

University of Arkansas System
Division of Agriculture
VIRTUAL FIELD TRIP
FALL-PRODUCING BLACKBERRY PRODUCTION
Broadcast Transcript
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(Terry K.) Hello, and welcome to our Virtual Field Trip. We're broadcasting live this morning from an atypically wet August day on the Sta-N-Step farm in Tontitown, Arkansas.

I'm Terry Kirkpatrick, Professor of Plant Pathology with the University of Arkansas System, Division of Agriculture, and joining me today is Ms. Sherri Sanders, a White County Cooperative Extension Agriculture Agent and the lead investigator in our research program.

Sherri, welcome to our program.

Thanks, Terry, appreciate it.

We'll be hearing a lot more from Sherri in a few minutes but first I want to do a couple of housekeeping things. The first thing I want to do is frankly thank the Southern SARE program for the opportunity to be here today. They funded our research on blackberry production and pest control for the last two years. Without them, we would not be able to be here today.

Our research team is truly an integrated group. We've got researchers in plant pathology, entomology, and agricultural economics. We've also got extension communication, and IT folks, and evaluators, and probably the most fundamentally important group we have are our three collaborating farmers.

(Sherri S.) That's right.

(Terry C.) Now, I want to do one thing just to set the record straight this morning.

Those of you who are detail oriented might have noticed that the background behind us are not blackberries.

And so I've got two things that I'd like to say. The first one is: These are blueberries, and the second is, we do know the difference between blackberries and blueberries.

(Sherri S.) We do!

(Terry C.) The extension cord on this rainy day just wouldn't reach to the blackberry planting.

We're going to talk about primocane blackberries throughout the next hour. These are a revolutionary new type of blackberry that has a potential to produce two crops in a single year.

Most of you are familiar with the standard blackberry cultivars. They grow as a primocane the first year, and fruit

in May, June, or July the second year on floricanes (depending on where you are).

Primocane fruiting varieties have the potential to fruit in the Fall on the primocanes, and then again the next year on floricanes, providing berries when the market is least saturated with berries and the demand is highest, so its profitability could be greater, and also just simply the ability to grow two crops in a single season.

Now, to tell us more detail about primocane blackberry varieties and what they will do, I'd like us to go now to the University of Arkansas System Division of Agriculture Fruit Research Station near Clarksville, Arkansas, and hear from Dr. John Clark, our distinguished horticulture faculty member about primocane blackberry varieties. John, tell us more about these unique varieties.

Hello, I'm John Clark and I work at the University of Arkansas System Division of Agriculture and I'm at the Division's fruit research station near Clarksville.

This is where our fruit breeding program has been based since its beginning in 1964. Dr. James Moore had a broad dream when he began the fruit breeding program working on a range of crops.

But one of our most important crops and where we've had our greatest success is blackberries. The first blackberries were released in 1974.

The varieties Comanche and Cherokee, and a whole series of these have been released since then.

The first thornless was Navajo, which took 25 years to get the canes to stand upright and get thorn-lessness in the canes.

And the florricane fruiting varieties that followed such as Arapaho, Apache, Ouachita and Osage for shipping and local markets and they're good at home, also.

Then we began to work in the late '90s in primocane fruiting. A true breakthrough in blackberry production, to allow fruiting for a longer period.

These are some of the key achievements of the program. And it's really exciting to get to share them with you today.

I'm often asked, what is a primocane fruiting blackberry? The first thing we need to talk about is what is a blackberry botanically? Blackberries and their cousin raspberries are very unique plants. They have a perennial root system, which means they live year after year after year.

But they have biennial canes, meaning the canes live two years.

This is quite unusual in the plant kingdom. Most of the blackberries you've seen are florricane fruiting varieties, where the primocane grows the first year. It goes through a dormant period and the second year it flowers and fruits, and after

flowering and fruiting, it senesces and dies, and the new primocane is growing for next year's crop.

And one of the key things about florricane fruiting varieties, the type that goes through the dormant period, most of the ones in the world today, is this time of year, the primocanes are vegetative, and you can see the growing point has no flowers. This is the florricane fruiting cane, and this cane will fruit next summer, providing fruit from May to July, depending on where you're located in the Northern hemisphere.

Now, primocane fruiting blackberries are something entirely new, and the primocane fruiting variety produces fruit on the current season cane, or the primocane.

This cane emerged from the crown or root system this year, and the cane terminated in flowers, and the small berries developing.

In the blackberry world, this is a breakthrough, because it offers a number of advantages.

First, in theory, you can get two crops on the same plant.

You can also, in appropriate environmental conditions, get fruit until frost.

Another advantage potentially of primocane fruiting blackberries is in cold regions of the country or world, where the canes will not overwinter due to damaging temperatures.

With the primocane fruiting cultivars they can grow from the crown or the root system, emerge, flower, and fruit on the current season canes.

Now, it may take some special management to do that, but it opens up a lot of new windows.

So what does that mean in production? This allows production for an extended period, not just the 4 to 6 weeks that we often think about blackberry production being active in a region, but in theory, can move to 6 months, possibly more, with various cultivars of florricane fruiting, primocane fruiting, and management of the canes.

So primocane fruiting gives us an opportunity to expand production areas, regions, environments blackberries can be grown, and really important is keep blackberries on the market shelf so that our consumers always have them on hand for buying opportunities.

