June 2006

Red River Valley Agricultural Research Center

RESEARCH NEWS FROM THE VALLEY

Red River Valley Agricultural Research Center
Fargo, ND & East Grand Forks, MN

Inside this issue:

From the Director

With the arrival of June here in The Valley, the Red River is back within its banks, farmers are completing their hectic planting season, and city-folk are sprucing-up their landscaping and getting their gardens in. Things are looking greener every day!

The months since our November 2005 "Research News From The Valley" have passed very quickly for me as I continue to encounter all manner of folks with connections to Red River Valley Agricultural Research Center, from NDSU administrators and scientists, to representatives from the remarkable breath of commodity interests that we serve, to retirees who are justifiably proud of their contributions and connections to the Center. Although I still have much to learn, I continue to be impressed with the cooperation at all levels between agriculture commodity groups, NDSU, and the Center staff. I would also like to acknowledge the Center's excellent Research Leader Team and dedicated Center Administrative Staff, all of whom I have come to rely on during the past 11 months. Please be assured that I will continue to work hard to contribute to the collective momentum that is so evident here. Thanks to all of you who have demonstrated remarkable patience with my many questions!

In this issue of the "Research News From The Valley," we highlight activities from the Red River Valley Agricultural Research Center's six research units. This includes recent examples of the worldwide recognition that Center staff continue to receive. Of special note is the Northern Plains Potato Grower's Association Meritorious Service Award given to Marty Glynn, of the Center's East Grand Forks Potato Research Worksite (PRW), in recognition of the outstanding career-long contributions of Marty and his PRW research team. You will also see from the short Center-wide updates within that while working hard to improve an impressive array of crop varieties for farmers, we also remain "on alert" to identify and address new challenges that are so much a part of production agriculture.

Because of the dedicated outreach efforts of Center staff, you very likely have had a chance to visit with a number of us at commodity-specific producer meetings and public forums like the "Marketplace for Entrepreneurs," the "Marketplace for Kids," and regional programs in support of improving science awareness in youth. I have been impressed with the enthusiasm and creativity that Center staff devote to assisting dedicated primary and secondary school teachers charged with nurturing the next generation of scientific and engineering professionals.

As always, if you have any questions about anything that you see in this research update, please don't hesitate to contact me or any of the Center staff directly. We work very hard to be sure that we produce relevant research of the highest quality.

Thank you for your interest and support of our diversified programs here at the Center and please accept my best wishes for a safe and productive summer season!

Bill Kemp
Center Director



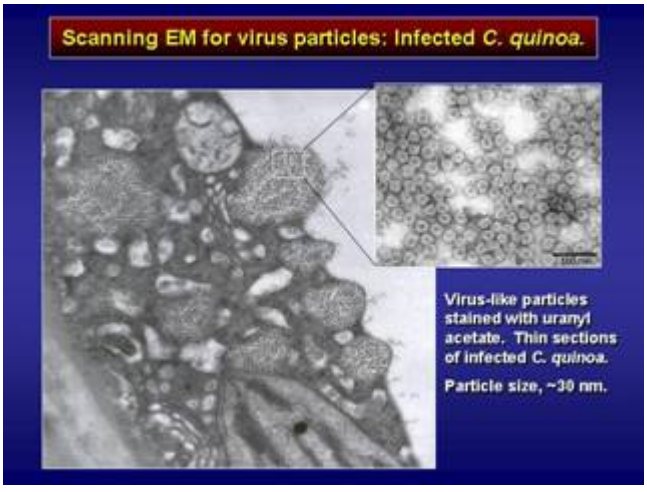

PASS IT ON!!!!

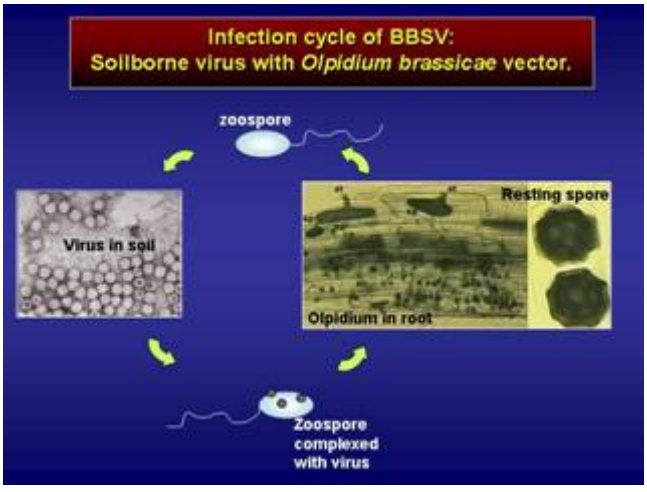
Feel free to pass on this issue of *Research News from the Valley* to others interested in agricultural research in the Northern Plains Area. To be added to our mailing list contact Alicia Thompson by phone (701-239-1370), fax (701-239-1395), or e-mail (thompsoa@fargo.ars.usda.gov).

