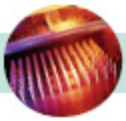
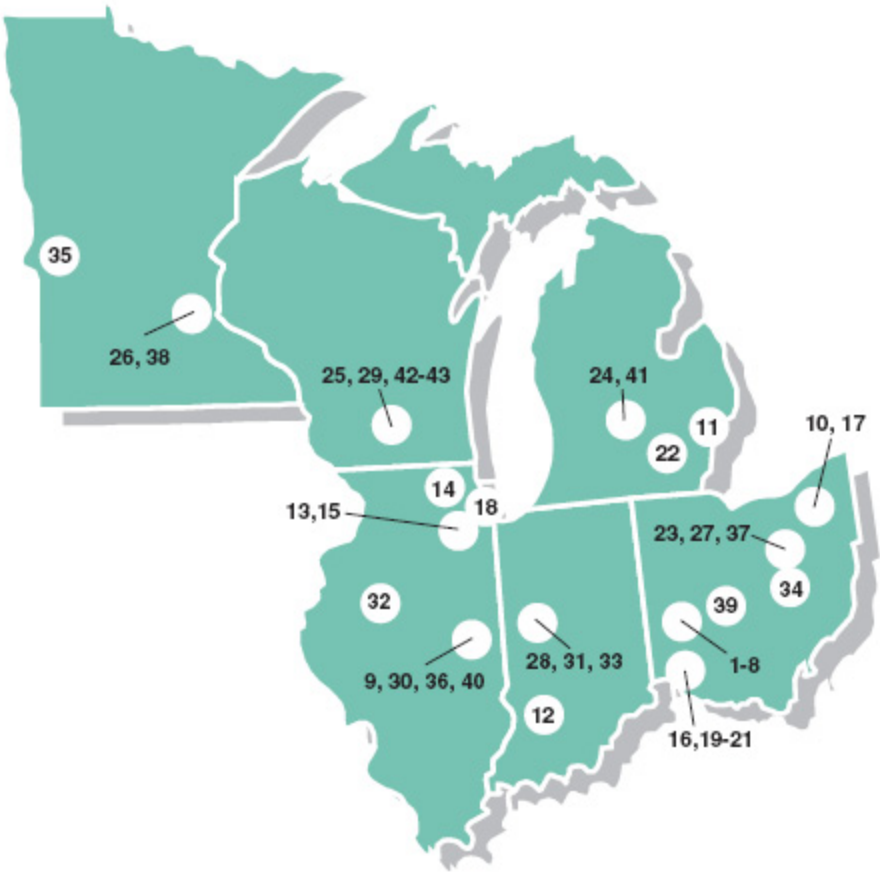

MANUFACTURING
SENSORS
MEDICAL
TRANSPORTATION
ELECTRONICS
FEDERAL LABORATORY CONSORTIUM
FLC
FOR TECHNOLOGY TRANSFER
MIDWEST REGION
ENVIRONMENT
ENERGY
ADVANCED PHYSICS