Primocane fruiting is one of the biggest things I've seen come along in blackberries, and it's exciting to be a part of this new technology for blackberry producers.

Let's talk a little bit about the history of primocane fruiting and blackberries.

The trait was found in a wild plant found in Virginia many years ago.

In Arkansas, we've been working for the last 21 years on

primocane fruiting to improve it and incorporate it in our blackberry breeding program.

I remember the day, September 27, 1997, when we selected the first 14 primocane fruiting blackberry selections.

I remember leaving the field that day thinking: Wow, this is exciting.

The first thought: This is almost a new crop, and it will be fun for the next 25 years of my career to improve this.

The other thought was: Wow, those berries aren't very good.

They were small, little berries.

Many of them had poor flavor.

Often many of them were doubles.

Many of them had poor color so I looked at that and said: How are we going to make that better? Well, it's been quite the story to be where we are today.

Primocane fruiting cultivars that have diverse times of flowering, thornlessness, high fruit quality, high productivity, we've got a long way to go to make the perfect primocane fruiting blackberry.

But we're well on our way at the University of Arkansas.

This is Prime Ark 45, released in 2009 from the University fruit breeding program, Prime Ark 45 is the world's first shipping quality primocane fruiting blackberry. It has large fruit, very good flavor, good shipping capability and high productivity. I'm holding floricanes fruiting plants right now that have borne fruit in June, and the blooms are now present on the primocanes to produce the primocane crop.

Prime Ark 45 is thorny, so that's something to consider; works well in commercial production.

However, you might want to think about that for pick-your-own, because oftentimes, pick your own customers are concerned about thorns.

Prime Ark 45 is a great choice and one that a lot of people are really happy with.

This is Prime Ark Freedom.

It was the world's first thornless primocane fruiting blackberry released in 2013.

Prime Ark Freedom is unique and we finally got the thorns off the plants.

However, it's more of a homeowner or pick your own or local market berry because it does not ship as well as Prime Ark 45 or Prime Ark Traveler, but look at these berries.

Wow.

These are impressive.

These are floricanes berries that ripened in late June here in Arkansas, and right now, there are small green berries on the primocanes which will produce the second crop.

These are bragging berries.

This is Prime Ark Traveler, a 2014 release from the University Fruit Breeding Program.

This is the world's first commercial shipping-quality thornless primocane fruiting blackberry. Nice flavor, has a sub acid flavor, has a sub acid flavor that consumers really like.

These are floricanes fruit ripening in late June in West Central Arkansas, but right now, the canes are setting the primocane crop, and that's a crop that in certain conditions, particularly mild climate, you can extend the production season for quite a long time.

Prime Ark Traveler has been a lot of fun to develop, and I hope it will cause lots of satisfaction with growers and consumers.

One of the key aspects of managing erect cane blackberries is the tipping of the primocanes during the growing season.

This needs to be carried out on all blackberries, and for example here, you see the branching that occurs after tipping the primocane.

If this is not done, the cane will continue to expand, and can get outside of the areas you want the plants to grow.

You can see the point that the primocane was tipped here several weeks ago has resulted into multiple lateral branches, which are producing numerous berries.

This is a key component of managing erect cane blackberries, and it increases the fruiting area of primocane fruiting varieties.

Research in Oregon and in California has shown that multiple tippings are really valuable for increasing yields.

For instance, tipping at about a foot and a half to 3 feet tall, and then tipping the laterals that result from that at the same length, multiplies the growing points, multiplies flowering, increase yields.

So that has to be looked at carefully as you manage primocane fruiting varieties so that you get all you can from the plants for high levels of productivity and increased grower profits.

This is a primocane and the tipping is done approximately shoulder-height. It's very simple, just a cut like that, and that will maintain the hedge row that you want to have to keep your plants under control, and keep the canes where you want them.

Wow, that's simple. And as long as you do it, particularly when the canes are small and the tips are soft, you get the maximum response, and its greatest health opportunity for the plant to heal the cut and result in nice lateral branching. The lateral branches are critical for increased yields, creating a beautiful hedge row, lateral branches, high productivity, and

blackberries that are easy to maintain.

One of the first challenges I saw with primocane fruiting blackberries back in 1997 was the impact of heat on the primocane fruiting potential.

My observations over the last 20 years has pretty much shown that when it gets above 90 degrees Fahrenheit for multiple days or extended periods, that hinders primocane fruiting.

Hinders it how? First off, when it gets really hot, on up around 100, it will stop the flowering process.

It will inhibit bud formation.

It can lead to double fruits.

It can make the berries smaller.

It can make poor quality and poor color, so it can be quite dramatic.

The cane I'm holding here is developing very nice with full set berries.

And so this is developed in the upper 80s, showing adaptation to that climate.

Primocane fruiting has got a long way to go before it's adapted to all growers in all regions of the country.

So everybody's going to have to pitch in and do a little bit to figure out what is best for every region and down to each farm.

Primocane fruiting is one of the true breakthroughs in new blackberry production technology, but there's a lot to be done to develop the exact growing methods for homeowners, local markets, and commercial producers.

There's a lot to do to adapt the technology to farms across the country and world.

It's an exciting time, and that's something to look forward to in the years to come for increased blackberry production.

