Plant Science Says

July, 2001

Follow the Grain
"The European Union Markets"
by Jackie Kennedy

Nottingham and Sherwood Forest are words that help conjure up illusions of Robin Hood, Maid Marion, and Little John - characters that may have entered our imaginations during the recent "Follow the Grain" trip to London, England, and Paris, France. MSU Professor Vincent Smith, Ag Econ., and Deborah Habernicht, Manager of the Cereal Quality lab, spear-headed a group of sixteen individuals, including myself, on an international learning tour which explored the European Union Markets. The trip concluded the "Follow the Grain" class offered by MSU in conjunction with the tribal colleges of Fort Peck Community and Dull Knife Memorial to educate students by exposing them to the cultural and business aspects of the world markets.

Departing early on May 18, 2001, for Minneapolis, Minnesota, to visit the Minneapolis Grain Exchange was the first stop on our itinerary. An exciting afternoon was spent at the grain exchange learning about it's history, touring the building, and interacting with several interesting individuals. Helen Pound, a broker employed by Goldenber, Hehmeyer and Company (a small grain firm located within the Minneapolis Grain Exchange Building) guided us through several mock trade exchanges. We learned that approximately three to four thousand contracts, mostly spring wheat, are traded daily at the Minneapolis Grain Exchange. Watching the exchange boards as well as being a mock broker was fun and exciting, but I don't think I'll quit my job at the MSU Cereal Quality Lab to [illegible] a broker (a job not for the faint of heart!). Mark R[illegible]nd from General Mills and Mike Mastel, a grain merchant for Mayco Export, topped off the Minneapolis adventure with their unique insights into the grain industries.

LA BASILIQUE DU SACRE-CŒUR

Our second stop was Paris! While flying into Charles DeGaulle Airport outside of Paris, I couldn't help but notice how contained the boundaries of the towns appeared. It was impressive to see no urban sprawl, only a definite division between town and the rural areas. I thought it was great! Since there are approximately ten million people living in Paris, I learned how precious space was. With such high populations in Europe, farmland is well guarded from expansion by city limits. Mother nature provides high precipitation, and that coupled with good farming practices allows high yielding crops on the hectares farmed in France.

Stephen Marette , a senior economist from the French Institute of Agronomy Research (INRA) was our host during the Parisian stay. He arranged for our group to meet with people representing the French university system (INAPG),the Institute of Agronomy Research (INRA), the French Ministry of Agriculture, the Offices National Interprofessional des Cereales, and a very successful milling operation - Grands Moulins de Paris in Gennevilliers. The French views against GMO's as well as their thoughts on agricultural policies and the World Trade Organization were engaging.

The Louvre, Notre Dame, the Tour Eifel were just a few of the many sights our group visited while on a walking tour of about 10 miles the last day spent in Paris. Blisters were not uncommon. Everyone felt those blisters were well worth the concurred as we marveled at the beauty and history surrounding us.

Our third stop and entrance into England was made aboard the Eurostar train via the channel from Paris. The countryside was picturesque. No urban sprawl was apparent and space seemed at a premium in England here also. I found it interesting that the government doesn't have power over the land like we often see exercised in America. Eminent domain or the condemning of land for varied usage is almost nonexistent in England. The farmers or landowners have retained a strong, powerful hold on the use of their lands.

While in England, we also met with many diverse and interesting professionals such as those individuals at the National Farmers Union and the Home Grown Cereals Authority. We visited the American Embassy, Grosvenor Square, London, where the U.S. Agricultural Attache, Tom Hamby, briefed us on U.K. agriculture. We partook of the touristy sights too.

Hoof and mouth disease curtailed almost all of the activities that were planed outside London. We were fortunate enough, to spend one day visiting the University of Nottingham, and having lunch with a successful farmer, Tonly Strawson, at a local pub. During this outing, we were made aware that concerns such as disease, environmental issues, development of new cropping methods and profitability are universal. The English and French have varied approaches and views on GMO's, world trade, and numerous other issues.

We were the recipients of wonderful hospitality by both the French and English peoples. Our group enjoyed what each country had to offer, and we still cherish some very good memories. Traveling home to America. The consensus amongst us was that we had a greater appreciation for our own country, especially where we are blessed to live. As Montanans, we love our wide-open spaces and our way of life!