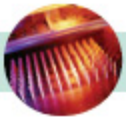



FLC Midwest Region



No.	Agency	Laboratory Name	Location
1	DOD–Air Force	Aeronautical Systems Center	Wright-Patterson AFB, Ohio
2	DOD–Air Force	Air Force Institute of Technology	Wright-Patterson AFB, Ohio
3	DOD–Air Force	Air Force Research Laboratory (AFRL)	Wright-Patterson AFB, Ohio
4	DOD–Air Force	AFRL–Air Vehicles Directorate	Wright-Patterson AFB, Ohio
5	DOD–Air Force	AFRL–Human Effectiveness Directorate	Wright-Patterson AFB, Ohio
6	DOD–Air Force	AFRL–Materials and Manufacturing Directorate	Wright-Patterson AFB, Ohio
7	DOD–Air Force	AFRL–Propulsion Directorate	Wright-Patterson AFB, Ohio
8	DOD–Air Force	AFRL–Sensors Directorate	Wright-Patterson AFB, Ohio
9	DOD–Army	Engineer Research and Development Center–Construction Engineering Research Laboratory	Champaign, Illinois
10	DOD–Army	Army Research Laboratory–Vehicle Technology Directorate	Cleveland, Ohio
11	DOD–Army	Tank-Automotive Research, Development, and Engineering Center & National Automotive Center	Warren, Michigan
12	DOD–Navy	Crane Division, Naval Surface Warfare Center	Crane, Indiana
13	DOE	Argonne National Laboratory	Argonne, Illinois
14	DOE	Fermi National Accelerator Laboratory	Batavia, Illinois
15	DOE	New Brunswick Laboratory	Argonne, Illinois
16	HHS-CDC	National Institute for Occupational Safety and Health	Cincinnati, Ohio
17	NASA	Glenn Research Center	Cleveland, Ohio
18	USEPA	The Chicago Regional Laboratory	Chicago, Illinois
19	USEPA	National Exposure Research Laboratory	Cincinnati, Ohio
20	USEPA	National Homeland Security Research Center	Cincinnati, Ohio
21	USEPA	National Risk Management Research Laboratory	Cincinnati, Ohio
22	USEPA	National Vehicle and Fuel Emissions Laboratory	Ann Arbor, Michigan
23	USDA	Application Technology Research Unit	Wooster, Ohio
24	USDA	Avian Disease and Oncology Laboratory	East Lansing, Michigan
25	USDA	Cereal Crops Research Unit	Madison, Wisconsin
26	USDA	Cereal Disease Laboratory Research Unit	St. Paul, Minnesota
27	USDA	Corn & Soybean Research Unit	Wooster, Ohio
28	USDA	Crop Production and Pest Control Research Unit	West Lafayette, Indiana
29	USDA	Forest Service–Forest Products Laboratory	Madison, Wisconsin
30	USDA	Invasive Weed Management Research Unit	Urbana, Illinois
31	USDA	Livestock Behavior Research Unit	West Lafayette, Indiana
32	USDA	National Center for Agricultural Utilization Research	Peoria, Illinois
33	USDA	National Soil Erosion Research Laboratory	West Lafayette, Indiana
34	USDA	North Appalachian Experimental Watershed	Coshocton, Ohio
35	USDA	North Central Soil Conservation Research Laboratory	Morris, Minnesota
36	USDA	Photosynthesis Research Unit	Urbana, Illinois
37	USDA	Soft Wheat Quality Research Unit	Wooster, Ohio
38	USDA	Soil and Water Management Research Unit	St. Paul, Minnesota
39	USDA	Soil Drainage Research Unit	Columbus, Ohio
40	USDA	Soybean/Maize Germplasm, Pathology, and Genetics Research Unit	Urbana, Illinois
41	USDA	Sugarbeet and Bean Research Unit	East Lansing, Michigan
42	USDA	U.S. Dairy Forage Research Center	Madison, Wisconsin
43	USDA	Vegetable Crop Research Unit	Madison, Wisconsin




Introduction

The Federal Laboratory Consortium for Technology Transfer (FLC), a nationwide network of federal laboratories, is the only government-wide forum for technology transfer (T2). The goal of T2 is to accomplish the rapid integration of technologies developed through federal research into the mainstream of the U.S. economy. The FLC is divided into six administrative regions: Northeast, Mid-Atlantic, Southeast, Midwest, Mid-Continent, and Far West.

The Midwest Region comprises Ohio, Indiana, Illinois, Michigan, Wisconsin, and Minnesota. Within this region, more than 40 facilities conduct federal research and development. This brochure provides a short description of each facility, along with descriptions of some of the most common T2 mechanisms. We encourage you to find out more about research being conducted within the region at our web site, www.flcmidwest.org, or by contacting us directly.

Cynthia Wesolowski
Regional Coordinator

Kristen Schario
Deputy Regional Coordinator

Kenneth M. Wright
FLC Midwest Region Support Office

Laboratory Descriptions

Department of Defense—Air Force

1 Aeronautical Systems Center

The Aeronautical Systems Center (ASC) manages aerospace system development from concept to combat capability. ASC uses operational command input to identify capabilities required to overcome future threats and rapidly delivers these capabilities using "spiral" development processes. Among ASC capabilities, the Major Shared Resource Center assists by solving such computationally challenging problems as complex fluid dynamics and structural interactions. Additionally, the Simulation and Analysis Facility (SIMAF) provides virtual environments to evaluate and test aerospace systems in realistic scenarios.