(Sherri Sanders) Thanks, Dr. Clark. You know, blackberries are an important fruit crop here in the state of Arkansas and as Dr. Kirkpatrick mentioned, the traditional varieties are those floricanes fruiting varieties. But there's a growing interest in these primocane fruiting varieties, and as he mentioned, they'll provide berries for us during late summer and early fall, when market prices are at a peak.

Our SSARE project was funded for a better understanding of our management of insects and diseases that are on fruit at this time of year. Additionally, high late-summer temperatures also have a negative impact on those primocane fruiting blackberries. The use of mineral particle films such as kaolin clay to lower leaf temperatures and protect plants from solar injury has been suggested as a way to enhance cane fruiting production. So we incorporated that into our research as well.

Our team, through the SSARE funding, established experiments

on three separate farms in two different states. One of our farms is Moss Springs Berry Farm in Bowie County, Texas, over the line (from Arkansas).

The second place that we established an experiment is Gillam Farms, which has recently been sold to Ritter Farms. That's in White County, Arkansas, and that's my home county as a County Agent. And our third farm where we've established experiments and plot work and research is here in Tontitown, Arkansas, up in the northwest corner of the state. That's Sta-N-Step Farms.

Our research evaluated the effect of mineral particle film applications during the late season on blackberry production for insects and diseases. Two of these farms are U-pick operations, and one is a large commercial farm. So you may be saying: Hmmm, why is this important to you? Well, perhaps you could use primocane fruiting blackberries to develop an untapped market in your area. Perhaps this could be a way for you to extend your harvest into the Fall.

Joining me now is Dr. Donn Johnson, University of Arkansas Professor of Entomology. Hi Donn.

(Donn J.) Hey, Sherri, thank you.

(Sherri S.) Yeah. Donn's going to talk to us about our pest management practices that we did with this research. He's also going to share our findings regarding the effectiveness of kaolin clay to blackberry production, especially primocanes.

(Donn J) Well, thank you. And good morning. I will be talking about several of the pests that we have in Arkansas that affect the blackberry and I'll be talking about monitoring techniques, how to identify the pests, how to identify the damage, and also various control tactics that are recommended.

Blackberry pests in the order that they appear during the season are strawberry clipper, rednecked cane borer, spotted wing drosophila, stink bug, broad mite, Japanese beetle and raspberry crown borer.

Strawberry clipper. This pest lays eggs in the blackberry flower, and then it also severs the stem. We monitor for it by trying to knock the adults off the flowers on to a paper plate, and you can also note how many severed stems there are in a per 4 row foot area, and if you have more than one adult or more than 2 severed stems in a 4 foot of row, you can apply insecticide.

And you'll notice that I was saying that we only can apply up to first flower. After that, we can't apply any insecticide to save bees, and we also have to remember to read through our labels and our state registered compounds to see what is allowed in your state for blackberries.

Rednecked cane borer, this is a pest that comes out in May and June, and the adults will appear only on primocanes. So

look for them on primocanes. You can see mating pairs on primocanes, you can see them doing a little bit of feeding damage on the primocane leaves and they will lay eggs in the cane.

Rednecked cane borer larva emerges, and it severs, it girdles the cane and then later in the season, probably in July and August, you'll start seeing galls on the cane and they overwinter as an enlarged white larva in the pith.

Normally, healthy canes in the spring will leaf out and they'll flower, but when you have rednecked cane borer galled canes, you'll see in these blue circles, there's galls, and that restricts flow of nutrients and water above the cane, above the gall, and you will see that the leaves will come out, the flowers will come out, but they'll soon die, so it really reduces yield.

In terms of control of rednecked cane borer, if you have just a low population of galled canes, like less than 5%, you can go in during March and sever or prune out those canes and shred them up so the larvae or the adults will not emerge. But in some cases you get a little bit higher population of galled canes and it's better to start some kind of insecticide spray program, so monitor for the adults in May and June during the mid-day, and you can look on primocanes, and if you see adults, then once you have post-bloom, it's legal to apply insecticides such as a soil drench to kill the larvae, which would be Admire Pro, or a weekly foliar spray of JMS Stylet Oil.

Spotted wing drosophila. This is becoming a worldwide pest on berries and some other fruits. It's a very small fly, a tenth of an inch in size. It has a spot on the male's wing tips. There's no spot on the female wing tips, and the female is kind of unique. It has an egg-laying organ called an ovipositor that is serrated on the end, and that allows it to lay eggs in ripening and ripened fruit.

So this egg-laying can occur from late May all the way into first frost in the Fall. So they'll lay eggs and if you have a magnifying glass you can see the two little breathing tubes sticking out of the skin, and then later you'll see the larvae inside. They're a legless white larva.

This usually starts about three weeks before ripening begins. This gives you an indication if flies are present and we have a monitoring trap that has a lure inside, and it also has vinegar inside, and we place it on the perimeter of the planting, three weeks before ripening, and then we also place it at about the berry height.

Spotted wing larvae can be detected by a flotation method. We harvest about 30 fruit and put them in, let them soak for about 30 minutes in a water solution that's one quart water plus

1/4 cup of salt, and hopefully you won't see any larvae float up. That would be an indication that your management techniques are working well.

Some of the techniques we use to minimize numbers of spotted wing, first of all, sanitation. This is removal of culls and overripe fruits from the field, and then solarize those and send them off to the dump. Don't keep them around the field. This is a food source for spotted wing to lay eggs in.