Italy by Nina Zidack

From June 9-16, Nina Zidack, Alice Pilgeram, and Dave Sands immersed themselves in the issues surrounding enhancement and biosafety of biological control organisms at a NATO Advanced Research Workshop, which was held near Florence, Italy. The Bozeman crew presented their work on virulence enhancement of biological weed control agents and interacted with 50 other scientists whose research interests ranged from horizontal gene transfer to biological control of rabbits with genetically modified viruses. As the meeting progressed, the Bozeman crew fell into their respective roles - Alice, the scribe, faithfully documenting all of the scientists claims and discussions; Nina, quizzing people on the practicality of their projects; and Dave, challenging people to think "outside the box" as well as acting as the self-appointed poet laureate. After the conference, Dave and Alice adjourned to a Tuscan Villa to relax with the Sands clan. Nina took a train to visit Carlotta Balconi who is visiting her family in Vimercate, a village north of Milan. Nina had a great time with Carlotta's family and was awed

Carlotta Balconi (Sherwood Lab) outside her home in Italy

by their 700-year-old house, which has been in the family for 400 years.

Lab of the Month - Seed Lab (710 LJH) - Neal Foster

The Seed Laboratory has three functions. First, we provide service testing for seedsmen; second, regulatory services for departments of agriculture and third, support for seed related problems to the university.

With service testing we provide the services necessary for labeling of seed, determining pure seed, inert matter, other crop seed and weed seed along with germination and viability percentages. These services are provided for over 800 customers throughout the United States and Canada. By providing this information the owner can determine if the seed can be sold but also establish a value for that seed lot. Our customers range from small individuals (farmers and ranchers), seed companies (small family owned businesses to international companies), state agencies (Montana Seed Growers Association and Wyoming Seed Certification), and federal agencies (Bureau of Land Management and the Forest Service).

Regulatory services are provided to the Montana and Wyoming Departments of Agriculture. Each department has inspectors who visit businesses where seed is being sold or a complaint has been registered. The inspectors will pull samples and then submit them to the Seed Laboratory along with a copy of the seed tag. Once the Seed Lab receives these samples, they are analyzed and results are compared (the labeled information and the second results). If the results are within tolerance, no further action is taken. If the results are out of tolerance a stop sale can be issued and the seed is relabeled. The DOA's take a variety of samples, anywhere from lawn seed and vegetables, to small grains, to hay cubes. Hay cubes samples are normally taken from outfitters and checked for noxious weed seeds to prevent national and state forest contamination.

Support services are provided to university and extension faculty. These services range from identifying seeds from soil samples to determining kernel characteristics of new varieties. Other information we provide helps in determining why a field was not established due to poor seed quality or other factors.

The Seed Laboratory currently employs seven permanent staff and up to fourteen students during the school year. Each seed analyst is encouraged to obtain either their Registered Seed Technologist or Certified Seed Analyst certificate. These certificates are obtained through a combination of college courses, specialized seed schools and hands on training, followed by a national exam. These certificates provide professional recognition for the individual as well as the laboratory.

The main testing services provided by the Seed Laboratory are purity, noxious weed seed content, germination and viability (tetrazolium – TZ). The purity consists of pure seed, inert matter, other crop seed and common weed seed. A specific amount of seed is analyzed and separated into these categories, weighed and the percentages reported. A larger portion of the sample is checked for noxious weed seed. The type of noxious weed seed will vary depending on the region where the seed is to be sold. We perform several types of noxious weed seed exams, Montana (only Montana noxious weeds) western states (only noxious weeds from the Mississippi River west) all states (the 48 contiguous states) and for Canada or other foreign countries. Germination tests determine the number of normal seedlings that can be expected to establish under optimum field conditions. Viability testing is normally a TZ test. This test can rapidly determine the viability of a seed lot which is important when dealing with seed lots with high dormancy (most reclamation species).

The number of samples tested seems to be increasing yearly. This is a result of better seed law enforcement, state seed industry growth and an increase in out of state seed samples. Approximately 45% of our business comes from places other than Montana.

Currently there are over three hundred different species tested by the Seed Laboratory. Anything from alfalfa, cereals and dry beans to saltbush, monkey flower and desert peach. The major area of growth has been in reclamation species. Some of the reclamation species are extremely difficult to test and a relatively small sample may take several days for the analyst to sort through.

Horticulture Position Search Update
by Kirstin Golga

As many of you know from my recent e-mail assaults, we are interviewing three candidates for Assistant/Associate Professor of Horticulture to fill the vacancy left by Steve Keeley.

