



STATION NEWS

New York State Agricultural Experiment Station, Geneva, New York

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June 20 - July 4, 2008

BRIEFS

Change In Network Service

On June 1 the Station transitioned to a faster network service. Users should see a 30-fold increase in connection speed to internet resources: nominally, transmission rates will increase from 3Mbs-1 to 100Mbs-1. Further upgrades to the campus network over the next few months will eventually increase speeds by another factor of 10.

One detail of the change involves routing all internet traffic through Cornell-Ithaca and this will generate increased traffic charges for most users. Cornell charges a base \$2.50 per month for 5GB leaving or entering the Cornell network¹. Every MB over the 5GB will be charged \$0.0015. These charges will be included on the monthly bill that is sent to the departments. Be aware that internet radio, telephone, music, movies, web-cams, and hijacked computers will accrue these charges and supervisors should monitor acceptability of these activities.

This complex project has been in progress for about a year and I want to thank Ron Pool, Mark Casasanta (Geneva Computer Center), and Ed Kiefer (CIT Assistant Director, Network & Voice Engineering) and his staff for their efforts.

J. Barnard

New Member of ASC

The ASC is pleased to announce that we have hired a new Transaction Specialist, Michelle (Shelly) Cowles. Shelly comes to the Station with 10 plus years of work experience at Cornell.

Shelly's job responsibilities will include; purchases with the ASC over \$500 per card, external invoicing for faculty/programs,

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An Apple That Tastes Like Berries And One That Doesn't Brown— The Time Is Ripe

Mention an apple and most people will immediately associate the word with a crisp, juicy, sweet-tart red fruit. But ask Cornell fruit geneticist Susan Brown about apples, and she'll share visions of deep red flesh or skin patterned like feathers on a bird's back, of flavors like anise, berries or roses. She'll talk of apples loaded with cancer-preventive antioxidants or as much vitamin C as an orange, that don't brown when cut or go soft in storage.



Susan Brown with one of her new columnar apple trees.

At the New York State Agricultural Experiment Station in Geneva, N.Y., these apples already exist, and new possibilities—whether exotic, delicious, kind of weird or just plain awful (think gasoline, nail-polish remover or soap)—are literally endless.

Apples are as infinitely variable as the number of seeds they produce the world over, and planting a seed will never produce a tree just like the one it came from. Though a tree confers the same qualities on all the apples it bears, the five to 10 seeds inside each apple are all unique offspring.

The only way to replicate a desirable apple is to graft a cutting from the tree that produced it onto some sturdy rootstock, explains Brown, the Herman M. Cohn Professor of Horticultural Sciences. The trees that yield the varieties popular with consumers are all clones of solitary originals that, in the old days at least, probably grew by chance in a cider orchard or wilderness.

Though chance and intuition will always play a role in the birth of some great apples, creating superior new varieties that will catch on with consumers involves a heavy dose of science.

The apple-breeding program at NYSAES dates back 125 years and has reaped 63 cultivars, including Empire, Macoun, Jonagold and Cortland.

"When I came into the program in 1990, I realized that a lot of our varieties were based on McIntosh or Empire because they are ideally suited to our location," Brown says. But she was concerned about the lack of genetic diversity in commercial apples. "I have really sought to save traits that I think will add to our knowledge of genes and

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(BRIEFS, continued)

cash handling, and internal billing assistance to the support units.

Shelly began work on Monday, June 16; her standard work hours are M-Th. 8am-5pm and Fri. 8am-4pm.

Please stop over and welcome Shelly to the Station!

Kim Moyer

Traminette Wine Tasting Results

Below are the results of voting in the June 6th informal comparative Traminette tasting which was hosted by the Lee Library. Votes were tallied based on a point system (votes for 1st place were worth 3 points, for 2nd were worth 2 and for 3rd were worth 1). The top three were:

16 points: Rooster Hill, Semi-Dry

13 points: Arbor Hill Grapery & Winery, Dry

10 points: Benmarl-Seneca Lake, Off-Dry

Thanks to everyone who participated and a special thanks to Bruce Reisch for his insightful overview and also a special thanks to our volunteers who helped make the event a success!

Mike Fordon

Organic Farm Days ay CU

The Cornell Organic Working Group is sponsoring two organic Farm days. The first, Outwit Weeds! (Grain crop edition), will be held July 14, 4-7 pm, at Cornell's Musgrave Farm, Aurora, NY. Sharpen your weed management skills through hands-on exercises, demos, and discussions based on the Organic Cropping Systems project's long-term grain crop experiment. Learn to identify weeds at the seedling stage, to time cultivations and adjust cultivation equipment to maximize weed control, and to estimate weed density and its impact on crop performance. See ridge-tillage and cultivation equipment demonstrated. Best practices for integrated weed management will also be discussed. The farm is 35 miles north of Cornell's Ithaca campus, in the southern

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(APPLES, continued)

how they can be deployed. The rootstock breeding program also does this."

