache	80.8 ab	4.7 c	21.3 ab	10.6 b	21.1 ab
Arapaho	80.0 ab	6.1 c	26.8 ab	4.3 ab	22.9 ab
Ouachita	76.8 ab	22.8 bc	15.5 a	11.5 b	19.9 ab
Tupy	64.3 b	35.1 abc	39.7 bc	1.8 a	30.7 b
Prime-Jim®	33.3 c	75.3 a	56.0 c	11.0 b	57.7 c
<u>2009</u>					
Natchez	90.5 a	14.8 ab	14.7 a	1.3 a	12.8 a
Prime-Ark®45	87.0 ab	4.8 b	29.9 ab	3.4 a	5.7 a
Apache	63.3 d	0.0 b	68.8 c	18.2 bc	23.3 a
Arapaho	73.6 bcd	0.0 b	56.4 c	0.0 a	22.9 a
Ouachita	85.1 abc	0.0 b	35.0 ab	3.5 a	6.3 a
Tupy	57.8 e	12.0 ab	64.0 c	19.6 c	43.0 b
Prime-Jim®	70.8 cde	23.3 a	51.5 bc	11.9 ab	24.3 b

^z Percent marketability ratings are used as an indicator of performance after 7 d in the cooler. Percent marketability is calculated as: 100-[sum(% decayed + % soft (4- and 5-rated berries) + % leaky)]/3. A minimum of 85 is desired.

^y The berries were rated on a yes/no scale for presence of red drupelets in clusters of three or more.

^x The berries were rated on a yes/no scale for presence of leakiness.

^w The berries were rated on a yes/no scale for presence of decay.

^v The berries were rated on a 1-5 scale for softness, where 1 = firm and 5 = collapsed berry, very leaky. Means represent berries that scored a 4 or 5.

^u Means followed by the same letter are not significantly different (P>0.05) by t-test.

Methods used in these evaluations were developed by Dr. Penny Perkins-Veazie, NC State University.

Table 2: Plant and fruit characteristics of five blackberry varieties at the University of Arkansas Fruit Research Station, Clarksville.

Characteristic	Variety				
	Prime-Ark@45	Prime-Jan@	Prime-Jim@	Ouachita	Natchez
<i>Floriscane bloom date</i> ^z					
10% bloom	29 Apr.	---	29 Apr.	3 May.	29 Apr.
50% bloom	2 May	---	2 May	6 May	1 May
<i>Floriscane harvest date</i> ^z					
First	9 June	---	5 June	13 June	5 June
Peak	25 June	---	23 June	30 June	23 June
Last	17 July	---	7 July	17 July	17 June
<i>Primocane first bloom date</i> ^y	30 June	16 June	13 June	---	---
<i>Primocane first ripe fruit date</i> ^y	8 Aug.	18 July	15 July	---	---
Fruit ^{xw}					
Firmness	8.0 (0.0)	6.7 (0.6)	6.6 (0.6)	8.2 (0.5)	7.5 (0.6)
Flavor	7.8 (1.1)	7.0 (0.0)	6.4 (0.6)	8.0 (0.0)	7.5 (0.6)
Soluble solids (%) ^y	9.7 (0.5)	8.6 (0.6)	9.1 (1.5)	10.4 (2.1)	8.6 (0.7)
Plant ^{xw}					
Vigor	7.2 (0.5)	6.5 (1.0)	7.6 (0.6)	7.0 (0.0)	7.2 (0.0)
Health	7.6 (0.6)	7.0 (1.4)	7.6 (0.6)	8.0 (0.7)	7.5 (0.6)
Erectness	9.0 (0.7)	7.3 (0.5)	7.8 (0.8)	8.2 (0.5)	7.0 (0.8)

^z Data from one year, 2008, with data collected from the 2007-established replicated plots.

^y Means of 4 years, 2004-2008, with data collected from the observational plots.

^x Means of 4 years, 2004-2008, with data collected from the observational plots; ± the standard deviation.

^w Rating scale of 1 to 10 where 10=best.

^v Soluble solids measured on a 25-fruit sample from observational plots harvested during the floriscane-fruiting season.

Table 3: Floriscane yield and berry weight of two primocane fruiting and two floriscane-fruiting blackberry varieties followed by primocane yield and berry weight in a replicated trial at the Fruit Research Station, Clarksville, Arkansas established in 2007. Data are for 2008 (primocane crop was greatly impacted with an infestation of raspberry crown borer in this planting, contributing to poor yields).

Variety	Yield (lbs/A)	Weight/berry (g)
<i>Floriscane</i>		
Prime-Ark@45	11,682 a ^z	6.1 b
Prime-Jim	5,407 a	4.6 c
Ouachita	7,822 a	5.8 b
Natchez	12,565 a	7.9 a
<i>Primocane</i>		
Prime-Ark@45	986 a	4.3 a
Prime-Jim@	75 b	3.2 b

^z Mean separation within columns by *t* test ($P < 0.05$).

Table 4: Primocane yield and berry weight of two primocane-fruiting blackberry varieties for 2007 in replicated plantings established at the Fruit Research Station, Clarksville, Arkansas. Prime-Jim® plants were planted in 2004 and Prime-Ark®45 in 2005. All plants were fully mature at the time of data collection.