The first candidate, Dr. Tina Cade, was here on June 11 & 12. She is an Assistant Professor at Illinois State University. Her doctorate was obtained from Texas A&M University in 1997, and her master's and bachelor's degrees are both from Kansas State University. Tina's research seminar on June 11 was called "Measuring the Benefits of Urban Green Spaces: Opportunities for Montana State University," and her teaching seminar on June 12 was "Color: An Element of Floral Design."

The second candidate, Dr. Stanley Myers, was here on June 21 & 22. He was an Assistant Professor at Arkansas State University. His doctorate was obtained from Cornell University in 1979 and his master's and bachelor's degrees are both from Texas State University. Stan's research seminar on June 21 was called "To Have or Not to Have...In a Public Garden," and his teaching seminar on June 22 was "Landscape Installation Method: How & Why."

The third candidate, Dr. Douglas Findley, will be here on the oh-so-convenient dates of July 5 & 6. He is an Assistant Professor at Auburn University. His doctorate was obtained at Colorado State University in 1999, and his master's and bachelor's degrees are both from Auburn University. Doug's research seminar will be on July 5 and is called "Cold Hardiness of Selected Southeastern Landscape Plants," and his teaching seminar on July 6 is "Color in the Landscape." Unlike the last two seminars, Doug's will be held in 108 ABS.

We have had a great turn-out for the first two candidates' seminars, and all vacation plans considered, I am knocking on wood that the third candidate will get the same treatment. The amount of cooperation I have received from the department so far has been wonderful. I'd like to thank you all very much for your participation in this search, especially if you are not a horticultural professor. It makes a difference to get everyone's opinions because after all, we'll be stuck with whomever we c[illegible] (ha ha)! So again, thank you all for your participation, comments, etc. Hopefully, the Search Committee will come to a decision soon, and the next newsletter will contain a bio of our new horticulture professor!

Update on accounting position

The announcement has been posted for the position of accountant. We should be interviewing by the middle of July and hopefully someone will be in place by the the first of August. That does mean that for the last 2 weeks of July there will not be an accountant. As always, Kody (3544) will be available to try to answer any basic accounting questions.

Growing Tips by Bob Gough

Do Lichens kill trees?

Lichens do not kill trees. These living things, actually a symbiotic relationship of an alga and a fungus, live in complete harmony as green coatings on the trunk and branches of trees, as well as on rocks and other materials. The alga elaborates food through photosynthesis for itself and the fungus, and the fungus in turn provides protection and some minerals to the alga. Lichens are parasites and are more unsightly than injurious, although in certain cases where they are extensive they may interfere with gas exchange over the parts they cover. They are extremely sensitive to sulfur dioxide and so you will seldom see them on trees in industrial areas. They rarely develop on rapidly growing trees because new bark is constantly formed before the lichens can grow over the surface. Therefore, a thick covering of lichens can indicate a tree in declining health although no research has been done to confirm this idea.

If the lichens really offend you, spray the infested parts of the tree with Bordeaux mix. Otherwise, leave them alone and be thankful you have clean air.

If you have a question you would like to see answered in Dr. Gough's column, please email the question to decker@montana.edu.

Water-Conserving Landscaping Involves More Than Plant Selection - Dick Pohl

Drought is just an exaggeration of what Montanans see most years -- dry conditions. But every time we have a severe drought, "people become more interested in alternatives to a turfgrass yard, says Dick Pohl, Montana State University's landscape architect. "Turfgrass is the most water-intensive landscape you can have," adds Pohl, who teaches in MSU's Plant Sciences and Plant Pathology Department as well as designing campus landscapes. He has had an interest in native plants and designing drought-tolerant landscaping for many years.

Drought-tolerant landscape design is more formally called "xeriscaping," from the word "xeric" that means adapted to an extremely dry habitat. Such landscaping can dramatically cut water use in a yard, but many people focus only on selecting drought-tolerant plants.

"You can accomplish more in terms of reducing water usage if you start a bit more broadly," says Pohl.

Part of that beginning is making sure that you make available the water that flows nearby, including catching available rain runoff, terracing or grading to reduce runoff and adding organic matter to the soil so it can hold more water. As you select sites for plants, consider how the slope of your land will channel water to your moisture-loving plants. At MSU, sections Pohl has designed include areas fed by water running from parking lots. A home approach could use the water dispersed from down-spouts or funneled from a walkway. It doesn't take a ditch to funnel water. A slight lowering of the ground compared to the surrounding area is enough to give run-off a specific direction.

