BIGMAP SYMPOSIUM EXAMINES AGRICULTURAL CO-EXISTENCE, SUSTAINABILITY

Co-existence was the focus of BIGMAP’s Eighth Annual Symposium held April 19 and 20 at the Gateway Hotel in Ames, Iowa.

Over 110 agricultural industry leaders, scientists, and experts from around the world attended the 1 1/2 day event, titled “Co-existence, Choice, and Sustainability for Crop Production” that focused on differing ag technologies and the importance of assuring choice in the types of crops and cropping systems that will support the expanding worldwide needs for food, feed, fiber, and fuel production. The symposium addressed all technologies—organic, biotech, and conventional—to meet current agricultural challenges.

“Co-existence is defined as differing systems existing and prospering in the same place, and at the same time,” said BIGMAP Director Manjit Misra. “The theme of this symposium is directly related to alleviating world suffering by addressing global hunger, thirst, nutrition, and health…Co-existence is not a destination in itself, but is a means to an end,” he said.

On the second day of the symposium, Lowell Rheinheimer, farm resources manager from Organic Valley/CROPP Cooperative, commented on the importance of communication between the biotech and organic communities. “We’ve got a wide gulf to bridge,” he said. “We need to talk, because we come from pretty different worlds.”

European Parliament member Peter Jahr discusses co-existence in the European Union in the opening session of the Eighth BIGMAP Symposium in April.

“Today, let our thoughts firmly dwell not on conflict, but on co-existence. And let our vision be not on the short term, but on true sustainability; ‘enough for all and forever.’ We must let our thoughts dwell not on rigidity, but on choice.”—Seed Science Center Director Manjit Misra
A formal ceremony commemorating three new initiatives for Africa was held at the Marriott Hotel in Des Moines last October in conjunction with the 2010 World Food Prize.

Featured speakers at the event included Wendy Wintersteen, endowed dean of Iowa State’s College of Agriculture and Life Sciences; Getachew Belay, senior biotechnology policy advisor for the Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA), COMESA; Joe DeVries, director of the Program for Africa Seed Systems for the Alliance for a Green Revolution in Africa (AGRA); Arlene Mitchell, senior program officer for the Bill & Melinda Gates Foundation; and Manjit Misra, director of the Seed Science Center at Iowa State.

“The ISU Seed Science Center has been extraordinarily successful in developing partnerships and in achieving great successes as it works to bring high-quality seed to the farmer,” said Wintersteen in her opening remarks. “And that is really what today’s celebration is all about, bringing high-quality seed to the farmer.”

A highlight of the ceremony was the signing of an international memorandum of understanding between the Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA) of the Common Market for Eastern and Southern Africa (COMESA) and Iowa State University’s Seed Science Center. As part of the agreement, scientists from Iowa State’s Global Seed Program will work to harmonize seed policies and regulations within the 19 COMESA member countries and with outside trade partners.

During the event, DeVries gave an overview of the seed industry in Africa and announced Iowa State’s second African initiative—an AGRA grant to partner with the University of Nairobi and others to establish a Seed Enterprise Management Institute (SEMIs) in Kenya.

Mitchell, representing the Bill & Melinda Gates Foundation, then commented on the urgent need for improved seed policies in Africa, a special focus of the third Iowa State African initiative—the Seed Policy Enhancement in African Regions (SPEAR) Project (see page 3). “We turn to other experts to help us with these kinds of challenges,” said Mitchell, “And Iowa State is a leader in seed policies. We are proud to partner with them in this project.”
**NEW GRANT TO IMPROVE QUALITY SEED ACCESS IN SUB-SAHARAN AFRICA**

Seed Policy Enhancement in African Regions (SPEAR) Project

Owens State University seed scientists are partnering with regional and national organizations in Malawi, Zambia, and Nigeria to conduct a pilot study in Africa on enabling better access to improved seed varieties with the help of a new grant from the Bill & Melinda Gates Foundation.

The Seed Policy Enhancement in African Regions (SPEAR) project is funded by a $1.45 million three-year grant. As part of the grant, Iowa State University scientists will work to advance harmonization policies into actionable reality in western and southern Africa. They will improve varietal evaluations and timely releases of candidate seed varieties.

“As the project progresses, seed will be provided to companies on a timely and equitable basis,” said Seed Science Center Global Seed Program Leader Joe Cortes. “Seed production contracts will be initiated, and regional and international seed companies will begin working with the existing seed companies in the area. In the end, licensing contracts will result, and smallholder farmers in sub-Saharan Africa will have access to increased varieties of high-quality seed.”

“The SPEAR project speaks to what we are about here at the center—providing quality seed to the world,” said Seed Science Center Director Manjit Misra, professor of agricultural and biosystems engineering. “We are proud to be a part of this project that can truly enhance the sustainability of smallholder farmers in Africa that currently face limited resources.”

The Seed Science Center at Iowa State University houses the largest comprehensive public seed laboratory in the world. In the past 12 years, the center’s Global Seed Program has conducted international projects on seed policy and regulations in more than 70 countries around the world. Currently the program has ongoing projects in 30 countries.

For more information about the Seed Science Center at Iowa State University, visit www.seeds.iastate.edu.

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**MUNKVOLD, SHEPHERD RECEIVE GRANT TO SUPPORT NSHS MISSION**

National Seed Health System (NSHS) Co-Directors Gary Munkvold and Lisa Shepherd recently received a four-year grant from the USDA Foreign Agricultural Service under the Technical Assistance for Specialty Crops program. The project is titled, “Standardization of Seed Health Tests to Facilitate Seed Exports and Support North American Plant Protection Organization (NAPPO) Seed Standard Development Through the National Seed Health System.”