New Sugarbeet Virus Identified in U.S.

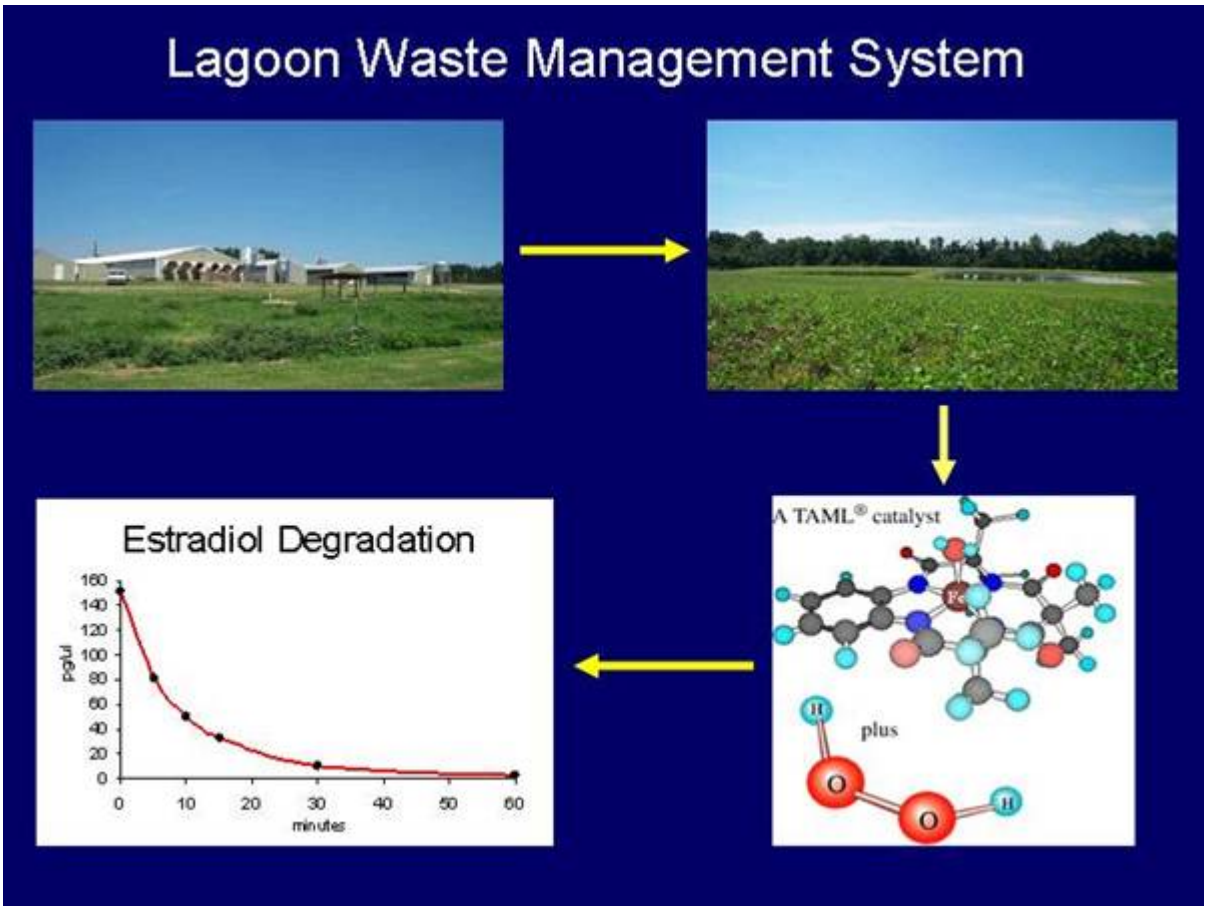
Successful sugarbeet production depends on the rapid diagnosis and management of diseases during the growing season. The identification of emerging disease threats is critical to developing effective management strategies to prevent or mitigate crop loss. Rhizomania (crazy root) disease is a major cause of reduced yield and sugar content in sugarbeet. Rhizomania can be found in all sugarbeet growing regions of the U.S. and Europe. Until recently, beet necrotic yellow vein virus (BNYVV) was considered to be the sole pathogen responsible for this disease. In the summer of 2005, beet samples displaying classic Rhizomania symptoms were collected in Colorado. Initial tests in the laboratory of Dr. John Weiland indicated that the disease on these samples was not consistent with BNYVV infection. In a collaborative effort involving the laboratories of Drs. Weiland and Edwards (Cereals Unit), further tests conclusively demonstrated the presence of beet black scorch virus (BBSV), a virus previously unknown in North America but prevalent in China. Research is underway to determine if BBSV can induce Rhizomania-like symptoms and to identify the route(s) of infection.

