Purdue soybean research on board historic space flight

by Tom Campbell

The Oct. 29 launch of the Space Shuttle Discovery carried the hopes and dreams of Americans everywhere, embodied in 77-year-old astronaut, politician and hero, John Glenn.

It carried the hopes and dreams of Rick Vierling, too. Vierling is adjunct associate professor of agronomy and has been director of the Indiana Crop Improvement Association’s Genetics Program since 1992.

The shuttle carried Vierling’s experiment that tests a gene delivery process designed to insert new genetic material into soybean plants. It was one of 83 experiments conducted during the mission.

Vierling, along with University of Toledo biologist Steven L. Goldman, had been immersed in preparing the experiment for space flight for six months. Vierling approached NASA’s Commercialization Center in Madison, Wisc., in February 1997 with an idea to shuttle flight sometime in 2000.

“In 1997, it was just an idea,” Vierling says. “I didn’t even have preliminary data when I pitched the idea to NASA.”

In January 1998, NASA decided the experiment had enough promise to bump it up on the timeline. Vierling’s experiment was listed on the manifest for STS-95, Glenn’s historic return to space.

That gave Vierling and Goldman less than six months to get the experiment approved and in a format that would allow the payload specialist (Glenn) adequate time for training.

“We had to do two years worth of research in six months to meet NASA’s deadline,” Vierling says. “I didn’t know the federal government could move that fast. It really put me under the gun. I had planned on about 18 to 20 months to get the background information so we could correctly design the experiment.”

The actual launch of the shuttle was a momentary respite from the rigorous, pressure-filled workload Vierling had endured for the previous six months.

“Vierling describes the launch in the step-by-step procedure that marks him as a scientist, but with the youthful glee of an excited spectator, seeing something for the first time.”

“The first thing that hits you is that it is so large,” Vierling says. “Everything is quiet. You hear the countdown over the loudspeaker. It gets to zero and you see huge, white clouds of smoke shooting out of the bottom of the rocket. But from three miles away, you don’t hear anything. At least not yet.

“Then you see the glow of the orange flame. The rocket finally starts to rise, but you still don’t hear anything. Then you see the birds flying off the islands that surround the launch site.

“As the rocket starts to rise off the pad, you see shock waves caused by the sound vibrating off the surface of the water. Finally, you hear it. The sound just builds up. It’s like a staccato, popping sound. It’s so loud you can feel it in your body. Everything happens in such a short time. Then it’s gone from sight.”

Glenn performed Vierling’s experiment on Nov. 1, sometime after 10 p.m. Back on the ground, NASA woke Vierling and relayed the good news. The experiment had gone off without a hitch.

Houston, we have no problem.

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if this works, this will affect everybody,” Vierling says. “This project could change the whole future of soybeans.”

Vierling says one of the first applications could be an arthritis vaccine for humans. “We have the genes and the vectors in the lab right now, ready to go,” he says. “We just have to get them into the soybeans. The pinchpoint is the transformation to soybeans.

“If we can increase the transformation rate, it will open up a whole new era for soybeans.”

After returning from space, Vierling’s beans — the variety named after retired Purdue plant pathologist Kirk Athow — were grown into plants at the University of Toledo greenhouse.

The beans will be harvested late this spring and returned to Purdue. Vierling and his staff will then determine the successfulness of his experiment.

That is where the final frontier of space becomes critical.

“The bacteria we are using is motile, it swims,” Vierling explains. “We know from previous experiments in space that it is much easier to move in microgravity. The bacteria should be able to move much easier in space.”

Vierling had some difficulty just getting the bacteria on board the Discovery’s middeck locker.

Commercial airlines would not let him ship certain chemicals and the bacteria to the Kennedy Space Center.

“No genetically modified organisms were allowed on the plane,” Vierling says. “People get nervous when you talk about genetically modified bacteria, even if it is a naturally occurring plant pest, not a human pathogen.”

continued on page 2

Youthful glee of an excited spectator, seeing some-
Bernie Engel, PhD’88, a Purdue University agricultural engineer, helped develop a computer-based geographic information system (GIS) used by NASA to assure launch managers that shuttle exhaust won’t harm local wildlife.

“Right next to the launch area is Merritt Island National Wildlife Refuge, which is visited by more than a million people a year,” Engel says. “NASA is very careful about not messing up the environment or letting harmful deposits accumulate.”

A few hours after a shuttle goes up, spent fuel from the solid rocket boosters falls back down. Much of what falls is an acid cloud — in concentrations low enough that it won’t hurt spectators, but high enough that repeated launches could alter the local environment. NASA monitors the deposits and limits the number of launches from each pad to prevent environmental damage.

For years NASA has used a computer model to figure out where deposits fall. But three years ago, during a six-month sabbatical at the Kennedy Space Center in Florida, Engel noticed that NASA engineers were using photocopied maps to plot their estimates. Engel, one of the pioneers in GIS technology, convinced them to move to a GIS computerized mapping system.

With GIS, researchers can pull together data on weather, land use, topography and wildlife and more in one computer system. With all the data integrated, launch personnel can easily estimate how a change in such things as wind velocity or launch location affects where the acid cloud falls. Also, GIS computer maps of data are more accurate than the paper ones NASA had been using.

“Distance estimates made using the paper system could easily be off by thousands of feet,” Engel says. “GIS gives a better estimate of where the hydrochloric acid cloud will fall and removes some of the chance for human error.”

Burton Summerfield, pollution control officer for Kennedy Space Center, pushed to make the change as soon as he saw the advantages of Engel’s suggestions. Engel helped set up the new system, which NASA has used for the last year and a half.