Funds from the grant will support the NSHS mission of developing, reviewing, approving, and promoting the use of validated, accurate seed health tests for phytosanitary certification. The NSHS has worked closely with the American Seed Trade Association (ASTA) to prioritize the components of the project, which aligns with ASTA’s efforts to develop a Seed Standard under the North American Plant Protection Organization.

The NSHS project focuses on vegetable crops, which are affected by many of the high-priority seedborne pathogens. Funds from the grant will support the hiring of a full-time staff scientist to lead the project.

The National Seed Health System (NSHS) is a program authorized by the USDA-APHIS and administered by the Iowa State University Seed Science Center to accredit both private and public entities to perform certain activities needed to support the issuance of Federal phytosanitary certificates for the international movement of seed.

The NSHS also serves as a resource for pest risk assessment and phytosanitary resolution whenever disputes arise that disrupt the international movement of seed.

For more information about the NSHS, visit: www.seedhealth.org
VILSACK SPEAKS ON BIODIVERSITY AT GLOBAL TOWN HALL MEETING

U.S. Secretary of Agriculture Tom Vilsack, traveled to Iowa State University last October to participate in a Global Farmer Town Hall Meeting co-sponsored by the Seed Science Center, CropLife International, CropLife America, and Truth About Trade & Technology.

Vilsack presented opening remarks and answered questions from the audience at the event that was broadcast live around the world via the Internet. The meeting was the first stop on the Biodiversity World Tour designed to celebrate the United Nations’ International Year of Biodiversity.

As part of the meeting, Orion Samuelson, host of several nationally syndicated agricultural broadcasts, facilitated a panel of farmers and others from around the globe in a discussion of sustainable agriculture practices and their role in biodiversity preservation. Panel members included: Camila Illich, a field crop farmer from Brazil; Pam Johnson, a corn and soybean grower from Floyd, Iowa; Rajesh Kumar, a vegetable grower from India; Gary Munkvold, professor of Plant Pathology and Microbiology at Iowa State; and Judy Chambers, director of the Program for Biosafety Systems at the International Food Policy Research Institute in Washington, D.C.

The town hall meeting, which took place in the Alliant Energy-Lee Liu Auditorium in Howe Hall, was held in conjunction with the 2010 World Food Prize.

To view a video of the Global Town Hall Meeting held on the Iowa State University campus in OCT 2010, visit: http://www.biodiversityworldtour.com/2010/10/12/webcast-archive/
The Iowa State University Seed Science Center is partnering with the African Seed Trade Association (AFSTA) to harmonize seed policies and regulations in the Common Market for Eastern and Southern Africa (COMESA) region countries.

The project is part of a grant funded by the European Union and awarded to the Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA). The project was initiated by COMESA in 2009.

“The purpose of the project is to create a harmonized framework for a sustainable seed sector in the COMESA region of Africa,” said Iowa State Global Seed Program Leader Joe Cortes. “The goal is to increase farmer productivity, to stimulate market development, and to enhance seed availability.”

Smallholders from 19 COMESA countries will benefit from the project. They include: Burundi, Comoros, the Democratic Republic of Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe.

“Project efforts were started by focusing on seed certification, phytosanitary measures, seed import and export regulations, and regional variety release,” said Cortes. “After conducting a series of workshops on the topics attended by representatives from the COMESA Member States along with participation from the public and private sectors, we have developed three technical agreements for each of the countries.” The agreements include a variety release system, a seed certification scheme, and a common quarantine pest list for seed and plant protection.

Cortes says the next step will be to approve the three technical agreements as part of a validation workshop that will be attended by seed authorities from each country’s national seed department, National Plant Protection Organizations (NPPOs), and members of the private seed sector from each of the COMESA member states.

“We are very happy to be working with AFSTA on this project,” said Seed Science Center Director Manjit Misra. “Scientists with our Global Seed Program have worked in several of these countries before, and helping to improve livelihoods—tovensure a safe and secure food supply for COMESA smallholders—is something that all of the stakeholders involved can be very proud of.”

ZAMBIAN AMBASSADOR VISITS SEED SCIENCE CENTER

Sheila Siwela, Zambian ambassador to the U.S., visited the Seed Science Center June 28th. Siwela was in Iowa to investigate investment, technology transfer, and trade opportunities. Siwela was accompanied by Thomas Hertz, Hertz Farm Management, and Myles Kappelman, Iowa Department of Economic Development. During Siwela’s visit, Global Seed Program Scientist Adelaida Harries presented the group with an overview of Iowa State’s international seed programs. They also discussed the center’s recent progress in Zambia as part of the SPEAR project (see page 3).

From left: Iowa State Global Seed Program Scientist Adelaida Harries discusses trade opportunities with Myles Kappelman, Iowa Department of Economic Development; Sheila Siwela, Zambian ambassador to the U.S.; and Thomas Hertz, Hertz Farm Management at the Seed Science Center in June.
NEW REFERENCE GUIDE OFFERS STRATEGIES FOR ONLINE EDUCATORS

A new reference guide designed to aid instructors who teach online was released earlier this year. Teaching Online: A Quick Reference for Online Instructors was developed by Ana-Paula Correia, Curriculum and Instruction Department, Center for Technology in Learning and Teaching (CTLT), Iowa State University, and Farrah Dina Yusop, Curriculum and Instructional Technology Department, University of Malaya, Malaysia.

