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Mississippi *Vaccinium* Journal

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January-March 2016

New Year, New Contributors

Unbelievably, this is the fifth volume of the Mississippi *Vaccinium* Journal. Time has certainly flown by since I started in my current position on November 1, 2011. The blueberry industry has changed, with lots of backlogged berries in cold storage having a stranglehold on our industry. Right now, things look dour, but we don't yet know what tomorrow may bring.

As a way to keep the information in this newsletter fresh, I contacted some of my colleagues in Georgia to help provide timely, current information. Luckily for me, they agreed and now you can access this information here. I should not claim all the credit for this idea. It was actually brought up by a blueberry grower here in Mississippi who lamented that we did not have the resources of the Georgia industry and thus lacked ready access to some of their valuable information. Well, I have tried to rectify that the best I could by inviting some University of Georgia researchers to contribute to this newsletter. I hope you all find it a valuable contribution.

Chill Hour Report

Eric T. Stafne, Fruit Extension Specialist, MSU-ES

The number of chill hours reported are as follow:

Verona = 733 hr as of Jan 22, 2016

Crystal Springs = 374 as of Jan 22, 2016

Wayne Co. = 318 as of Jan 22, 2016

They are about 1/3 the amount we had accumulated by this time last year.

See all Chill hours here: <https://msfruitextension.wordpress.com/chill-hours/>

Agenda for the 2016 Blueberry Education Workshop

Eric T. Stafne—Fruit Extension Specialist, MSU-ES

The 2016 Mississippi Blueberry Education Workshop was held on January 14 in Hattiesburg. There were 55 attendees that heard the following speakers. To access a PDF copy of each talk (if available), click the linked title.

Speaker Line-Up and Schedule:

1:10-1:40 pm **Dr. James Barnes** (MSU-ES):

[The Economics of Marketing Blueberries Using Facebook: Some Lessons Learned from the Mississippi Bricks to Clicks Extension Program](#)

1:40-2:10 pm **Chaille Clements** (Mississippi Dept. of Agriculture and Commerce):

[Mississippi Farm-To-School Program](#)

2:10-2:40 pm **Dr. Eric Stafne** (MSU-ES):

[Harvest-aid Technologies to Improve Harvest Efficiency](#)

2:40-3:00 pm Mechanical Harvest Survey and Break

3:00-3:30 pm **Dr. Rebecca Melanson** (MSU-ES):

[Recognizing and Managing Blueberry Diseases](#)

3:30-4:00 pm **Dr. Donna Marshall-Shaw** (USDA-ARS, Poplarville):

[Blueberry Cultivars for Small and Local Markets](#)

4:00-5:00 pm Questions/Discussion/Evaluation

Infection of Cold-Injured Blueberry Stems by *Botryosphaeria dothidea*

Phil Brannen, University of Georgia Plant Pathologist

The following is largely a synopsis of information previously provided by Gerard Krewer (UGA Professor Emeritus and consultant), Bill Cline (NC State), Dave Lockwood (Univ. of TN), Danny Stanaland (retired county agent and consultant) and Phil Brannen (UGA) relative to a suggested response to cold damage on blueberries and the potential threat of *Botryosphaeria* canker development on damaged tissues. The extent of the damage to southern highbush blueberries may be variable throughout the state this year, but I suspect it will be somewhat universal for blueberries grown anywhere along the same latitude as Georgia. Based on initial reports and opinions of field specialists, cold damage will likely have a significant negative impact on yield this year. Without regard, freezes may soon cause tissue damage to canes, and this will need to be addressed.

Though freeze damage is immediate, there is a secondary danger of significant infection and disease development by *Botryosphaeria* fungi. *Botryosphaeria* fungi may take a while to move into cold-injured blueberry shoots, but they will likely invade them eventually to cause stem blight symptoms (mainly dieback that moves down canes to the crown). Some fungicide applications made for *Botrytis* control (e.g. Pristine) may also suppress initial *Botryosphaeria* infections, but producers should watch plants carefully for *Botryosphaeria*-related stem diebacks in the spring and summer.