And the other thing more importantly is to harvest daily or every other day. This greatly reduces the number of fruit that would have eggs laid in them, and then immediately refrigerate, and this slows down the development of spotted wing.

Some of the techniques to also reduce the fly most successful so far has been insect exclusion netting which is a one millimeter mesh netting that you put over the planting. Another one is black weed barrier. This will reduce the number, or the survival of the larvae as they fall from the fruit and land on the ground to pupate, and then also to enhance your efficacy of your weekly miticides. If the program you're using produces a less dense canopy, you get very good coverage of your insecticides.

So our project was trying to also look at the effect of Surround whitewash in the canopy on temperature of the canopy, fruit yield, acceptability of whitewashed fruit to the consumer, and also is there -- can we control some of the pests and diseases.

And we whitewashed 8 of 16 plots that are 20-foot plots, and we whitewashed them as needed to maintain that whitewashing, and we also monitored the temperature in those canopies and in untreated canopies and outside in ambient.

We basically found that the effect of whitewashing on canopy temperature was minimal because both the green and the whitewashed plants were only slightly cooler than the ambient temperature.

Stink bugs. We see several types of stink bugs in our plantings, brown ones and green ones, and they pierce the drupes and this causes the drupes to dry out, and then also, we can monitor for these pests using either a yellow pyramid trap that's baited with either a green or a brown stink bug lure. These are available at some of your IP and supply houses. You can look from mid-May through harvest, looking at fruit, looking at the trap, and especially looking for nymphs.

Broad mites. You see the picture on the left is a picture of a healthy terminal of a primocane.

In the middle, you can see the damage that broad mites do by feeding on the underside of the leaves of terminals. It will actually bronze the leaves. In many cases, the leaves and the

fruit clusters on the terminal tip will die, and you'll also see cupping both upward and downward from the broad mite.

Broad mite female is kind of amber colored, the left picture. It has a white hourglass mark on it, and very distinguishing is the egg. You'll see those spotted - the egg is very white and spotty, and then the males are even more unusual, because they carry around an immature female, and when she becomes an adult, they mate. And broad mites can be controlled using Microthioil, if the temperatures are below 90, or we have one compound only registered for blackberry broad mite, and that's Agri-Mek, and that's usually applied if it's above 90 degrees.

Japanese beetle. This is something that's coming out, we still have Japanese beetle in the field today and they come out in June and July. They cause flower damage, which will reduce yield, and they'll also get - to some extent, they'll put holes, chew holes, in the leaves.

We can monitor for the first emergence of adults using the yellow trap to the left that's baited with a dual lure, and you can also walk the planting.

Japanese beetles unfortunately come out at the time of primocane bloom, which means we can't use insecticides so that was one of the reasons for our use of Surround to see if that would reduce the amount of damage to the flowers and we're still evaluating that at the moment.

The last pest is raspberry crown borer, and this is unusual because it comes out in the Fall. The moth comes out, and the larvae will start tunneling in the crown, and it will cause the canes to die, as you can see. And in the foreground, you can see over time, the foreground is an older planting that's had a lot of raspberry crown borer damage, and there's very few canes. It reduces primocane production. In the background, you can see a nice, healthy, young planting, very even distribution of canes.

Raspberry crown borer. Biology. It starts out in September as an adult. It lays eggs on the upper canopy of the blackberries on the underside of the leaves, and then the larvae hatch, and go down to the bottom of the cane, just below the soil surface. There's two ways to monitor for it. The first one is May through August, you can look for those shepherd's crook or dead canes, cut them off at the base, and you may see a tunnel and a larva inside.

In Fall you can look at the base of the primocane for pupa skin indicating adult emergence is occurring.

And before I talk about the reference of the blackberry pests, the raspberry crown borer can be controlled in the Fall, late October, with a soil drench pesticide. And here you see all the blackberry pests I covered, and the spray periods are

noted in orange, and the larval periods where you don't spray are noted in yellow. Thank you very much.

This is a good time for you to go to your Q&A and ask any questions. We'll try to address them a little bit later.

(Sherri S.) All right. Thanks, Donn. That was good information. So if you're like me, you probably have some questions. Please take a moment now, like Donn said, and type those questions into your Q&A box. We'll answer some of them live later in the broadcast, but I want you to know, all of your questions will be answered by an Extension specialist, if not live, then through text for you.

You know, our partnership with this project is invaluable and critical with our cooperating farmers to the success of this. And these are our cooperating farmers. They represent all three farms that we've been talking about.

The first one is Todd Gibson. Hi Todd. Todd is from Ritter Farms, and he's from White County, Arkansas. His farm is in White County, Arkansas.

The next one is Eric Lum. Thanks for being with us, Eric. Eric is with Moss Springs Berry Farms in New Boston, Texas.

Les Dozier, we appreciate you. He's with Sta-N-Step farm here in Tontitown. And all three of them have agreed to share their knowledge from the grower's perspective with us.

Todd, tell me about your operation. I know you're relatively new to horticulture farming but you're not new to agriculture as a whole. So tell us about your operation.

(Todd G.) Right, Sherri, and thank you for having us. You know, Ritter as a company has been involved in production agriculture since the company's inception in about 1886 and since that time, they've been intensely involved in row crop agri-business ventures but just recently have we stepped into the world of berry production, so we're brand new.

