Purdue Agriculture—A State Fair tradition

No matter what our age, we all have a favorite part of the Indiana State Fair, whether it’s 4-H competition, food booths, exhibits or even the hot, humid August weather that typically settles over Indianapolis during the fair’s 12-day run.

And no matter how many years we go to the State Fair, we always seek out those things that we like best. It’s tradition. In some cases, a family tradition that has endured for generations.

For Purdue Agriculture, State Fair is tradition, too.

State Fair is a time when we at Purdue Agriculture bring all our resources from around the state to one location for the benefit of the citizens of Indiana. We’re at your disposal—everyone from professors to campus Extension specialists to county educators. We’re there to explain our research that makes food production more efficient and food preparation safer. We’re there to answer questions about issues in agriculture and natural resources that affect your life and the environment. We’re there to provide information about Extension programs and resources for home and family life, as well as leadership and community development.

We answer questions about garden and landscape plants at our Plant Wellness Center, distribute some 5,000 copies of our popular Extension catalog of educational publications, videos and CD-ROMs, and have computers with Internet connections available that can access information throughout Purdue University.

The State Fair is our opportunity to showcase Purdue Agriculture for hundreds of thousands of people over a period of a few days. But what makes this possible is the teaching, research and outreach that occurs 365 days a year.

This is the Purdue tradition that has been going on for generations. We invite you to be a part of it.

Victor L. Lechtenberg
Dean of Agriculture

Purdue University
“Cutting edge” is a buzzword that is tossed around casually these days, but it is not something that we take lightly around Purdue Agricultural Research Programs. In scientific research, cutting edge is a challenge—a constantly changing goal. How can we do it better? Safer? Cheaper?

Cutting-edge research takes us in new directions. It pushes us beyond what we already know. It opens up exciting frontiers and leads to fantastic, often life-changing, new discoveries.

But what is cutting edge these days? It is genomics, the unraveling of plant and animal genomes. It is biotechnology that helps us produce plants and animals with particular traits. It is site-specific farming technology that lets producers carefully target everything from weed control to fertilizer application. And, it is the teamwork that brings scientists from different areas together to find a more complete solution to the challenges we face.

In genome projects, scientists work to identify every gene in a given organism and determine what each of those genes does. This is no small task. A simple organism like yeast has some 6,000 genes. Scientists have identified all of the genes, but they still only know what one-third of them do. Corn has approximately 30,000 genes—genes that determine everything from height to disease resistance. Cracking the genome code is incredibly complex, but once we have the key, the possibilities are limitless.

With an understanding of the genome of a plant or an animal, scientists can look at the genetic underpinnings of breeding stock that have a desirable trait. Through biotechnology, they can speed up the process of getting quality traits into plants and animals. Those traits might help us raise leaner pigs or grow drought-resistant corn. What once took years, sometimes decades to achieve, scientists will be able to accomplish in just a few months.

Biotechnology in agriculture is at the same stage now as the computer industry was in 1985. In the next 10 years, we will see rapid advances in agricultural biotechnology, not unlike the explosion in computer technology that revolutionized our world over the last 15 years. Just like computers, the products of biotechnology will touch all our lives in the years to come, and Purdue Agricultural Research Programs will help pave the way.

Biotechnology already is showing promise in generating plants that could help us replace the chemicals currently derived from petroleum in thousands of petroleum-based products. Scientists are exploring the enormous potential of modifying the metabolic processes and pathways in plants to make them produce alternative, specialty chemicals. These “factory” plants would produce specialty chemicals cheaply and cleanly, reducing—or even eliminating—our dependence on petroleum.

Producers have the first wave of site-specific farming tools, including yield monitors and Global Positioning Systems, that offer a wealth of new information. Now, a producer using a yield monitor may know that yield is low in one area of a field, but not why yield is low. Finding a solution to the yield problem is difficult without knowing the underlying cause.

Researchers are working on the next generation of site-specific tools that will identify problems, analyze the information and provide a solution on the spot. These tools probably will include equipment that visualizes weeds and selectively sprays them and soil sampling machines that can locate nutrient deficiencies in a small section of the soil in one field and add the appropriate nutrients to correct the problem.

As we look at the future of agriculture, it becomes clear that the structure of the industry is changing. We are beginning to shift from a commodity mindset to a more entrepreneurial mindset, with an increase in vertical integration, as well as more specialty crops and niche markets.

In this new system, Purdue Agricultural Research Programs will help producers learn the skills that they will need to compete in this new environment, including shifting the focus to marketability and profitability. We also will do the research that will help producers survive—and thrive—as they move into a new era of entrepreneurial production.

Advances in the new century will come as the result of cooperation among a number of scientists. The science of the future demands a truly integrated approach, one that may bring an agricultural and biological engineer, an animal nutritionist and a waste management specialist together to work on animal waste. It is an approach that amalgamates the highly specialized knowledge of several scientists to look at a problem from all angles and find the best possible solution.

That is what scientific research and Purdue Agriculture are all about. It is not enough to find a solution. Instead, we constantly search for the best solution and then search harder to see if that solution can be improved.

The view from the cutting edge here in Agricultural Research Programs at Purdue is spectacular. And it’s getting better all the time.