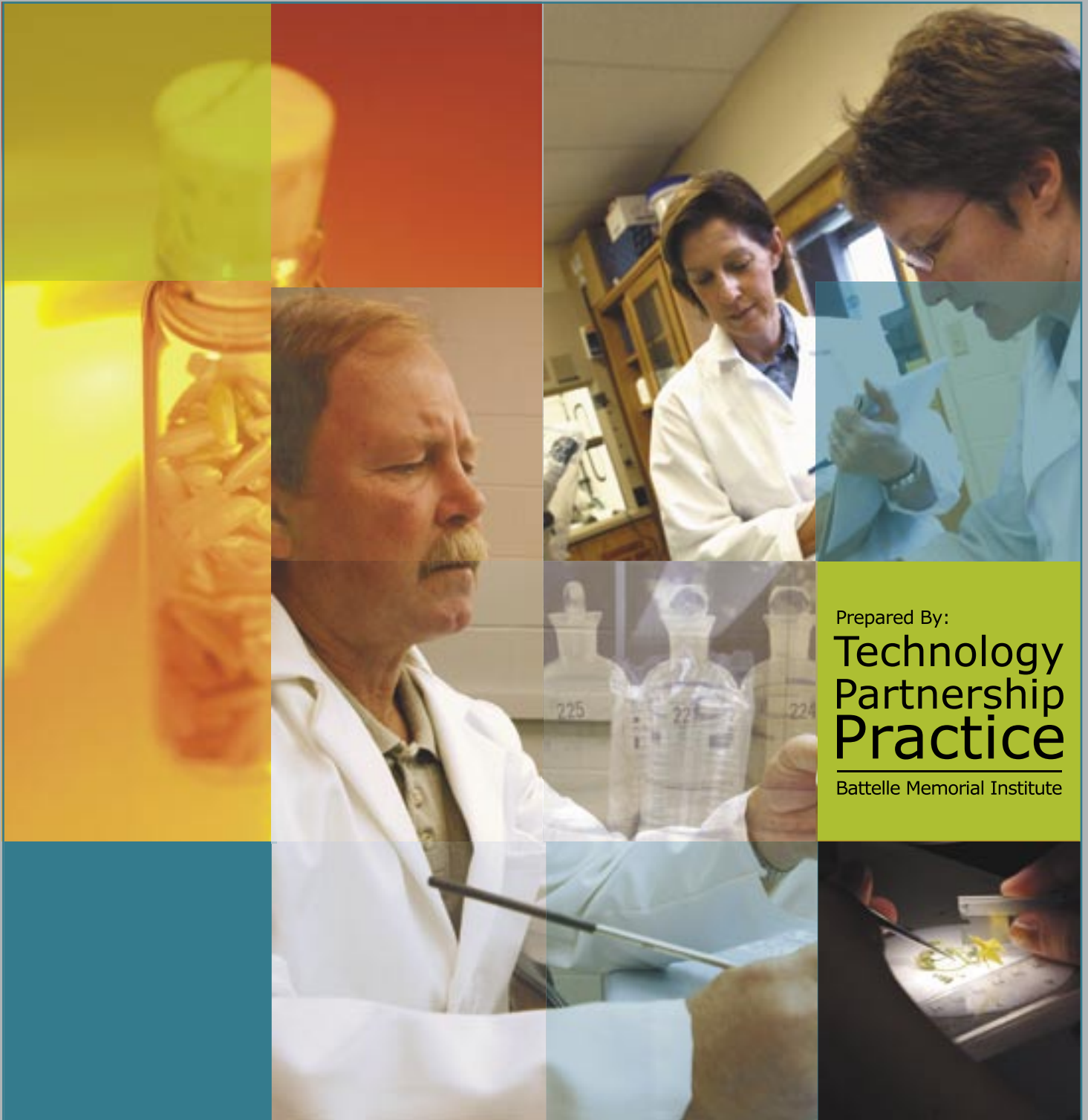


OHIO AGRICULTURAL RESEARCH
AND DEVELOPMENT CENTER:
A Generator of Positive Economic Impacts for Ohio



Prepared By:

**Technology
Partnership
Practice**

Battelle Memorial Institute



A 2003 Battelle study shows that The Ohio State University's Ohio Agricultural Research and Development Center (OARDC) annually significantly impacts Ohio's economy. The Center receives funds from the federal government, extramural funding sources, industry contracts, and allocations from the state of Ohio—and it invests these funds in infrastructure, resources, and human capital to benefit the state.

In 2003, the OARDC research complex worked with 644 research contracts on projects funded by more than \$16 million from extramural sponsors. Battelle found that OARDC and OARDC-related R&D in Ohio is a generator of significant economic impacts for the state in the form of: technology commercialization; new and improved crops, breeds, and products for Ohio producers; new and improved technologies for Ohio industry; and an enhanced and protected environment and quality of life for Ohioans.

On an annual basis
OARDC directly
generates:

- **\$142.3 million**
in total Ohio
economic output
- **1,576 jobs**
in Ohio
- **\$54.2 million**
in personal income
for Ohio residents
- **\$5.6 million**
in annual tax
revenues.

TECHNOLOGY COMMERCIALIZATION

In a knowledge-driven economy, intellectual property has become the most valuable property of all. While software and information technology dominated U.S. technology growth in the 1980s and 1990s, bioscience disciplines have been making the headlines more recently. The postgenomic era, with its quantum leap forward in the understanding of fundamental and functional life mechanisms, is spawning new avenues of discovery and innovation.

Against this backdrop of bioscience prominence, the importance of OARDC as a generator of intellectual property and scientific discoveries comes clearly into focus. The Center has an established track record in developing new crop cultivars, animal disease diagnostics, vaccines, and related discoveries that proves the Center's potential as an innovation engine.



