Plant Science Says

May, 1999

Ongoing Departmental Searches
There are three searches currently being conducted within the Department: 1) Assistant/Associate Professor of Biochemistry, tenure track, screening begins July 1; 2)Assistant/Associate Professor of Horticulture, tenure track, screening begins July 15, and 3) Assistant Research Professor in Plant Genetics, working for Dr. Blake, non tenure track, deadline June 18.

Montana Wheat and Barley Grants
The following people have received grants from the Montana Wheat and Barley Committee:
Tom Blake - Developing Improved Barley Varieties for Montana
Phil Bruckner - Herbicide Resistant Winter Wheat for Downy Brome & Jointed Goatgrass
Optimization of Wheat End-use Quality for Noodle & Dual-purpose
Winter Wheat Breeding/Genetics
Enhanced Field Selection for Wheat Stem Sawfly Resistance
Mike Giroux - Selective Tests for Small Grain Quality
Deb Habernicht - Improved Quality of Montana Hard Red & Hard White Wheats
Jack Riesselman - Montana Ag Live
Luther Talbert - Spring Wheat Breeding & Genetics
Development of Superior Wheat for Montana by Genetic Transformation

Promotion and Tenure Committee
Congratulations to Rich Stout on being elected to the University Promotion and Tenure Committee. His 3 year term as an alternate will begin in September of this year.

Faculty Council
Congratulations to John Sherwood on being elected to a 3 year term on the Faculty Council. Mike Giroux is the alternate.

Gene Sharp Award
The E. L. "Gene" Sharp graduate student achievement award was given this year to Kanat Tiourebaev. Kanat recently completed his Ph. D. in plant pathology under the direction of David Sands. He studied the control of Cannabis by use of a pathogenic fungus, Fusarium oxysporum. He is returning to Kazakhstan where he has a position to work on the diseases of small grain cereals. The Sharp award is an endowed award that was established in 1988 by former and current faculty members to honor Gene Sharp upon his retirement after having served as the first department head of the former Plant Pathology Department from 1972-1987. The award is presented to the graduate student majoring in plant pathology who has made an outstanding contribution to the profession in the form of a thesis, poster, paper, presentation, patent, etc.

Kanat Tiourebaev also received the Walsh Olsen Fellowship Award. Senator Walsh made the initial endowment of $5000 in 1927. Two of the requirements for this award are creativity in research and worthy contribution to the industry of agriculture in Montana.

Congratulations to Kanat on receiving both of these awards. He and his family left to go back to Kazakhstan last Thursday. Hopefully Kanat will be returning sometime in the near future for a visit.

Crop Sciences Award
G. James Baley, a graduate student in the Plant Sciences Department, recently received the 1999 Gerald O. Mott Meritorious Graduate Student Award in Crop Science. This award is received by only 6 students and is presented by the Crop Science Society of America.

Montana Ag Live

This is the schedule for the remaining Spring broadcasts for Montana Ag Live:

May 9 - Gary Brester: Cattle Price Outlook
May 16 - Bob Gough: Rhubarb Bolting
May 23 - John Paterson: Beef Qaulity Assurance
June 6 - Bob Gough: Efficient Summer Watering Programs

Dr. Lavin's Argentina Trip

I traveled to Argentina during the latter half of March to study the genus Adesmia, which belongs to the legume plant family. The genus includes about 230 species endemic to the southern Andes, mostly in Chile and Argentina. They are very common along the east slope of the Andes as well as in Patagonia. The habit of the species of this genus range from trees and shrubs to perennial herbs, and are important forage species for native gazers (e.g., guanacos) as well as livestock. The habitat of all these species is any vegetation with at most an open tree canopy. I am helping an Argentine plant systematists, Emilio Ulibarri at the Darwinion Institute near Buenos Aires, with his systematic studies on this genus. At the same time, I am studying the DNA sequence diversity of Adesmia. By implementing a molecular clock on the DNA data gathered from this genus, as well as other related legume genera, it is possible to understand how long it took this genus to evolve in South America. The upshot of my studies is that the large diversity of tropical and subtropical legumes from South America appear to have evolved during a fairly short time period (1-10 million years) and stem from North American lineages that are much less speciose (presently) and that have been in existence for about the last 50 million years.

Lab of the Month - Cereal Quality Lab (106 LJH)
by Deb Habernicht

The Cereal Quality Laboratory (CQL) is comprised of eight talented team players: Jackie Kennedy and Harvey TeSlaa are full time Lab Technicians (see Employees of the Month), Petrea Hofer is a Research Associate; Seth Wright, Christie Weaver, Curt Foster and Nate TeSlaa are part-time undergraduate students; Debra Habernicht is the supporter, coach and cheerleader.

As our name suggests, we research the end-use quality of cereal grains. Emphasis is on flour milling and bread-baking traits of hard red and hard white wheats. In addition, the growing interest in the use of hard white wheat for the Asian noodle market has instituted noodle quality evaluation. Effects of various environmental and genetic factors are determined. The CQL is highly interactive with wheat breeders, field technicians, research center scientists, and others to insure that high quality wheats are released and recommended by the Montana Agricultural Experiment Station. Additionally, the CQL is valuable in assisting with the development of new markets for Montana wheats and other small grains. The Montana Wheat and Barley Committee invites international trade teams to the CQL to evaluate Montana wheats for bread and noodle quality. In addition to professionals touring the lab, the CQL also entertains organized tours of young students who want to gain an understanding of where bread comes from. The lab also serves Montana wheat growers by participating in two county fair milling and baking contests. Seminars are also given throughout the year to enhance the general public's understanding of the importance of end-use quality to the markets of Montana wheat.