“Bernie has taken our existing model and integrated it to allow for better prediction of the environmental effects,” says Ross Hinkle, chief scientist for Dynacomp International Inc., a company that contracts with NASA for life science support. “We can get almost instant feedback on what the environmental effects might be.”

NASA still calls on Engel when it needs help tweaking the new system. In fact, engineers for the space agency called him in October as they prepared to send Discovery into orbit.

“Just when I was teaching my Purdue GIS class about GIS programming,” Engel says, “they called and said they needed help with the same issues the class was studying.”

Mini-bins, continued from cover

Harvest Education and Research Center has become a reality.

CTB Brock Bins donated 16 mini-bins. Farm Fans of Indianapolis contributed a new continuous flow dryer. Other companies provided fans, computer hardware and software.

“This is a great step up for us,” Mason says. “The technologies that we are testing now can easily move up to the commercial-size storage facilities.”

Two research projects have already been completed during the pilot bins’ first year of operation. Mater reported on some of the data at the 7th International Working Conference on Stored Product Protection in Beijing, China, in October.

The bins, built in parallel rows of eight, have catwalks that provide easy access to the stored grain. Phase II of the project calls for 16 additional pilot bins and enhancement of the existing grain handling and storage facilities. This will allow researchers to scale up their experimental work, as well as work on storage problems in grains other than field corn and soybeans.

As farmers look to expand their horizons by producing specialty crops (like white corn, high-oil corn, popcorn, canola, flaxseed, sorghum and millet) that have very different handling requirements than field corn and soybeans, the research center will be able to answer many of the handling questions economically by utilizing the small bins.

A third phase, as money becomes available, would include construction of a building that would house a wet- and dry-grain milling lab as well as a training center where students, producers and researchers alike could gain hands-on knowledge from Purdue’s research.

“The smaller bins are the perfect size to put specialized crops in to find out the best ways to store and manage them,” Mason says.

Wooshuk says: “It’s nice to be able to solve problems with the team approach, since all of our work is interrelated. That is what makes Purdue’s approach to research so unique. And it is what makes this center unique, too.”

Soil research, continued from page 1

Undaunted, Vierling rented a van, loaded up his family and experiment and headed for Florida, settling in at the plush Royal Mansions condonammaris, just five miles from the launch site.

NASA was caught in a housing pinch when lodging requests from dignitaries and the media came flooding in. Over 4,000 media credentials were distributed for the launch, compared to 400 for Glenn’s first space flight in 1962. The Vierlings got caught in the housing crunch.

On the day he was to load the experiment into the shuttle-size locker aboard the shuttle, Vierling had to relocate his family to the Melbourne Beach Holiday Inn, some 35 miles away from the space center. The travel distance turned a long day into a long night.

“Since we had to load the shuttle 36 hours prior to liftoff, we had to do a lot of experimentation with individual bacteria colonies on their growth rate,” Vierling says. “We had to estimate how much we needed to put in the culture so that it would be the right proportion when it came time for Glenn to do the experiment in space.”

Vierling found they needed to put more bacteria in the culture than originally planned. A late night call to a NASA toxicologist in Houston gained the necessary approval to alter the concentration level of a second chemical just prior to loading. All of which added up to a 19-hour day for Vierling and Goldman.

“We were definitely busy,” says Vierling, who hopes the project has paved the way for more experiments on future shuttle flights.

“If this shows some positive results, I would hope that I could have an experiment a year on board the shuttle.”

Given the short amount of preparation and the lack of available background information, Vierling says he was cautiously optimistic about the experiment results.

“Something like this has never been performed in microgravity,” he says. “There isn’t a wealth of background information for us to refer to and say this may happen, or this might not happen. We’re basically flying blind. Things may not go as we expect, so we can’t get too excited yet.”
Ag grads corner job market

by Andrea McCann

A triple-threat offense can take part of the credit for placement of 92 percent of Purdue University’s May School of Agriculture graduates, according to Allan Goecker, BS’64, MS’66, PhD’74, assistant dean and associate director of academic programs in the ag school.

Goecker explains that coordinators in each of the school’s departments, a placement service in the school’s Office of Academic Programs and the university’s Center for Career Opportunities create a winning team to find employment for ag school grads. Also key is a strong employment market for food, agricultural and natural resources students.

“One only percent of our students go on to graduate school now because the commercial job market is so good,” he says.

Another 2 percent of May graduates were not seeking employment, and 6 percent were job hunting.

“There are still job opportunities available in agriculture,” Goecker says. “I think it will be a somewhat tighter market than what we have seen because of the continuing consolidation of the agricultural sector.”

Besides the constraints on human resource needs from consolidation, he says, some formerly strong international markets are no longer there.

Also, as agriculture evolves, it’s harder to differentiate between agriculture and science and agriculture and business. This creates competition from other disciplines.

“The strongest areas for jobs in the agriculture industry are in the post-harvest areas — food process engineering, food science and marketing,” Goecker explains.

Areas dealing with computer information systems also are strong and likely to stay that way with emerging technologies.

Traditional disciplines may be affected by negative economic news in agriculture, according to Goecker, but the nontraditional ones likely will not.

John Rodgers, BS’64, MS’70, a recruiter with Agra Placements Ltd., Peru, Ind., a 25-year-old business that specializes in connecting ag-related employers with qualified employees, says he expects sales teams to feel the biggest change in the near future. He says businesses are focusing on upgrading their sales force rather than adding to it. Distributors and retail outlets increasingly are expected to handle more of the service needs. He also says equipment dealers are laying people off in anticipation of fewer sales.

The seed industry is not feeling the same crunch, according to Kevin Kaiser, BS’91, a plant manager for Novartis Seeds Inc. in Paris, Ill.

“The industry as a whole is hiring,” he says. “We constantly have openings. The seed industry is not affected as much as the equipment industry.”