2 Air Force Institute of Technology

The Air Force Institute of Technology (AFIT) is the Air Force's graduate school of engineering and management, as well as its institution for technical professional continuing education. Committed to defense-focused research that sustains the technological supremacy of America's air and space forces, AFIT personnel conduct wide-ranging research with the Centers of Excellence in Directed Energy, Information Assurance Education, Measurement and Signature Intelligence, Operational Analysis, and Systems Engineering.

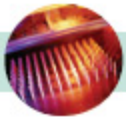
3 Air Force Research Laboratory

The Air Force Research Laboratory's (AFRL) mission is to discover, develop, and integrate affordable warfighting technologies for air and space forces. AFRL accomplishes this through nine technology directorates, the Air Force Office of Scientific Research, and Headquarters staff. AFRL Headquarters and five directorates are co-located at Wright-Patterson Air Force Base. AFRL is a full-spectrum laboratory, responsible for planning and executing the Air Force's entire science and technology budget, basic and applied research, and advanced technology development.

4 AFRL Air Vehicles Directorate

The AFRL Air Vehicles Directorate (VA) seeks to enable the joint warfighter to anticipate, find, fix, track, target, engage, and assess anyone, anywhere, at any time. The directorate focuses on core competencies (Integration, Control Sciences, Structures and Aeronautical Sciences) and works in concert with other AFRL directorates to achieve this vision. The directorate has established Centers of Excellence in Computational Sciences, Control Science, Multi-Disciplinary Technologies, and Structural Science.




5 AFRL Human Effectiveness Directorate

The AFRL Human Effectiveness Directorate develops, integrates, and transitions technologies for training personnel, improving the interface between warrior and weapon system, and protecting and sustaining Air Force warfighters. Core technology areas include: warfighter skill development and training, training simulation, information display and decision support, crew system design technologies, directed energy bioeffects, toxic hazards effects, crew protection, and logistician effectiveness. The directorate has collaborative relationships with academia, other military services and government agencies, and commercial enterprises.

6 AFRL Materials and Manufacturing Directorate

The AFRL Materials and Manufacturing Directorate (ML) develops materials, processes and advanced manufacturing technologies for aircraft, spacecraft, missiles, rockets and ground-based systems and their structural, electronic and optical components. ML performs research in revolutionary nano-scale and biotechnologies as well as nonstructural materials (coatings, fluids, greases, etc.). Air Force product centers, logistics centers, and operating commands rely on ML's expertise in structural materials, NDI, aerospace propulsion systems materials, sensor materials, and systems support and advanced manufacturing methods.

7 AFRL Propulsion Directorate

AFRL Propulsion Directorate develops air and space vehicle propulsion and power technologies. Focus areas include turbine and rocket engines, advanced propulsion systems, and fuels and propellants for all propulsion systems. The Wright-Patterson AFB location is focused on the development of air-breathing engines and most forms of power technology. Programs address both future systems and the need to keep current systems competitive, safe, affordable, and effective.

8 AFRL Sensors Directorate

The AFRL Sensors Directorate's vision is a full range of air and space sensors, networked to the warfighter, that provides a complete and timely picture of the battle space, thus enabling targeting of the enemy and protection of friendly assets. To achieve this vision, development is focused on surveillance, precision engagement, and electronic warfare technologies. Core technology areas include radar, active and passive electro-optical targeting systems, navigation aids, automatic target recognition, sensor fusion, threat warning, and threat countermeasures.

DEPARTMENT OF DEFENSE—ARMY

9 Engineer Research and Development Center - Construction Engineering Research Laboratory

The Construction Engineering Research Laboratory (CERL), part of the Army Engineer Research and Development Center, conducts research and development focused on increasing the Army's ability to construct, operate, and maintain its installations while ensuring environmental quality at reduced life-cycle cost. CERL develops quality products and helps customers implement new technologies, with many products transitioning to the private sector. CERL represents a unique asset for research in civil and military engineering and environmental quality.

10 Army Research Laboratory - Vehicle Technology Directorate

The Army Research Laboratory Vehicle Technology Directorate (VTD) conducts basic and exploratory propulsion research at the NASA Glenn Research Center at Lewis Field. Projects involve new gas turbine engine concepts, advanced power transmission systems, and improved engine components and materials for air and ground vehicles. VTD develops the capabilities needed to design, fabricate, and test engine systems for greater efficiency, lighter weight, enhanced reliability, and improved power output.

