Beginning next year, students with an interest in seed sector management will have an opportunity to apply for a master’s degree developed by the Iowa State University Seed Science Center.

The masters of science in seed technology and business will be offered over the Internet and will integrate coursework from the College of Agriculture with that of the College of Business. It will cover topics such as seed production and genetic improvement along with business administration courses and will be available to students worldwide. In addition, courses will be scheduled over a period of two and a half years to allow working professionals an opportunity to take advantage of the program.

“The objective of this new degree is to develop decision-making skills that will prepare students for roles in the seed industry,” said Paul Christensen, manager of the program. Because biotechnology advances at such a quick rate, the degree is tailored to benefit individuals in the industry by helping them acquire new skills. Students will progress through the program as a group and will be encouraged to share experiences from their work.

According to Christensen, industry has already shown an interest in the program. “Companies are interested in a source of instruction that can substitute for internal training,” he said. “Others are interested in gaining access to material that is unavailable internally.”

The State of Iowa Board of Regents approved the masters of science in seed technology and business in March 2006. The degree will be accompanied by graduate certificates in seed science and technology and seed business management for students who wish to enhance their existing experience and training.

Students interested in applying for the program should contact Paul Christensen at intlcorn@iastate.edu.

For more information about the master of science degree in seed science, visit www.seeds.iastate.edu/class.
Erik Christian, a graduate student working in the Seed Science Center, comes by his interest in seed science as a result of years of observing first-hand the planting, growing, and harvesting of seed. “Growing up on the farm, we raised soybean seed for a local seed company. That’s how I became interested in seed science,” said Christian.

Christian is working on an M.S. degree in Crop Production and Physiology with Agronomy Assistant Professor Susana Goggi. As part of his research, Christian is studying plant-extracted oils as a fungicide seed treatment for corn. “First we look at how well the plant-extracted oils perform in the lab against corn pathogens,” said Christian. “Then we take the most promising oils to the field to see how they perform.”

Christian, who was raised on a farm near Story City, Iowa, graduated from Iowa State with a BS in Agronomy in 2004. During his college career, Christian seized opportunities to learn, not only from the classroom, but also by taking on top leadership roles in several agriculture-related campus organizations and by working side-by-side with individuals in the seed industry. “When I was an undergraduate I was fortunate enough to work for the Iowa Crop Improvement Association,” said Christian. “While working there, I was able to see the certification side of the industry and meet a lot of seed industry people.”

Christian says that his interest in seed science won’t end when he receives his degree. “After graduation I plan on continuing my education and hopefully someday finding a job in the seed industry,” he says.

Susana Goggi started at the Seed Science Center in 1994 as a laboratory manager and has been an Agronomy faculty member for several years. Her seed physiology research is a vital component of the Seed Science Center’s programs. It provides an understanding of the factors affecting seed survival and vitality.

Goggi, who earned MS and PhD degrees from Mississippi State University and a BS degree from Universidad de Buenos Aires, currently teaches a seed physiology course designed for graduate students conducting research in seed science and hoping to work in the seed industry. Working with students is one of her favorite things about her job at Iowa State.

“One of the aspects I enjoy most from my work is my role as a mentor,” said Goggi. “It is such a rewarding experience to see students grow into creative independent thinkers and become successful professionals. My research program has benefited from the energy and vitality from a diverse team of high school, undergraduate, and graduate students conducting research under my guidance.”

As part of her research program, Goggi focuses on key aspects of seed development including maturation, germination, and deterioration for two crops of vital importance to Iowa’s economy: corn and soybeans. Goggi is dedicated to providing the public with clear, concise information about seed science issues. “A very important role of my position is providing unbiased, science-based information to seed producers and farmers,” Goggi said. “Working with stakeholders keeps my research program relevant and focused on the important issues affecting seed production and seed quality in Iowa.”
BIGMAP AFFILIATE FACULTY TO OFFER NEW GRADUATE MINOR

Jeff Wolt

BIGMAP affiliate faculty members in the Colleges of Veterinary Medicine, Agriculture, and Liberal Arts and Sciences are working to develop an interdisciplinary graduate minor and a graduate certificate in Risk Analysis and Decision Making. Led by Jeff Wolt, professor of Agronomy, the project team is working to design and introduce new course offerings in risk analysis and decision making and to adapt these and existent course offerings for distance delivery. This project will be funded by a Higher Education Challenge Grant from the USDA.