Data for final job areas, according to Craig Blume, vice president of financial services at Farm Credit Services in Lafayette, an earnings-based credit service.

“We’re picking up market share and growing,” Blume says. “The industry itself will slow because there will be fewer purchases, but Farm Credit Services won’t change its approach.”

A summary compiled by Goecker shows natural resources, science and management trailing the pack as starting salaries go, at an average of $23,250. Agricultural and food process engineering led the way, averaging $41,356 per year. In the past five years, starting salaries have climbed $2,000 to $4,000, depending on the discipline.

Salaries sharply increased in the last three or four years in the horticulture and landscape architecture field because of a low supply and high demand for employees, according to Leroy De Vries, co-owner of Henry Mast Greenhouses Inc. in Byron Center, Mich. He estimates starting salaries to be between $23,000 and $31,000, depending on experience. He says few people go into the plant-growing end of the business, and many students go back to a family-owned operation after graduation.

“Henry Mast has been around since about 1950, and we supply places like Meijer, Frank’s and Home Depot with plants,” De Vries says. “Soon we’ll have 15 or 16 acres of greenhouses, and we’d love to have people with an agricultural background. It’s a wide-open field for a lot of people.”

Students are realizing the growth potential in the horticulture industry, as well. Purdue’s Department of Horticulture and Landscape Architecture saw the second-highest growth in enrollment in the School of Agriculture this fall. The Department of Food Science had the highest enrollment growth in the school. The Department of Agricultural Economics still can boast the highest total enrollment, however, with 370.

Overall enrollment in the Ag School was down slightly this fall from 2,539 to 2,510.

$Scholarship dollars abound

“Not every scholarship comes from the main university,” says Thomas W. Atkinson, a Purdue agricultural adviser who supervises 37 scholarships available in the School of Agriculture alone.

“Many are available at the school and department level specifically for students in particular fields. We work hard to let every incoming student know about the scholarships available to them. But every year I’ll run across qualified candidates who never knew about them.”

Scholarship endowments come from all over — alumni and students eager for others to attend Purdue, those who want to stimulate interest in a particular discipline, and even companies that want to help promising students become top employees.

Purdue’s School of Agriculture posted a record $55,000 in available scholarship funds in 1998.

Orville Redenbacher’s Top of the Crop Scholarship goes to the upper crust of the upperclass students who best answer “What one thing can I do better than anyone and why?” Part of the answer will be “Study,” since a minimum 3.3 grade point average is required to compete for the $2,500 prize.

A Purdue Ag Alumni Association Scholarship named for Maurit Williamson, its fun-loving former director, offers serious money. The initial $3,000 award can be renewed for three more years for a total of $12,000. The criteria are serious, two — top 5 percent of their high-school class and combined SAT scores of 1,300.

Not all scholarships are based on academic achievement. Some are based on commodities and majors such as beef cattle or agronomy. Others are awarded strictly to Hoosiers based on their hometowns or are open to everybody who follows in the footsteps of the benefactor.

The state of Indiana will help cut college costs for up to 46 needy freshmen who enroll in the Schools of Agriculture or Consumer and Family Sciences. Criteria are a record of 4-H achievement and financial need. Awards are given in the form of fee remissions.

Demonstrated leadership and an interest in animal agriculture are the most important criteria for the $2,500 Oakley M. Ray Award available for seniors. In contrast, only incoming freshmen and enrolled students from Adams, Allen, DeKalb, Grant, Huntington, Noble and Whitley counties can compete for Marquardt Scholarships. The scholarships range from $200 to $500, and 60 to 70 are awarded each year.

The $1,000 Hafele-Stinson Scholarship always includes this paragraph as a letter to recipients: “Although we paid the prevailing tuition and fees, we now recognize that our Purdue education was largely subsidized by previous benefactors and by Indiana taxpayers. It is now ‘pay back time’ — accepted with pleasure along with the fond memories and pride of being a Purdue alumnus. Perhaps someday you will be able to do likewise.”

For freshmen and incoming students, scholarship applications are available in Indiana high schools or county Cooperative Extension Service offices.
A readership survey can be a dangerous thing for a publication. When you ask somebody how you’re doing, you run the risk of finding out what you are doing isn’t what your readers want.

The Agricultural Communication Service team members who produce CONNECTIONS (Mindy Jasmund, Vic Herr, Andrea McCann, Marian Sipes and myself) accepted that risk in our most recent issue by publishing a full-page readership survey. More than 80 readers took the time to fill out the survey and return it to us. To those people, we say thank you for taking the time to respond.

“I enjoy CONNECTIONS,” says an 85-year-old Indiana reader. “It keeps me informed on what Purdue is doing.”

We thought you might be interested in some of the survey results.

Survey responses came from two Lebanese (in Ohio and Indiana), four universities (Purdue, Penn St., Indiana St. and Iowa St.) and 22 different states. We even received a response from a reader in Thailand.

We learned that, for the most part, readers are fairly satisfied with the content of CONNECTIONS.

“I enjoy CONNECTIONS,” says an 85-year-old Indiana reader. “It keeps me informed on what Purdue is doing.”

Another writes: “As a graduate in landscape architecture, I often glance through (CONNECTIONS) looking for issues related to my field. It’s nice to see those stories on a regular basis.”

Thank you for the job security. But not every comment was as supportive.

“I am a forestry and natural resources graduate. I recall very few articles related to my profession, forestry and wildlife,” says one Hoosier reader.

Don’t say we aren’t responsive. There is a story on page 7 of this issue about two forestry graduate students and their selfless efforts to secure relief aid for Central American victims of Hurricane Mitch. Readers, mostly male, between the ages of 26 and 85 spend an average of 15-30 minutes reading the issue, then usually recycle it. Some pass their copy along to a friend, or relative, like a 74-year-old reader in Connecticut who passes his issue along to his grandson who is interested in Purdue.