Teaching Online is a reference book for educators who deliver distance education courses online and/or are planning to do so in the near future. It is filled with practical strategies for teaching and learning via online learning technologies. It also advises educators on ways to design online courses to fit the unique needs and motivations of online students and shares good practices for creating online courses, in supporting a learning community, and in assessing students.

The manual was created as part of the instructional design support provided by Correia and Yusop as consultants for the Iowa State Graduate Program in Seed Technology and Business (STB). As Correia explains, “Being an instructional consultant for the STB program made us realize even more that faculty members outside the field of education need additional support when teaching online. Technical support is important, but is only an element of process when you strive to be an exemplary online instructor. Our experiences as online teachers and students and our expertise in online learning and teaching created a perfect opportunity to meet a need identified while interviewing multiple online instructors teaching across campus.”

“The teaching manual provided great value when designing, monitoring, and improving our global online curriculum,” said STB Program Chair Gary Munkvold. “It calls attention to many of the unique aspects of online teaching that faculty members may not anticipate. Ana and Farrah have shared a number of insights in it that will empower educators at all levels to meet the needs of online learners.”

According to Correia and Yusop, online teaching is not much different from teaching face-to-face. “Both methods require careful planning and implementation,” Correia admits. “Online students are generally more self-directed as learners, however challenges can occur if they lose motivation and connection from the content, instructor, or their peers.” Correia adds that educators who teach online do not receive continuous feedback on their performance because they are not able to see their students’ faces and read their body language. She says that and other factors can make teaching online both challenging and rewarding.

When asked how she thought the reference guide would help instructors at Iowa State or elsewhere, Correia replied, “We believe that it is already helping online instructors at Iowa State and beyond. The guide has been used by the Brenton Center and the College of Human Sciences Office of Distance Education and Educational Technology. Additionally, it has been introduced by Farrah to the University of Malaya faculty in Malaysia.”

Turkan Karakus assisted Correia and Yusop on the design and content development of the manual. STB students and instructors also offered assistance and insights.

An electronic version of Teaching Online: A Quick Reference for Online Instructors can be found at: www.seedgrad.iastate.edu/images/Correia_Yusop_TeachingOnline.pdf. A paper copy can be requested by emailing Correia at acorreia@iastate.edu.

About the Authors:
Ana-Paula Correia is an Associate Professor at Iowa State University. Her research interests include collaborative learning, online learning and teaching, and curriculum development in instructional design and technology.

Farrah Dina Yusop is a lecturer at the University of Malaya, Kuala Lumpur, Malaysia. Her research interests are in civic professionalism, the role of instructional design and technology in society, and experiential and service-learning approaches in instructional design and technology.
FOSDICK NAMED 2010-11 MISRA SCHOLAR

Michael Fosdick of Mediapolis, Iowa, was named the 2010-11 Manjit K. Misra Outstanding Senior Seed Scholar during the Iowa Seed Association (ISA) awards ceremony held at the Agribusiness Showcase and Conference in Des Moines last February.

Fosdick, who currently works for Pioneer as an agronomist trainee in the emerging leader program, majored in agronomy at Iowa State University. Fosdick held internships with Pioneer Hi-Bred, International, Inc. at several locations during his undergraduate career.

Nine Iowa State students were awarded Iowa Seed Association Scholarships at the Agribusiness Showcase and Conference. In addition to receiving an ISA scholarship, Michael Misra was also named recipient of the American Seed Trade Association (ASTA) Scholarship.

This is the fifth year that the Misra Scholarship was been awarded to Iowa State students. Bruce and Kathy Maunder provided funds for the scholarship that is awarded on the basis of academic excellence, leadership and interpersonal skills, and a demonstrated interest in a career in the seed industry or in seed science.

SEED LAB STUDIES WAYSTO “LIVE GREEN”

Germinating seedlings at the Iowa State University Seed Laboratory may soon get even “greener.” In an effort to comply with EPA requirements to move away from older fluorescent lighting systems, Seed Lab Manager Mike Stahr is researching a new energy plan that, if successful, could reduce the energy needed for germinating seedlings—not only at Iowa State, but also in seed labs across the country.

Stahr has been collaborating with a local lighting company to set up and conduct a study comparing the growth characteristics of various seed species under traditional cool white fluorescent lights and LED lights.

“A number of seed labs across the nation have already converted to energy-efficient T8 fluorescent bulbs in lieu of traditional T12 fluorescent bulbs,” said Stahr. “However, these bulbs still pale in comparison to LED lights.”

Stahr says that currently, according to the Association of Official Seed Analysts (AOSA) Rules for Testing Seeds, germination tests should be conducted using cool white fluorescent lighting. However, he believes that LED lighting may provide an even better alternative. “LED lights are a win-win proposition,” said Stahr. “They use much less electricity while providing just as much light. In fact, they provide an improved quality of light for the human eye and produce much less heat.” Stahr points out that producing less heat will equal lower cooling costs for the lab.

Stahr has contacted a number of other seed labs across the country to discuss germination lighting systems. Several of the labs have expressed interest in the results of the study. Once his research is complete, Stahr plans to propose a rule change to the AOSA to allow using LED lighting and to implement an energy-saving lighting system at the Iowa State University Seed Lab.