For more information, contact Dr. Jeffrey C. Suttle, Research Leader, Sugarbeet & Potato Research Unit, at suttlej@fargo.ars.usda.gov





Use of Green Chemistry for Removal of Estrogenic Compounds from Agricultural Wastewater



Hormonal activity in livestock waste and treated wastewater effluents is important because of intense livestock production in the U.S. Environmental concerns have been triggered by potential contamination of ground and surface water with hormones from animal waste. Therefore, a collaborative effort among Carnegie Mellon's Green Institute of Oxidative Chemistry and ARS units in Florence, SC and Fargo, ND was initiated to investigate means of destroying hormonal activity.

Nancy Shappell, a Research Physiologist with the Animal Metabolism–Agricultural Chemicals Research Unit in Fargo, has found a novel compound from the Carnegie Mellon Green Institute which is an effective activator (catalyst) of hydrogen peroxide used to destroy estrogenic compounds. The compound is from a class referred to as TAML® (TetraAmido Macrocyclic Ligands) activators. These TAML®s have been found to be environmentally friendly and effective in catalyzing degradation of unrelated compounds such as industrial dyes. Potential applications include treatment of beef, dairy, swine, and municipal wastewater to remove estrogenic compounds. Recent acquisition of a state of the art Liquid Chromatography Quadrupole-Time of Flight mass spectrometer (made possible by customer support) was integral to this research. For more information on TAML® see the March 2006 issue of Scientific American.

For more information, contact
Dr. Gerald L. Larsen, Research Leader,
Animal Metabolism & Agricultural Chemicals Research Unit,
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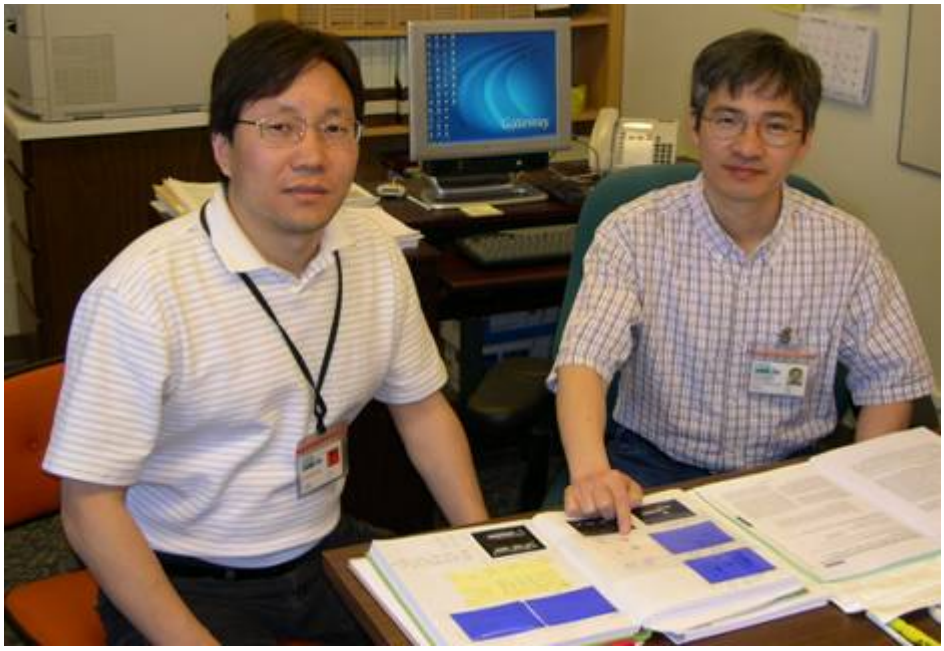
Leafy Spurge Research Funded by Competitive Grant Nears Completion



Drs. Wun Chao (USDA-ARS) and Ying Jia (NDSU) reviewing subtractive hybridization and gene expression data in laboratory notebook.

Dr. Wun Chao, a Research Molecular Geneticist in Plant Science Research, was awarded a USDA-National Research Initiative Competitive Grant in 2003 to identify dormancy-related genes from leafy spurge. At the time, our unit was initiating the development of an expressed sequence tag database (ESTs) and microarrays, but development of these tools was a long-term undertaking. This award was timely because it provided an early opportunity to explore the leafy spurge genome for bud dormancy-related genes, while we developed microarrays. The technique used by Dr. Chao is call subtractive hybridization. It is capable of detecting the expression of multiple genes in dormant and growing crown and root buds of leafy spurge. In addition, the technique is particularly suited for detecting genes with low copy number, i.e., few messenger RNA per cell, something that can not be accomplished with microarrays. Dr. Chao and his collaborators at North Dakota State University (NDSU) and the USDA-ARS, Albany, CA recently completed the project.