A popular addition in recent issues of CONNECTIONS has been “A Bit of History.” We’ve been showing readers what campus used to look like, through the photographic archives of J.C. Allen. A couple of readers requested an updated photo of the campus so they can keep up with changes.

With the addition of the Food Science Building and Horticulture Greenhouses in recent months, it’s a pretty good idea to show readers what the campus looks like now. So look for that in an upcoming issue.

But simply because the survey has come and gone doesn’t mean we’ll stop listening to our readers. Publishing CONNECTIONS is an evolutionary process. Some changes are so small, most people probably didn’t even notice. We are constantly trying to improve the product. As readers, your opinions matter. Those opinions help us shape future issues of CONNECTIONS.

We hope this survey has started a dialogue. We hope you will contact us when the urge strikes to complain, compliment or suggest story ideas for CONNECTIONS.

“We’ll continue to make minor changes as we go along. In this issue, we’ve made some changes to the calendar. We hope these changes will make it easier for readers to keep up with the activities of the School of Agriculture.

Questions and comments should be directed to Tom Campbell, CONNECTIONS editor, 1143 Agricultural Administration Building, Room 204, West Lafayette, Ind. 47907-1143. E-mail: tc@aes.purdue.edu

EPA partnership fruitful for students and faculty

by Tom Campbell

A 10-year partnership between Purdue University’s Center for Technology Transfer and Pollution Prevention (CTTPP) and the Environmental Protection Agency (EPA) has produced more than 50 interactive software programs and given more than 100 students their very first professional-level assignment.

“The faculty and students who have worked with the EPA over the past decade have much to be proud of,” says David Ullrich, the EPA’s acting administrator for Region 5, encompassing Ohio, Illinois, Michigan, Minnesota, Wisconsin and Indiana.

“With modest resources, they have created truly world-class software, helping to make complex environmental issues, regulations and concepts easier to understand and fun to explore.”

The programs are used by numerous universities, school districts, government agencies, nonprofit organizations, environmental professionals and individuals in the United States and 80 nations around the world.

The software development program involves EPA professional staff working with undergraduate and graduate students and faculty from the Agricultural and Biological Engineering Department. Professors Don Jones, Mack Strickland and Bernie Engel direct the program at Purdue. Amy Childress, multimedia supervisor, and Sandra Allen, BS’91, MS’94, multimedia development specialist supervise the day-to-day programming.

The programs are available free from the EPA Website, http://www.epa.gov/seahome/, the Purdue CTTPP site at http://danpatch.ecn.purdue.edu/~cttpp, or from the USDA Water Quality Data-base at http://www.hermes.purdue.edu/

Guan receives MacArthur Award

Professor Kunliang Guan, who earned his PhD in biochemistry from Purdue in 1989, is one of 29 winners of the prestigious MacArthur Fellowship Award for 1998. Guan is currently associate professor of biological chemistry at the University of Michigan Medical School and senior associate research scientist at Michigan’s Institute of Gerontology.

Also known as the genius award, the MacArthur Fellowship is a $230,000, five-year fellowship.

“Kunliang is a very bright and highly creative scientist,” says Michael Marletta, University of Michigan biochemistry professor and a former MacArthur Award winner.

“He has an ability to see things that others have missed and consequently has already made several very important discoveries in the cell signaling area.”

Guan’s research has helped to explain how cells regulate internal processes, such as division, and how they respond to external conditions, such as infection.

Born in Tongxian, China, in 1963, Guan received his BS from Hangzhou University and has been a faculty member at the University of Michigan since 1991. Guan’s wife, Yuli Wang, also completed her doctoral work at Purdue, earning her PhD in biochemistry in 1990.

The John D. and Catherine T. MacArthur Foundation is one of the largest private philanthropic foundations in the United States.
Purdue Agriculture lost a dear friend when David C. Pfendler, BS ’32, MS ’39, HDR ’75, died Sept. 12 at his home in Petaluma, Calif. He was 90.

Pfendler, diagnosed with a rare form of nonreatable lymphoma in 1998, worked in the School of Agriculture for 38 years prior to his retirement as associate dean in 1974.

“Dave was a tremendous student counselor,” says former Secretary of Agriculture Earl Butz, “the best I have ever known.”

Purdue President Steven C. Beering says: “Dean Pfendler was one of the great sages of the university. He devoted his career to students, but he understood the School of Agriculture in all its dimensions. It was a great comfort to me to know I could call upon his wisdom and draw strength from his friendship.”

Beering honored Pfendler with the prestigious Griffin Award in 1996.

Pfendler counseled thousands of agriculture students during his tenure. He had a gruff exterior, but a kind heart. He was explicitly dedicated for each student he counseled.

“He had a heart as big as all outdoors, but he had steel in his backbone to straighten out students who were having problems,” recalls Lowell Hardin, BS ’39, HDR ’90, assistant director of Purdue’s International Programs in Agriculture.

Butz says Pfendler saved many a Purdue student from failure.

“He could be as hard as nails, if that’s what was required, or as soft as soap, if that’s what was needed,” Butz says. “Many a graduate of Purdue University owes the success of his college career to Dave Pfendler. He truly understood how to motivate students. He knew how to build a fire under some students and how to put enticements in front of others.”

One such student was Allan Goecker, BS ’64, MS ’66, PhD ’74, Purdue’s assistant dean of agriculture and associate director of academic programs.

“Dean Pfendler was very stern. He had very high expectations for his students,” Goecker says. “Some students had difficulty facing up to those expectations, but those who did were very grateful for the advice, counseling and care he extended to them.