Video Highlights 2010-11 Iowa Seed Association/Misra Scholars

A video highlighting the 2010-11 Iowa Seed Association and Manjit K. Misra scholarship recipients can be viewed on YouTube at http://www.youtube.com/watch?v=WinS3sdU_eo.
Manjit K. Misra—Eighth Annual BIGMAP Symposium Address

For a full transcript of Misra’s comments visit: www.seeds.iastate.edu/misra.pdf

Above (from left): Lowell Rheinheimer, Organic Valley/CROPP Cooperative, and María Alejandra Sarquis, IICA representative for Chile and executive secretariat of the Southern Agricultural Council, were among the speakers featured at the BIGMAP Symposium in April.

BIGMAP SYMPOSIUM
(continued from page 1)

Rheinheimer asked attendees how the differing groups might work together to ensure the genetic purity of seed. “What can we do on a practical basis to co-exist?” he said.


On the second day of the symposium, in addition to Rheinheimer, who spoke on “Maintaining Organic Integrity Within a Sea of Transgenics: How Organic Valley is Responding to the Dilemma of Unwanted GMO Contamination;” Jim Bair, vice president of the North American Millers’ Association, discussed “Low Level Presence in the Food Supply;” Lynn Clarkson, president of Clarkson Grain Company presented “Maintaining Purity for Identity Preservation;” Kathleen Delate, professor of agronomy and horticulture at ISU, spoke on “Integrated Crop Management and Organic Agriculture;” and Rick Hellmich, research entomologist for USDA-ARS, presented “Halo Effects of Bt Crops.”

Rikin Gandhi, executive officer of Digital Green also spoke on “Sustainable Agriculture and Technology for Socioeconomic Development;” Dick Thompson, a Boone County, Iowa, producer, shared “Practitioner’s Perspectives on Sustainable Crop Management;” Marty Matlock, professor of biological and agricultural engineering at the University of Arkansas, spoke on “Measuring Sustainability in Agriculture;” and Dennis Garrity, director general of the World Agroforestry Center, addressed “Evergreen Agriculture: A Robust Approach to Food Crop Production Sustainability in the Tropics.”

The symposium was made possible with funding from the Food and Fuel Initiative: Iowa and the United States Department of Agriculture.

“World hunger is a global challenge. Global challenges need global solutions and global collaborations. But these collaborations must begin with a change in attitude; in how we think. Today, let our thoughts firmly dwell not on conflict, but on co-existence. And let our vision be not on the short term, but on true sustainability; ‘enough for all and forever.’ We must let our thoughts dwell not on rigidity, but on choice.”
CONSUMERS WILLING TO PAY PREMIUM FOR HEALTHIER GENETICALLY MODIFIED FOODS

Dan Kuster Iowa State University News Service

Consumers are eager to get their hands on, and teeth into, foods that are genetically modified to increase health benefits—and even pay more for the opportunity.

A study by Iowa State University researcher Wallace Huffman shows that when consumers are presented with produce enhanced with consumer traits through intragenic means, they will pay significantly more than for plain produce.

The research is published in the current issue of the Journal of Agricultural and Resource Economics.

Intragenic modification refers to plants that are genetically modified with genes from other plants within their own species.

Transgenic foods refer to plants that are modified with genes from other species.

Consumer traits are those modifications that are seen as a benefit to the consumer, such as enhanced levels of vitamins. Farmer traits refer to traits that benefit farmers, such as pest and drought resistance.

“What we found was when genes for enhancing the amount of antioxidants and vitamin C in fresh produce were transferred by intragenic methods, consumers are willing to pay 25 percent more than for the plain product (with no enhancements). That is a sizable increase,” said Huffman, distinguished professor of economics.

Improving plants by using intragenic methods is very similar to cross breeding plants, a process very commonly used by backyard gardeners trying to improve their irises, and was the main method used by hybrid seed corn businesses prior to genetic modification.

Some plants, however, are difficult to cross breed for a variety of reasons.

There are thousands of types of potatoes, for instance, each having some unique genetic traits. But since they reproduce by using an internal seed or eye of the potato, improving them through cross breeding with other potatoes is difficult.

By using the tools of genetic engineering, the intragenic process allows plant breeders to improve produce using within-species transfers.

Consumers’ acceptance of genetically modified plants is a real turnaround from previous research.

In 2001, Huffman first researched consumers’ willingness to pay for transgenic foods. At that time, he showed that consumers would pay 15 percent less for foods made from or containing farmer traits introduced by transgenic methods, compared with produce that was not genetically modified at all.

If there remains any hesitation by consumers to eat genetically modified foods, it is difficult to say, said Huffman.

“There still could be a little bit of negative feelings toward a genetically modified product, but they (consumers) see real value being created in enhanced consumer traits, and they are willing to pay for those enhancements that are introduced by intragenic methods,” said Huffman.

It does seem that buying foods made healthier through intragens does not make consumers uneasy, he said.

Huffman’s experiment involved consumers bidding on both genetically modified and non-modified fresh potatoes, tomatoes, and broccoli.

The intragenically and transgenically modified products had increased levels of antioxidants and vitamin C.

“The basic idea is that when consumers saw that the intragenic produce had elevated healthful attributes, they were willing to pay more for them,” said Huffman.

Consumers were not willing to pay more if those enhancements were introduced through transgenic methods, he added.

Participants were also given information—positive, negative, and neutral, and in combination—on genetic modification from scientific, human, financial, environmental, and general perspectives.

The positive information on the food was given from the point of view of the food industry. The negative information was presented from the perspective of environmental groups. The neutral information was given as from the scientific community. The industry and neutral perspectives contained definitions of intragenic and transgenic modifications.