"Adding organic matter is one of the most frequently missed options, and it's very important," says Pohl. Soil with higher organic matter holds more water. Both sand and clay soils have l[illegible]rganic matter. A good organic soil is so important for e[illegible]t water storage that people building a new home on a site with poor soil should consider amending the soil with compost or other organic matter at the outset. It's a lot easier for the builder or landscaper to plow organic matter into the soil than it will be for you to take a shovel or tiller to it later.

Whatever your soil is like, make sure you use the organic matter you grow. A mulching mower and organic fertilizers can help. Watering properly to degrade the mulch and feed a healthy organic cycle is another necessary step.

In selecting plants, remember that low-mowed turf grass requires more water than any other landscape, says Pohl. But selecting plants isn't a simple or isolated part of the process.

"When people decide to change some of their landscape from turf grass, often they think that simply selecting plants labeled 'native' to Montana is all they have to do. But we have water-loving plants in Montana, too. You need to look at what kind of environment the plant comes from before making a choice."

If you decide to use some plants with low water needs and others with greater water needs, group them accordingly: dry tolerant plants together and water loving plants together, watering each section according to its needs.

A[illegible]nsider how shade minimizes evaporation, says Pohl. Just as plants shaded by a large tree may require less water, so taller grasses shade the ground more than shorter grasses. Setting your mower to a higher cutting length can help grass use less water.

Planting some areas in bunch grasses and letting them grow without mowing can add a variety of textures and colors to the yard while minimizing water use. Among the warm season bunch grasses native to Montana are buffalograss, blue grama grass and sheep fescue. For flower, vegetable and shrubbery beds, be sure to mulch heavily to reduce water loss through evaporation.

When you do water, use the more efficient low-volume watering devices, like soakers and drip irrigation systems.

"Propelling water up into the air wastes about 75 percent of it, depending on how windy it is," says Pohl.

In landscaping to conserve water, people should also consider some non-native species.

"There are many non-native plants that are very desirable for use in low water consuming landscapes," says Pohl. "Plants such as Russian olive, sea-buckthorn and several species of ju[illegible] that come to us from Asia are not only very drought tolerant but are also salt tolerant where problem soils may create difficult growing conditions. Natives help to perpetuate the local conditions, but new introductions from other parts of the world can claim an important role in conserving water."

In some cases, companies that specialize in agricultural crop seeds also have access to native species that are used to revegetate disturbed landscapes like roadside and power-line corridors.

Farewell to Sarah

After working in this department for 8 years as the accountant, Sarah has taken a position at Washington State University in Pullman Washington as the Area Finance and Administrative Officer. Her last day with us will be around July 12. We are going to miss Sarah greatly and wish her all the best in this new venture.

Employee of the Month - David Baumbauer, PGC

I was born and raised in Fort Wayne, Indiana with a five year stint in Singapore thrown in. I received a BSF-Forest Management from Purdue University in 1982, and headed west to graduate school at University of Montana's School of Forestry. My thesis work looked at vegetative propagation techniques for Rocky Mountain Juniper and Creeping Juniper. These species are used for mine land reclamation in the Southeast Montana coal fields.

I met my wife Cathy (also a forester), at Purdue and we were married in 1983. Before moving to Bozeman we spent two seasons at Champion International's Rocky Mountain Timberland's nursery in Plains, MT. The nursery raised 2.5 million seedlings per year in two greenhouses and 15 acres of bare root beds. It was here that I received my certificate in "Jack of All Trades, Master of None".

I have been manager of the Plant Growth Center since 1987 and started teaching greenhouse management in 1993. The market gardening class was first offered in 1997. I feel very fortunate to have the opportunity to teach for the PSPP department and appreciate the PGC users' patience when I'm in the classroom and not in the office.

Cathy and I have two daughters. Sara is 9 and will be in the fifth grade and enjoys playing the piano, dance and swimming. Carol will be in second grade and loves all things concerning the outdoors.

Cathy and I have a small greenhouse business "Chef's Garden". We raise culinary herbs for the restaurant and garden center markets. We also have a booth at the Bozeman Farmers Market (starts July 7th).

Our family enjoys river running, hiking, camping and Nordic skiing. I like camp cooking, especially Dutch Oven and building wooden boats.