“The integrated curricula for the graduate minor will allow students to receive training in risk analysis that can be applied across various fields of biology,” said Wolt. As part of this graduate minor, BIGMAP affiliated faculty developed a course on risk assessment for the biological sciences. Offered in fiscal year 2006, this course is one of the first of its kind offered nationwide. It is co-taught by Wolt and Scott Hurd, associate professor of Veterinary Diagnostics and Production Animal Medicine. Other courses that will be offered as part of the graduate minor include Risk Perception and Communication for Scientists, which will be designed and taught by Associate Professor Lulu Rodriguez of the Greenlee School of Journalism and Communication, and Science Policy Formulation, which will be designed and taught by Assistant Professor Annette O’Connor of the Department of Veterinary Diagnostics and Production Animal Medicine.

Other co-collaborators on this project include Helen Jensen, professor of Economics; Alicia Carriquiry, professor of Statistics; and Ana Correia, assistant professor at the Center for Technology Learning and Teaching.

SEED SCIENCE CENTER CO-SPONSORS WORKSHOP IN SOUTHERN AFRICA

by Sabrina Shields-Cook

Joseph Cortes and Adelaida Harries, scientists at the Seed Science Center, have been working on a project to harmonize seed regulations and to promote seed trade across the globe. With funding from USAID, they have designed and conducted workshops in the past in Latin America and Asia-Pacific. Most recently, they helped to facilitate the last of a series of workshops in southern Africa that led to the endorsement of three major regional agreements for the harmonization of seed regulations in southern Africa.

“We firmly believe all farmers around the world should have access to the best varieties and that is not happening in Africa,” said Cortes. “Our goal is that our project makes an impact and gives farmers easier and faster access to new varieties.”

The workshop gathered the Permanent Secretaries of the Southern African Development Community (SADC) on “Harmonization of Seed Regulations to Promote Seed Trade,” and was held in Benoni, South Africa, on September 18-19. As a result of this workshop, the Permanent Secretaries of Agriculture for the 14 member countries of SADC established a Regional Variety Release System, a Seed Certification and Quality Assurance System, and a Seed Import/Export Phytosanitary System. “These agreements will give farmers quicker access to the best new varieties, define common certification standards for the most traded seed crops in southern Africa, and create a new regional quarantine pest list governing seed trade within the region,” said Cortes.

A more in-depth look at the work Cortes and Harries are doing in South Africa will appear in the next issue of Iowa Seed & Biosafety.

DID YOU KNOW?

Iowa State University is one of the first universities in the nation to offer a course in risk assessment for the biological sciences.
A fundraising initiative led by the Iowa Seed Association has established seven graduate student fellowships in seed science at Iowa State University. Total funds raised were over $1 million. The fellowships, part of the “Investing in People and the Future of the Seed Industry” initiative, will encourage research on global and domestic seed issues and advancement of the science and technology of seed testing.

“The fellowships will help our students address important issues affecting the most critical part of our food supply—the seed,” said Manjit Misra, director of the Seed Science Center.

The three most recent gifts, which put the initiative over its $1 million goal, included a $150,000 gift from the Iowa Crop Improvement Association, a $150,000 gift from the Committee for Agricultural Development, and a $150,000 gift from Barbara Everson of Sequim, Washington. Other fellowships created through the initiative are the Edda G. Sehgal Fellowship for Graduate Studies in Seed Science, the Iowa Seed Association Graduate Fellowship, the Monsanto Graduate Fellowship in Global Seed Policy and Regulations, and the Pioneer Hi-Bred Graduate Fellowship in Seed Science.

“These fellowships will help prepare our graduates for careers as leaders in the global seed industry,” said Wendy Wintersteen, dean of the College of Agriculture at Iowa State. “We appreciate the Iowa Seed Association’s leadership role in achieving the fundraising goal.”

A grant from the Grow Iowa Values Fund will support the commercialization of an in-line continuous flow meter, developed by scientists at the Seed Science Center, which has the potential to increase efficiency and improve profitability in the seed, grain, and food industries. Director Manjit Misra, Scientist Yuh-Yuan Shyy, and Assistant Scientist Alan Gaul were awarded $73,737 in state economic development dollars to develop and market the device, co-invented by Misra and Shyy and patented by the Iowa State University Research Foundation, which is capable of measuring variable flow rates of granular or liquid products.

“The ISU technology was designed to meet criteria that are important to the customers,” said Misra. An ideal granular flow meter would provide an accurate measurement of variable flow rates in a continuous and non-invasive manner without interrupting the flow. Additionally, it would be self-cleaning, minimize product damage, and be priced to meet economic thresholds needed for adoption by multiple industries. “We anticipate that the ISU design, which meets these criteria, would be marketable in multiple industries for monitoring seed and other granular free-flowing products,” Misra added.