(Sherri S.) But so far, so good.

(Todd G.) So far, so good. A good learning curve. And with that said, I want to extend my sincere appreciation to the University of Arkansas and all their expert staff for all the help they've given us and they continue to give us in breaking into this new industry.

(Sherri S.) We're glad to have you, thanks for being here with us, Todd.

Eric, we've got a few questions for you, bud. Eric's a retired County agent from Texas on top of everything else and you're doing this in your retirement years.

(Eric L.) Yes, ma'am.

(Sherri S.) Tell us about Moss Springs Berry Farm and how long you've been growing blackberries there.

(Eric L.) Moss Springs Berry Farms is owned and operated by my

wife, Belinda, and myself, and yet at the same time we involve the entire family. Our grandchildren are very active in the operation of the farm. We are a basic U-pick, we-pick operation. However, through the years we've built up a very strong clientele. My wife utilizes Facebook to keep our clientele advised as to the status of the orchard.

Then we also have a winery that we furnish blackberries to, and we planted our first berries in 2003, so I guess you could say we began to be established in 2003. We've been in operation for 15 years. We love to have people come by. It's family oriented. We have a lot of grandparents that bring their grandchildren, and especially now, we're having a lot of young people coming and bringing their children, so that they get an ag experience.

(Sherri S.) That's a good thing, that's good.

(Eric L.) Yes, it is.

(Sherri S.) So tell me, how did you get involved in this project? And I've got another question before you go: Do these primocane fruiting varieties have a fit in your operation?

(Eric L.) Okay, it was very simple for me to get involved.

(Sherri S.) Yeah.

(Eric L.) As a County Agent in Bowie County, which corners or joins two different counties in Arkansas, we had a lot of joint educational efforts between the Extension Service in Arkansas and the Texas Agricultural Extension Service, and then also I attended several field days, and they were very helpful up at Hope, Arkansas, and they did an excellent job, and that's where I first began to become interested in the blackberries. When I grew up as a kid, we had blackberries, but they were more boysenberries and they had huge thorns and they ate you up and you got chiggers and you had to watch for snakes.

(Sherri S.) It was a labor of love.

(Eric L.) It was. No, it was a labor where your parents told you had to go do it.

(Sherri S.) You got that.

(Eric L.) It wasn't any love to it.

(Sherri S.) You got voluntold to go pick them, I'm with you.

(Eric L.) That's right. But through these contacts, we were invited to participate, and we're so proud to be a part of it. It's been very educational. When we look at Traveler, we're still in a learning curve.

(Sherri S.) Right.

(Eric L.) Because we're pretty far south. We're quite a bit further south than any of the other producers.

(Sherri S.) Which is one of the reasons we wanted y'all in this so we can actually say we've done research in three different areas, so, yeah.

(Eric L.) Yes, ma'am. One of the things that we're facing with the -- we have a wonderful early crop in June. We were very pleased with it, off of 320 feet a row, we harvested over 600 pounds of blackberries.

(Sherri S.) That's good stuff.

(Eric L.) And that is excellent and it's a very good-tasting berry. We did a little taste test. We basically have Ouachita and the Traveler. Now, we've tried every variety that Arkansas comes out with, because we feel like, or I feel like, that Arkansas leads the path in the country when it comes to thornless blackberries.

(Sherri S.) Well, we thank you for that.

(Eric L.) And no one likes to come out and get stuck by a thorn.

(Sherri S.) No.

(Eric L.) So it's very important for us to keep the orchard very clean. It's very important that it be thornless so little kids, we encourage families to come out. Starting out, we had a lot of grandparents that brought grandkids. Now we're having a lot of younger adults that are bringing their children, so they want to know where that fruit comes from. They want to actually pick it off the vine and meet the person that's growing it.

(Sherri S.) That's good. Ag awareness is important.

(Eric L.) And we hope it will have a place, once we learn how to utilize it, to help take some of the pressure off our other orchard and the winery.

(Sherri S.) What you sell to them?

(Eric L.) Yes, ma'am.

(Sherri S.) Yeah, that's great. All-right. Okay, Les, we've got a few questions for you.

(Les D.) All right.

(Sherri S.) Now, we appreciate you hosting us today.

(Eric L.) You're welcome.

(Sherri S.) And I assume you're glad we brought you some rain, because that was us you know.

(Les D.) I think we'll leave it to God.

(Sherri S.) Okay, we'll leave it to God, all right. How about, how did you get involved in this project?

(Les D.) Well, I've worked with Dr. Johnson for many years concerning the health of my blueberries and blackberries and raspberries whenever I come to a pest situation, so that's how I got started to begin with.

(Sherri S.) So Donn hooked you up here.

(Les D.) Yeah, Donn did. But background as far as the farm, we started in 1989. We planted blueberries to begin with, as you can see from the sign, but after a few years, we advanced into blackberries. But my background is actually animal science.

(Sherri S.) Right.

(Les D.) And so when we bought a 10-acre farm and I was trying to figure out what to do, well, you can't raise many cows on 10 acres.

(Sherri S.) Not many.

(Les D.) So I looked into the numbers, and other than marijuana, berry production per acre is the biggest cash return.

(Sherri S.) That's interesting, yeah.

(Les D.) So we started with the blueberries, and after about 5 years of production, we had customers saying: Well, do you have anything else? And so I thought, well, let's try raspberries and blackberries, so we went into raspberries and blackberries. We've been doing both of those for about 15 to 20 years.

