Good afternoon ... and thanks for joining us ... I'm Judy Simpson. As we head towards 2012, we're going to spend some time this week looking back at 2011. During the course of the year we highlighted a variety of research projects conducted at the University of Vermont. The UVM research is largely focused on topics and issues that benefit Vermonters. One such project takes us to the apple orchard, where Rebecca Gollin has the story:

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 a very small tree in an intensely 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, and 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 rg, with atf

[Judy] From the apple orchard, we’re going to head now to the pasture. At a dairy farm in Highgate we found UVM researchers collaborating with students and farmers on a project that’s sure to take root in the years to come. Across the Fence’s Keith Silva has that story:

Bridgett Jamison VO: This isn’t as big as they can get, but it’s still pretty big. I guess we’ll take a look ...
Bridgett Jamison is attempting to pull a giant radish out of the ground, but we’re getting ahead of ourselves. This story begins out in the pasture ... where cows make quite an impact on the soil.
Jamison VO: “A cow walking on the soil will compact the soil about as much as a car or a large truck even.”
Grass-based farming is rising in popularity due to public’s demand for locally-raised beef, organic milk, and specialty cheeses. Dairy farmer, Guy Choiniere collaborates with University of Vermont Extension on a variety of projects that use applied research to improve pasture quality, extend the grazing season, and address soil compaction.
Guy Choiniere//Choiniere’s Dairy Farm: “So everything I do here is to improve soil health and everything I feed the soil, do with the soil, the soil knows exactly what to do, all I need to do is to make sure it’s in good shape. My definition of sustainability has always been is creating a system that will work through the good times and in bad and this is a great year to test those systems out. I mean this is a tough year with flooding this spring and drought in the summer and I want to see what’s working and trying some of these new projects, working with some fine people I get to see which projects are working the best, because it’s a survivor year.”
Choiniere has been working with Jamison on a three-year study looking at how forage radishes improve pasture quality.
Bridgett Jamison//UVM Plant & Soil Science Graduate Student: “The theory is called bio-drilling and it’s fairly new and it’s tillage with plant roots is what they call it too. The idea is that the radish has a really big taproot and it’s capable of breaking up compact soil. So we’re putting the radishes in these pastures in the hope that it’s going to grow down and break through some of the compact soil layers that the cows have created and then when the radish dies in the winter -- which they always do -- all those nutrients that were locked up in the radish will enter the topsoil and that creates for a really good forage,
more high-quality soil with better tilth and better nutrients and better water relations. Pasture land in Vermont is often found on a hillside or on other land that’s not always accessible to tractors and equipment ... not to mention that any machinery increases soil compaction. For this study ... Jamison and Choiniere have come up with a “handy” solution to both of these problems. Jamison: “The idea is that we want this to be cost-effective and available on lands that are maybe too rocky or too steep for tractors and so we’re doing what’s called broadcast seeding where you literally just take it and you throw the seed around somewhat evenly, hopefully, and the radish grows where it grows and you do that year after year after year and eventually we expect there to be a pretty big difference in the soil. We’re trying to apply some pretty high-tech science to a solution that is really simple and accessible to most farmers in the area. Choiniere plans to graze this pasture at least once more before it’s time to bring the cows in for the winter. Which brings us back to the beginning ... Jamison: “So it’s been about two months and we’re back at Guy’s farm looking at some forage radishes. These radishes were actually grazed a little over a month ago so this is mostly regrowth and as you can see they’ve gotten pretty big despite the fact that they were grazed. I guess we’ll take a look. See how deep it really went. Hopefully I can pull this baby out. Alright, here’s what the radish looks like you can see it’s about maybe a good 6 to 8 inches of it were actually underground and the thought is that this is going to decompose and it’s going to add that organic matter into the topsoil and that a lot of the nutrients that were collected from down here at the bottom are going to be brought up to the top where they can decompose. So, the radish will die after a couple of frosts in the fall and then it decomposes and it will create this area of really rich soil and it won’t be a hole it will fill in so it will just be loose, rich, nutrient-rich, organic-matter-rich soil that will allow for water to infiltrate the soil a little better and it will hopefully facilitate better grass growth the next year. The idea of using radishes to increase production and improve soil quality was a new idea for Choiniere, but he’s happy with the results and to have another way to manage his business. Choiniere: “I was happy to try the tillage radishes because it did add a tool to my toolbox and there are places on the farm that I can’t manage with equipment or any other way so the biological method is worth having here on the farm, living on mainly a riverbank, it’s a great place for me to try the tillage radishes to see if I can address the compaction and the fertility using those. Who would have thought a tillage radish would improve your farm, it’s definitely something to think about if you’re in the farming business.
Who knew that ‘having the radish’ could be so good. In Highgate, I’m Keith Silva with Across the Fence.