Statistics from The Ohio State University's Office for Technology Licensing indicate that in FY 2003, agricultural and ag-related intellectual property was responsible for 22 invention disclosures, five patent applications, 11 executed license agreements, and more than 35% of all OSU licensing revenues. Multiple companies operating in Ohio have their roots in R&D conducted at OARDC, and Battelle anticipates that the productivity of OARDC in terms of technology commercialization is likely to increase.

NEW AND IMPROVED CROPS, BREEDS, AND PRODUCTS FOR OHIO PRODUCERS.

germplasm developed at OARDC. Battelle's review

“On an annual basis soybeans produced through OARDC discoveries generate \$191 million in Ohio economic output, create \$67 million in income for Ohioans, and support 4,030 jobs.”

Ohio's agriculture, horticulture, livestock, and ag-processing sectors operate at a high yield and level of efficiency in part because of the application of knowledge, techniques, technologies, and

of OARDC activities identified a legacy of positive impacts generated through OARDC work that has:

- Improved Ohio's soil fertility.
- Managed and controlled agricultural and horticultural pests.
- Prevented, diagnosed, and treated animal infectious diseases.
- Controlled the negative impacts and crop losses caused by plant pathogens.
- Increased crop yields through breeding and developing enhanced crop cultivars.
- Increased meat and poultry yields by means of enhanced breeding and specialized approaches to animal nutrition.

NEW AND IMPROVED TECHNOLOGIES FOR OHIO INDUSTRY.

“Enhanced food safety has the potential to save between \$260 million and \$532 million in economic losses to Ohio on an annual basis and prevent between 132,000 and 492,000 Ohioans from getting food-borne illnesses.”

Food processing is a major industry accounting for \$18.9 billion in Ohio economic output. While OARDC is active in the primary production end of agriculture, its researchers and scientists are also actively involved in R&D for the value-added sectors engaged in the processing of agricultural products. For example, large-scale economic losses are caused annually by food-borne pathogens, and OARDC research shows great promise to substantially reduce these losses by testing that can be accomplished in minutes on a food sample. Current testing

methods take upward of 18 hours to conduct—time during which food stuffs may begin to spoil.



AN ENHANCED AND PROTECTED ENVIRONMENT AND QUALITY OF LIFE FOR OHIOANS.

“In response to the opportunities presented in what has been termed the ‘Biotech Century,’ OARDC has multiple new and emerging initiatives aimed at leveraging bioscience and biotechnology advances for the benefit of Ohio and Ohioans.”

Perhaps best known for its applied agricultural research, OARDC is also a major producer of research related to environmental preservation, community sustainability, family studies, and rural/urban development economics. Through environmental preservation research and activities (such as work on waste management, soil preservation, carbon sequestration, and reducing pesticide and fungicide runoff), OARDC research is directly contributing to the sustainability of Ohio's natural environment—a resource that has increased in importance as quality of life takes central stage in attracting skilled human capital. OARDC's active work on ornamental plants and trees also has provided a base of knowledge that has helped Ohio's

communities and individual households spend their money wisely on ornamentals best suited to survive and thrive in Ohio's environment and soils.

INTO THE FUTURE

Throughout its 121-year history, OARDC has constantly adjusted its areas of program and research focus to match current and emerging needs and opportunities facing agricultural bioscience and agribusiness in Ohio. Change has been a fairly constant companion for the Center, but perhaps no single decade has brought as much potential

as the current one. The 21st century has opened with dramatic advances in the biosciences. Advancements in genomics and post-genomic sciences have opened new avenues of study and paved the way for rapid progress in multiple areas of biology and the plant and life sciences.

Among the most prominent of the new and emerging scientific initiatives of OARDC are:

- **The Ohio Plant Biotechnology Consortium**—Administered by OARDC and comprising 11 Ohio-based institutions working to pool scientific and human resources to accelerate Ohio's plant biotechnology research and advance Ohio's position in plant-based technologies.
- **The Ornamental Plant Germplasm Center**—A joint project of OSU and the U.S. Department of Agriculture, the OPGC is working to build the world's leading herbaceous ornamental plant gene bank. The possession of germplasm forms the building block for active OARDC programs in the "mining" of germplasm for genes and markers having favorable application in agricultural, horticultural, and medical applications.
- **Emerging infectious diseases research program and the Plant and Animal Agrosecurity Research facility**—This project aims to protect the United States and Ohio from the devastating effects of emerging infectious diseases entering the United States by accidental or deliberate (e.g., terrorist) means. The program also aims to be a generator of licensable and commercializable technologies in diagnostics, environmental monitoring, vaccination, treatment, and incident response strategies.
- **Bioenergy and Biofuels Program**—An OSU- and OARDC-based initiative aimed at producing energy, fuel resources, chemical products, and other commodities from renewable biomass resources. The opportunity is to create new industries and revenues for Ohio, while at the same time reducing biomass waste.
- **ATECH and the BioHio Research Park and business incubator**—These initiatives are specifically aimed at increasing the licensing and technology commercialization benefits from OARDC's research. Through developing formal commercialization professional positions, OARDC expects to significantly increase the flow of new businesses created in Ohio and revenue streams back to the state from the licensing of intellectual property. The initiative is being bolstered by a formal plan to develop an agribusiness research park and business incubator adjacent to OARDC's facility in Wooster—providing a home for both spin-off companies and joint industry-OARDC R&D collaborations.

Through the application of traditional and genomic life science approaches,

OARDC's R&D continues to build on this legacy of positive impacts. For example, OARDC serves a critical role in developing the specific high-yield, disease-resistant, high-quality strains of soybean that thrive in Ohio and maintain the viability of this industry. Positive impacts from only one of the many OARDC programs far exceed state and federal expenditures to support the Center.

