



MUCK CROPS Agricultural Research Station



Boosting Production and Safety of Ohio's Fresh Vegetable Crops

Located on 15.5 acres in the rich, black soils of Huron County, the Muck Crops Agricultural Research Station is dedicated to research and outreach specific to the needs of fresh-market vegetable production—which is key to the economy of Ohio's fertile "salad bowl" in the north-central section of the state.

Station personnel work with Ohio Agricultural Research and Development Center (OARDC) scientists, OSU Extension specialist, growers, and industry groups to conduct innovative studies on unique production issues facing vegetable farming in muck soils—which are high in organic-matter content but experience diseases and weed growth uncommon in other areas. The research generated at the Muck Crops Station is also vital to farmers growing vegetables in mineral soils throughout Ohio. Additionally, the Station is at the forefront of research seeking to reduce the risk of foodborne disease contamination in produce. All of this knowledge is shared with farmers to improve their operations, Ohio's overall economy, and the public's health.

Huron County ranks No. 1 in Ohio in vegetable production and 99th out of all U.S. counties — comprising almost 10 percent of the 47,000 acres dedicated to vegetable crops in the state and boasting some of the nation's largest vegetable operations.

History

The oldest among OARDC's outlying research sites, the Muck Crops Agricultural Research Station was established in 1948. A group of area producers called the Golden Rule Association purchased and donated 15.5 acres of prime muck soil near Celeryville to the Ohio Agricultural Experiment Station (now OARDC) for use as an experimental farm. In 2009, new facilities were built, including offices, a workshop, storage areas, a laboratory with digital microscopes, and a new greenhouse.

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Bringing Knowledge to Life

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Research Focus

The Muck Crops Agricultural Research Station maintains an intensive and relevant research program that addresses the profitability, quality, and safety of fresh vegetable crops grown in both muck and mineral soils in northern Ohio — including lettuce, radishes, parsley, green and bulb onions, squash, and other leaf, vine and root crops. Scientists help farmers overcome disease, insect, and weed challenges with new cultural practices and management techniques. The knowledge generated at the Station is also invaluable to other muck-crop growers in Ohio, across the United States, and around the world.

Key Research Studies Conducted at the Station Include:

Disease Management

Diseases are a major challenge to fresh-market vegetable production. OARDC plant pathologists study chemical and biological alternatives to controlling disease organisms — including resistant cultivars, proper field site selection, crop rotation, controlled moisture in the fields, and chemically treated seeds. OARDC and U.S. Department of Agriculture (USDA) researchers continually test new fungicides and bactericides for their efficacy against profit-cutting diseases. Emphasis is also placed on integrated pest management (IPM) approaches to lower chemical use and disease-forecasting systems to reduce crop losses.

Insect and Weed Management

OARDC entomologists and weed scientists seek to help farmers produce healthy vegetables with fewer agrochemicals. Trials are conducted on insect life cycles and behavior, seed treatments, IPM methods, and pest monitoring. OARDC and USDA entomologists also test new insecticides for their efficacy against pests such as thrips and weevils that can decimate crops. Because weeds are particularly abundant in organic soils and tend to become immune to chemical herbicides, experts continually test new weed-control methods at the Station.

Transplant Production and Variety Trials

Area growers use transplants to lengthen the growing season and improve stand uniformity over direct seeding. The Station's greenhouse provides vigorous young plants for many of the research trials conducted on and off the farm. The Station also evaluates new vegetable varieties for quality, yield, and resistance to local pest populations.

Food Safety

Outbreaks of dangerous foodborne diseases on fresh vegetables have increased in the past few years, posing challenges for growers. Plant pathologists and microbiologists are studying the correlation between plant diseases and foodborne pathogens (such as *E. coli*) to try to reduce contamination at the farm level. For example, researchers are evaluating the efficacy of various irrigation water-injection systems (chlorine gas, chlorine dioxide, hydrogen peroxide) for sanitizing water.

Outreach

The Muck Crops Station has a very close relationship with local farmers. In collaboration with OSU Extension, research generated at the Station is constantly shared with growers through field days, monthly breakfast informational sessions, and the annual Winter Muck Crop School.

Food safety research conducted at the Muck Crops Station is critical to both public health and the economy, as prevention of foodborne illnesses has the potential to save Ohio between \$260 million and \$532 million a year in economic losses.

Economic Impact

Here are some of the ways that research and outreach programs at the Muck Crops Agricultural Research Station impact the economies of north-central Ohio and the Buckeye state:

- Huron County ranks No. 1 in Ohio in vegetable production and 99th out of all U.S. counties — comprising almost 10 percent of the 47,000 acres dedicated to vegetable crops in the state and boasting some of the nation's largest vegetable operations.
- Ohio State vegetable-crop research supports an industry with a market value of \$22.7 million in Huron County alone and over \$135 million across the state — plus billions of dollars in added value these crops help generate through job creation, retail food sales, and consumer health.
- Food safety research conducted at the Station is critical to both public health and the economy, as prevention of foodborne illnesses has the potential to save Ohio between \$260 million and \$532 million a year in economic losses.