An early sign of the potential marketability of the device, two Iowa companies have expressed a strong interest in working with the Seed Science Center on this project: ALMACO, an agricultural equipment company whose products are focused on the agricultural research marketplace, and Remington Hybrids, a large agricultural operation with several seed plants across the state of Iowa. After the initial prototype is built and tested at the Seed Science Center, these two companies will build and test prototype flow meters under variable flow conditions. Once the device has been tested and refined, the Seed Science Center will work with the Iowa State University Research Foundation to license the technology to Iowa companies.

“There are roughly 800 seed companies in the United States, of which over 100 have locations in Iowa,” said Misra. “We anticipate that the multiplier effect of sales and service of these units will lead to significant economic development for Iowa and Iowa companies.”

**DID YOU KNOW?**

The Seed Science Center at Iowa State University is home to the world’s largest public seed testing laboratory and administers the U.S. Department of Agriculture’s National Seed Health System. The lab’s seed health testing is key to the annual export of millions of dollars of American Seed.
Joe Colletti was recently appointed senior associate dean of the College of Agriculture at Iowa State University. Colletti, who has served as an interim in the position since August 15, 2005, succeeds Wendy Wintersteen who was named Iowa State College of Agriculture Dean and Director of the Iowa Agriculture and Home Economics Experiment Station in January of 2006.

In his new position, Colletti is responsible for the administration of college programs. He will also oversee budgets, personnel issues, and will serve as Associate Director of the Iowa Agriculture and Home Economics Experiment Station.

Colletti came to Iowa State University in 1978. He served as a faculty member in the forestry department where his researching and teaching responsibilities included forest and natural resource economics, system analysis related to complex resource issues, and forest ecosystem management. In 2004, Colletti was named interim chair of the Natural Resource Ecology and Management Department.

Prior to coming to Ames, Colletti earned master’s and doctorate degrees in forest economics from the University of Wisconsin at Madison in 1974 and 1978. He earned a bachelor’s degree in forestry from Humboldt State University in 1972.

Colletti is a member of the College of Agriculture’s air quality team and played an instrumental role in the research and demonstration of the Bear Creek riparian buffer project near Roland. This project was designated by the USDA as a national model for managing erosion and protecting water quality.

Colletti’s appointment at Iowa State became effective August 1.
Intellectual Property (IP) rights are created by society through political and legal processes. They are usually justified based on their ability to encourage innovations in the development of ideas and information for the future use of society. Ideas and the capacity to use them are not only important, they are central to the process of improving productivity. IP rights, including those on plant varieties, create temporary monopoly rights. Society trades the right to a temporary monopoly on the products associated with a new idea for the future free use of the idea by all. All intellectual property becomes public after the rights expire. In the case of plant varieties, the genetic information goes back into the pool of public germplasm.

Successful new varieties and products of biotechnology make the use of other resources in agriculture more efficient. In the 20th century, it gradually became clear that the creation of new plant varieties and other products of biotechnology embody information in the same way as does the design of a steam engine. Although some have argued otherwise, patents on varieties and the products of biotechnology are not “patents on life,” any more than a steam engine patent is a patent on iron.

They are patents on ideas that created something which did not exist before. In a free market, without IP, there is little incentive for individuals to create new ideas or new varieties. Some believe that the knowledge creation process can be centralized and that government can create enough new ideas for society. In this model innovation prizes replace royalties as rewards for innovation. Experience indicates that centralized research has some severe limitations both in selection of research topics and in the efficiency of execution. Although government can create a research environment conducive to new ideas, in the end, ideas occur in some individual’s mind. More new ideas will be created if individuals can be rewarded. The temporary monopoly on the use of new information for a fixed period creates conditions for individuals benefit from their work.

The long experience with patents for more traditional kinds of technology indicates that the private sector has some real advantages in creating and applying new technology. With these advantages come the limitations that are usually associated with monopolies: higher prices, limitations on use by the public, and the possibility that monopoly power might be misused to influence others in the market. In the case of the misuse of monopoly power, the public depends on other laws to regulate improper influence. For decades, the U.S. government has legal processes in place to deal with the misuse of market power.

Due to the self-replicating nature of seed, variety research is especially sensitive to intellectual property rights. Without IP rights, after seed of a variety becomes relatively widely distributed, the variety becomes a public good and its use cannot be excluded from anyone. If this were the case, the underinvestment in private research for the creation of new varieties would be extreme.

In spite of the potential for abuse of market power, intellectual property rights for new plant varieties have significant long-term benefits for the society that can implement them properly. They encourage the development of new technologies and new ideas and they help to ensure that those ideas will eventually be freely available to all.