The team identified 516 unique partial gene sequences from a forward and a reverse subtracted cDNA library. The libraries were enriched for differentially-expressed genes present in growing and dormant sample of leafy spurge. Their differential expression has been confirmed and quantified by another technique called Reverse Transcription-Polymerase Chain Reaction. A comprehensive paper on this research is being published in the journal *Plant Molecular Biology*. Currently, Dr. Chao is examining the role of selected genes to answer questions on the molecular mechanisms during dormancy and growth of leafy spurge crown buds. These cDNA libraries and differentially expressed genes are important resources for further research by Dr. Chao and unit members on dormancy and vegetative reproduction in leafy spurge.

Dr. Chao is also conducting physiological, cytology, and biochemical research to determine the effects of growth regulators (sucrose, auxin, gibberellic acid, etc.), seasonal and environmental changes, and cell cycle activity on the arrest and growth of leafy spurge buds. Additionally, Dr. Chao and his collaborators at NDSU are developing a transformation system for leafy spurge and Canada thistle to test the function of cloned genes *in planta*. The lack of transformation systems for weeds is a major impediment to progress in characterizing the role of dormancy-related genes and genes for other physiological phenomena.

For more information, contact
Dr. Michael E. Foley, Research Leader
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Dr. James V. Anderson, Research Chemist
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Plant Science Research Unit

A Research Tool for Wheat Genomics

Example of VIGS in wheat. Left to right: healthy leaf, virus-infected leaf, leaf with bleaching due to silencing of phytoene desaturase, and leaf with chlorosis due to silencing of subunit H of the magnesium-protoporphyrin chelatase complex.

Wheat is a major crop worldwide as well as here in the upper Midwest. In fact, wheat, rice, and maize account for more than 85% of the world's cereal production. Such strong global demand will continue to provide the impetus for developing new wheat varieties with improved disease resistance and grain quality. The use of new biotechnological approaches to facilitate incorporation of such desirable traits into wheat first requires careful characterization of genes and verification of their function. Such analyses can be facilitated by capitalizing on a phenomenon known as gene silencing.

Virus-induced gene silencing (VIGS) uses a viral-expressed transgene to trigger RNA silencing against an endogenous plant gene. In other words, a part of a plant gene is inserted into a virus that is then used to infect the plant. The plant responds to the virus infection with a process designed to suppress expression of the invading RNA sequence, with the result that expression of the endogenous gene is also suppressed. When a gene is silenced in this manner, one simply observes the plant for the associated phenotypic changes. Thus, VIGS can serve as a powerful tool for functional genomics by facilitating the screening processes needed to identify and characterize gene function.

Most VIGS vectors have only been available for dicot plants. For example, Potato virus X (PVX) and Tobacco rattle virus (TRV) have been commonly used for Solanaceous species and Pea early browning virus (PEBV) for legume species. When this work was begun, the only published example of the successful use of a VIGS vector in monocots was the use of Barley stripe mosaic virus (BSMV) in barley.

We recently determined that BSMV could serve as a useful VIGS vector in wheat as well. Although predominantly a barley pathogen, BSMV also occurs naturally in wheat. Yin-Shan Tai, molecular biologist in the Cereal Crops Research Unit, modified the genome of BSMV to facilitate insertion of a PCR product and to increase the efficiency of VIGS over that previously described. Tests with three different marker genes verified that the system works well in wheat. The system is now in use by several laboratories in addition to our own.

(This work was done in collaboration with Jennifer Bragg and Andy Jackson of the University of California at Berkeley.)

For more information, contact
Dr. Michael C. Edwards, Research Leader,
Cereal Crops Research Unit,
at edwardsm@fargo.ars.usda.gov

Sugarbeet Root Maggot - More Than a Pest

They say that every cloud has a silver lining. That may even hold true for the sugarbeet root maggot (*Tetanops myopaeformis*) (SBRM). SBRM is a major insect pest of sugarbeet in North America. Fifty-four percent of the sugar produced in the U.S. comes from sugarbeets and approximately two thirds of the national acreage devoted to sugarbeet production can be affected by SBRM. Localized losses dues to SBRM damage can vary from 40 to 100 percent if control measures fail or are not undertaken. So where is the silver in this plague-ridden cloud?

There are tens of thousands of strains of insects that are important to medical and basic researchers, and maintaining these strains costs millions. If there were a way to store these strains so that they were not continually being raised, the monies could be redirected into direct research. Constant rearing can also lead to detrimental inbreeding and, in some cases, to the total loss of strains that had cost tens of thousands of dollars to develop. Another group interested in the storage of large numbers of insects is commercial insectaries rearing beneficial insects used in biological control programs.