Huffman said that information from the food industry was usually given more weight by consumers than the information presented by environmental groups. The neutral information moderated the negative effect of environmental group information.
If you’ve ever found yourself contemplating the need to brush grass seed or color sort pepper seeds, a new summer workshop developed by Iowa State University Seed Conditioning Specialist Alan Gaul may be just the course for you. Participants in this summer’s Seed Science Center workshops had the unique opportunity to take part in these types of activities and more for the first time in a new workshop titled “Specialty Seed Conditioning.”

Held May 24-26, 2011, seed industry professionals from around the state traveled to Ames to attend the event that focused on gaining expertise in operations involving the conditioning of everything from small lots of seed to unusual and high-value seed products.

“We have had requests in the past for these types of workshops,” said Gaul. “We finally decided that the timing was right to go ahead with it this year.” In the workshop Gaul covered everything from conditioning vegetable seeds, to flower, tree, and grass seed. In addition to debearding, brushing, and color sorting a variety of unique seeds, Gaul said that attendees of the workshop also learned about threshing and seed extraction, surface disinfection, and sampling and material handling. “We offered hands-on demonstrations on seed drying and aeration techniques, air screen cleaning and aspiration, seed sizing and length grading, and spiral and belt seed separation,” he added. Gaul said that the group also explored frictional separation, scarification and priming, seed coating and pelleting, and counting and packaging.

“Although there were a lot of aspects to cover regarding these types of seeds, it turned out to be a very successful program,” said Gaul. “People in the seed industry seemed very happy with the information we provided, and it was unique—we are one of the few places that offer anything like this.”

According to Gaul, 2011 was also unusual in the number of on-site conditioning workshops that he was asked to perform for seed companies across the Midwest and internationally. “It is normal that our workshops at ISU are popular and full to overflowing,” said Gaul. “But this year, the number of on-site workshop requests that we have received has been phenomenal.” As a result, Gaul has spent a good deal of his free weekends this summer and fall traveling to conduct conditioning workshops in locations such as Thailand, India, North Dakota, Ohio, Minnesota, Illinois, and Wisconsin.

Seed Science Center workshops are held from April to August each year. Topics include seed testing and cleaning, gravity separation, and color sorting. The 2011 seed conditioning workshop series included a total of 11 workshops conducted at the Seed Science Center, attended by 188 individuals from 18 states and five countries. Additional custom workshops were conducted at multiple locations to provide training on specific topics. For more information about Seed Science Center Workshops visit www.seeds.iastate.edu/seedtest/training.html.
GOGGI CONDUCTS SEED SYSTEMS RESEARCH WITH FAO

A gronomy and Seed Science Center Associate Professor Susana Goggi spent six months this past spring in Rome and France as part of a collaboration with the Food and Agriculture Organization (FAO) in Rome. During her professional development assignment, Goggi worked with colleagues on the Seeds and Plant Genetic Resources team of the Plant Production and Protection Division (AGP) of the FAO. The group co-authored an article titled “Seed Systems, Interventions, and Adaptation to a Changing World Climate.” The publication explored seed systems in developed and developing countries as well as the similarities, disparities, and possible consequences of underdeveloped seed systems on plant genetic resources and adaptations. They also examined ways to move countries forward to developed seed systems in order to prepare for the negative effects of climate change.

After completing her FAO research, Goggi presented a seminar on the group’s findings to the general FAO staff prior to returning to the U.S.

While in Europe, Goggi also explored collaborations with the Organization for Economic Co-operation and Development (OECD)-Paris, assisted Iowa State students with thesis work, and participated in preliminary and oral exams via Skype.

“It was wonderful to have time to delve into the literature on a new topic of global importance and to explore new areas of science,” said Goggi. “This experience will allow me to actively collaborate with colleagues in the global and national climate change programs at ISU and beyond with research in seed systems development.”

Goggi added that she plans to use the information she gained to enhance education by sharing her global perspective on seed systems development with her students in Seed Science and Technology (Agron/Hort 338).

VEISHEA 2011

Life on the Farm: Discovering Seed Science

Individuals attending Iowa State’s VEISHEA celebration in April had an opportunity to learn about seeds and seed conditioning in the Seed Science Center lobby while escaping from the cold temperatures outside. Visitors of all ages stopped by to identify seeds, learn about seed production, and enjoy bags of tasty popcorn.
Focus on Food and Fuel Initiative: Iowa Research

DRY DISTILLERS GRAIN AS A CREEP FEED FOR CALVES

Dried distillers grains is a readily available commodity in Iowa that can be successfully used as a single ingredient creep feed for young suckling calves when considering both short-term and long-term results.

Extension Program Specialist Garland Dahlke and Animal Science Professor Daryl Strohbehn recently concluded a study that examines the value of Dried Distillers Grains as a creep feed for calves. The research was partially funded by the USDA as part of the Food and Fuel Initiative: Iowa project. A synopsis of the research and results follows.

Dried distillers grains is a feedstuff that is nutrient dense in terms of energy and protein. The energy component is derived primarily from fat and highly digestible fiber. The protein fraction also contributes to this energy pool, but is of high quality providing a source of amino acids that can be absorbed in the lower gut and utilized by the developing ruminant. Suckling calves are accustomed to a diet high in protein and fat already, and although the fat and protein composition of distillers grain is different than milk, the overall quantities of protein are similar, while the fat level is about one third that of milk on a dry matter basis. It was believed that this feed could make a good creep feed as-is and that the effect of providing the feedstuff in limited and ad libitum quantities to young suckling calves was observed in terms of the effect the feeds may have on subsequent performance at weaning and on the final carcass composition of the calf.