Our concern is not that our products taste good; that is up to the commercial bakeries – which we are not. We are committed to following formulas and methods that are designed to evaluate the difference among wheat lines. In the 1998 crop year, we analyzed approximately 15,000 samples for whole grain protein content. Over 2,600 early generation lines were analyzed for protein and gluten strength. More than 1,500 samples were evaluated for milling and baking quality, about 400 of these samples were also evaluated for Asian noodle quality. In addition to our routine testing, we also work on research projects in cooperation with faculty in Plant Sciences and other departments. This year we are on the last year of a whole wheat vs. white bread project where we compared the genotypic response in white-flour and whole wheat-meal dough and bread baking evaluations over a range of genotypes. The objective was to assess genotypic variability and genotype x evaluation protocol interaction to determine if high quality genotypes could be identified for use in whole grain products using traditional quality evaluation protocols. An additional research project will attempt to define genotypes, on-farm management practices, and environmental factors critical for the production of high-quality hard white wheat for bread and noodle markets.

Funding for the CQL comes from the Montana Agricultural Experiment Station, grants from USDA Fund for Rural America and the Montana Wheat and Barley Committee.

Employees of the Month - Jackie Kennedy & Harvey TeSlaa (106 LJH)

The first thing Harvey and Jackie want everyone to know is that they are not married. Jackie was born in Sandpoint, Idaho. She has taken a variety of baking classes in her career as a baker. Her husband is a warehouse man at Empire Building Materials and they have 2 daughters. She is a grandmother to a 4 year old girl and a godmother to 4 other children.

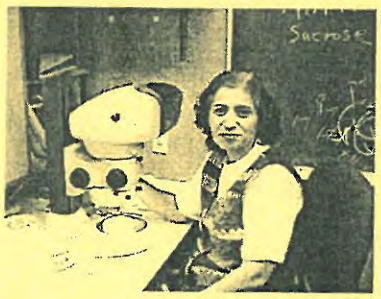
Harvey was born in South Dakota but grew up in Iowa. He went to vocational school in Mitchell, South Dakota in 1972 to learn to bake - 3 months of cake decorating, 3 months of cakes and cookies, and 3 months of breads. His wife is a teacher at Amsterdam school and they have 3 children with their youngest about to graduate from high school.

Harvey and Jackie began baking at Van's IGA in the mid 80's and were there approximately 14 years. They shared an interesting insight into how bakeries deal with older items. They pull stale items off the shelf (doughnuts, pies, bread, etc.) and grind them up. They are then used in formulas that require so many pounds of this ground up mixture to make cookies, cakes, cinnamon roll filling, etc. Bakeries have to recycle these older items or their losses are too great.

Jackie began work in the Cereal Quality Lab in 1995 and Harvey began in 1997. Harvey does not miss doing cakes and cookies; he just loves working with dough. Also, they both enjoy getting more of a complete picture of the grain to bread process. They feel they are giving something back to the state and the baking industry by testing the new varieties to see which yield the best results. Bread baking is done off and on throughout the year along with noodles and other specialty items. It is always great to see that cart with bread by 106! Jackie and Harvey have also been taking the Follow the Grain class. In this class they have seen how knowledgeable the producer has to be in order to be competitive in today's market. One producer checks the currency value every day. A good portion of producers are on the computer daily.

As far as their life outside Room 106, Harvey raises sheep and cattle. Jackie has horses, 8 house cats and loves to fish.

Visiting Scientists



In the framework of a continuous collaboration between MSU and AlAkhawayn University in Ifrane, Morocco, Dr. Mohamed Ettayebi (Ph.D. in Molecular & Cellular Biology-1986) from SUNY in Buffalo, NY) and Dr. Asmahan Haddad (Ph.D. in Immunology/Microbiology from SUNY in Buffalo, NY-1987) are visiting the Department of Plant Sciences for two semesters to work on the anticancer drug, taxol, in Dr. Strobel's laboratory. This visit is the result of a research collaboration initiated in September, 1996, and was preceded by a two month visit in the summer of 1997. The taxol project will serve as a model for future research to be carried out at AUI. Taxol is not the only important natural product that can be isolated from microorganisms. Many others are solicited for their use in industry, food, human health and environmental control. A natural resources research center at AUI is part of the university strategic plan. Because AUI plans to have an excellent position among the international research institutions, research collaboration with MSU is very valuable. Dr. M. Ettayebi and his wife, Dr. A. Haddad, are here with their three children Inas, Ilias and Soundous.

The search for alternative sources for Taxol is a major concern for many research groups and pharmaceutical firms. Ultimately, to lower the price of Taxol and make it more available, a fermentation process involving micro-organisms would be the most desirable means of supply. The discovery by Dr. Strobel's research team of endophytic fungi which adhere to the yew tree was the first demonstration that any organism other than Taxus could produce Taxol. However, the yield of Taxol and taxanes is still low.

One research direction to optimize taxol production from yew-associated filamentous fungi is based on genetic improvement and requires the establishment

of effective molecular genetic engineering tools. The first prerequisite is the ability to transform the microorganism with foreign genes. During the Summer 1997, Dr. M. Ettayebi participated in the transformation of a taxol producing fungus, a project directed by Dr. David Long. More molecular genetic experiments will be done during this visit to MSU. He is also involved in other projects in Dr. Gary Strobel's laboratory such us the search for new antifungal natural products and the biocontrol of Knapweed.

May Birthdays:

Bharat Bashyal	5
Mareike Johnston	22
Tom Blake	24
Gene Ford	29
Robert Johnston	29
Deanna Nash	31

Happy Birthday!