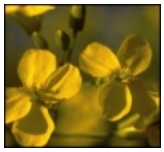
The silver in the SBRM is that the larval stage can survive more than five years in a refrigerator, and can also survive for months submerged under water at room temperatures. How are these insects able to do that? This is the question Dr. George Yocum (Research Physiologist, Insect Genetics and Biochemistry Research Unit), in collaboration with Dr. Mark Boetel and graduate student Anitha Chirumamilla (Department of Entomology, NDSU), is investigating. Answering this question may lead to improved storage strategies for many medically and agriculturally important insects.

A few of the insights developed in this investigation are 1) Some SBRM enter a prolonged diapause (dormancy) lasting 2 to 3 years; 2) SBRM do not need to be in diapause to survive years at low temperatures; 3) Fats are not used at a constant rate during storage; and 4) SBRM have a temperature-dependent switch in carbon dioxide production not known in other insects. Clearly we are realizing that SBRM is more than a pest, it is an untapped model organism for the study of low temperature storage of insects. Increasing our knowledge of the sugarbeet root maggot will be beneficial not only to sugarbeet producers but agricultural research as a whole.

For more information, contact
Dr. James S. Buckner, Research Leader,
Insect Genetics & Biochemistry Research Unit,
at bucknerj@fargo.ars.usda.gov

Dr. George Yocum and Anitha Chirumamilla changing a column on the Sable Systems respirometer used in oxygen/carbon dioxide respiration studies of larval sugarbeet root maggots.

National Sclerotinia Initiative






The ARS Sclerotinia Initiative annual meeting was held in Bloomington, MN on January 18-20, 2006 with approximately 85 individuals in attendance. Highlights of the meeting included an invited presentation entitled "Farmers Have More Choices Than Ever – What Will Affect Their Future Planting Decisions?" by Mike Krueger, The Money Farm, Fargo, ND and a guest lecture entitled "Biological Control and Epidemiology of Sclerotinia" by Dr. John Whipps, University of Warwick, United Kingdom. An Industry Panel also discussed "What's New in the Commercial Sector" which provided an update on technologies developed by participating Initiative scientists that are currently being used to assist growers manage this important disease. Finally, more than 30 research posters from meeting participants were displayed throughout the meeting.

The Initiative is currently in its fifth year and due to funding increases received in the FY2006 Agricultural Appropriations bill will be able to expand its research capacity through distribution of more than $1.5 million to cooperating scientists across the United States. For 2006 a total of 45 plans of work were submitted to the Initiative steering committee for funding consideration with 30 of those plans approved to receive some level of monetary support. The funded research to be conducted during the upcoming year will build upon the numerous important accomplishments previously developed. For example, during the past four years Initiative scientists have developed improved disease screening methods for canola, pea, lentil, dry bean, soybean, and sunflower to identify Sclerotinia resistance; released a soybean variety and germplasm with partial resistance to Sclerotinia stem rot; identified and released Sclerotinia resistant sunflower germplasm to commercial breeders for integration into new hybrids; identified six lentil cultivars and a breeding line with improved resistance to Sclerotinia; identified several canola cultivars with improved tolerance to Sclerotinia; expanded the use of a Sclerotinia risk map use for canola growers; and evaluated numerous biological and chemical fungicides for management of Sclerotinia.

Don't forget to check out the Sclerotinia Initiative website at: www.whitemoldresearch.com for additional information about this activity.

A PROGRAM OF THE

USDA ARS

Erratum

In the October 2005 "*Research News from the Valley*," there was a misprint in the article entitled "Sclerotinia Initiative FY2005 Progress Report." It should have read….

At present, no acceptable commercial snap bean cultivar resistant to white mold is available. To address this need a snap bean breeding line with some resistance to white mold, Cornell 501, was developed and released by a cooperating scientist at Cornell University. A multi-site test system was established and coordinated by the University of Nebraska and verified putative white mold resistance in the line.

Fargo ARS Pathologist Serves as USDA Collaborator on Program Fostering "Redirection" of Former Soviet Bioweapons Researchers

Scientists involved with the Sunflower/Phomopsis project funded by the U.S. State Department, pictured here at the VNIIMK Institute headquarters in Krasnodar, Russia are (L-R) Dr. Vladimir Ismailov, Dr. Tom Gulya, Dr. Nikolay Balbyshev, Dr. Tatyana Antonova, Dr. Ivan Beganov, Dr. Nikolay Bochkaryov, and Dr. Vasili Piven, taken during the September 2005 visit. The VNIIMK Institute was founded by the renowned Russian plant geneticist, Dr. Vasilii Pustovoit.

Dr. Tom Gulya, Research Pathologist with the Fargo Sunflower Research Unit, is serving as the USDA collaborator on a US-funded project with two research institutes in Krasnodar, Russia. This, and nine other approved projects, are administered by the USDA Office of International Research Programs (OIRP) with funds from the US State Department, and are tasked with the objective to "engage former Soviet bioweapons scientists in peaceful, agricultural research."

