

# Summer Program REAPS Lasting Benefits

**O**ne conversation with 17-year-old Abra Parkman and you know you're talking to a confident young woman ready to embrace her future. This high school senior has already accomplished much, including attending an innovative science program at Kentucky State University (KSU) developed in partnership with USDA's Agricultural Research Service and Natural Resources Conservation Service.

For 2 years, Parkman, of Evansville, Indiana, has spent half of her summer at KSU's Research Extension and Apprenticeship Program, known as REAP. She learned about this program when USDA Liaison/Director Jesse K. Moore came from Frankfort, Kentucky, to tell parishioners at the Nazarene Mission Baptist Church in Evansville about agriculture and a chance to be part of the REAP experience.

The program gives students—eighth graders to high school juniors—a chance to live on KSU's Frankfort campus and work with scientists and other agricultural professionals every day for 6 weeks. Their work includes publishing mini-papers and giving oral presentations to their peers, mentors, and others.

Parkman plans to attend college after graduating from Benjamin Bosse High School in Evansville. She's considering becoming a zoo veterinarian—specializing in animal reproduction. She says working with USDA's Animal and Plant Health Inspection Service (APHIS) got her involved in research right from the start.

"I got to see a veterinarian worming cattle and taking blood to test for diseases," she says. "It was really interesting to see what was done with the animals."

Parkman's mentors, APHIS veterinarians who do farmsite testing for cattle diseases such as brucellosis, were so impressed with her that they asked her back for a second year. Because only about 30 of roughly 150 REAP applicants

are accepted annually, repeat internships are a special honor.

"Working with 1,000-pound animals can be dangerous—they're not house pets," says APHIS veterinarian Barry Meade. "But Abra handles them quite well. She's also learned two of the laboratory tests we run. We rely on her a lot."

Parkman usually accompanies veterinarian John Hollis on his rounds and has helped APHIS conduct a nationwide survey of horse owners and breeders about special equine diseases that APHIS is

working to control. Her first REAP paper was on brucellosis eradication efforts, and this year she wrote about APHIS' mission and program scope.

## Going Back a Decade

ARS began a special cooperative program in 1988 with historically black 1890 schools to get minority high school students excited about science careers.

The Kentucky State program started in 1990, when KSU Dean of Agriculture Harold R. Benson drafted the original

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Students in Kentucky State University's Research Extension and Apprenticeship Program visit the ARS National Visitor Center at Beltsville, Maryland.

proposal and applied to USDA to become a REAP school.

It costs \$155,000 to offer the program to about 30 students. Currently, USDA contributes \$50,000—half from ARS and half from NRCS. KSU, Kentucky state government, and various businesses contribute also.

The students make several educational trips, including a visit to Washington, D.C., to see the Capitol. They also make a trip to Beltsville, Maryland, to tour ARS' Beltsville Agricultural Research Center.



The Maryland trip begins at the ARS National Visitor Center, housed in a historic log lodge that the Civilian Conservation Corps built in 1936.

This year, one of the tour's hits was botanist Eric Erbe's demonstration electron microscope. He uses liquid nitrogen to freeze samples of living plant tissue in research to help ARS find new controls for nematodes—microscopic worms that cost millions in crop damage each year. One student asked how much he could magnify a sample.

"About 250,000 times," Erbe replied. "But the key thing is how you use the system. It's just like your car: Just because it can go 100 miles an hour doesn't mean you normally drive it that fast."

Marcus Thomas, a 15-year-old sophomore, wanted to know how Erbe began his career. Erbe said he had been interested in microscopes since he was 6.

"I wanted to get an understanding of how he got into that career," said Thomas after the demonstration. When asked if he'd like to do similar work, Thomas smiled shyly and said, "Maybe."

"Aren't you nervous about getting that liquid nitrogen on your skin?" asked 16-year-old Michael Carty of Charlotte Amalie High School in St. Thomas, Virgin Islands. Being so cold, liquid nitrogen can instantly freeze the skin.

"I've poured about a swimming pool's worth of the stuff during my career," Erbe replied. "After a while, it becomes second nature. Liquid nitrogen could cause injury, but we follow strict safety guidelines."

Erbe helped DeLaina Givens, a 15-year-old junior, freeze a wildflower she'd picked on the campus. A junior at Scott County High School in Georgetown, Kentucky, Givens has been learning a lot through the REAP program, which she heard about from a woman in her church whose daughters had participated.

During a tour of the Beltsville dairy facility, Givens held odorless, composted manure that had been turned into fertilizer—one of ARS' many sustainable

agriculture projects. This kind of research will reduce nitrogen runoff, a form of pollution.

"REAP really changed my whole outlook on agriculture," Givens says. "I knew I wanted to be a scientist, but REAP showed me agriculture is more than farms—it's also about protecting wildlife and ensuring that what we eat is safe."

During her first year in REAP, Givens did lab work for her mentor, engineer/chemist Matt Byers with KSU's Community Research Service. Byers was working on how plant pesticide exposure affected farmworker health. This year, Givens gave educational tours at the Salato Wildlife Education Center on Kentucky's native plants.

Not every REAP student becomes a scientist. B. J. Carter, a 16-year-old senior at Paul Laurence Dunbar High School in Lexington, Kentucky, plans a career in law enforcement. But the REAP program has enriched his life, he says, because mentor Sherri Evans has given him a love of horticulture and gardening.

"I had biology in school last year, and REAP really helped me get more out of it," he says. "I like science more since I went through the program."

Whether it's building a lifetime love of science or helping someone choose a career, ARS scientists see that programs such as REAP are vital to the survival of their own research.

"This is really important for us," says dairy scientist Albert Guidry, who is in Beltsville's Milk Secretion and Mastitis Research Unit, as the students toured the dairy. "We communicate with our peers through scientific journals. But if we don't reach the next generation and get them excited about the work, who's going to carry it on in the future?"—By **Jill Lee**, ARS.

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