RESEARCH METHODS
Dahlke and Strohbehn conducted a two-year trial using purebred Black Angus cow-calf pairs from the same herd where the calves were given access to creep feed for approximately 140 days prior to weaning. Cow-calf pairs were maintained in five locations each year, forming contemporary weaning groups. The calf creep feed was a commercially prepared feed provided in self-feeders in all locations except for the distillers grain treatments.

The analysis of the dried distillers grain was as follows: 30% crude protein, 10% fat, 37% neutral detergent fiber (NDF), 0.8% phosphorus, 0.7% sulfur. Calves also had free access to their dam's ration and the milk provided from their dam throughout the trial. The calves on the limit-fed distillers grain treatment were provided approximately two to three pounds of the distillers grain per head per day in a trough during the trial. Calves allowed ad libitum access to distillers grain were also fed in a trough, but fed in a manner that would not limit the intake of the feed. Calves fed in this manner consumed twice as much dried distillers grains than the limit-fed group when quantities were compiled at the end of the creep-feeding phase.

At weaning, 43 bull calves from all the groups were sorted off and brought together for a feeding trial. Calves were weaned and back grounded for approximately one month prior to the beginning of this part of the feeding trial. At this point forward individual dry matter intake was monitored using the Iowa State University Feed Intake Monitoring System (FIMS). Bulls were fed at the Iowa State University Beef Nutrition Farm from mid-November through March. All bulls were provided the same ration consisting of corn silage, dry corn, soybean meal, dry hay, and mineral-vitamin supplement. The ration was balanced to allow for a minimum of three-and-one-half pounds of daily weight gain at a starting weight of 700 pounds using the Growing Bull Module of the BRaNDS ration formulation software to accomplish this.
The trial summarized in Table 1B, which looked at the subsequent feed-out results when dry distillers grains were provided *ad libitum* as a creep feed, proved to cause some differences in the performance measures. Bulls allowed unlimited access to the distillers grain as a creep feed were significantly heavier starting the feed-out. They did not significantly differ in final weight or overall average daily gain from other bulls, but there was a significant reduction in the average daily gain (ADG) observed in these *ad libitum* creep-fed bulls in the first month and last month on test, which may have also been a function of the corresponding feed intake at these times. Feed dry matter intake otherwise was not different from the trial mean, but feed dry matter to weight conversion was significantly higher for these bulls. The measures concerning the carcass of the bulls indicated that this treatment had no real impact on intramuscular fat (IMF) percent, but did have an impact on increasing rib eye area (REA) and reducing backfat (BF) from the trial mean. This trial did not show any impact on scrotal circumference or fertility since all bulls passed their breeding soundness exam. There were no health problems in any of the bulls in this trial.

**CONCLUSIONS**

The results of the distillers grain creep-feeding protocols generally seem very good since they are simple and do not negatively affect later feed out performance except for the extra one-half pound of feed dry matter required for a pound of gain in the feed out phase for the *ad libitum* creep-fed calves. This extra feed requirement is not desired, and these calves seemed to be the most expensive to feed out while the limit-fed distillers group were the most economical group to feed out–especially when creep feed costs are included in the analysis. However, before casting a final conclusion in stone—it is important to consider the variation that can occur between individuals in such a trial. It was an interesting result that the group allowed *ad libitum* access to the distillers grain as calves had a smaller standard deviation of starting and ending weights along with all measured performance categories apart from scrotal circumference when compared to the limit-fed calves. This trend also existed for many of the traits when compared with the other contemporary groups involved in the trial. Because cattle are managed in groups, minimizing variation in the outcome is a goal, and practices that assist in this task should be noted.

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### Table 1. Weaning to Yearling Bull Development after Different Creep Feeding Regimens

**A. Limit Fed Distillers Grain as Creep Feed Weaning to Yearling Performance**

<table>
<thead>
<tr>
<th></th>
<th>Start Wt. (lb)</th>
<th>Finish Wt. (lb)</th>
<th>ADG (lb)</th>
<th>F:G</th>
<th>DMI (lb)</th>
<th>IMF %</th>
<th>REA in²</th>
<th>BF in</th>
<th>Scrotal Circ. (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Bulls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trial avg.</td>
<td>611</td>
<td>1146</td>
<td>3.7</td>
<td>4.8</td>
<td>18.6</td>
<td>5.2</td>
<td>14.0</td>
<td>0.41</td>
<td>15.5</td>
</tr>
<tr>
<td>Range–other avg. groups</td>
<td>539-638</td>
<td>1054-1243</td>
<td>3.3-4.3</td>
<td>4.0-5.1</td>
<td>15.7-20.0</td>
<td>4.6-6.0</td>
<td>10.01-14.9</td>
<td>0.28-0.51</td>
<td>14.8-15.8</td>
</tr>
<tr>
<td>Range–other avg. groups std. dev.</td>
<td>45-80</td>
<td>62-116</td>
<td>0.2-0.5</td>
<td>0.4-1.0</td>
<td>1.2-3.1</td>
<td>0.6-1.4</td>
<td>0.6-1.6</td>
<td>0.04-0.11</td>
<td>0.6-2.4</td>
</tr>
<tr>
<td>Distillers Creep (limited)</td>
<td>598</td>
<td>1146</td>
<td>3.8</td>
<td>4.8</td>
<td>18.6</td>
<td>4.6</td>
<td>14.1</td>
<td>0.43</td>
<td>16.0</td>
</tr>
<tr>
<td>Trt. avg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt. std. dev.</td>
<td>95</td>
<td>136</td>
<td>0.5</td>
<td>0.5</td>
<td>2.9</td>
<td>0.9</td>
<td>1.6</td>
<td>0.08</td>
<td>0.2</td>
</tr>
<tr>
<td>Significance</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