This project's main research goal is to explore the potential of biological control of Phomopsis stem canker, a serious disease of sunflower in Russia, Europe and the United States. Dr. Gulya is interacting with scientists at two premier scientific institutes: the All-Russian Research Institute for Biological Plant Protection (ARRIBPP), and its partner institute in the same city, the All-Russian Research Institute for Oilseed Crops (VNIIMK). While Phomopsis stem canker has become of lesser concern to US sunflower growers (as Sclerotinia has become more important), the biocontrol products the Russian scientists are developing may have an effect on several important sunflower pathogens.

Funds for the project will continue for three years, and it is the hope of the ARS Sunflower Unit that cooperation with one or both Russian institutes will continue afterwards. Dr. Gulya will conduct one annual site visit in each year of the project to review progress, and is accompanied by an NDSU research specialist, Dr. Nikolay Balbyshev, who is currently working with Dr. Gulya on Sclerotinia research.

Keynote Address to South African Plant Pathologists Given by USDA Plant Pathologist

Dr. Tom Gulya, Research Plant Pathologist with the Sunflower Research Unit, Northern Crop Science Laboratory, was invited to give the opening address at the 40th annual Congress of the Southern African Society of Plant Pathology, held January 22 to 25, 2006, in South Africa. Dr. Gulya presented a talk on integrated means of controlling Sclerotinia diseases, using sunflowers as his major example.

After the meeting, Dr. Gulya met with South African government (ARC, equivalent to USDA-ARS) pathologists to discuss collaborative research projects. While South Africa has a sizeable amount of sunflower production, there has not been a government-sponsored sunflower pathologist for over five years. Dr. Gulya was pleased to learn that letters he sent to South African ARC officials resulted in a decision to at least sponsor one or more graduate students to work on sunflower disease topics.

This was Dr. Gulya's fourth official visit to South Africa. Previous visits were sponsored by the USDA's Office of International Cooperation and Development. The USDA funded a joint research program in which South African scientists evaluated USDA sunflower germplasm to white rust, a disease indigenous to South Africa, but which currently is not found in the United States.

Dr. Gulya's reaction to his fourth visit: "I'm getting too old for these 22 hour plane rides!"

The plenary speakers at the 40th SASPP Congress in South Africa.

For more information, contact Dr. Brady A. Vick, Research Leader, Sunflower Research Unit, at vickb@fargo.ars.usda.gov

Potato Research Worksite Coordinator Receives Award

On February 14, Martin Glynn, Worksite Coordinator at the RRVARC East Grand Forks Potato Research Worksite received the Northern Plains Potato Grower's Association Meritorious Service Award. This award is presented at the association's annual meeting and banquet to individuals who have demonstrated 'tremendous leadership and made outstanding contributions to the potato industry'. Marty began his research career in potato postharvest technology in 1971 with North Dakota State University and joined ARS in 1998 as the worksite coordinator for the PRW.

For more information, contact
Dr. Jeffrey C. Suttle, Research Leader,
Sugarbeet & Potato Research Unit,
at suttlej@fargo.ars.usda.gov

WSSA Presents Fellow Award to Dr. Foley

27 February 2006

On February 13, 2006, at the 50th Annual Meeting of the Weed Science Society of America in New York City, Dr. Michael Foley was presented the Fellow Award. The Award recognizes substantial contributions in more than one of the following areas: (1) professional publications, (2) educational contributions other than publications, (3) development of improvement of weed science programs, practices, and products, (4) other professional contributions, (5) service to WSSA or regional conferences, and (6) service to the profession outside the society. A maximum of 0.25 percent of the active membership of WSSA may be elected to fellowship in one year.

I hope you will join with me and the Weed Science Society of America in congratulating Dr. Foley on his achievements.

~K. Neil Harker, Chair
WSSA Awards Committee

Dr. Hareland Participates at the 2005 ND Farm Bureau Annual Convention

Gary Hareland, Food Technologist, participated on a panel discussion at the North Dakota Farm Bureau Annual Convention held at Bismarck, ND, on November 19, 2005. Panel members discussed wheat and barley quality issues that impact price discounts and premiums on wheat that is sold. The topic of discussion was well-received and stimulated some difficult questions by the audience, which were mostly grain growers.

Dr. Gary A. Hareland
Research Food Technologist

Community Involvement

RRVARC Participates in Marketplace for Entrepreneurs

Marketplace for Entrepreneurs is co-sponsored annually by U.S. Senator Kent Conrad and ND Agricultural Commissioner Roger Johnson and was held in Fargo at the Fargodome January 17th and 18th.Our team consisted of Larry Charlet (SUN), Theresa Gross (SUN), Sharon Grugel (SUN), Cheryl Kimberlin (PLS), and George Yocum (IGB). Attendance on the day of our exhibit was 6823, so we were kept busy. Though it was a long day we enjoyed our many interactions with the people visiting our exhibit. The positive response to our research was encouraging.