“He was a mentor to me and a special friend to many, many Purdue graduates. He took the time to not only know the students, but in many cases, their families, too. His greatest contribution was his impact on young people. It’s not one that shows in black and white; it shows in personalities and success.”

Pfendler’s father, David C. Pfendler, graduated from Purdue’s School of Agriculture in 1897. His class donated the gates to the university. Dave located the gates in storage a few years ago and recently helped reinstall them on the Memorial Mall near Stewart Center.

A native of Indiana, Pfendler was a past chapter and national president of Alpha Gamma Rho fraternity. He served on the board of directors of the Ag Alumni Seed Improvement Association and held the honorary titles of both Sagamore of the Wabash and Kentucky Colonel.

Purdue Agriculture has a number of scholarships available to assist students financially, from one-time awards to scholarships that can be renewed for four years. We will help make Purdue affordable for students who want to come here.

We also help our students when it comes time to look for a job. The School of Agriculture’s job placement rate is consistently above 90 percent. And, despite this tough year in production agriculture, there are jobs out there for our graduates. Many of them are finding well-paying, challenging jobs right here in Indiana.

There is a world of opportunity here at Purdue and in agriculture. Students with an interest in anything from engineering to insects, economics to genes, and food to forests can find their place at Purdue Agriculture. We offer a wide range of majors that give students the skills to get the jobs they want.

Please join us in helping students seize the opportunities Purdue has to offer. Open the doors to Purdue University and Purdue Agriculture for a student you know. You could make all the difference in the world.
Horticulture and Landscape Architecture

The American Society of Horticultural Science (ASHS) presented Randy Woodson a career award for 1997. Woodson, director of Agricultural Research Programs, earned the award for distinguished contributions for a period of 10 or more years as an internationally recognized horticulturist, plant molecular biologist, researcher, teacher and administrator. Woodson was department head until his appointment as research director and associate dean of agriculture on July 1. Woodson was one of only five academic or industry representatives selected for the career award this year.

Seniors Gary Lehman, John Moran and Mark Pletcher earned a second place award ($1,600) at the National Stone Association (NSA) Student Landscape Architecture competition in Washington, D.C. Their entry converts a sand and gravel operation into an agricultural research center complete with a working farm and fisheries research center.

International Programs In Agriculture

For his lifelong contributions to world food security, Lowell S. Hardin, BS ’39, HDR’90, has been awarded the Nyle C. Brady Award by the Consultative Group for International Agriculture Research (CGIAR). Hardin received the award for helping shape the concept of international agricultural research over a career that started in 1965 as a senior agriculturalist for the Ford Foundation.

Agricultural Education

Program coordinator B. Allen Talbert has received the Outstanding Young Agricultural Educator Award for the Central Region for 1998. The award is presented by the American Association for Agricultural Education. Talbert is one of four regional award winners this year and is recognized for contributions to agricultural education in the areas of teaching, research and service.

Dexter B. Wakefield, a graduate teaching assistant, is the Central Region vice president for Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS). The organization is a national society committed to fostering partnerships between minority agriculture and natural resources college students and professionals from academia, government and business.

Mark A. Balschweid has joined the faculty as an assistant professor. Balschweid is researching the integration of scientific principles into the secondary agricultural education classroom.

Food Science

Arun K. Bhunia is an assistant professor of food microbiology. Bhunia is teaching a course in microbial foodborne pathogens and is doing food microbiology research. Bhunia was previously an assistant professor of food microbiology and immunochromatistry at Alabama A&M and adjunct assistant professor at the University of Alabama in Huntsville.

Biochemistry

The Board for International Food and Agricultural Development (BIFAD) Chair’s Award for Scientific Excellence has been presented in the name of Larry Butler, a Purdue scientist who died in February 1998. The award recognizes the work of an outstanding scientist contributing to the alleviation of hunger, generally relating to exceptional efforts through the Collaborative Research Support Program, a program that highlights the partnerships among universities, the U.S. Agency for International Development (USAID) and others.

Agricultural Communication Service

David A. King has been appointed interim executive director of the Indiana Higher Education Telecommunication System (IHETS). King assumed his IHETS duties Oct. 1 on a part-time basis. He will continue his role as head of the Agricultural Communication Service. King has worked with IHETS for five years, serving on the Video Network Committee and as chairman of the Integrated Technology Committee.

Information Technology

Neal Vines is working to merge the efforts of information technology in agricultural research and Extension in the agricultural administration complex. Vines, whose title is information technology leader, came to Purdue from Virginia Tech.

Agricultural and Biological Engineering

The Society of Automotive Engineers (SAE) selected Harry G. Gibson to receive the Forest R. MacFarland Award. Gibson will receive the award during the 1999 SAE International Congress and Exposition in March. The award will be presented to Gibson in recognition of his efforts and leadership in the farm, construction and industrial machinery activities of the society.

4-H and Youth

“4-H Woodworking Curriculum” earned a blue ribbon award in the 1998 Educational Aids Competition sponsored by the American Society of Agricultural Engineers. 4-H youth leader Roger Tormoehlen, BS’80, MS’82, PhD’85, and Mack Strickland, BS’71, MS’72, PhD’79, (Agricultural and Biological Engineering) participated in the project, which was one of 80 entries submitted for the competition judged at the ASAE’s annual meeting in Orlando, Fla.

Animal Sciences

Rebecca Krisher has been appointed assistant professor specializing in the area of developmental biology and reproductive physiology. Krisher, a graduate of Hanover College (BS), North Carolina State (MS) and Virginia Polytechnic Institute and State University (PhD), did post-doctoral work at the University of Wisconsin before joining the Purdue staff.