There will be an advantage to pruning out dead tissue in late February to mid-March; there is research-based information from North Carolina (Bill Cline) to back this up. Widespread infection by *Botryosphaeria dothidea* following cold injury has been reported. Injured stems are colonized early, disease incidence increases with time and temperature, and the later you wait past mid-March to prune, the more disease you are likely to observe. I do generally recommend a fungicide application after each day of pruning to prevent additional infections of pruning cuts. Also, do not push plants with excessive nitrogen this spring, as this might further exacerbate the situation with *Botryosphaeria*.

Dave Lockwood (Univ. of TN) has also advised growers to delay pruning until late winter/early spring so that they can feel relatively sure that the potential for additional cold injury is past. He also advises holding off until one can easily see, based on bud swell or early shoot growth, where the strong, new growth will originate. At that time, he advises pruning back to healthy wood. Bill Cline suggests that "it is worth a special effort to remove cold-injured stems, especially on young bushes. With cold-injured basal shoots (suckers that emerge from the crown), snap them off by hand at the crown, since the brown pith often goes all the way to the crown. In controlled experiments this significantly reduced disease incidence. For cold-injured shoots higher up on older canes, prune them back to healthy green tissue."

When pruning, producers should review the weather forecast, and I would attempt pruning when 3-4 days of dry weather (no overhead frost protection or irrigation as well) are predicted to follow. This will also help to reduce infections on new pruning cuts, and again, we need to consider use of fungicides after each day of pruning to prevent yet more infections.

Reference

Infection of Cold-Injured Blueberry Stems by *Botryosphaeria dothidea*. W. O. Cline, Department of Plant Pathology, North Carolina State University, Raleigh 27695-7616. Plant Dis. 78:1010. Accepted for publication 20 June 1994. Copyright 1994 The American Phytopathological Society. DOI: [10.1094/PD-78-1010A](https://doi.org/10.1094/PD-78-1010A).

Coastal area producers to meet Feb. 23 in Biloxi

BILOXI, Miss. -- The annual meeting of the Mississippi State University Coastal Research and Extension Center's Commodity Advisory Meeting is set for Feb. 23.

Agricultural producers can meet with representatives of the MSU Extension Service and Mississippi Agricultural and Forestry Experiment Station to share feedback and offer direction for educational programs and research projects in 2016.

Eleven individual commodity sessions begin at 9:30 a.m., including forestry, fruits, vegetables, livestock, bees, home horticulture, commercial ornamental horticulture, seafood and aquaculture, corn and cotton, soybeans and peanuts, and horse and small ruminants.

The program begins at 9:20 a.m. and ends at 3 p.m. A tentative agenda is available at <http://coastal.msstate.edu/advisory>.

All commodity groups will share their priorities during a general session after lunch.

Deadline for preregistration is Feb. 16. On-site registration begins at 9 a.m. on Feb. 23. Lunch will be provided.

The Coastal Research and Extension Center is located at 1815 Popp's Ferry Road in Biloxi.

For more information or to register, call the Coastal Research and Extension Center at 228-388-4710.

Writer: Susan Collins-Smith

COOPERATIVE EXTENSION SERVICE

Mississippi State University and U.S. Department of Agriculture Cooperating

You are cordially invited to participate in the
Coastal Research and Extension Center

Commodity Advisory Council

February 23, 2016

Coastal Research and Extension Center
1815 Popp's Ferry Road, Biloxi, MS 39532

9:00 am – 3:00 pm

Lunch will be served

Please RSVP by February 18, 2016

Via email: Lester.Mitchell@msstate.edu or
phone: 228-546-1004

Individuals invited to this Advisory Council are selected as representatives of specific commodities and are asked by Mississippi State University to evaluate and provide future direction for research and educational programs for their commodity. Your input is extremely valuable to us in setting priorities for the coming year.

We hope that your schedule permits you to attend.

