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EPISODE NAME:  Apple Research at the UVM Horticulture Research Center

Today on Across the Fence, a newly-planted apple orchard at the University of Vermont Horticulture Research Center may represent the future of apple production. We’ll learn what researchers are doing to help support apple growers in our region. Good afternoon ... and thanks for joining us ... I'm Judy Simpson. Apples have long been an important part of Vermont agriculture, and our working landscape. With the renewed emphasis on local food, apple research continues to bear fruit for both growers and consumers. For the latest on the work of the UVM Apple Team, here’s Across the Fence’s Rebecca Gollin:

The well-known proverb that claims ‘an apple a day keeps the doctor away’ never took into account what would happen if you grew that apple on very small trees, in an intensively managed, high density, organic orchard. For those who have been wondering, these questions and many more are being answered - at the University of Vermont’s Horticulture research center, known as the Hort. Farm.

Nats: Terry/ - when you think of the big old trees that you see in farmhouses, those trees would take 15 years to produce a full crop...

Researchers at the hort farm are planting a new orchard as part of the organica project. It’s a multi-state effort that was started in 2006 to assess the feasibility of growing apples organically in Vermont. The new orchard will give the UVM researchers the opportunity to test some of what they’ve learned in the past six years.

Terence Bradshaw, UVM horticulture research center: “Two of the orchards have been in the ground for six years and one is brand new this year, with a whole new set of varieties that we think might be better suited to organic production based on some of the things we’ve learned in the last six years from the other blocs.”

Nats, (Terry planting) – ‘pull this shunt up 4-6 inches and you'll get that dwarf size... which produces fruit faster’

The apples being planted are varieties that are new to the study. All are resistant to apple scab, which is a major threat in the northeast. These trees are also being planted closer together than in the older orchards, which could increase production significantly.
Bradshaw – “We have about 800 trees on this one acre orchard. They grow almost like little tomato bushes, very tall and skinny…. the establishment cost is extremely high, but you increase your production per acre, you decrease the time that it takes to getting fruit by manipulating the branches to allow them to fruit earlier, and having these really heavy duty trellises that can hold up a tree with a full crop at a younger age. Over on the New York side of the lake, they’re getting upwards to 1000 bushels per acre out of these intensive systems, whereas the statewide average in Vermont is about 380 bushels per acre.”

There are other advantages to growing smaller trees.

Bradshaw – “You have much better light penetration in the tree, you don’t have big limbs that shade out parts of the tree, so the tree receives the full sunlight that can come in there, and the apples end up being larger and redder, and you get a better return bloom every year because that’s really dependent upon the amount of sunlight that gets in there and feeds those developing buds, right about this time of year, so next year’s fruit buds are being made now”

Rebecca Gollin, Across the Fence/ The orchards planted in 2006 are producing enough fruit to start generating the all-important economic information that is the bottom line. Bradshaw says that while researchers and apple growers are eager to see the figures, there is still a lot to be learned about growing apples organically.

Bradshaw – “None of the orchards have peaked and are ready to be pulled out and we’ve learned everything and we’re ready to write the report and close the book on it. Everything in apples is just like any part of farming; you learn something new every year. You know last year was extremely hot and dry, this year so far has been extremely wet, we’ve learned a lot of things there. “

As with any research project, this new orchard will answer some questions while raising new ones.

Bradshaw – “you think, well everybody knows how to grow apples by now, but there’s always something new on the horizon,”

Keeping an eye on what’s new in one of Vermont’s oldest industries, these researchers prefer much more than just one apple a day. At the UVM Hort farm, I’m Rebecca Gollin with Across the Fence.

Thanks Rebecca. Joining me now is the director of the UVM horticulture research center and one of the lead researchers in the organica project. Terry Bradshaw thanks for being with us.
Judy.: Tell me a little bit about the organic apple orchards in Vermont. Are there many of them?

Terry.: There's not a lot of organic apple orchards in Vermont and this time. Vermont has about 3000 acres of apple orchards and roughly 200 acres of them are certified organic. That's mainly due to problems that come about from production issues and some marketing issues and some people are little bit reluctant to make that jump and that's part of why we're doing this project is to assess the feasibility help folks determine whether not it's feasible and show them what can and can't be done before they invest their money and time transitioning an orchard organics.

Judy.: I was going to say it must be expensive to do that transition.

Terry.: It is. It's a three year transition to be certified and during that period you need to use organic inputs and those inputs are generally more expensive but during that time you can recoup the higher price of certified organic fruits. Just like we've seen with organic dairy farming it's a tricky window so oftentimes growers will trying to start anew block or unfortunately the block that hasn't been managed for three years so they can start fresh but they end up with a lot of past problems that they've inherited from there. we're trying to show folks the way to do it the right way.

Judy.: What has your research been showing you on organic apple production in Vermont?

Terry.: The main things we found I'd say our biological and nature which is what we expected. We knew we would have some issues with diseases mainly apple scab which we often talk about and we found actually surprising that apple scab is not terribly hard to control in an organic system using approved fungicides that you need. However some of those materials sulfur and lime sulfur and things like that are a bit harsh on the trees and we have found that that rese respond by reducing photosynthesis and maybe not performing as well as they should so we've seen some horticultural problems with trying to get rese to grow in their allotted space that we've given them when we planted which is part of the reason we've planted this new orchard with smaller trees and less space between them to give them more room to grow. We have seen every year a new bug their rears its head. We've been able to manage these under integrated pest management systems for years but a few years ago European apple slaw fly became a big problem and we found ways to manage that. Coddly moth has been another one that's been tricky. Every year we tweak their program and figure out what the best way is to manage them and I've heard them say before it takes five years to become proficient and something and 10 years to be an expert so were approaching your five so hopefully will be proficient soon and experts before long.
Judy.: As we saw on the tape every year is different just whether one is.

