At BARC, We've Only Just Begun

There's an easy way to keep an eye on what we're up to at the Beltsville Agricultural Research Center (BARC) these days. The Agricultural Research Service has around 900 active, appropriated research projects across the country, and a detailed description of each project is posted on the ARS website. And according to the in-house database we use for tracking our work, about 250 BARC researchers are either heading up or collaborating with more than 100 of these projects.

Reading through these BARC projects is like reading through the course list at a university for overachievers. In the Environmental Management and Byproduct Utilization Laboratory, researchers are taking on a study called "Air Quality in the Chesapeake Bay Region as Influenced by Agricultural Land Use Changes." Down the road at the Sustainable Agricultural Systems Laboratory, their colleagues have put together a project entitled "Molecular Approaches To Enhance Plant Nutrient Content, Shelf-Life, and Stress Tolerance." Scientists in the Bovine Functional Genomics Laboratory are tackling "Using Genomics To Define and Control Parasitic Infections in Cattle." And ARS experts at the Bee Research Laboratory have been working steadily at "Improving Honey Bee Health, Survivorship, and Pollination Availability"—work that's been carried out in a spotlight since 2006, when beekeepers began reporting alarming losses in their hives from colony collapse disorder.

For an agricultural research facility that started out in 1910 with a single dairy barn, we've done pretty well over the years. Of course, we got a big boost in the 1930s, when some of the men in the Civilian Conservation Corps (CCC)—one of the New Deal programs that put people back to work during the Great Depression—came to Beltsville to expand our space. When they were done,

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Aerial view of the Dairy Research Facility and surrounding area on the east side of BARC, circa 1994.

they had constructed 21 buildings, erected 242 miles of fencing, and built 79 miles of roads, trails, and bridges. They had also landscaped 500 acres, moved 78,000 trees and shrubs, and installed 126 miles of water, sewer, and drainage pipes. In addition, they used blueprints that had been drawn up for lodging in Yellowstone National Park to build the rustic "Log Lodge," which served as a recreation center for CCC workers in the area. The Log Lodge now provides a home for the ARS National Visitor Center, which was visited in 2009 by around 5,000 people, including government officials, stakeholders, schoolchildren—and the occasional local resident who wanted help in identifying a mysterious insect.

So where do we go next?

U.S. Department of Agriculture Secretary Tom Vilsack has outlined his research priorities for USDA scientists and collaborators. He wants us to find out more about how farming practices affect the dynamics of global climate change. He wants us to concentrate on finding ways to improve our detection of pathogens that cause foodborne illness and ways to keep those pathogens from contaminating our food supplies. Scientific studies on enhancing health and nutrition throughout childhood is another mandate, as is research on creating food security, both in the United States and across the globe. Finally, Secretary Vilsack firmly believes that USDA scientists can significantly contribute to the development of environmentally sustainable systems for bioenergy production that will help secure abundant—and homegrown—supplies of "green" energy.

BARC is the world's largest agricultural research complex, and our scientists will be front and center in these efforts. We have the tools and expertise to decipher the genetic workings of a single soybean and the instruments to measure and analyze data on all the factors—including fertilizer inputs, available sunlight, rainfall, temperature, slope aspect, soil type, planting and harvest schedules, and pest-control strategies, among others—that affect crop production and yield.

We've traced the evolution of *Toxoplasma gondii,* a parasite that has for 10 million years infected warm-blooded vertebrates around the globe, to acquire the information needed to mitigate its future impacts on livestock and humans. Our nutritional investigations have revealed not only how Americans eat, but what they can choose to eat if they want to improve their health with every bite. Our scientists confirmed what many of us had already found out through bitter experience: that poison ivy is thriving and becoming even more virulent because of rising global temperatures. We're working on ways to predict the best crops to grow along the eastern seaboard as the U.S. population increases and available farmland dwindles. We've even found a way to make biodegradable flowerpots out of chicken feathers.

It could be that our first hundred years at BARC are only the beginning and that our best is yet to come. Meanwhile, if you're in the neighborhood on June 5, please join us at our Centennial Celebration Field Day, when we'll take a look at where we've been and talk a bit more about where we intend to go from here.

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