(Sherri S.) So it was a good compliment to your blueberries.

(Les D.) Yes, it's a very strong compliment. And if I have a weak year in one crop, I can usually make up for it in another.

(Sherri S.) That's good. Diversification is important.

(Les D.) Yes.

(Sherri S.) Okay, so let's talk about this kaolin clay product. We've done that in this research, so what are your thoughts from a grower's perspective on Surround or kaolin clay in your plantings?

(Les D.) I think it's going to be depending on the consumer, because we've discussed this even last year, you know, they basically are spray painted a white color and you can rinse them off fairly quickly but from a farmer's point of view, any extra work is not a good thing, and so it's going to add moisture to the fruit. My only thoughts and recommendations were, if you have an overhead sprayer, like, turn it on the night before, spray the fruit, and then the next day, the fruit will be dry and ready to pick and clean.

Or if you have access to a hose with a sprayer, you can kind of do that, but on the side note, one of the things that I found out on the blackberries was the dual crop, and I see you did that, too. But in the test plot the University had, I cut them all down to the ground, so it was only primocanes, and so when they came out, there was about 18, 20 canes per plant.

(Sherri S.) Right.

(Les D.) Very, very cany. And -- but I had some I could work with and I actually kept floricanes from last year, and by doing that, I had a summer season which is normally when the blueberries come out so I've got customers here with blueberries, blackberries, and raspberries all simultaneously, but then later on, I pull out the floricanes now, and the primocanes that are left are actually, to me, they're not as cany, there's probably 5 to 8 canes for this Fall, and so it

seems the dual crop is a better alternative rather than just one single primocane.

(Sherri S.) That's why we do this type of research and we do it on farm sites. We appreciate y'all. Thank you very much.

Les brought up an important part about that Surround and the consumer acceptability, and our entire team is in agreement that there is an issue with that, because folks just don't want to wash, or buy blackberries that have white specks on them, so that's just the way it is. And so we talked about that, and we said, well, we're looking into the usefulness of Surround, or kaolin clay, until the green berry stage early to mid-season suppression of diseases and pests.

Kaolin clay has been used in other fruit crops such as apples and there doesn't seem to be an issue with washing it off of them as they remain in good condition afterward, but as you probably know, and Les relayed that information, as well, man, washing blackberries affects their shelf life.

So without any further ado, joining us now in the broadcast is Dr. Jenny Popp and Leah English. They are our ag economists and they will explore the dollars and sense of this potential untapped market of producing primocane fruiting blackberries into the late summer and early Fall.

(Jenni P.) Thanks, Sherri. Rain or not, it's still a beautiful day out at Les's blackberry fields. Leah and I can see them through the window. When most people think about running a farm, they often picture a farmer working outside in fields like these. However, a very important part of running a successful farm actually occurs away from the fields. This is farm planning and budgeting.

(Leah E.) So what is farm planting? Farm planning is exactly how it sounds: Coming up with a plan for the future of your farm.

This includes deciding what crops or livestock to raise, how to raise them, and how to sell them. So why is this important?

(Jennie P.) It's important because running a farm can be a risky venture.

It's not like other businesses, where you can adjust quickly to unexpected circumstances.

(Leah E.) Bad weather, pests, or disease may wipe out your crop.

A sudden change in the market of your product may greatly reduce the price you get.

And don't forget about government policies.

Policy changes can have a big crops can be sold and at what be sold and at what price.

These are just a few examples of things that may affect your bottom line.

(Jennie P.) The key to having a successful farm isn't what you grow, it's whether it is financially sound.

Farm planning is an ongoing process, but beginning with a plan will set you up for success and help you achieve your goals.

In other words, farm planning allows you to move from wishful thinking to reality.

(Leah E.) A major part of farm planning is creating a budget.

A farm production budget lays out your yearly costs, revenues, and expected profits for your farm.

This may sound a bit complicated, but it's really not.

Anyone can create a budget, right, Jennie?

(Jennie P.) Right. It's easy to take the process and break it down into its smaller pieces, and when you put those smaller pieces back together, you will have a detailed budget that will allow you to determine which of your goals are feasible. So let's talk a little bit about the steps to get you started.

(Leah E.) The first step is to outline your plans. You need to figure out what you want to grow and how you want to sell it.

Say, for example, you think you might want to start growing blackberries, or if you're already a blackberry grower, maybe you want to expand your operation or try out a new variety. You need to begin by thinking what you want to grow, how much you want to grow, and what practices you'll use to grow it.

(Jennie P.) Now that you know what you're going to grow, the next step is to decide how to sell it.

This is called a marketing plan.

U-pick, farm store, farmers market, and wholesale are just some of your options.

Depending on which market you choose, there will be different cost and revenue outcomes to consider.

For example, we recently worked with the North American Raspberry and Blackberry Association on a pricing survey.

We found that the highest prices for blackberries were received at farmers markets, while the lowest prices were received for large quantities of berries sold to wholesalers.

So depending on how many berries you have and where you plan to sell, your revenue can vary a lot.

(Leah E.) Once you have a plan of what you want to grow and how you want to sell it, the next step is to think about the types of costs associated with producing and selling your berries. These costs can be divided into two main types: Fixed and variable.