Graduate Student Focus - Arunrut Vanichanon (Yui)

My name is Yui for short. My husband, Panist Vanichanon, works as a computer programmer in Bangkok, Thailand. We have two children; Gunn is eight years old and Boze is 18 months old. Gunn really enjoys his life here. For Boze, I'm glad for having her here with me now. Songkhla, southern Thailand, is my hometown. It is located at sea level, and is hot and humid along with the seashore. Bozeman was chosen because I wanted to experience something different. This is the best choice I ever made because Bozeman is a gorgeous town and most people are nice, even though there are snowy days in June. I felt sorry for all the trees and hope they can recover soon. I have a teaching position at Thaksin University in my hometown. I work with wild wheat evolution with Dr. Luther Talbert, my major professor. I enjoy working in the lab because of the helpful people and excellent facility. I enjoyed teaching in plant biotechnology last spring with Dr. Mike Giroux and some other e[illegible] I learned a lot more and enjoyed students in the class. They all worked hard and were eager to learn something new. Thanks all of you that let me have today.

I enjoy winter here except winter activities such as skiing, ice-skating and etc. I prefer some activities in summer such as camping. I would rather someone else did the fishing then gave me fish for cooking and eating.

New Employees
Angie Solvie (303 ABS)

Angie Solvie is Dr. Weeden's personal secretary. She is working from 8-12 Monday through Friday in 303 ABS. Prior to coming here, Angie has worked in the Registrar's office, History and Philosophy, and the Center for Biolfilm Engineering. Angie and her husband Carl have 4 children. Angie's hobbies include quilting, scrapbooking, reading, photography and rubberstamping. She is really trying to learn how to garden!

Grants

Gary Strobel, "A Biorational Approach to Discover Novel Bioactive Molecules from Rainforest Endophytes, Novozymes.

Poetry by David Sands

NATO BIOCONTROL MEETINGS (Florence,Italy)

We few, we happy few,
Banded about a band or two
Of genes turned on
And others off,
Like stop and go lights
Flickering throughout a busy city,
And many a mile of C's and G's
Loaded with antisense and the opposite.
Our challenge is clear,
But only to us.
We best disguise ourselves as tourists.

SIENA

A banded zebra cathedral,
Barber pole in log scale.
I read you and your Popes,
Like so many bands on a gel,
Handed down a million generations,
Conservative relying on change,
And change nested in fidelity,
Alpha types and gentle women
In quiet love and war.

July Birthdays

Susie Couch	2
Katie Cash	3
Pat Hensleigh	5
Dan Bergey	7
Jack Riesselman	9
Thais Hulting	20
Eric Smidansky	20
Susan Siemsen	22
Petrea Hofer	28
Ray Ditterline	29

Recipes of the Month

Chicken Ginger stir fry by Yui Vanichanon

Chicken breast fillets (sliced)	4 breasts
Ginger cut into fine shreds	6 cm.
Garlic (smash)	3 cloves
Onion	½ cup
Spring onions (cut 1inch pieces)	3
Soy sauce	2 tablespoons

Brown Sugar 2 teaspoons
Vegetable oil 1 tablespoon
Oyster sauce (optional) 1 tablespoon

1. Heat oil in a wok.
2. Add garlic and ginger then stir-fly for 1 minute.
3. Add the chicken stir until cooked.
4. Add onion and the rest of ingredient stir thoroughly.
5. Cover and steam for 2 minute.
6. Serve immediately with steamed rice.
7. Enjoy this for dinner this summer.

Stuffed Zucchini flowers

Alice Pilgeram had these in Italy and said they are wonderful!

12 zucchini blossoms
10 oz. Ricotta Cheese
1 egg
½ cup freshly grated Parmesan cheese
3 T of chopped fresh parsley
salt and pepper
2 garlic cloves, minced
3 T finely chopped onion
2 cups canned tomatoes

Remove stamens from the flowers and gently wash. Place the ricotta in a sieve and let sit over a bowl in the refrigerator for 30 minutes or until all excess liquid has drained. In a bowl, combine the cheeses, egg, parsley and salt and pepper. Mix w sing a pastry bag, stuff the flowers.

In a medium sized skilled, heat the oil, garlic and onions. Cook for a few minutes and add the tomatoes. Season with salt and pepper and cook for 5 -10 minutes. Add the zucchini flowers and cook an additional 7 minutes. Serve warm with th e sauce.

Note: You could also bake these zucchini flowers in a 400 degree F. Oven for 15 minutes until golden brown and serve with the tomato sauce on the side.