For more details see “Patented Agriculture” by GianCarlo Moschini: www.card.iastate.edu/iowa_ag_review/spring_02/patented.aspx
Thirty-five participants from around the world attended a three-day workshop at the Seed Science Center in May to discuss the analysis and detection of biotechnology traits in seed and grain and to receive hands-on training in the current methodologies utilized for biotech trait detection.

“The development and adoption of crops with biotech traits is increasing rapidly in many parts of the world,” said Satish Rai, scientist at the Seed Science Center and workshop presenter. “However, the use of biotech-derived product in food and feed is subjected to regulatory provisions in many countries. Technologies for detecting biotech traits have become an essential part of meeting these regulatory provisions.”

The workshop, co-sponsored by Pioneer Hi-Bred International and the International Seed Testing Association (ISTA), attracted leading biotech developers from the United States as well as international scientists from Germany, Switzerland, Canada, and France.

Workshop attendees participated in a series of presentations and roundtable discussions on topics including quality control, interpretation of test results, and characterization of quantitative Polymerase Chain Reaction (PCR) as a testing tool.

“Quantitative PCR is the most commonly used technique for assessing the amount of biotechnology-derived genes present within a sample,” said David Hondred, senior research scientist at Pioneer Hi-Bred International and workshop presenter. “The technique is specific and can detect these genes even if they are present at very low levels.”

In addition to the discussions and presentations, attendees participated in two hands-on lab sessions to perform DNA isolation, quantification, and normalization and to experiment with the use of quantitative and real-time PCR testing for biotech trait detection. “Testing for biotechnology traits in seed and grain is essential to crop development, production, stewardship, and regulation,” said Manjit Misra, director of the Seed Science Center. “As a world leader in seed testing, we were excited to have the chance to host this workshop to help train people in industry and academia on the latest technologies for biotech trait detection.”

If you would like to receive a copy of Iowa Seed & Biosafety electronically:
Please forward your Email address to seedsci@iastate.edu

2007 SEED WORKSHOPS
The Center’s program of workshops continues for 2007.
For more Information visit:
www.seeds.iastate.edu
or Email:
Alan Gaul at agaul@iastate.edu

SCHEDULE
Schedule for most workshops
8:00 a.m. - 8:30 a.m. Registration
8:30 a.m. - 4:30 p.m. Workshops
Subsequent days: 8:00 a.m.-4:30 p.m.

LOCATION
The workshops will be held in the Seed Science Center at Iowa State University.

REGISTRATION
Enrollment is limited in workshops. Registration will be accepted on a first come, fees-paid basis. The coordinator of the workshops reserves the right to limit the number of persons attending per company or institution. If you have questions about registration, contact Terrie Hunter at (515) 294-5961.

ON-LOCATION WORKSHOPS
Special arrangements may be made for the workshops to be held on location at your plant or place of operation if four or more employees are involved.

CUSTOMIZED WORKSHOPS
Special arrangements may also be made for customized workshops designed to suit your company’s needs. These workshops are held in the Seed Science Center and can vary in duration and content, based on your company’s specific needs.
### ISU Seed Workshop/Shortcourse Schedule for 2007

<table>
<thead>
<tr>
<th>Workshop/Shortcourse Title</th>
<th>2007 Training Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purity Testing Short Course for Seed Analysts</td>
<td>April 17 - 20</td>
</tr>
<tr>
<td>Germination Short Course for Seed Analysts</td>
<td>April 24 - 27</td>
</tr>
<tr>
<td>Color Sorting - Sortex</td>
<td>June 4 - 5</td>
</tr>
<tr>
<td>Color Sorting - Satake</td>
<td>June 6 - 7</td>
</tr>
<tr>
<td>Commercial Seed Corn Conditioning</td>
<td>June 11 - 14</td>
</tr>
<tr>
<td>Seed Treatment</td>
<td>June 27 - 28</td>
</tr>
<tr>
<td>Soybean &amp; Small Grain Seed Conditioning</td>
<td>July 9 - 11 &amp; July 30 - August 1</td>
</tr>
<tr>
<td>Gravity Separation</td>
<td>August 7 &amp; August 9</td>
</tr>
<tr>
<td>Research Seed Corn Conditioning</td>
<td>August 13 - 16</td>
</tr>
<tr>
<td>Seed Corn/Soybean Quality Evaluation</td>
<td>August 22 - 23</td>
</tr>
</tbody>
</table>

For updates or more information about ISU seed workshops/shortcourses, visit [www.seeds.iastate.edu/seedtest/training](http://www.seeds.iastate.edu/seedtest/training) or Email agaul@iastate.edu.