(Jennie P.) Fixed costs are costs associated with those assets that you will likely have year after year.

Think about equipment and land.

It's not usually easy to change the amount of a fixed asset

used within a given growing season. For example, a farmer won't generally put new acres into production mid-season. Variable costs, however, are the costs for those inputs that you can change during a growing season. Think about the amount of fertilizer you use, or perhaps irrigation, and most importantly, the amount of labor.

(Leah E.) Once you have an idea of the costs, think back to your Marketing plan. Now how do you want to sell your crop? Once you have an idea of your revenues, to do this, first you want to estimate what prices you want to set for your crops, and then think about how much you realistically think that you can sell. Taking the quantity that you plan to grow, and multiplying by the price you expect to get, will give you your expected total revenue.

(Jennie P.) All right, so you have your costs, you have your revenues. Now you need to calculate your expected profits. Profits are the difference between your revenues and costs. If your costs exceed your revenues, well, then, your plan doesn't make sense economically.

Assessing the profitability of your operation may sound difficult but there's multiple ways that you do a budget. Just choose the version that's best for you.

(Leah E.) Your budget can be as simple or as complex as you like. You can create your own budget on paper by using spreadsheet programs such as Microsoft excel.

Many extension agencies offer free budget templates online, so if you're new to budgeting, a quick Google search for "Blackberry Budget Template" is a good place to start.

(Jennie P.) To make things a bit easier, you might want to purchase budget software that will walk you through the process step by step, or you can use some of the free software tools that are available.

(Leah E.) And speaking of free software tools, we actually have some free tools available on our website.

The beauty of our electronic tools is that they can be used by both beginning and advanced budgeters.

Here's a short video that walks you through the process of using our blackberry budgeting tool.

Our tools are interactive, meaning you can change values and they will recalculate your costs and revenues for you.

The tools contain some average values for Arkansas production systems.

You can either use these default values, or you can change them to better reflect your individual farm situation.

For instance, you may change the planting distance used on your farm, the amount of acres of blackberries in production, the yield you expect to get for your plants, the percentage

going to fresh versus processed markets, the market prices you expect to receive from fresh vs processed sales, labor costs, interest costs, and the cost of setting up your trellis or irrigation systems.

You can also build a list of any machinery or equipment you expect to purchase for your farm.

Once you have all of your initial inputs entered, simply press the green run button, and customized estimated budget for you.

Once the tool has calculated your budget, you can view the results in several different ways, including a comprehensive estimated budget that covers all years of farm planning from your soil preparation all the way through production year five.

The budget allows you to see your annual gross returns, your expected costs, and a breakdown of what profits you can expect to make from year to year.

Our tools also allow you to do advanced economic analyses, such as breakeven, sensitivity, and risk analysis.

Breakeven analysis allows you to better understand what you need in terms of prices and quantities in order to begin making a profit within a certain period of time.

With the uncertainty involved in farming, it is also good to consider what happens to your farm profitability if your circumstances change unexpectedly.

Sensitivity analysis can help you better prepare for the unexpected.

Yields, markets, or market prices may change from year to year.

What if a storm unexpectedly wipes out part of your crop?

What if the price for berries in the market goes down?

Or, on the other hand, what if things look better?

Input prices may go down or your market price could go up.

Our budgets calculate how your profits change as the situation changes, and allows you to compare different scenarios.

Our risk management tools can help you determine the likelihood of reaching a target profit level over time.

This feature in particular can be useful to long-term farm planning.

For example, being able to show that there is a high likelihood of turning a profit may help you convince a banker to give you an operating loan for your farm.

This tool may be one way to help you calculate that likelihood.

If you would like to give our tools a try, you can download them from the CARS website at cars.uark.edu.

We currently have tools available for blackberry, raspberry,

blueberry, strawberry, and apple production.

You can also email us at cars@uark.edu, and we can send you a copy.

(Jennie P.) To learn more about how to use our budgets, you can also visit the University of Arkansas Cooperative Extension Service Blackberry School website, and visit -- and view Leah's presentation on working with our interactive fruit budgets.

So, Leah, what's our take home message today?

(Leah E.) Well Jennie, the bottom line is, when it comes to farm planning and budgeting: Just do it!

(Terry K.) All right. Well, thank you Jennie and Leah and as a marketing plan and a budget is probably the key ingredient to making a successful operation each year.

We've covered a lot of ground over the last hour, and now in our remaining time, we'd like to hear from you. Your Q&A boxes continue to post questions in them. We will answer some live. I'm being joined now by the rest of the research team, and we're going to do some of these online.

Please continue, any questions you have, please continue posting them. Okay, our first question from a grower is one that I believe we're going to need to have a couple of folks answer and the question is: Is tipping done before or after fruiting?

Let's hear from the Northern and the Southern locations, because it's going to depend on where you are. Les?

(Les D.) I've got Nachez and the Traveler, and we did the tipping in June for the Traveler. We tipped about yea high, about 36 inches or so and on the traveler I did 40 to 48 inches and then I tip again and again multiple times through the season, but it will be during harvest, so you'll have the floricanes with fruit and the primocanes coming up, and you want to get them about right as they're getting about yea high.

(Terry K.) All right. Eric, what about from the Southern?

