

## Research: We Accomplish More Together

The cliché view of the scientist is a man alone in his ivory tower, running years of experiments to make a great discovery. It doesn't work that way any more, if it ever really did.

Collaborations—partnerships—are a way of life for 21st century science. As modern research gets continually more complex and costly, it is simply not effective to try to carry out the work alone, whether you are talking about an individual or a research agency.

Partnership and collaboration have always played a significant role in the Agricultural Research Service's successes. In the past decade alone, ARS has entered into thousands of new partnership agreements every year with a variety of universities, nonprofit organizations, government agencies, and industries.

The benefits of partnership have been powerful and far reaching.

It was a group of eight scientists—five from ARS and three from Cornell University—who teamed up to make the first determination of the molecular structure of RNA. This achievement won the team's leader, biochemist Robert W. Holley, who worked for both ARS and Cornell, a share of the 1968 Nobel Prize for medicine or physiology.

The landmark soybean variety Williams 82 was developed in a collaboration between ARS and the Illinois Agricultural Experiment Station in 1988. Williams 82 is considered by many to be one of the most important soybean varieties ever bred; it was the first with resistance to 19 of the 24 races of *Phytophthora* root rot.

Then there is corn variety B76, which came out of a joint ARS-Iowa State University program in the 1970s and 1980s. It remains the basis for nearly every seed-parent line of corn in the U.S. Corn Belt and much of the rest of the world. A 1990 study found that these lines have been so widely used that they should be accorded a major share of credit for the more than doubling of corn yield during the past 40 years. This yield increase has produced an estimated \$1 billion per year for American farmers.

Today, with everyone facing ever-tightening budgets, partnerships are even more meaningful. Partnerships allow resources to be leveraged so that the most can be made of everyone's budgets. Costly equipment, building facilities, and increasingly scarce land for field trials can all be shared.

Perhaps most importantly, partnerships bring together a wider variety of expertise and viewpoints, which often results in more effective research.

Partnering in ARS works on many different levels and in an incredible array of collaborations. Many, if not most, are

informal scientist-to-scientist relationships. These types of relationships are one of the benefits for ARS of having a number of its laboratories co-located with state experiment stations and land-grant universities. To be able to casually walk down the hall to discuss ideas is a valuable opportunity for scientists, whether they are working for ARS or for another organization.

But ARS also has many formal collaborations, especially with universities. ARS and the land-grant universities, along with USDA's Cooperative State Research, Education, and Extension Service (CSREES), which provides grant funding for agricultural research, are complementary research systems.

ARS, as the in-house scientific research arm of USDA, usually has a broad focus or national scope, tackling research with diverse approaches and contexts. Our agency is funded by congressional appropriations that can support multiyear, long-term, problem-solving projects not suited to annual or short-term grants.

ARS considers our university friends to be among our strongest partners. To complement our work, these institutions often have access to a breadth of expertise far beyond agricultural sciences, providing a great pool of resources.

Beyond partnerships with CSREES, ARS has worked with almost every other federal agency at one time or another, including the U.S. Department of Defense and newer agencies such as the Department of Homeland Security. Currently, new research initiatives are also under way with the U.S. Department of Energy on bioenergy development and with NASA on cell biology in space. The story on page 12 of this special partnership issue talks about several of these types of collaborations taking place between ARS and other federal agencies.

International cooperation is also an essential part of ARS programs. Today's complex global economy means that agricultural and environmental problems don't stop at national borders. You can read on page 22 about how agricultural research organizations from many countries are pooling their expertise and resources to meet the threat posed to the world's wheat and barley crops by the wheat rust Ug99.

After all, we—the United States and the rest of the world—are all in this together. It is not possible for a global problem such as Ug99 to be solved by the resources of any one country.

In ARS, we encourage all our scientists to look at the potential for such collaborations and how we can all benefit from shared abilities and facilities. The cooperation has been incredibly successful over the years. And we all accomplish more together than any of us can alone.

**Edward B. Knipling**  
Administrator  
Agricultural Research Service

PEGGY GREB (D1384-2)