Our exhibit consisted of Canada thistle, leafy spurge, loaves of experimental bread, mice, Colorado potato beetles, jars of various small grains, a sunflower insect collection and potato chip display. As always, handing out free bags of potato chips got people to our table, and once there most stayed to talk about our exhibit. The other two strong draws were the mice and the Canada thistle. With the mice we received two basic responses: “Oh how cute!” or “How disgusting!” The Canada thistle also elicited strong responses from the people visiting the exhibit, but no one thought it was cute. Senator Conrad stopped and visited with us and Dr. Yocum discussed with him the Q gene work being done at Fargo in the Cereal Science unit. Another memorable discussion we had was with Bob Crawford, a retired baker for the Fargo, ARS Wheat Quality Laboratory. He shared about his work with an ancient Egyptian strain of wheat.

For more information, contact Dr. William P. Kemp, Center Director at kempw@fargo.ars.usda.gov

Marketplace for entrepreneurs

Growing North Dakota from Within

www.MarketplaceOfIdeas.org

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Executive Director
411 Main Street West
Mandan, ND 58554-3164
701-663-0150 or 1-888-384-8410
Fax: 701-663-1032
marketplace@btinet.net

MARKETPLACE FOR ENTREPRENEURS/ MARKETPLACE FOR KIDS ORGANIZING SPONSORS

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Marketplace of Ideas/Marketplace for Kids, Inc. is a 501(c)3 Nonprofit Organization and Equal Opportunity Program.

The Marketplace for Kids program is funded, in part, through a grant from the US Department of Education Fund for the Improvement of Education.

February 15, 2006

Dr. William P. Kemp
Red River Valley Ag Research Service, ARS/USDA
1307 18th Street North
Fargo, ND 58105-5677

Dear William:

Thank you for your role in making Marketplace 2006 a resounding success. Moving Marketplace for Entrepreneurs to a new location is always a challenge; however, we are pleased to hear about the many valuable and memorable experiences participants have recounted about this year’s event in Fargo.

The seminars, workshops, tours, exhibits, concert, entertainment, inventions and featured speakers combined to demonstrate how truly vibrant and promising our life in North Dakota is. We were particularly encouraged by the participation of a large number of young people and impressed by the depth of information provided by presenters and exhibitors.

Each year we like Marketplace to be new and fresh--showing current and future opportunities. We sincerely appreciate your contribution toward accomplishing that goal in 2006. We welcome your comments and observations regarding future Marketplace activities. We hope you will keep in contact with us.

We are pleased to enclose a copy of the Marketplace program booklet and a CD containing the 2006 Resource Directory.

Again, thank you for your help in making Marketplace for Entrepreneurs so successful!

Sincerely,

KENT CONRAD
U.S. Senate

ROGER JOHNSON
Agriculture Commissioner

Marketplace for KIDS
Growing Young Entrepreneurs!
www.MarketplaceForKids.org

RRVARC Ambassadors

ND Senator Kent Conrad visited the USDA-ARS-RRVARC Booth.

Community Involvement - Cont'd

RRVARC Participates in Marketplace for Kids

On May 9th, staff of the Red River Valley Area Research Center (RRVARC) in Fargo, ND, participated in the 2006 Marketplace for Kids held at Concordia College, Moorhead, MN. Marketplace for Kids is a yearly event co-sponsored by U. S. Senator Kent Conrad, North Dakota Agriculture Commissioner Roger Johnson, and North Dakota State Superintendent of Public Instruction Wayne Sanstead. The event encourages children to invent and market a product or an idea. Approximately 2,500 fourth, fifth, and sixth graders from schools throughout the Red River Valley participated in this year's event.

Several organizations, including the RRVARC, had display booths highlighting their services. At the RRVARC booth, children learned about some of the research activities at the Center. Our exhibit included lab mice (including 11 baby mice), a hissing cockroach, a game to match food products with the crop from which they were derived, and a high-performance liquid chromatograph to measure the amount of caffeine in soda pop. Students who visited the booth and participated in the demonstrations were rewarded with a bag of potato chips (provided by the Northern Plains Potato Growers Association) or a packet of sunflower seeds (provided by the National Sunflower Association).

In addition to our display booth, Ms. Theresa Gross, Ag. Science Res. Technician (Sunflower Research Unit), presented a class on "The Wonderful World of Insects" and Ms. Sheila Sears, Bio. Science Lab Technician (Insect Genetics & Biochemistry Research Unit), presented a class on "How Did They Do That?"