Brown arrived at Cornell just as revolutionary advances in molecular genetic technology were sparking the College of Agriculture and Life Sciences-led Genomics Initiative, now known as the New Life Sciences Initiative.

"In 1990 there were probably only 28 families of genes," Brown recalls. "A family of genes would be, for example, several genes for scab resistance. We didn't have a lot that we could use to make more efficient what was admittedly a long, expensive process. But now we have genetic markers that we can use. I can show you a small seedling and tell you whether that little seedling, when it grows up, is going to have red or yellow fruit, or have a gene for disease resistance or not. I can get scab resistance without any problem at all."

Brown also hopes to make the apple business more profitable for the state's 674 growers. She works closely with New York stakeholders, both to find out what improvements they would like to see in apples and to have their help with grower trials of promising new varieties. "We have fruit in grower trials pretty much all throughout New York," she says. She also works to create trees that not only produce well but successfully resist multiple insect pests and pathogens, and do it all while beautifully enhancing a variety of landscapes.

Apple trees, it turns out, don't have to look like a trunk with upward, out-spreading branches. Brown has fruit-bearing trees that are perfectly columnar, others that weep and some crosses of these types that are both columnar and weeping. Her favorite type looks like a bush, with dense, upward-thrusting branches of uniform length. "All the branches stop at almost the same point," she notes. "We spend a lot of time pruning trees, trying to bring them down so that growers can get in there with ladders." She even has one that is only a foot high and already bearing fruit.

With so much of the apple's enormous potential yet to explore, she and her colleagues are excited about beefing up Cornell's tree-fruit genomics program with three new genomicists, the first of which will be an expert in the genetics of tree architecture.

"Our goal is to establish a center in tree fruit genomics," she says. "We have the USDA germplasm repository, with more than 2,000 accessions of apple, my breeding program, the rootstock breeding program, and the USDA grape group in the next building is a center of excellence in grape genomics," she says. In addition, "Every year we harvest at least 10,000 seeds. We have 33 acres of seedlings, which is a huge amount, and we have to evaluate them for many characteristics. We're one of the largest programs in the world."

Another goal for Brown is to create an apple that can convert a new generation of children to eating fruit. She got an idea about what might work when she put crabapples in her kids' lunches as a joke and they came home raving about how good they were. "Kids like more fully flavored apples with higher acidity—that's how Granny Smith became popular," she says. "My goal is not to get kids to eat crabapples but to develop large varieties that are really powerful. I want to make apples that are really desirable to the younger market, because if they don't eat them now, then they're never going to eat them."

And if they don't eat them, there's no end to what they'll be missing.

J. Griffith

Were it offered to my choice, I should have no objection to a repetition of the same life from its beginning, only asking the advantages authors have in a second edition to correct some faults in the first.

—Albert Einstein



(BRIEFS, continued)

portion of Cayuga County, in the township of Ledyard, on the Poplar Ridge road two miles east of Aurora and Cayuga Lake. For further information, contact Elizabeth Dyck. (607-895-6913).

The second event, Cornell Organic Research Farm Field Day, will be held August 18, 4-7 PM.

Explore soil quality and reduced-tillage strategies. Sample improved varieties and learn about plant breeding. Discuss whole systems demonstrations and the farms that inspired them! Come to Cornell University's Freeville Organic Research Farm in Freeville, NY for this Twilight Event. This is an opportunity to discuss issues in organic agriculture ranging from seed saving to compost use to weed management and rotations. Meet with the researchers and farmers for an evening of demonstrations, collaboration and networking.

For further information, contact Melissa Madden (607) 351-3313, mam233@cornell.edu, or visit <http://www.organic.cornell.edu/>

For directions visit- <http://www.hort.cornell.edu/organicfarm/about.html>

(NEW STUDY, continued)

Other Cornell researchers involved in the study include Elizabeth Earle and Jun Cao from the Department of Plant Breeding and Genetics and Jian-Zhou Zhao and Hilda Collins from the Department of Entomology. The work was supported by a grant from the USAID Program for Biosafety Systems.

Marissa Fessenden



Check It Out!

Visit The New York Wines web-site calender for all the latest happenings at New York State Wineries.

www.newyorkwines.org/winecountry/fingerlakes/calendar.asp

New Study Shows That Transgenic Plants Don't Hurt Beneficial Bugs

Genetically modified (GM) plants that use Bt (*Bacillus thuringiensis*), a common soil bacterium, to kill pests won't harm the pests' natural enemies, according to new research by Cornell entomologists.