**B. Ad Libitum Fed Distillers Grain as Creep Feed - Weaning to Yearling Performance**

<table>
<thead>
<tr>
<th></th>
<th>Start Wt. (lb)</th>
<th>Finish Wt. (lb)</th>
<th>ADG (lb)</th>
<th>F:G</th>
<th>DMI (lb)</th>
<th>IMF %</th>
<th>REA in²</th>
<th>BF in</th>
<th>Scrotal Circ. (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Bulls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trial avg.</td>
<td>716</td>
<td>1220</td>
<td>3.9</td>
<td>5.3</td>
<td>20.8</td>
<td>5.7</td>
<td>15.0</td>
<td>0.43</td>
<td>15.5</td>
</tr>
<tr>
<td>Range–other avg. groups</td>
<td>659-713</td>
<td>1208-1252</td>
<td>3.8-4.2</td>
<td>5.1-5.2</td>
<td>20.0-21.1</td>
<td>4.6-6.1</td>
<td>14.4-14.9</td>
<td>0.37-0.48</td>
<td>15.3-15.9</td>
</tr>
<tr>
<td>Range–other avg. groups std. dev.</td>
<td>40-42</td>
<td>78-99</td>
<td>0.2-0.5</td>
<td>0.5-0.8</td>
<td>2.1-2.4</td>
<td>0.5-1.5</td>
<td>0.7-1.1</td>
<td>0.07-0.14</td>
<td>0.8-0.9</td>
</tr>
<tr>
<td>Distillers Creep (Ad Lib)</td>
<td>762</td>
<td>1265</td>
<td>3.8</td>
<td>5.7</td>
<td>21.3</td>
<td>5.6</td>
<td>15.8</td>
<td>0.39</td>
<td>15.3</td>
</tr>
<tr>
<td>Trt. avg.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt. std. dev.</td>
<td>66</td>
<td>72</td>
<td>0.3</td>
<td>0.5</td>
<td>1.6</td>
<td>0.7</td>
<td>1.1</td>
<td>0.06</td>
<td>0.8</td>
</tr>
<tr>
<td>Significance</td>
<td>&lt;0.05</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>&lt;0.05</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

**IMF:** Intramuscular fat  
**REA:** Rib eye area  
**BF:** Backfat  

---

At the end of the time on feed, all bull carcasses were evaluated using ultrasound to determine 12th rib backfat (BF), rib eye area (REA), and intramuscular fat (IMF). Bulls were also evaluated for breeding soundness and weight gain at the time. A Students-T test was then performed to evaluate whether the numerical differences calculated between the distillers creep-fed bulls and the overall trial means was significant.

**RESULTS**

The distillers creep-fed groups, labeled as “Trt.” In Tables 1A. and 1B. were compared against the trial means. The limit-fed distillers grain creep group did not differ from the calves started with commercially prepared creep feeds in the post weaning to yearling phase of life in regards to growth or carcass characteristics. Scrotal circumference, however, was larger in this treatment when compared to the trial mean. None of the bulls failed the breeding soundness exam in this trial, and Trt bulls remained healthy during the feed-out phase of this trial, while there were a few cases of pneumonia occurring in the other bulls that seemed to be associated with a particular contemporary group, and probably a breakdown in vaccination program.
Seed Science Center staff member Mark Smith is no stranger to agriculture or to Iowa State. “I’ve been involved in agriculture most of my life,” says Smith, who came to the center in 2010 to conduct research with Seed Science Endowed Chair Gary Munkvold. Smith is working on a soybean project funded by the Iowa Soybean Association.

Smith, who earned a B.S. degree in agronomy from the University of Nebraska, grew up on a small farm in east central Nebraska. “I came to Ames to attend grad school and got my master’s degree in plant breeding,” he said. Smith’s graduate research included methods to improve test weight in oats. He later went on to work in the Iowa State Agronomy Department where he worked in forage breeding for 12 years and managed the Iowa State Forage Variety Testing Program.

Smith says that the goal of his current research is to fine-tune management practices to maximize soybean yield. “Our project involves the evaluation of soybean production in various crop rotations with corn and two tillage systems,” he said. “We are also looking at ways that yield is affected, as well as the interactions of several pathogens—especially, soybean cyst nematode, sudden death syndrome, brown stem rot, phomopsis, and white mold.” In addition, Smith is also measuring the light interception of the soybean canopy.

“Working with Dr. Munkvold I’ve learned a lot about soybeans, diseases, and the lab procedures involved in measuring and quantifying the damage or presence of pathogens,” he said. “I enjoy working with soybeans, and have found everyone to be very helpful. Gary has a good group of people, so working here is enjoyable.”

Jessica Blake
Seed Analyst

Although raised in rural Iowa where her mother taught her how to plant a garden and her father taught her the importance of land conservation, Iowa State Seed Analyst Jessica Blake says that the faculty and staff of the Seed Science Center have played an important role in helping to cultivate her career in the seed industry.

“I didn’t have a traditional farming background or even an agricultural education,” said Blake. “You might say that I came to appreciate the importance of seed to society in an unusual way.”

