

CORNELL  
UNIVERSITY

## STATION NEWS

GENEVA  
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## BRIEFS

An updated Campus Map is enclosed in this issue. For additional copies, contact Communications Services, x248.

## STATION NEWS UPDATE

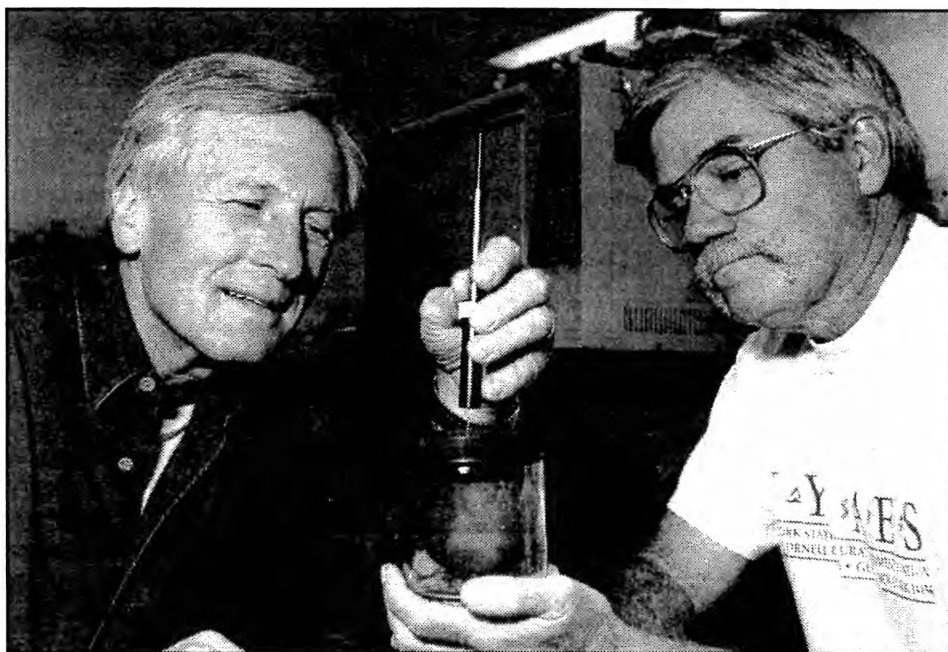
With this issue, Pat Blakeslee completes her tour of duty as interim editor of *Station News*. Please send items for *News* to Sandy Antinelli (sja2) until further notice.

ENGLISH AS A SECOND  
LANGUAGE CLASS OFFERED

A course on English as a Second Language (ESL) will be taught at the Station again this year free of charge. Finger Lakes Community College (FLCC) has scheduled ESL on Mondays and Thursdays from 6:30 - 9:30 p.m. in the Sawdust Cafe through December 20. Janet Alden will be the instructor for the fall semester. There will no class held on Thursday, November 25, Thanksgiving Day. If you have any questions contact FLCC at 716-394-3500, x431, or attend the next class and talk with Janet Alden.

JIM ABBOTT AND BILL  
AREHART ARE ON THE MEND

Jim Abbott, head of the carpenter shop at B & P, will be out of commission for at least 6-8 weeks, recovering from a torn achilles tendon. Greenhouse worker Bill Arehart is also on the mend from injuries incurred during a fall a few weeks ago. He will return to work on Monday. Ed Bailey and the rest of the B & P team will cover the bases during Jim's absence. Please join us in wishing Jim and Bill speedy recoveries.

MOTHS, BEETLES, AND COCKROACHES  
MAKE ROOM FOR MAGGOTS

Wendall Roelofs (l) and Charlie Linn (r) use SPME to absorb volatiles from an apple.

For the last 20 years, European corn borers, scarab beetles, and German cockroaches had the run of the insectary, the electroantennogram, and the wind tunnel at Geneva. But, a \$1.6 million grant from the National Science Foundation (NSF) has made room for maggot flies.

Charlie Linn and Wendell Roelofs received a grant to study how populations of the pesky apple maggot, *Rhagoletis pomonella*, shifted from one host plant to another to become a separate species. The entomologists will collaborate with Stuart Berlocher of the University of Illinois and Jeffrey Feder of Notre Dame on the five-year, interdisciplinary project.

"The grant is one of the first to be funded by the NSF under a new initiative that seeks to stimulate collaborative research in environmental biology," says Roelofs. "Over the last two decades, our lab has developed key technologies that make it possible for us to apply this kind of research to other species of insects, and we are excited to do so."

## The NSF Initiative

The NSF initiative is designed to meet a growing need for larger integrated research projects that address major issues across the fields of ecology and evolution. Environmental biology includes the fields of systemic biology, population biology, ecology, ecosystem studies, ecological and evolutionary physiology, and animal behavior.