Tentative Agenda

9:00-9:20 a.m.	Registration
9:20-9:30 a.m.	Welcome and Introductions
9:30-11:00 a.m.	Breakout Commodity Session One Agronomic Crops (Cotton, Corn, Peanuts & Soybeans) Commercial Ornamental Horticulture Fruits & Vegetables Horse & Small Ruminants Seafood and Aquaculture
11:00-12:30	Breakout Commodity Session Two Apiculture (Bees) Forestry Home Horticulture Livestock
12:30-1:15 p.m.	Lunch (provided on-site)
1:15-1:45 p.m.	Comments from USDA, & Farm Bureau
1:45 – 2:30 p.m.	Reports from Commodity Groups
2:30 p.m.	Responses from MAFES & MSU-ES
3:00 p.m.	Adjourn

Mississippi State University, United States Department of Agriculture, Counties Cooperating

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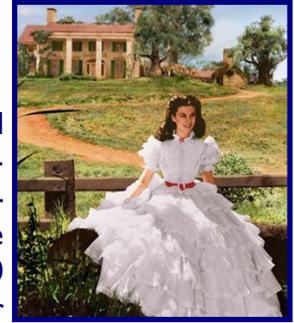
MSU Extension will provide reasonable accommodations to persons with disabilities or special needs.

Please contact Lester Mitchell, 228-546-1004, llm159@msstate.edu, prior to a program or event to request reasonable accommodation.

Give the New UGA *Southern Misses* Blueberries a Try

D. Scott NeSmith—University of Georgia, Blueberry Breeder

The University of Georgia produces and evaluates thousands of seedlings and selections each year seeking new blueberry varieties for commercial growers. There continues to be interest in higher yielding varieties with improved fruit quality. Recently, three new southern highbush varieties were released and we are calling this new series *Southern Misses*. More than 10 years in the making, the *Southern Misses* are intended to target our major southern highbush season with high quality, improved varieties which are well adapted to the area. Overall, this suite of varieties should offer commercial Georgia growers, and others across the Southeast, novel new southern highbush varieties to develop more reliable production strategies. A brief description of each of the *Southern Misses* is given below, along with some data, to help visualize how they might be used.



'Miss Alice Mae™' - This is a main season southern highbush cultivar to consider as a replacement for the older industry standard 'Star'. 'Miss Alice Mae™' will flower a few days later than 'Star', helping to avoid some freeze damage scenarios. However, frost protection measures would still likely benefit 'Miss Alice Mae™' in many years. The new variety should ripen during the peak of southern highbush season, which is around the first week of May in south Georgia. In trials (see data in tables) yields and berry quality have been very good, and the variety will hopefully provide the industry a new main season workhorse. The plant habit is semi-upright and compact. Regular pruning is advised to maintain good berry size on 'Miss Alice Mae™'. Berry size, Brix, and firmness of the variety are very good.



Figure 1. 'Miss Alice Mae™' fruit.

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Give the New UGA *Southern Misses* Blueberries a Try, cont.

D. Scott NeSmith—University of Georgia

'Miss Jackie™' – 'Miss Jackie™' is a high yielding, high fruit quality, late season southern highbush. This new variety is later ripening than 'Miss Alice Mae™' and 'Star', ripening more closely to our 2006 release 'Camellia'. The latter half of May is a production time frame in south Georgia that often has a "fruit gap". This gap occurs as the main season highbush varieties expire; but, before the early season rabbiteye varieties come into significant production. 'Camellia' has proven to help fill this gap, but additional varieties are needed. 'Miss Jackie™' fits the timing of the gap well, and should compliment 'Camellia' nicely. The variety generally flowers later than main season varieties and also ripens later. This variety, like 'Camellia', could be used in production systems without frost protection to achieve later season highbush production. The upright, compact bush habit of 'Miss Jackie™' is generally easier to manage than 'Camellia', which can be overly vigorous, causing excessive plant "leggyness". 'Miss Jackie™' should be a strong companion variety for 'Camellia' and/or 'Legacy', or as a variety offering an additional option to growers in the later season production window.



Figure 2. 'Miss Jackie™' fruit.

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Give the New UGA *Southern Misses* Blueberries a Try, cont.