A native of Guttenberg, Iowa, Blake began her academic career at Kirkwood Community College in Cedar Rapids where she discovered an interest in biology. From there she pursued a biology degree at Iowa State, accepting a job in the Iowa State germination lab as a student seed analyst in the fall of 2008. Following graduation, Blake returned to the seed lab as a temporary summer employee in the spring of 2010.

Blake credits her interest and success in seed analysis and testing to her years spent at the center. “Thanks to shortcourses and everyone’s willingness to mentor me, I have learned a tremendous amount about seed testing and the seed industry,” she said. “I have always been fascinated with plants and seeing them sprout from seeds in my garden. Observing seedlings in a lab is an incredible experience because you can see every structure and every abnormality, which allows a lot more insight as to why one seed grows and another doesn’t.”

Blake returned to the center when hired as a seed analyst in the Iowa State germination lab in the fall of 2010. Currently, she performs germination tests on corn, soybeans, and small seed crops. She also assists Lisa Shepherd in the Seed Health Lab in preparing media and setting up health tests.

“Jessica is a very quick learner,” said Seed Lab Manager Mike Stahr. “In fact she is one of the best seed analysts I have worked with in 32 years of testing,” he added.

This past spring Blake became an AOSA Certified Seed Analyst in germination—an accomplishment that she says was made possible with help from center colleagues.

Becoming a registered seed technologist is Blake’s next goal. “It is extremely important that seed companies and farmers receive an accurate evaluation of the quality of the seeds that they are selling and planting,” she said. “I look forward to contributing to the accuracy of the information available to them.”

Mai Quinn
Seed Analyst
Graduate student Gladys Mbofung’s interest in seed technology was sparked by a research project that she worked on at the University of Arizona. “I worked with the pathogen Fusarium oxysporum f. sp. lactucae that causes wilt in lettuce,” she said. “I developed a method to detect the pathogen in lettuce seeds, and in the process of assaying various seedlots for the pathogen, I discovered I had a lot of questions concerning seed that I couldn’t answer with my plant pathology background.”

A native of Bamenda, in the African Republic of Cameroon, Mbofung came to Ames with her son in January 2007. Currently, she conducts research with Agronomy Associate Professor Susana Goggi as she works toward a master’s degree in crop production and physiology with an emphasis in seed science.

Mbofung’s research focuses on the importance of seed treatment chemicals, soybean maturity group, seed composition, and initial seed-borne pathogen load on seed ageing in a range of storage environments. She believes that if her findings reveal a significant relationship between seed vigor and longevity in soybeans, it could provide important information for soybean breeders who desire high field performance and better storability. “If we understand the causes of seed quality problems, growers and industry can use the information to guarantee their access to quality seed,” she said. “And I will have played a part in helping producers gain a better understanding of how soybean seed characteristics impact storability.”

After graduation, Mbofung plans to find a job in plant pathology and seed science.

The Iowa State Seed Lab has added a new face to its customer care department. Cherie Hill joined the Lab in April of 2010.

A native of Ellsworth, Iowa, Hill worked for many years at McFarland Clinic in Ames before applying for a management position at the Iowa State Student Health Center in 2003.

In her current role at the Seed Lab, Hill processes incoming seed samples and responds to customer phone calls and emails. She also runs sample reports and assists with other center tasks.

Although she has lived on the farm with her husband for more than 40 years, Hill admits that the transition from a medical background to the Seed Lab was initially daunting. “You can’t imagine how much there was to learn,” she admitted. That milestone now behind her, Hill says she enjoys the work and the genial atmosphere at the Lab. “We work hard, but we try to have a good time too,” she said. Most importantly, Hill doesn’t hesitate to pass on her positive attitude to Seed Lab customers and others. “I always try to be helpful and upbeat—to meet the day, the customers, and my coworkers with a smile that I hope is contagious,” she says.

Seed Lab Manager Mike Stahr says that Hill’s ability to work well with others has made her a valuable addition to the Seed Lab. “Customer care is one of our highest priorities,” he said. “Our customers relate well to Cherie’s personality and she treats everyone well. She’s an asset to our team.”

Hill has two grown children and three grandchildren. In her spare time she attends family sports events and enjoys gardening, baking, walking, and biking.

Graduate student Ruth Rolling is another example of an individual who worked first as an undergraduate student at the Seed Science Center and later returned to pursue a master’s degree in an area related to the seed industry.

A native of Waterville in northeast Iowa, Rolling was raised on a dairy farm where her parents rotationally graze and milk 70 jersey cows. After coming to Iowa State to study agronomy as an undergraduate, Rolling applied for student work at the Seed Science Center in the fall of 2008. During her time as a student employee, Rolling assisted with center administrative tasks while also making herself available to Seed Lab Manager Mike Stahr for help with seed-lab related tasks as needed. “That piqued my interest in pursuing seed science as part of my education,” said Rolling. Rolling later returned to the center to begin her graduate studies in May 2010.

Currently, Rolling conducts research with Agronomy Associate Professor Susana Goggi and Agronomy Professor Reid Palmer while she works toward a master’s degree in seed science. Rolling says that working with Goggi to better understand the seed-quality components that affect the yield and storage of grain has been rewarding. “I enjoy the different areas of research that are going on in the Seed Science Center, and the willingness of other professors and students to share their research with others,” said Rolling. “I think my research can benefit others by providing information on improving agronomic performance in soybeans,” she said.

Rolling is scheduled to graduate in May 2012. After graduation she plans to seek employment in the seed industry.
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