Entomology

Sandy Lindsay received the Outstanding Service Award in the Entomology Department. The honor,
presented for the first time, recognizes Lindsay’s performance, contributions, accomplishments and continued outstanding service to the department.

The Indiana Pest Control Association granted honorary membership to professor of entomology Gary W. Bennett at the organization’s summer meeting July 18 in Indianapolis.

Roger H. Ratcliffe, adjunct associate professor of entomology and research entomologist, was recently promoted by the United States Department of Agriculture-Agricultural Research Service (USDA-ARS).

Agronomy

Two faculty members were honored at the annual meetings of the American Society of Agronomy (ASA), Crop Science Society of America (CSSA) and Soil Science Society of America (SSSA) in Baltimore, Md., Oct. 18-23.

John G. Gravelle, professor of agronomy, received the 1998 Agronomic Education Award. Marion F. Baumgardner, MS’55, PhD’64, professor emeritus of agronomy, received the 1998 Soil Science Distinguished Service Award.

Forestry and Natural Resources

Harvey A. Holt was named winner in the Support Category of the National Roadside Excellence Contest sponsored by the National roadside Vegetation Management Association (NRVMA). Holt received the award Oct. 8 in Salt Lake City, Utah. The award honors Holt for leadership and support provided to the roadside industry and other noncrop markets.

Doctoral candidate Shuju Bai, along with William Chaney, won a contest sponsored by the Plant Growth Regulation Society and Sedagri. The award, which carries a $250 prize, was presented for Bai’s paper, “Treatment of Silver Maple Trees With Tree Growth Regulators Influences Growth of Progeny Seedlings.”

Botany and Plant Pathology

The Purdue Alumni Association presented its Special Boilermaker Award to Carole Lembi. Earlier this year, Lembi completed the doctoral thesis of Stewart Kees after his untimely death on June 27, 1997. Their story was told in the last issue of CONNECTIONS.

Agricultural Economics

Three appointments have been made within the department. Frank Dooley, formerly of North Dakota State, has been named associate professor. Alan S. Gray, from Texas A&M, and Mark Leach, from Georgia State, have been appointed assistant professors.

The Distinguished Agricultural Alumni Awards convocation will have a distinct Midwestern feel when it honors its newest class April 23.

Four Hoosiers are among the Class of 1999 to be honored at the 9:30 a.m. ceremony at Fowler Hall Purdue’s Stewart Center. A reception in the Stewart Gallery and luncheon at St. Thomas Aquinas Church will follow. All events will be hosted by Dean of Agriculture Vic Lechtenberg.

Award winners include:

- Walter J. Ambruster, BS ’62, MS ’64, managing director, Farm Foundation, Oak Brook, Ill.
- William T. Boehm, MS ’72, PhD ’74, vice president, The Kroger Co., Cincinnati, Ohio.
- Daniel J. Cantiliffe, MS ’67, PhD ’71, chairman, Horticultural Sciences Dept., University of Florida, Gainesville, Fla.
- Joann K. Green, BS ’77, president, Claire Bennett Associates, Inc., Indianapolis, Ind.
- Barbara A. Kohn, BS ’79, vice president, Vicam, Watertown, Mass.
- David L. Miers, BS ’70, president, Miers Farm Corp., Greensburg, Ind.
- David K. Mueller, BS ’75, owner, Fumigation Service and Supply, Insects Limited, Westfield, Ind.
- Donald E. Orr, BS ’67, president and chief operating officer, United Feeds Inc., Sheridan, Ind.

For more information, contact Laurie Swift at (765) 494-3150.

The Indiana State Fair appealed to young and old alike during its 12-day run in August. A record 728,724 people, including 7-year-old Laura Arvin (right), visited the fair. Arvin patiently waited for turkeys to hatch at a Purdue-Indiana State Poultry Association joint exhibit. Retired Extension educator Arthur Redinger, BS ’60, MS ’66, (left) uses a mallet and chisel to produce a Shaker bench at the Pioneer Village. The 1999 fair is scheduled for Aug. 11-22.

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Coffee anyone?
by Tom Campbell

Perhaps the most important thing Baltasar Ferreiro learned during his college career at Purdue was summed up in one sentence by Associate Dean of Agriculture David Pfendler on the very day Ferreiro received his Purdue degree.

“We have simply taught you how to look for information,” Pfendler told Ferreiro June 13, 1971, when he received his degree in agricultural economics.

Ferreiro has spent the rest of his life doing exactly that. “Once you learn how to look for information, you can get it anywhere,” says Ferreiro, a voracious implement profiting-edge technology. He utilized a drip irrigation system, a high rate of planting per area and a cold press processing system for the extraction of oil from the lemon husk.

Working alongside his father, Ferreiro had established the largest citrus plantation in Central America, implementing the latest in technology. He utilized a drip irrigation system, a high rate of planting per area and a cold press processing system for the extraction of oil from the lemon husk. “We were one of three producers worldwide doing it that way,” Ferreiro says. “Now, 98 percent of the essential oil is extracted likewise.”

Ferreiro’s plantation is now about 4 percent of the ground his ancestors farmed. The rest was parceled to guerrillas and soldiers who fought in the war. It was the price Ferreiro paid for peace in his country. But Ferreiro has gotten more with less by planting more coffee plants per square meter than his competitors. He developed a more productive fertilization scheme to help boost productivity.

“High quality production needs a better and more analytical production process,” he says. Ferreiro designed and built the efficient coffee mill and roasting machinery used on his plantation, as well as an irrigation system that increased productivity.

When the smoke had cleared at the end of El Salvador’s “Lost Decade,” Ferreiro had complete control of every phase of his coffee operation, from planting all the way through air delivery of the product.