We would like to thank Dr. Jeffrey Suttle, Research Leader/Research Plant Physiologist (Sugarbeet & Potato Research Unit); Dr. Brady A. Vick, Research Leader/Research Chemist; Mr. Leonard Cook, Chemist; Ms. Angelia Hogness, Bio. Science Lab Technician; Dr. Gerald J. Seiler, Research Botanist (Sunflower Research Unit); Ms. Dee Ellig, Bio. Science Lab Technician; Mr. Grant Harrington, Bio. Science Lab Technician; Ms. Colleen Pfaff, Bio. Science Lab Technician (Animal Metabolism-Ag. Chemicals Research Unit); and Dr. Joseph Rinehart, Research Biologist (Insect Genetics & Biochemistry Research Unit) for representing the RRVARC this year.

Community Involvement - Cont'd

Expanding Your Horizons, Cells: Evidence of Action Workshop

Photos courtesy of Lloyd Billey

Two workshops were held April 8th at the Biosciences Research Laboratory for 7th and 8th grade students from Minnesota and North Dakota. The goal of this program is to encourage girls to consider careers in math or sciences. A total of 12 students were in attendance, hailing from Bismarck to Shanley. BRL mentors included Lloyd Billey, Amy McGarvey, Sheila Sears, and Nancy Shappell. Students witnessed and quantified the effects of ethanol on human cells. In addition to hands on experience with laboratory equipment such as pipets, they applied math skills to determine cell number, percent cell death, and decrease in metabolic activity. One student (who had serendipitiously ended up in our workshop due to an error) expressed amazement that the graphing we were using was exactly what they were doing in math at school. She was encouraged to go back and share the real life application with her teacher and fellow students. These students were a fun group, eager to learn and appreciative of the volunteer efforts of our staffs. At least one student asked about the educational requirements to do this kind of research. Maybe they will be tomorrow's ARS technicians and/or scientists.

Research Botanist Judges ND State Science Fair

The 56th Annual North Dakota State Science and Engineering Fair was held at the Bison Sports Arena, April 6-7, 2006. Over 250 students from throughout ND presented their projects in the Senior and Junior divisions. Students in the senior division were competing for the right to advance to the Intel International Science and engineering Fair (ISEF) at Indianapolis, in May, 2006. Two senior division students from each of the eight regions were selected to compete as North Dakota representatives at the ISEF. Each student received a $16,000 scholarship from the University of Mary, Bismarck, ND. One sweepstake winner representing the best senior division project from all regions and from all discipline categories was selected. They received a gold North Dakota Plaque, a jacket, a certificate of merit and cash award from the North Dakota Academy of Science, plus an $8,000 scholarship to NDSU, Fargo, ND, and the right to compete at the ISEF. In addition over 65 special awards were given to students in various disciplines in both divisions. These included awards in natural, biological, life sciences, dentistry, engineering, and math and computer sciences.

I judged projects in the junior division and special awards in senior division in the life sciences.

Judging science fair projects is extremely interesting, and at timing challenging. You get to see some very interesting students with intriguing projects which show some very "creative thinking." It is enjoyable to take time from my everyday science routine to go and visit with these students whose projects sometime think "way outside of the box" where sometimes the sky is the limit.

Gerald J. Seiler
Research Botanist,
Sunflower Research Unit

USDA-ARS-RRVARC
Fargo, ND

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RED RIVER VALLEY
AGRICULTURAL RESEARCH CENTER

Vision Statement

An internationally recognized center of excellence for integrated agricultural research on high priority problems to ensure a safe and abundant food supply.

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Upcoming Events:

EVENTS AT THE CENTER

JUNE 2006

8: Dr. George Yocum, USDA-ARS, Insect Genetics & Biochemistry Research Unit, Fargo, ND, "Diapause Specific-Genes and Possible Factors Affecting Their Expression in the Colorado Potato Beetle," BRL-Large Conf. Rm., 10 a.m.

29: Dr. Kenneth Vogel, USDA-ARS, Wheat, Sorghum & Forage Research, Lincoln, NE, "Developing Switchgrass into a Biomass Energy Crop," BRL-Large Conf. Rm., 10 a.m.

AUGUST 2006

TBD: Dr. Patrick Fuerst, Washington State University, Pullman, WA

SEPTEMBER 2006

14: Dr. Prem Jauhar, USDA-ARS, Cereal Crops Research Unit, Fargo, ND, NCSL-Large Conf. Rm., 10 a.m.

26: Dr. Bikram Gill, Dept. Plant Pathology, KSU, Manhat tan, KS, NCSL-Large Conf. Rm., 2 p.m.

EVENTS ELSEWHERE

JUNE 2006

20-22: National Sunflower Assn. Summer Seminar, Bismarck, ND.

24-29: 4th Intl. Wolbachia Conf., San Juan, Puerto Rico.

JULY 2006

23-27: Potato Assn. of America Annual Mtg., Madison, WI.