(Eric L.) From the Southern side, we have Ouachita's and Travelers, and right before harvest we go in harvesting and we tip off the tall canes and we take off the tall canes, we have trellises that are about 42 inches to 48 inches high, and we tip them the first time about 4 to 6 inches above the wire. Then we come back and we will continue tipping them so we don't get too long a branches so that we can control the growth pattern and where the blooms are and where the fruit is.

(Terry K.) Excellent, thank you. Our next grower asks the question: Which primocane is recommended for home growers? Does anybody want to volunteer to take that? Sherri.

(Sherri S.) Les talked about it, when you have primocanes home growers usually don't want to mess with thorns. On our farm we have Prime Ark 45 because we had our plots established before

freedom and traveler came out. They have thorns, although they're wonderful and tough plants.

I would recommend Prime Ark freedom for home growers. They're extra sweet and ripen quickly. If you want to have that for your home that's my choice. If you need something like Les and Eric have, a U-pick operation or some type of Farmers Market vendor, you probably want the Prime Ark traveler because their shelf life lasts longer.

(Terry K.) Thank you. Another person asks the question: Does the fly netting alter the heat stress on the plant? Donn, you're the entomologist, I'll let you answer this.

(Donn J.) I think the question is does the fly netting, does it alter the heat stress on the plant? We basically had high tunnels with netting, and we actually were getting much bigger yields inside the tunnels, and there was not a whole lot of effect on firmness or even titratable solids, so it was not affecting that at all. And it also advanced production a little bit. We had yields a little bit earlier in the tunnel than outside.

(Terry K.) All right, thank you.

Here's one: Does the clay affect photosynthesis? I guess I'll answer that one. We didn't measure the photosynthetic change in our -- in this study. Previous studies have shown however in apples and other crops that if it's applied right according to the label, photosynthesis is not affected so we did not measure it, but we assume the answer to that is no.

Another question is: Can you speak more of the results of the study? Was Surround effective in managing pests, and was Surround effective in lowering the temperature of the canopy? And why is that important? Donn, do you want to do that one again?

(Donn J.) Well, as you saw in my talk, the temperature does not change a whole lot in the canopy when you whitewash the plants with Surround. So it was not really lowering the temperature of the leaves, and I can't remember what the second question was.

(Terry K.) I can't either.

(Sherri S.) Why is that important?

(Donn J.) Why is it important, yeah? Did it have any effect. In terms of pests, we're still collecting data. Several of the pests we just didn't see in our study so we don't see any real effect. We haven't been able to get any results on that aspect. We're starting to have a little bit of Japanese beetle here but we had a drought and that kind of delayed their emergence, so we're trying to assess if there is any real difference right now in our yields, and we're still accumulating, because we just started collecting yield data last week here.

But we hope to see some effect of Surround on the Japanese beetle. It does reduce foliar feeding in other crops, like in grapes.

(Terry K.) All right, thank you. A grower or a person asked: Can these types of blackberries escape cultivation and become invasive? And can they cross with our native blackberries and change their characteristics?

Sherri, you want to answer that? Or...

(Sherri S.) I guess they could escape. I mean, they're prolific and they're hearty but I don't know that they -- I don't think they would be invasive either.

(Terry K.) I've got to say as someone who spent my youth walking through thorned wild blackberries, having them become invasive might not be a bad idea.

(Sherri S.) Exactly right, but I'm like you I don't think they would.

(Les D.) I don't believe they will. I don't believe so.

(Eric L.) Right.

(Terry K.) Right. Okay, what and when should fertilizer be used in blackberries? Eric or Les or either of you?

(Eric L.) Well, I'm representing the Southern side, and we're about 200 miles south of here, so our fertilization program is going to be earlier than Les's. We're going to go in probably somewhere when I see the first green up, I'll go in and I'll fertilize the first time. We use triple 17, about half a cup to a cup in between the plants. Then we'll come back a later time, after the fruits are just about finished, the fruiting is finished, then we come back and apply a second application.

So for the Southern Region you're going to do it a little differently than you would.

(Les D.) Up in the North I usually have a single application, of course traditionally if you have more light applications, it's probably better. I do a light application generally of urea throughout the fields and about 200 pounds per acre, but due to the pH of my fields I've had to change and I've gone with ammonium sulfate the last couple years.

(Sherri S.) All right, y'all. Our time is about up here with you all today. I'd like to thank you for your participation. I'd also like to thank SARE for funding this project.

We all encourage you to continue to explore this new production opportunity.

Also, there's a few reminders for all of you linked to us today --

A recording of this broadcast will be posted in our blog; Please respond to the brief evaluation link you will receive following the broadcast.

We want and need your feedback.

Thanks for being a part of our Virtual Field Trip from the Arkansas Ozarks.

We have an army of folks to thank. I want to do that because those are the folks behind the scenes that are helping us. Our entire district administration team is on site with us and we appreciate Beth Phelps, Sharon Reynolds and Jerry Clemons.

Drs. Jackie Lee and Amanda McWhirt have been responding to your questions. Dr. Julie Robinson, Mary Poling, Vonda Nutt, Leah Wasson, Jessica LeFors, Barbara Lewis, Lizabeth Herrera, Nick Kordsmeier, Mary Hightower, Chris Meux, Kerry Rodtnick, Ricky Blair, Diedre Young, and Dr. Karen Ballard have supported the marketing, educational content, and technical production of this broadcast.

Thanks again for joining us, and have a great day.

[End of broadcast]

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