D. Scott NeSmith—University of Georgia

'Miss Lilly™' – 'Miss Lilly™' is a strongly upright, narrow plant, with large high quality berries. Many growers are looking for reliable main season highbush varieties to produce without having to incur frost protection expense. 'Miss Lilly™' is expected to offer growers fruit that ripens in the main southern highbush season, but without the requirement of frost protection. The new variety flowers very late, yet ripens with or near 'Star' and 'Miss Alice Mae™'. Although 'Miss Lilly™' per plant yield is less than 'Star' on average, yields are steady from year to year due to the late flowering habit allowing the variety to typically escape cold damage. The lower per plant yield for 'Miss Lilly™' can be compensated for by higher density planting, since the plant is very narrow and upright. Higher density planting would achieve comparable per acre yields in that case. Regardless, there are a number of growers looking for an easier to manage, early ripening southern highbush. 'Miss Lilly™' could be grown with 'Camellia' and 'Miss Jackie™' to provide both early and later ripening fruit on the same farm without overhead frost protection.



Figure 3. 'Miss Lilly™' fruit.

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Give the New UGA *Southern Misses* Blueberries a Try, cont.

D. Scott NeSmith—University of Georgia

In summary, after more than 10 years of breeding and selection, going through literally thousands of plants, UGA has released three new Southern Misses highbush blueberries with high quality fruit, and plants that are well adapted to Georgia growing conditions. The varieties differ in their targeted utility, and growers are urged to give these a trial. The new varieties are all being patented, and plants can only be produced and sold by licensed nurseries. Licensed nurseries for 'Miss Alice Mae™' and 'Miss Jackie™' are Cornelius Farms and Fall Creek Farm & Nursery. Licensed nurseries for 'Miss Lilly™' include Cornelius Farms, Farmer John, and Fall Creek Farm & Nursery. Contact these suppliers today and order plants for trial.

Table I. Plant and fruit ratings for the new UGA Southern Miss blueberry varieties and standards at the Alapaha Research Farm. Data are 5 Year avg.

Berry and plant attributes	Star	Camellia	Miss Jackie™	Miss Alice Mae™	Miss Lilly™
Berry size	7.6	8.9	7.9	7.4	8.4
Berry scar	7.0	7.2	7.5	7.9	7.4
Berry color	7.1	8.7	7.6	7.6	7.8
Berry firmness	7.2	7.2	7.8	7.6	7.8
Berry flavor	7.0	7.8	7.5	7.9	7.8
Cropping	4.7	5.4	5.9	5.9	5.2
Plant vigor	6.3	9.8	8.5	8.4	7.6
Date of 50% flowering	Mar 3	Mar 11	Mar 10	Mar 8	Mar 17
Date of 50% ripening	May 8	May 15	May 17	May 8	May 11
Fruit development period (days)	66	65	67	61	55

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Give the New UGA *Southern Misses* Blueberries a Try, cont.

D. Scott NeSmith—University of Georgia

Table 2. Yield, berry wt., firmness and BRIX for 3 new UGA blueberry varieties and 2 standards 2010 thru 2013. Data are from the UGA Blueberry Farm in Griffin, Ga.

Year	Star	Camellia	Miss Jackie™	Miss Alice Mae™	Miss Lilly™
Yield (lbs/bush)					
2011	12.7	9.7	10.0	10.4	8.5
2012	11.7	10.5	17.0	9.1	7.2
2013	3.9	15.9	15.5	14.3	7.3
Avg	9.4	12.0	14.2	11.3	7.7
Berry wt (g/berry)					
2010	1.53	2.94	1.90	2.07	3.15
2011	1.20	1.97	1.80	1.47	2.08
2012	1.80	1.60	1.55	1.75	2.17
2013	1.79	2.56	1.76	2.00	2.12
Avg	1.58	2.28	1.75	1.82	2.38
Firmness (g/mm)					
2010	196	150	165	208	165
2011	206	166	173	190	188
2012	190	164	168	182	186
2013	191	150	166	208	188
Avg	196	157	168	197	182
Brix (%)					
2012	13.9	14.5	12.0	15.3	12.0
2013	13.5	13.3	13.3	14.0	12.3
Avg	13.7	13.9	12.7	14.7	12.2

Anthracnose fruit rot concerns for 2016

Phil Brannen — University of Georgia, Plant Pathologist

One area of particular concern in 2015 was the rise of anthracnose fruit rot (Fig. 1), caused by *Colletotrichum* species. This fungus overwinters in dead twigs and/or dormant flower buds. Once spores are produced, they move to and germinate on the surface of green fruit; the fungus then penetrates the fruit but remains dormant until the fruit begins to ripen. Rots form as the fruit matures, and orange to salmon-colored spore masses are observed on fruit surfaces (Fig. 1). Spores produced on rotting fruit can subsequently infect surrounding fruit as well as vegetative tissues. For whatever reason, anthracnose was prevalent on numerous commodities last year. The only surprise for us in Georgia is that we rarely see this disease as a fruit rot on blueberries. Infection is most often observed when conditions are warm and wet; however, that is often the case in Georgia, and we still have not had major issues.