That is welcome news for ecologists and farmers in the debate over GM plants. Much of the debate surrounding the use of GM crops focuses on their effect on organisms that aren't pests.

The research showed that GM plants expressing Bt insecticidal proteins are not toxic to a parasite that lives inside the caterpillar of the diamondback moth, a devastating worldwide vegetable pest. It was published in the May 27 issue of the online scientific journal *PLoS One*.

"The conservation of parasites is important for enhancing natural biocontrol that will help suppress pest populations as well as reduce the potential for the pest insects to develop resistance to the Bt," explained Anthony Shelton, Cornell professor of entomology at the New York State Agricultural Experiment Station in Geneva, N.Y., who conducted the study with postdoctoral associate Mao Chen. "Our studies make it clear that Bt plants are a win-win situation to control pest insects and to enhance biocontrol and biodiversity."

The Bt bacterium, which is not harmful to humans, has been used for decades as a leaf spray and since 1996, in GM plants, a method that has proven much more effective and is now more widely used. Both uses are approved by the U.S. Environmental Protection Agency. In 2007, Bt corn and cotton plants were grown in 22 countries on 104 million acres, according to Shelton.

"Few studies have examined the effect of Bt plants on parasites of caterpillars, but some of them have reported negative impacts," said Chen, noting that the new research suggests that those negative findings were likely due to testing methods.

To separate out the effect of insecticides and Bt proteins on the caterpillar and parasite, the Cornell researchers isolated and bred strains of caterpillars that were resistant to Bt or a conventional or organic insecticide. Then the caterpillars were parasitized with a wasp that kills the caterpillar in nature.

The resistant caterpillars were then either fed GM plants expressing the Bt protein or non-GM plants sprayed with the Bt protein, conventional insecticides or organic insecticides.

The parasitized caterpillars that ate plants treated with conventional and organic insecticides to which they were resistant, survived and developed into moths because the parasite was killed by the insecticide the caterpillar ingested. However, when the caterpillar fed on the Bt-sprayed plants or Bt plants, the parasite was not affected and killed its host caterpillar, demonstrating that Bt plants are not toxic to the parasite.

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Larva of the diamondback moth, a devastating worldwide vegetable pest. Inset: The parasitic wasp *Diadegma insulare*, that kills the diamondback caterpillar. Note: The two insects pictured here are not to scale.



CALENDAR of EVENTS JUNE 20 - JULY 4, 2008

MEETINGS

CHAIR'S MEETING

Date: Tuesday, July 1, 2008
Time: 8:30 AM
Place: Director's office

LTC

Date: Thursday, June 26, 2008
Time: 9 - 11 AM
Place: LTC
Title: Photoshop Series Part II
Instructor: Jane Irwin, Geneva

CLASSIFIEDS

FOR SALE: Glass-topped table and 5 chairs for porch/deck, \$20; queen mattress and box spring set, FREE. Contact Tony at ams5@cornell.edu.

APARTMENT FOR RENT: 2 bedroom, suitable for one or two adults, with living, dining, bath, dressing room, kitchen, & laundry room. Off-street parking. \$675 per month plus gas and electric. Landlord pays water, sewer, and trash removal. NO PETS, No smokers. Available now. Contact Donna Loeb at x2325 or drr2.

FOR SALE: Ford Escort TLX '97, 55,000 miles, auto, AC, PW, PL., 4 doors. Two owners, keyless entry, very good condition. Asking \$2500. Contact Mei at my256, x2414, or 315-719-7259.

FOR SALE: 28" cut 8 hp Snapper Hi-Vac mower in good condition for \$250; and the other is an older Troybilt Horse tiller, 6 hp for \$400; in good shape. Contact Holly at hlw7 or x2420.

SHORT TERM HOUSING NEEDED: Two adults and grandson: Arrive around August 1 for three weeks. Prefer two bedrooms, furnished. Contact Kathy at kad2 or x2236.

WANTED: Yarn, ribbon and fancy trim scraps. All colors. Also, old junk jewelry, beads and charms. Contact Donna at x2492 or dmb62.



The thirteenth edition of Bike & Walk Week took place June 2-6. Many employees biked or walked to work again this year and were treated each morning to a hearty breakfast at the Pavilion behind Jordan Hall (Left) Chef Jim Ballerstein cooked French toast and sausages on this particular morning. (Right) Allison Waldron, daughter of Keith Waldron and Jennifer Grant, draws a name for a door prize - door prizes were given out each day during the week.



Staff from Cornell's Arecibo Observatory in Puerto Rico toured the Station on Tuesday June 9. One of the stops on the tour was the V&B Lab where Chris Gerling talked about Cornell's enology and viticulture efforts. Marc Smith, Leo Dominguez, Paul Robbins, and Olga Padilla-Zakour also spoke to the group.