"Aspects of our project fall into all the fields the NSF is interested in with this new initiative," says Charles Linn, the senior research associate on the project whom Roelofs credits for tapping into the five-year "Mother Lode" from the NSF. "The biology of the *R.*

(NSF, continued on page 2)

# Laptop Comfort and Safety Tips

Today, many computer users have turned to convenient portable laptops as either an adjunct to their work stations, or as an alternative to a desk top computer. Just as desktop computers have specific guidelines and recommendations for safe and healthy use, so do laptops. The following is a list of things to consider and try to promote and ensure comfort when using them.

- Set up the laptop keyboard with elbows level with or slightly higher than the keyboard (elbows at approximately 90 degrees).
- Try using a chair without arm rests.
- Plug in your regular keyboard and monitor to your lap top, if possible.
- Avoid resting on the wrist rest areas while typing. Try using whole hand and arm movements to navigate around the keys.
- As the touch on lap tops are often lighter, and the key bed is shallow, be especially careful not to pound on the keys.
- If your laptop has a glide point that is difficult to move, try plugging in an external mouse, and / or try using key commands instead.
- When looking down at the screen, be careful not to bend your neck and head forward to see. Try tucking in your chin to look down, keeping your head and neck more or less balanced over the spine.

## Laptop Travel Tips

- When traveling, make sure to set yourself up as ergonomically as possible. If you are in a hotel, conference room, or any other facility, don't settle for resting your laptop on a desk, table, counter, or surface that is high or far from reach.
  - Use a pillow, pad or even folded towels, to raise your chair high enough so that your elbows are level or slightly higher than the keyboard.
  - Ask if the hotel has a docking station for

(LAPTOPS, continued on page 3)

(NSF, cont.'d)

*pomonella* fly makes them ideal for research on the ecology of speciation. We hope to use them to help answer questions in ecology, behavior and genetics," says Linn.

The NSF recognizes that insects are model systems for higher orders of animals, including humans. Solving questions of insect behavior may help shed light on larger questions of evolution that plague biologists.

The research has applied implications as well. *R. pomonella* is a major pest of apples, and related species attack cherries, blueberries, walnuts, green peppers, tomatoes, and several other crops. By deploying the tools of molecular genetics, the collaborators hope to understand exactly how flies of one species spread to different host plants and why domesticated plants are attacked—research that could have important consequences for designing effective pest management schemes for these related maggot species.

## Technology Is Key

"Dr. Stuart Berlocher and Jeffrey Feder have been working on the *Rhagoletis* flies for many years trying to determine the genetics of host plant shifts, but have been stymied because they could not assess hybrid flies for their behavioral responses to host odors," says Roelofs. "When we developed the techniques to identify key volatiles and to study the behavior of flies to the various volatiles, the whole project became possible. The NSF has recognized that we need all of our research labs working together to go to the next level on this research."

Roelofs and his associates have devoted 30 years to unraveling the secrets of insect communication and it is this track record that helped them secure the prestigious NSF grant. They have documented that sex mating behavior between male and females is chemically linked to odors known as sex pheromones, and determined how male insects receive the blend. In current research involving antennal lobe transplantation in European corn borers, they are studying how insect behavior is mediated in the central nervous system, and how the behavior is genetically and hormonally controlled.

Several technologies developed and refined at Geneva will be used to achieve the goals of the NSF grant. Several techniques for identifying host odors or volatiles were combined and applied to insects by Aijun Zhang and Roelofs using Solid Phase Micro Extraction (SPME), Gas Chromatography (GC), and Electroantennogram Detection (EAD). In the SPME phase, a tiny needle is used to absorb volatiles from the fruit, and inject them directly into the gas chromatograph, without contamination by solvents, at the concentration the flies encounter in the field. Using an antenna from the insect itself as a detection device (EAD), the researchers determine which fruit chemicals or volatiles trigger the insect's response. Using a flight tunnel he developed, Linn then tests the adult insect response to the volatiles of specific host plants. Throughout the entire process, larvae and adults are gathered in the field. Subsequent generations are reared in growth chambers called insectaries, where diet and environment are very closely controlled by Harvey Reissig's research group. The Barton Lab insectary is the insect equivalent of the Bronx zoo.

Under the NSF grant, further work will involve hybridization studies to cross flies and test the behavior of subsequent generations. Populations with a given set of mating behaviors will be sent to Illinois and Notre Dame where researchers will use advanced molecular mapping techniques called quantitative trait loci (QTL) to determine which genes control host plant specificity and where those genes are located in the chromosome.