We may have become complacent, as a spray program for rots should have prevented this – unless fungicide resistance was an issue. In light of the fact that the disease was prevalent throughout the state (really the region) on multiple commodities, I gravitate towards an environmental explanation, as opposed to resistance development. However, Phil Harmon (University of Florida) has confirmed *Colletotrichum* resistance development, particularly to the strobilurin fungicides (azoxystrobin in Abound and pyraclostrobin in Pristine) in Florida within the last year or two. In addition, he indicates that some *Colletotrichum* species are actually killing blueberry plants; this is mainly limited to one or two varieties, but this is not something we have seen before.

If resistance is being observed, there are several concerns. First, this would indicate that some fungicides are no longer working well. This might vary from one field to the next, but the advent of resistance might indicate a general issue with particular fungicide groups or classes. Phil Harmon has graciously agreed to help us determine whether we do have resistant fungal isolates in Georgia, but we will not know this till next summer. I am therefore suggesting some modifications to our blueberry spray program – just to be on the safe side. I will discuss this program in more detail below. A second concern is that with the advent of resistance, we may actually select for anthracnose fruit rot. In other words, we might be killing out some of the competitive fungi and actually increasing anthracnose (possibly other pathogens as well) to levels which would be worse than if we did not spray a fungicide at all. This has been observed in the last 2-3 years in South Carolina peach orchards. Dr. Guido Schnabel reported that anthracnose, rarely seen on peach, actually wiped out peaches in some sites – 60-70% losses. Likewise, *Alternaria* fruit rot increased as a major disease, and *Alternaria* resistance was to blame. Obviously, we need to understand our own situation. Again, we don't know that we have resistance to the anthracnose fungus (or possibly multiple fungi), but it would be prudent to assume that we may.

We definitely need to consider fungicides with anthracnose activity as we are developing our spray programs for 2016. The following materials should have some degree of activity against *Colletotrichum* species found on blueberry. Bloom and early cover sprays are thought to be particularly important for management of this disease, but infections can occur later in the season as well.

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Anthracnose fruit rot concerns for 2016, cont.

Dr. Phil Brannen — University of Georgia, Plant Pathologist

Abound; group 11 (possible resistance)

Captan; group M4 (Captan + phosphonates have been particularly effective for controlling Colletotrichum diseases on apples, but data is not available on blueberry.)

Captevate; group 17 + M4

Omega 500; group 29

Orbit; group 3

Phosphonates (Prophyt, etc); group 33

Pristine; group 7 + 1 (possible resistance)

Quash; group 3

Sulforix (late dormant application; same as for Exobasidium)

Switch; group 9 + 12

The blueberry disease management program (Fig. 2) is a modification of the Exobasidium program. Captan is actually pretty efficacious on Colletotrichum species, and until we know the resistance status of the strobilurin fungicides, I would consider tank-mixing Captan with Pristine or Abound to provide insurance and additional efficacy. As you approach harvest, visual Captan residues might be an issue, so it might not fit well in the latter part of the season just prior to harvest. In the chart below (Fig. 2), I have moved Switch to an earlier application window than presented in previous versions, as at least one of the fungicidal compounds in Switch is likely to be active (does not readily develop resistance). This program does take into account resistance management, while also providing efficacious materials at the time they would be needed. However, feel free to mix and match fungicides on your own, as long as they provide the needed efficacy against given pathogens at specific growth stages. See the IPM guide at www.smallfruits.org to help you in developing your spray programs. Also, timely, frequent harvest (no soft fruit) and rapid cooling will help to prevent post-harvest rots. As always, contact your local county agent if you have questions.

Figure 1. Anthracnose fruit rot of blueberry. This disease was more prevalent than normal in 2016. Efficacious, preventative fungicidal spray programs are required to control this disease.



