



FORUM

Lifting All Boats With Organic and Conventional Research

At first glance, the divide between organic and conventional farming appears to be of Grand Canyon proportions. But when it comes to research, the distance between organic and conventional farming practices is not nearly so great.

The Agricultural Research Service has a national program that specifically carries out studies aimed at helping organic farmers to compete in the marketplace by finding ways to cost-effectively produce abundant amounts of high-quality, safe products to meet consumer demands.

Consumer demand for organically produced goods has shown double-digit growth for well over a decade, providing market incentives for U.S. farmers across a broad range of products. Organic products are now available in nearly 20,000 natural food stores and nearly 3 of 4 conventional grocery stores. Organic sales account for more than 3 percent of total U.S. food sales, according to recent industry statistics.

ARS has responded to this rising demand with an interdisciplinary program of research on the biological and physical processes of plants, invertebrates, microbes, and soils, which may naturally regulate pests and enhance soil fertility.

The agency's scientists are mainly seeking strategies to prevent the problems faced by organic growers and then, secondarily, looking for therapeutic controls that they can use.

From a practical standpoint, this whole-system approach also describes a large part of ARS's research to improve conventional agriculture. Many of the results and lessons learned from conventional ARS research can be readily applied to organic farming systems and vice versa.

For instance, ARS is researching new cover crop mixtures and strategies that can reduce losses of nitrogen to ground and surface water and reduce the need for expensive supplemental nitrogen

fertilizers. This would be as much a benefit to conventional farmers as it would for organic producers, because neither group wants to pay for extra fertilizer or pollute waterways. You can read more about these new cover crop ideas on page 4.

The same dual-benefit idea applies to ARS's work on new plant varieties that are bred to be more resistant to diseases, pests, or drought. If a variety is resistant to a pest, it won't need to be treated with a pesticide, so it will be more useful to an organic farmer. But a conventional producer will also appreciate not having the expense of pesticide applications. It doesn't matter whether the breeding program was begun for the sake of organic or conventional producers; it benefits both.

More than 10 years ago, ARS began developing new and improved designs for roller-crimpers to manage and terminate cover crops while maintaining high residue cover as part of no-till agriculture. This research began as a way to reduce erosion and moisture evaporation, limit runoff, and increase infiltration and soil water-storage capability. But it now turns out that some highly effective crimpers, like those described in the story on page 6, can be of use to organic farmers as a way of controlling weeds, which are usually their largest problem.

In addition, ARS is developing specialized transition strategies for farmers who are seeking to convert from conventional to organic production systems. These strategies take into account both the economic and biological costs of conversion, so that farmers will have a complete and true picture of what their choices will mean.

There are other facets to the larger picture for society into which organic production fits. ARS scientists are conducting critical research to ensure public health and safety as well as improve organic production management. They are assessing the

prevalence of pathogens that can be associated with fresh produce from organic and conventional production systems. Once they identify critical points along the production, harvest, processing, and transportation chain where pathogens could be introduced and flourish, the researchers can then develop strategies necessary to prevent that occurrence and growth.

The long-term impact of organic farming practices on the environment is another essential issue. All intensive farming—organic or conventional—has the potential for environmental impacts, so ARS researchers are determining the “environmental footprint” of organic and conventional production systems. This research may lead to guidelines that support the USDA Farm Bill Conservation Title.

ARS is uniquely situated to carry out long-term research to learn about the effects of organic farming on production and on soil, water, and air natural resources as well as on weeds and pests, all of which are part of natural ecosystems. Because ARS research is not primarily dependent on short-term grants, our scientists can plan and undertake projects that need to develop data over 5, 10, or 20 years or more in order to monitor production and environmental impacts and changes.

As research increases our understanding of crop biology and environmental interaction, we will have better answers to production management issues. What we see today as differences between conventional and organic farming systems may fade tomorrow.

Matt Smith

ARS National Program Leader
Sustainable Agricultural Systems
and Natural Resources
Beltsville, Maryland