Terry.: Absolutely and you need to respond that. Part of a tractor organics is you can't just come in with the material war some kind of practice that's going to knock down a certain pass that's going to come in once it's populations built up you have the opportunity to knock it down you need to be proactive. The same thing with tree nutrition. And fertilizer sources generally are at a lower nutrient content so you need to plan ahead and really get a sense for the orchard. We walk those were churns quite often and really get a sense for what's out there so we can plan ahead and manage the trees best. As we harvest the fruit you realize that it's a little bit different for IPM or integrated pest management in that the pest populations can be different and we need a plan in terms of marketing around that. The call of fruit more often so does a lot more handling of the fruit and our initial expectations whether we might have 95% clean marketable fruit which is what you have in and IPM System we sort of had to reassess that and think that may not be realistic with organic systems. So you need a plan for your marketing and figure out what you're going to do with those extra apples that have stings on them.

Judy.: Because the bottom line is people who want organic food still want to be looking perfect.

Terry.: Yes and that's one of the tracks. We do sell the fruit that we grow at the Hort farm and it's very informal. We're not marketing it's through conventional channels but we can gain a little bit of insight there and yes there's an awful lot of demand for organic fruit but the question is can the price you get for the fruit be enough to offset the extra cost and inputs that are put into an organic crop.

Judy.: Who helps you with your research?

Terry.: We have a pretty good team on the apple team. There's a number of us as technicians. Lorraine Burkett who's the faculty PI or principle investigator of the project. We do have students who work with us. We've always hired an undergraduate or a recent graduate who either works a summer help or sometimes we have had formal internships in the orchards. The plant and soil science department under the ecological agricultural major actually requires an internship so that's been a nice vehicle to get sued an out there who can document what they're doing and do a little bit of the research some self.

Judy.: In Rebecca piece of a trellis system that you put up. Are there any disadvantages about system?

Terry.: Absolutely. There's a reason why not everybody is planting trees three or 4 feet apart. Those types of orchards are being planted not just under organic conditions but also IPM conditions. The biggest disadvantage is the upfront cost. Those systems cost 15 to 20,000 dollars per acre just to install and we install two acres of those the spring. So it's extremely expensive and that's compared to about $5000 for a lower density orchard where
you're not paying for trellises and so many trees per acre. The other major cost the comes and there is the changing your equipment. If you're using a larger tractor or larger mowers that are designed for big orchards now you need to invest in a lot more expensive equipment up front so that can be a pretty significant cost. Your edition becomes much more critical with the shallow root and systems and that's a fixed cost that needs to be considered. As far as spring is orchards across parts of Vermont it's very important to have uniform lands if you're away from the Champlain valley as specially and you have a lot of ledge or steep slopes these can be fairly difficult to install. But I think one of the biggest issues is a learning curve where growers need to learn may need to train these trees very early on. The way you get early production is by manipulating the trees by literally Bending branches to get the tree to put food on in the early years and if that's not done then you won't get the benefits and there really isn't very much room for mistakes in the early years when you have that much money tied up in them.

Judy.: What about the age of our orchards in here in Vermont to that end of the older or have orchards done a good job of replacing trees as they go?

Terry.: That's a good question. A lot of our orchards are relative the older. We don't have a lot of the old what we call standard orchards which is big seedling size trees having to literally climbed 20 feet up to get through but we do have a lot of semi dwarf orchards that may have been planted in the eighties through the early nineties that are starting to become the chore or starting to decline in productivity. But in the last few years is specially as new varieties have come out and new root stocks of come out growers have been very good at replanting and there's actually a number of growers who are planting these more intensive systems. I don't know of any who are doing it on many many acres scale of the least and trying out and getting sense for how it's going to work for them.

Judy.: Can you give me some examples how current or previous research findings from the UVM apple program have affected the apple industry?

Terry.: Absolutely. The UVM apple program has worked for many years on research that improves the competitiveness and the environmental impact of Vermont orchards. Over the years we've done research on applied biology that helps growers reduce their pesticide inputs without increasing risk and this is before we even got into the organic business. Doing things like scouting teaching growers and showing growers statistically and academically that you can scout orchards for apple scab in the fall and if the threshold is low enough you can actually reduce sprays in the spring. We've done work on varieties and root stocks that have allowed growers to change their orchards more profitable systems.

Judy.: So if people have questions about organic or integrated apple production in Vermont where should they go for information.

Terry.: The main web site for the organica project is UVM.edu/~ organica that's a real clearinghouse for information that we put up a lot of information from the program. We have an ongoing blog of what we're doing in the orchard as we plant these new orchards
and what we've been seeing. And Lorraine Burkett maintains are orchard observations on a weekly basis and lets folks know day today what's happening in there.

Judy.: If people want to visit the orchards they can do that?

Terry.: Absolutely. Actually we will be hosting an open house at the Hort Farm on August 19 from 2:00 to 5:00 PM that's down on 65 Green Mountain Drive in South Burlington. We will not only be focusing on the organic orchards we will also be showing the vineyards that we have. We've been doing a law to work with table and wine Grapes lately and folks can take a hay ride through all of the fruit plantings there so folks can get a sense of what we're doing there and a little slice of what the Vermont fruit industry looks like.

Judy.: May be interested in starting their own small production.

Terry.: Absolutely we get a lot of folks who are interested in planting both organic apples as well as Grapes and this is a real good opportunity to show folks what we're doing and what can be done.

Judy.: Terry thanks a lot for joining us today. That's our program for today I'm Judy Simpson we will see you again next time on across the fence.

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