Determining “how” and “why” a certain plant will grow and thrive takes time – and that’s why some research projects are done over the course of several years. That’s the approach that researchers with University of Vermont Extension are taking when it comes to growing hops.

The Vermont Hops Project is using a three-quarter acre site in Alburgh to investigate the viability of growing hops in Vermont and the Northeast. 99-percent of hops production worldwide is used in the production of beer:

It’s a flower; and the part that is of the most important would be the lupulin which is on the inside, it’s right next to the stem that’s where all the essential oils and alpha acids are … that’s beer, right there.”

Madden: “Hops are really exciting, we know they can be grown here, they were grown here a hundred, a hundred-and-fifty years ago, but we don’t know how to grow them today with today’s varieties. You can plant them in your backyard, I’ve got some in my backyard they look great, but when you start growing them on an acre basis it’s a very different ballgame. And so figuring out how to fertilize properly so you’re not fertilizing too much so that the pests come and destroy them or you’re wasting your money on fertilizer, or figuring out how to fertilize them enough to maximize your yields, that’s one of the big things that we’re really focusing on. We have a variety trial, and so we’re looking at what varieties do grow well here, already we can tell several varieties just don’t thrive, they get hit by disease, they get hit by potato leaf hoppers, they get hit by eastern comma butterflies, there’s been a lot of problems we’ve discovered, but some are definitely doing much much better.”

Alden Harwood// Harwood Farm – Addison, VT: “I’ve never been big on niche markets, but I don’t really consider hops to be a niche market. I think it’s more of the local movement and the bigger breweries, they’re not interested in the people around here, but the smaller brewers are saying, ‘yeah, you bring me something I like it, I’ll buy it right off the back of you truck. I see the whole local food movement has really taken off”

Mark Magiera//The Bobcat Café: “the best comes from everywhere and you know the American ideal is we can make the ‘best stuff,’ Vermonter’s can make the best stuff given the opportunity to bring a product to market it will be tapped. I love to say it’s the field of dreams if you build it they will come, perhaps, when the craft brewing industry made its resurgence 30 years ago 40 years ago now people were going like, oh, craft brewing what are you doing, they’re were innovators who basically said if they build it they will come and
the industry has grown quite a bit so small towns like Bristol can have a brew pub once again it’s great.”
The next step for the Vermont Hops Project is to get a small-scale hop harvester up and running.

[Judy] Collaboration is a key aspect of any kind of research. The UVM Morgan Horse Farm in Weybridge draws not only Vermont researchers, but those from around the country. Keith Silva tells us more:

Nichol Schultz VO: “yeah see its sugar! It’s better than dewormer.”

The University of Vermont’s Morgan Horse Farm is collaborating with the University of Minnesota on a study to determine the causes of equine metabolic syndrome.

Nichol Schultz, DVM//University of Minnesota: “metabolic syndrome in horses is characterized by a few different things and one of them being poor insulin sensitivity sort of like a diabetic-like state in humans. Another thing being obesity … and then the most devastating consequence of metabolic syndrome is a condition called laminitis which is a very painful condition in the front of the hooves typically which can be very crippling and many times it affects a lot of horses several are even euthanized because of it.”

The UVM Morgan Horse Farm was chosen for this national research study because of its reputation in the equine industry.

Schultz: “For the study we really need a large number of horses, both normal horses and horses suspected of EMS, so we’re really fortunate to have this opportunity to come here and visit the University of Vermont Morgan horse farm where they have a nice established breeding farm where we can find some nice quality Morgan’s who will hopefully serve as really good controls and baseline horses for this study.”

Steve Davis VO: “Morgans are very easy keepers and they’ve been brought up that way since 1789.”

Steve Davis is the director of the UVM Morgan Horse Farm ... a job he’s held for twenty-five years. Davis's experience has led him to believe that diseases like EMS are due to ‘lifestyle’ changes in horses and in their owners.

Steve Davis/UVM Morgan Horse Farm: “My feeling is most horses don’t do enough work. I think it’s more of an issue of the equine’s place in society and
as companion animals today and they don’t do enough, they need to do more and they need to be feed less just like you and I. [laughs]”

A blood sample is taken an hour after the glucose was administered. The blood is analyzed to determine what role genetics play in horses that develop metabolic syndrome.

Schultz: “If we’re able to find genetic markers for metabolic syndrome and then we’re able to develop a test, you know, where we can know ahead of time whether or not this horse might be pre-disposed to developing it. Well then a horse that does test positive could, you know, we could be managing them a little bit differently to prevent the economic consequences of dealing with things like laminitis.

Schultz’s research is on-going, but it’s already showing that eating less and exercising more makes perfect ‘horse sense’.

[Judy] Thank you, Keith ... and thank you for joining us. That’s our program for today. I’m Judy Simpson ... I’ll see you again next time on Across the Fence.

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