Variety	Yield (lbs/A)	Weight/berry (g)
Prime-Jim®	1,749	4.0
Prime-Ark®45	4,515	5.2

Figure 1: Prime-Ark@45 on July 30, 2009 at Clarksville, Arkansas, with fruits developed generally prior to a above 92°F temperatures that occurred in August (photo John R. Clark).



Figure 2: Fruits of Prime-Ark@45. Upper, floriscane fruits in Arkansas (photo John R. Clark); lower, primocane fruits in California (photo Ellen Thompson)



Bramble (Caneberry) Seasonal Checklist

Gina Fernandez, Small Fruit Specialist
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This checklist was originally developed for blackberry growers in North Carolina. Many of the items apply to raspberry production as well. You may have to adjust your work activities either earlier or later depending on your location. For more detailed information, check the Southern Region Integrated Bramble Management Guide and the Southeast Regional Bramble Production Guide at: <http://www.smallfruits.org/SmallFruitsRegGuide/index.htm>

WINTER

Plant growth and development

- ✓ Plant is "dormant"
- ✓ Some differentiation is occurring in the flower buds

Pruning and trellising

- ✓ Pruning should occur in late winter. However, in some areas winter ice storms can do tremendous damage to plants and trellis systems. If you produce blackberries in one of these areas, pruning can take place early winter to help avoid severe damage.
- ✓ **Make trellis repairs after plants have defoliated but before pruning and training.**

Erect types

- ✓ Prune out the spent floricanes
- ✓ Tie canes to wires in a fan shape
- ✓ Cut lateral branches back to 8-12"
- ✓ Thin canes to 6-8 canes/ hill (4 ft spacing)

Trailing types

- ✓ prune out spent floricanes
- ✓ tie or weave canes to wire so that they do not overlap
- ✓ prune side laterals to 12-18"
- ✓ thin canes to 6-8 hill (6-8ft spacing)

Primocane fruiting raspberries

- ✓ Prune (mow) primocane fruiting types to ground level

Weed control

- ✓ Many summer weed problems can be best managed in the fall and winter using preemergent herbicides. Determine what weeds have been or could be a problem in

your area. Check with local extension agent for cultural or chemical means to control these weeds.

- ✓ Establishing new plants into rows of black plastic or landscape cloth can reduce weed problems significantly

Insect and disease scouting

Listed are insects and diseases that are present during this season. Control of these pests may occur at this time or in another season. Check the Southern Regional Bramble Integrated Management Guide for recommendations. www.smallfruits.org

- ✓ Scout fields for insect and disease damage and remove those canes
- ✓ Remove wild brambles within 600 ft of your planting during the winter
- ✓ Apply liquid lime sulphur or Bordeaux for disease control

Planting

- ✓ Growers in warmer regions can plant in December.
- ✓ Take soil tests to determine fertility needs for spring plantings.
- ✓ Prepare list of cultivars for next years new plantings. Find the commercial small fruit nursery list at <http://www.smallfruit.org>

Nutrient management

- ✓ 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 ft 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.

Water management

- ✓ Make repairs to irrigation system (check pumps, lines, etc)
- ✓ Plants generally do not need supplemental water in winter

Marketing and miscellaneous

- ✓ Order containers for next season
- ✓ Make contacts for selling fruit next season
- ✓ Attend grower meetings:
 - SOUTHEAST REGIONAL FRUIT AND VEGETABLE GROWERS CONFERENCE in Savannah GA January 8-10, 2009 (<http://www.gfvga.org/conferences/2007FVWC/ConferenceMain.htm>) . There will be a session for brambles at the meetings.

Quarterly Strawberry Plasticulture Checklist

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This checklist was originally developed for growers in North Carolina. You will have to adjust your work activities either earlier or later depending on your location. For more detailed information, check the Southern Region Integrated Strawberry Management Guide and the Southeast Regional Strawberry Plasticulture Production Guide at:
<http://www.smallfruits.org/SmallFruitsRegGuide/index.htm>

Winter (Dec-Feb)

- ✓ Check all equipment (replace hoses etc)
- ✓ Get drip and overhead irrigation system hooked up, check your sprayer, replace hoses etc.
- ✓ Keep deer out of the strawberry patch. They can do serious damage to plants and plastic
- ✓ Examine plants for spider mite damage, they can be mistaken for winter damage
- ✓ Get ready for leaf tissue analysis in late February
- ✓ Spray ryegrass in late February/March
- ✓ Order chemicals and fertilizer for spring
- ✓ Scout crops for insects, mite and leaf diseases

- ✓ Scout for weeds, vetch in holes is not killed by winter temperatures
- ✓ Spray row middles with grass herbicide when ryegrass is 10-12 inches tall
- ✓ Purchase digital thermometer
- ✓ Calibrate thermometers in 32F water bath
- ✓ Purchase row covers
- ✓ Monitor weather forecasts closely
- ✓ Check frost alarm to see that it is working properly
- ✓ Get pumps, hoses and pipe ready for frost protection (First date is usually early March in NC)
- ✓ Order picking containers
- ✓ Prepare signs for stands, roadside directions, and on-farm use
- ✓ For companion crops, order seeds and locate/prepare greenhouse facility for growing transplants
- ✓ If selling fruit at wholesale markets, line up buyers now.

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Editor and Contributor.....Tom Monaco

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