-continued on Page 12-

Anthracnose fruit rot concerns for 2016, cont.

Dr. Phil Brannen — University of Georgia, Plant Pathologist

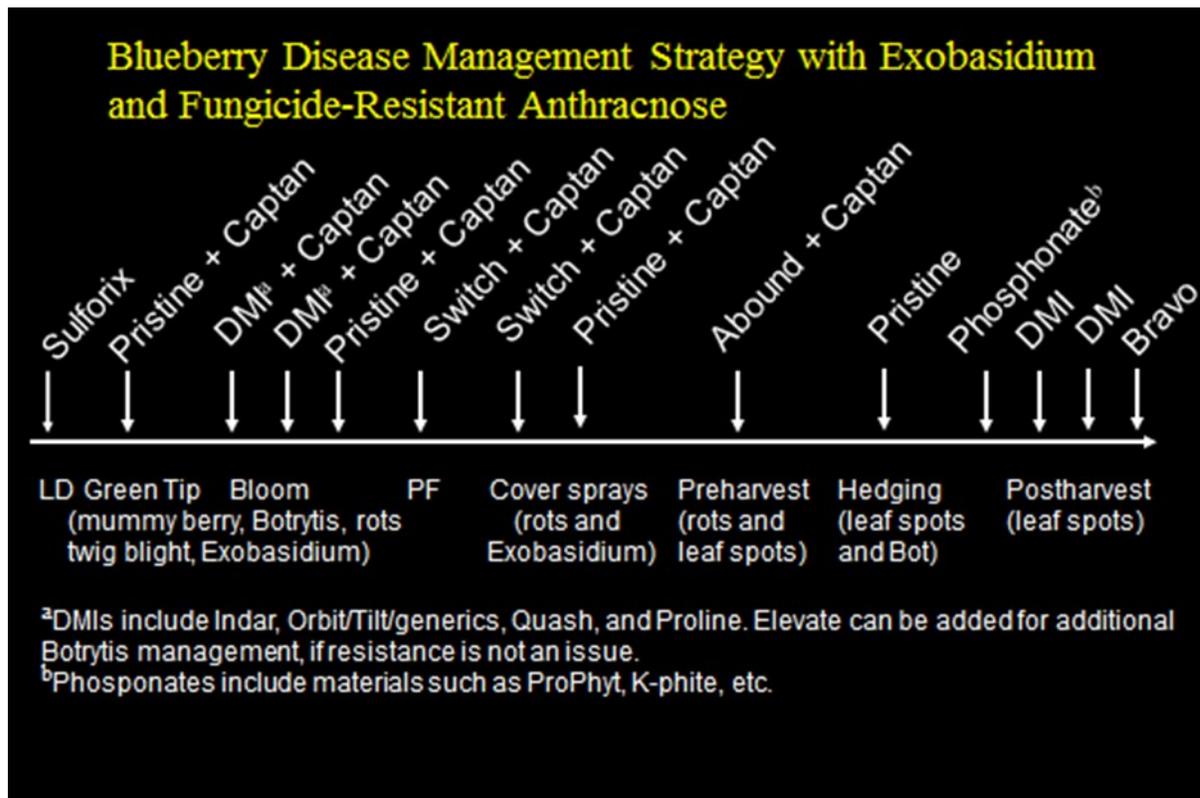


Figure 2. A suggested spray program for management of blueberry diseases after the introduction of Exobasidium leaf and fruit spot and potentially-resistant *Colletotrichum* species (anthracnose).



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Help with a Short Survey

Eric T. Stafne, Fruit Extension Specialist MSU-ES

If you grow blueberries in Mississippi then please contact me to complete a very short survey on blueberry mechanical harvesting for fresh markets. Some of you have already completed this survey that was handed out at the 2016 Mississippi Blueberry Education Workshop in January. If you did it there — Thank You! If not, but would like to fill out the survey contact me at:

Email: eric.stafne@msstate.edu

I will send the survey to you. By doing this our project can better identify the opportunities and obstacles that exist for mechanized harvest for fresh markets.

The survey is anonymous and has only 13 questions. If you would like to help us out, please contact me ASAP. This survey is being done in several states around the county and I would like to see Mississippi well represented.