“If I were to keep the process simple, using the KISS method, I experienced. Keep it simple and stupid,” Ferreiro says. “I feel that I use my degree from Purdue on a daily basis. They taught me how to open my brain and think things out there that can make me better. I am so proud to be a Purdue graduate.”

Ferreiro lives his life the same as he runs his business, guided by a few steadfast beliefs that are as deeply rooted as the richly flavored coffee plants he grows. “Peace, goal setting, attitude, determination, innovation and speed. These are my principles,” he says. “They are applicable at any stage in your life.”

Ferreiro’s Mountain Plantation Gourmet Coffee can be found at www.internationalcoffee.com/ferreiro.

E-mail: ferreiro@es.com.sv or call 1-888-BUY-KAFE.

Baltasar Ferreiro

Baltasar Ferreiro, shown here in his grinding mill, is a third generation coffee grower from the fertile volcanic mountain fields of El Salvador.

A boot on his neck and a gun barrel pressed to his temple held Ferreiro in place for 45 minutes as the guerrillas aimed their weapons and clicked away the empty chambers, mocking their prisoner.

“At that moment, I saw the Tunnel of Tranquillity,” Ferreiro says.

And in those tense minutes inside the tunnel, Ferreiro saw his life scroll out before him like living graffiti on the walls. “I remember flying through the tunnel like the old Superman, flying like an angel,” he says. “And at the end of the tunnel, I saw the silhouette of Christ. It was an experience I will never forget. Ever since that day, I know that there is a supreme being. I know there is a reason for us to be here, so let’s try to be the best we can be and lead the best life we can live.”

To this day, Ferreiro questions why he did not lose his life along that mountain roadway, why the rebels let him go. Emotionally, the near-death experience made him stronger. “At that very moment, I lost all fear of death,” Ferreiro says. “It is not that I go looking for it, but I am not afraid of dying. That experience gave me a very strong sense of confidence that I didn’t have before.”

Connections

Coffee from El Salvador to your door

Name: Baltasar Ferreiro
Occupation: Coffee producer
Degree: BS71 Ag Economics
Hometown: San Salvador, El Salvador
Family: (Divorced) three children:
Camilla, 18, Betsie, 15, Christina 6
Hobbies: Flying
Favorite coffee treats:
1. Hot cup of coffee
2. Ice-cold coffee and cream
3. Coffee and chocolate
4. Plantiff coffee beans encapsulated in chocolate (like peanut M&M’s)
5. Cappuccino (for Sunday mornings)
6. Coffee liqueur (after dinner)

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Al Pell is farming.  The area operates a grain and livestock farm near Brazil, Ind.

...continued on page 10
Scott Newman, PhD’83, is group leader, Molecular and Quantitative Genetics, for the Cooperative Research Center for the Cattle and Beef Industry (Meat Quality), based at the CSIRO Tropical Agriculture Laboratory in Rockhampton, Queensland, Australia.

Paula Bary, BS ’89, Danville, Ky., was recently certified as a member of the American Institute of Certified Planners (AICP).

Susan (Kyle) Troyer, MS’90, is a dairy farmer in Elkhart County, Ind. She celebrated the birth of a son, Crist Edward, on Dec. 7, 1997.

Nichelle Patti, BS’91, is attending graduate school at Indiana University. She is working on her MPA degree, specializing in environmental issues and nonprofit management.

Lori Hughes, BS’95, just recently got out of the Peace Corps after two years of service in the Philippines. She is now traveling for a time before returning to the United States.


Lee W. Miller, BS’51, Saint Petersburg, Fla., passed away March 20, 1998.

Ruble G. Langston, PhD’54, Bryan, Texas, passed away Aug. 27, 1998.


When hogs fry
by Donya L. Lester

Hold on to your hats, pardners! The biggest, best and wildest west show arrives by stagecoach at the Purdue Armory as the Ag Alumni Association hosts its annual meeting, the Purdue Ag Fish Fry.

The show begins at 11:30 a.m., Friday, January 22. Tickets are $12 and are available only through advance sales. They can be purchased at all Purdue Cooperative Extension Service county offices in Indiana or through the Ag Alumni Association office.

An authentic stage coach will herald the arrival of performers for “Buffalo Pete’s Wild West Show.”

As usual, the Fish Fry planning crew has added its special, wacky touch to the trick riding, sharp shootin’ and fancy ropin’ acts that will headline the show. In addition to the variety of wild west show performers, the audience will be entertained by the music of the Purdue Pep Band and vocal performers from the Purdue Musical Organizations. The show’s grand finale will feature a performance by the Purdue Varsity Glee Club.

The Fish Fry will celebrate the Purdue Agriculture tradition of service as it bestows its oldest and most prestigious award, the Certificate of Distinction, on honorees selected for their “service to agriculture beyond the call of duty.”

Once again, many of the “prime” seats will be available to the general public. Doors will open at 11:05 a.m. Those attending the Ag Forecast will have a reserved section of seating. Group discounts are available for parties of 10 or more.

For more information, contact the Ag Alumni Association at (765) 494-8593.

Stay In Touch ...

Let your fellow students know what you are doing through Class Notes. Please complete this form and send it to: Debby Jakes, Purdue Agricultural Alumni Association, 1140 AGAD, Room 1, Purdue University, West Lafayette, IN 47907-1140. Please specify the complete names of any acronyms you include in your news, because some may be unfamiliar to us or to our readers. You also may e-mail your Class Notes information to Debby at: debby@agad.purdue.edu

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News (job, family, community activities)
January 2
Forestry and Natural Resources Alumni Reception, Pre-game reception in Forestry and Natural Resources Building followed by Purdue men’s basketball game vs. Minnesota (limited number of tickets available). Contact Ag Alumni Association at (765) 494-8593.