Roelofs, who is the Liberty Hyde Bailey Professor of Biochemistry, is one of the principal figures in the field of insect biochemistry. His identification and synthesis of a series of sex pheromones from the Oriental fruit moth, the redbanded leafroller, and the European corn borer, together with the novel approach of using electroantennogram (EAG) bioassays, led to the development of the biocontrol of insects as an alternative to pesticides. For this work, he received the prestigious Wolf Prize for Agriculture in 1982.

But Roelofs is as humble as he is competitive on a tennis court and team-oriented in the lab. "I am like the 'coach' of our research team. The real players are the academicians and technicians who are doing the work in the laboratory," he says.

L. McCandless



## WORKING IN THE TRENCHES

Technicians have taken to the trenches in agricultural research at the Experiment Station in Geneva.

Rixana Petzoldt and Cindy Huftalen, who both work for Gary Harman, professor in the Horticulture Sciences and Plant Pathology departments, have done a study on the effect of the biological fungicide, *Trichoderma harzianum*, on field corn and discovered that T-22-treated seeds substantially increase sub-soil surface rooting.

T-22 was developed in Harman's lab in the 1980s using protoplast fusion. It is the active ingredient in several products that are manufactured and sold nationally and internationally by BioWorks, Inc. here in Geneva. The product are registered with the U.S. Environmental Protection Agency as a biological fungicide.

This summer, Petzoldt and Huftalen determined the ability of T-22 to increase sub-surface rooting. T-22 Planter Box was used to treat corn seed in the study. T-22 colonizes the roots of the corn plant over the entire root length for the life of at least annual crops and enhances root development and growth. However, its ability to increase sub-surface roots had not been known.

In early September, after the corn was mature, trenches were cut using a backhoe and grids were created by strings so the numbers of roots intersecting the soil profile could be enumerated. Petzoldt and Huftalen placed map pins at the site of root intersection, and photographer Joe Ogrodnik photographed each square so marked, and the numbers of pin heads in each square were counted.

The results of the study were conclusive. The number of roots in the upper 25 cm of soil was similar to the control plots for this tall (6 ft. tall) corn, but, in depths from 26 to 75 cm below the soil surface, there were about twice as many roots on corn plants that grew from T-22-treated seeds as without.

This greater deep rooting (in younger plants, an improvement in surface rooting can also be seen) has some important advantages for corn and other crops. Growers, especially in Ohio, noticed that wheat and corn treated with T-22 had greater tolerance to drought conditions than corn without T-22.

Last year, Harman, Petzoldt and Huftalen determined that T-22 very substantially increases nitrogen fertilizer use efficiency; among other findings it appears that the total amount of N fertilizer can be reduced by 30 to 50 lb/acre in the presence of T-22 without reducing yields. If this is so, T-22 can reduce farmers' costs and also provide a method of reducing contamination of water supplies by nitrate.

For farmers who use manure as a nitrogen source, excess phosphorus that can be washed from soil into water is becoming a substantial concern. Since manure is frequently added to provide optimal nitrogen fertilizer, the quantity of manure may be reduced and the level of phosphorus contamination reduced. In addition, the enhanced root development also appears to confer an advantage to plants grown in compacted soils.

D. Chicoine and J. Zakour



Rixana Petzoldt (left) and Cindy Huftalen (right) mark soil-root intersections as part of a study by Gary Harman's team to determine the effect of T-22 treatments on sub-surface rooting in corn.

(LAPTOPS, continued)

laptops. If not, ask if there are computer workstations for desktops.

■ If you can't find a surface low enough, or a chair high enough, then your lap is always an option.

- Sit so that your knees and hips are level. This will allow the laptop to rest comfortably on your lap.

- Again, be careful with your neck. Look down at the screen by tucking your chin in as opposed to bending your entire neck down, as this can cause strain and fatigue to the neck and shoulder area.

■ If you elect to place your computer on the food tray, and it is too high to achieve comfort, try raising your seat height by folding one or two blankets under you. If that doesn't work, you may be better off using your lap.

■ Laptops are often heavy, which means you should avoid carrying them with a handle. Try carrying them on your shoulder with a padded shoulder strap. Alternate shoulders when carrying.

■ Pace yourself. Take frequent breaks. Stand up and stretch. If you feel any strains or pains, stop what you are doing and experiment with different positions.

*These tips were adapted from Guidelines For Laptop Computer Users, by Vivienne Griffin, and Norman J. Kahan, M.D., distributed via e-mail by Soon Kong.*

### SAVE THE DAY

## Station Book Sale and Craft Fair

*Saturday, November 13  
10 a.m. - 3 p.m.*

*Jordan Hall Auditorium*

## CALENDAR of EVENTS

SEPTEMBER 24 - OCTOBER 1, 1999

### LTC

Thursday, September 30, 9:30-11:00 a.m.  
ADW, Section A

### CLASSIFIED

**FOR SALE:** 1987 Honda Civic, 4-door sedan with 96K miles, standard transmission, stereo cassette. In good running condition. \$1,000 or best offer. Contact Joy at 539-6067 or 789-4703.

**FOR SALE:** The following items must be sold; prices negotiable: 1991 Dodge Monaco \$2,000 or best offer. New tires and brakes, 113 k miles. Road bike 10-speed - \$45. Bike rack for car - \$30 Contact Roger at x366

**MISSING A GARAGE SALE?** This Saturday, Sept. 25, rain or shine, come to a garage sale at 73 Hillcrest Ave. (between North Street School and Castle St.), from 9:00 a.m. to 4:00 p.m. Items for sale include: tv, vcr, microwave, stereo system, tools, battery charger, floor lamps, vacuum cleaners, tcheck violin, fax machine, telephones, bikes, furniture, toys, hardware, miscellany. Also, lots of free stuff. Don't miss it! Tel. 789-9844.

**FOR SALE:** 1986 Chevrolet Nova, 5 speed, 4 door sedan. Good condition. Has been well maintained and is ready to go. \$700. E-mail geh11 or call 946-6491.

**FOR SALE:** Exciting! Special Wolfsburg edition VW convertible. Pampered. No rust. Leather, AC, power steering, cruise control, alloy wheels, 1986 model, 94,000 miles. \$3,990. 1990 Pontiac minivan. Lots of space, 7 individual seats, very comfortable, front wheel drive, V6, air conditioning, No rust, excellent condition, 92,000 miles, factory recall engine replaced at 55,000 miles. \$6,900 Please contact Jan or Thomas Henick-Kling (781-7011 or x277 or th12@cornell.edu).

**WANTED:** The GHS Band Booster Organization is in need of a computer and printer. If you have any surplus equipment, in good working condition, that you would consider donating to the organization, it would be greatly appreciated. Contact Judy at x 202.

## BOOK/CRAFT SALE APPRENTICE(S) NEEDED

Mary Lou Dumbleton is looking for an able apprentice (or two) to assist with coordination of this year's Book/Craft Sale on November 13 in preparation for taking charge of the sale next year. After several years in the position, Mary Lou is ready to pass this responsibility on to another willing volunteer. For more information, contact Mary Lou at mld2@nysaes.cornell.edu or 585-9836.

## GRAPE BREEDERS GATHER IN GENEVA



Grape breeders are a devoted and hardy bunch. Over 40 of them braved Hurricane Floyd to cluster in Geneva last week for the two-day North American Grape Breeders Conference.

"It was one of the best attended meetings of this group ever," said organizer Bruce Reisch, professor of grape breeding and genetics.

The group meets every two years in either the United States or Canada to discuss progress in grapevine breeding and related projects in genetics and taxonomy. Participants came from as far away as Korea, Germany, Switzerland, Spain, and Israel, as well as New York, California, Florida, Minnesota, Virginia, and Louisiana.

"Participants were treated to a dozen different oral presentations on studies such as disease resistance in grapes, new grape varieties, ecology of beneficial mites, grape growing in Europe, grape taxonomy, enology, the USDA grape germplasm collections, and insights discovered by private grape growers and researchers. In short, we discussed the whole gamut of grape activities taking place in both the U.S. and in five foreign countries," said Warren Lamboy, director of the USDA-ARS Plant Genetics Resources Unit.

Participants reported much progress in breeding for cold hardy, disease-resistant hybrid varieties of both wine and table grapes. New varieties from California were introduced along with other potential varieties from New York and Ontario. One of the new interspecific hybrids from Germany is now planted there on over 250 hectares. Others reported on crosses between muscadine grapes and bunch grapes and some unexpected successes in this hard-to-make cross between 40 and 38 chromosome species.

Participants from New York, California and Germany presented progress reports on the development of transgenic grapevines and genomic maps of grapevines.

"There was a great deal of discussion about international acceptance of genetically modified organisms (GMOs)," said Reisch. Nomenclature of transgenic grapevines is currently on the agenda for European organizations and there was much discussion on the implications of various outcomes for the development of improved forms of elite cultivars.

There was also an excellent discussion of grape importation and plant quarantines, which provided the grape curators with new ideas for approaching these issues.

Probably the single most important aspect of the meeting was the opportunity to meet simultaneously with a large number of grape breeders and researchers from across North America who represented academia as well as industry and private breeding facilities.

Valentin Blattner, a grape breeder from Switzerland, said, "I have already made many exchanges of ideas with my colleagues at the conference." He was interested in learning how the various grape varieties behaved in a different country under different climatic conditions. "Many disease problems are the same in the U.S. as they are in Switzerland," he said.

L. McCandless