January 22
Ag Science Forecast, 9:15 a.m., Loeb Playhouse, Stewart Center. A panel of agricultural industry leaders will address the international trade and monetary policy issues affecting agriculture. Orion Samuelson, host of U.S. Farm Report, will lead the panel discussion. For more information, contact the School of Agriculture at (765) 494-8392.

February 19-21
4-H Peer Education in HIV/STD Prevention Conference at the FFA Center, Trafalgar, Ind. County teams comprised of at least four teens and one adult educator or volunteer (teacher, 4-H leader, etc.) will participate. For details, contact Susan Barkman at (765) 494-8423.

February 23
Washington, D.C., Ag Alumni Event. All ag alumni in the D.C. area will receive an invitation to a reception with Dean of Agriculture Vic Lechtenberg. For more information, contact Donya Lester at (765) 494-8593.

March 27
Junior Pork Day at Purdue University for all 4-H swine members, parents and leaders. Contact Clint Rusk at (765) 494-8439.

April 16-18
Hoosier Horse Fair for all 4-H Horse and Pony members at the Indiana State Fairgrounds. Contact Clint Rusk at (765) 494-8439.

April 17
Project Future, West Lafayette campus. Students in grades 9 through 12 will participate in activities about natural resources, food and agriculture. For more information or to register, contact Mary Welch at (765) 494-8470.

April 17 & 18
Spring Fest, West Lafayette campus. Spring Fest encompasses open house and display activities, including events hosted by many departments in the School of Agriculture. The Schools of Science, Veterinary Medicine, and Consumer and Family Sciences will also participate in Spring Fest activities. For more information, contact Dana Neary at (888) 398-4636.

April 20
Senior Chili Supper, Ag Administration lawn, Purdue campus. Seniors and their spouses are the guests of the Ag Alumni Association as the seniors are officially welcomed into the Ag Alumni Association. For more information, contact Donya Lester at (765) 494-8593.

April 23
Distinguished Agricultural Alumni Awards Convocation, Fowler Hall in Stewart Center. Reception and luncheon will follow. For more information or to register, contact Laurie Swift at (765) 494-3150.

April 24
Gala Week Pancake Breakfast, 7:30 a.m. to 9 a.m., Ag Administration Building front lawn. Tickets are $5 per person and are sold at the door. Contact Ag Alumni Association at (765) 494-8593.

May 11
Connections Myron Davis Director, Agricultural Development
Increasingly, alumni and friends of Purdue Agriculture are recognizing the important role of their personal philanthropy. As I have related numerous times in CONNECTIONS and elsewhere, private support provides the margin of excellence in many disciplines. It makes higher education attainable for students of very humble means and it permits departments in Agriculture to attract a cadre of highly gifted undergraduates and graduate students so important in maintaining the prestige of an educational institution.

To a larger degree than ever, volunteers (alumni and friends like you) have helped our development staff communicate the need and impact of personal philanthropy. With great success over the past two years, graduates of Food Science, now among our volunteers, contacted classmates, industry leaders and professional peers asking their help in outfitting the new Food Science Complex. Their efforts have yielded hundreds of thousands of dollars! Alumni of Agricultural and Biological Engineering make up the department’s Development Committee, volunteers committed to helping raise funds for scholarship endowments and graduate student support, new equipment, laboratory renovation, industry lectures and more.

Calling All Volunteers

March 27
New York Alumni Reunion, Ithaca, NY. All Purdue agricultural alumni in the Ithaca area will receive an invitation to this dinner event to be held in conjunction with the NAADA conference (see above). Contact Donya Lester at (765) 494-8593.

August 12-23
Pioneer Farm and Home Show, held as part of the Indiana State Fair, Indianapolis, Ind. Contact Mauri Williamson at (765) 463-9829.

August 25
Area IX Golf Outing and Steak Fry, Darlington, Ind. For more information, contact Gary Standiford at (765) 477-7106.

Sept. 9
Eastern Indiana Purdue Ag Alumni Annual Banquet, New Castle, Ind. Contact Joe Russell at (765) 289-1330.
Mason, Maier and Woloshuk is not a prestigious law firm, but a three-pronged research team attacking grain storage problems with the help of a new education and research center at Purdue. The Post Harvest Education and Research Center includes 16 (500-bushel capacity) mini-bins filled for the first time this fall with corn produced specifically for Linda Mason, Dirk Maier and Charles Woloshuk's research projects at the Agronomy Research Center, located just north of Purdue's West Lafayette campus.

A food-pest management and stored-grain insect specialist, Linda Mason was having a difficult time finding adequate facilities to conduct her research. Commercial grain handlers would wince when they saw Mason coming. After all, much of her research involves introducing insects to grain, then monitoring the results.

"Understandably, people don't like the idea of me adding insects to their grain bins," Mason says. Consequently, much of her research had been conducted in a laboratory using 55-gallon drums filled with grain and insects.

"We needed a place where we could conduct state-of-the-art research without worrying about contaminating someone else's grain," Maier says. In 1992, Mason and Maier (an agricultural and biological engineer specializing in grain handling, storage and processing) began gathering ideas that would help them build the finest grain handling research facility in the world.

In 1993, Mason and Maier asked Woloshuk (a botany and plant pathology specialist in the field of feed and grain mycotoxins) to become part of their research team examining problems caused by insects and mold in stored grain. Woloshuk had been examining problems with the help of a new education and research center at Purdue.

"I don't look for something that is going to be great for insects but is terrible for molds or the condition of the grain," Mason says. "And I don't try to design ways to make stored grain more marketable. We would like to see more people do things like this."

In 1996, Mason and Maier began holding research facility in the world.