11 Tank-Automotive Research, Development & Engineering Center & National Automotive Center

The U.S. Army Tank-Automotive Research, Development and Engineering Center (TARDEC) is the nation's laboratory for military automotive technology. The National Automotive Center (NAC), a part of TARDEC, is the focal point for collaborative ground vehicle research and development. NAC links industry and academia with government in the development and exchange of technologies by leveraging investments and shared technology programs, with the goal of performance improvements, service-life extensions, and reduction of life-cycle costs.

DEPARTMENT OF DEFENSE—NAVY

12 Crane Division, Naval Surface Warfare Center

Crane Division, Naval Surface Warfare Center (NSWC Crane) has two missions. The industrial base mission includes stewardship of electronics, pyrotechnics, power systems, microwave, and radiation-hardened devices. Fleet support occurs in joint, cross-service, and cross-platform environments. The strengths of industry, academia and government are leveraged through partnerships to meet warfighter needs in special and strategic missions and electronic warfare/information operations. NSWC Crane applies improved processes and technologies to the development, acquisition, and support of combat weapons systems, particularly ordnance, electronics, and electronic warfare.




NASA

17 Glenn Research Center

Glenn Research Center develops and transfers technologies that address national priorities for safe and reliable aeronautics, aerospace, and space applications. Glenn's research and testing focus on: space power (generation, storage, management, and distribution); electric, nuclear, and chemical propulsion; communications; microgravity science (fluid physics, combustion, and acceleration measurement); human biology and biotechnology; engine materials, coatings, lubrication systems, structures, and fluid mechanics; instrumentation and controls; aircraft icing research; and turbomachinery (advanced turbine engine design).

U.S. ENVIRONMENTAL PROTECTION AGENCY

18 Chicago Regional Laboratory

The Chicago Regional Laboratory (CRL) performs chemical and biological analyses on environmental matrices in support of EPA programs, states and tribes. The laboratory performs over 100 different analytical procedures. CRL develops and modifies analytical methods based on regional needs. The laboratory also participates in Department of Homeland Security activities, including standard analytical protocol validations and development of new analytical tools for drinking water security.

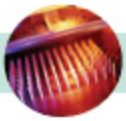
19 National Exposure Research Laboratory

The Environmental Protection Agency's National Exposure Research Laboratory (NERL) conducts research and development that leads to improved methods, measurements, and models to assess and predict the exposure of humans and ecosystems to harmful pollutants and other conditions in air, water, soil, and food. NERL supports regulatory programs through the development of methods for waste site characterization, computer modeling of pollutant transport and fate, monitoring network design, environmental indicator assessments, and design of exposure assessment studies.

20 National Homeland Security Research Center

The National Homeland Security Research Center (NHSRC) develops and delivers reliable, responsive expertise and products based on scientific research and evaluations of technology. Its expertise and products are widely used to prevent, prepare for, and recover from public health and environmental emergencies arising from terrorist threats and incidents. NHSRC's team of world-renowned scientists and engineers are dedicated to understanding the terrorist threat, communicating the risks, and mitigating the results of attacks.




U.S. DEPARTMENT OF AGRICULTURE

21 National Risk Management Research Laboratory

The National Risk Management Research Laboratory (NRMRL) develops ways to prevent and reduce air, land, and water pollution, and to restore ecosystems. With headquarters in Cincinnati, Ohio, and divisions in North Carolina, Oklahoma, and New Jersey, its staff of several hundred scientists and engineers shares the mission to solve a wide range of environmental challenges

22 National Vehicle and Fuel Emissions Laboratory

The National Vehicle and Fuel Emissions Laboratory provides emission testing services to motor vehicle, heavy-duty engine, and non-road engine programs in support of rulemakings, enforcement actions, and procedure development. Testing services include vehicle and engine emissions and fuel economy standard certification; in-use engine emissions compliance evaluation; and analysis of fuels, fuel additives, and exhaust compounds. The laboratory also provides technical assistance for the development of automotive technologies that reduce conventional pollutants and greenhouse gas emissions. These technologies include hydraulic hybrid vehicles, engine combustion research, and alternative engine technologies.

23 Application Technology Research Unit

The Application Technology Research Unit conducts fundamental and developmental research on new and improved application technologies to protect floricultural, nursery, landscape, turf, horticultural, and field crops from damage from diseases, pests, and adverse environmental conditions, while safe-guarding environmental quality, food and worker safety.

24 Avian Disease and Oncology Laboratory

The USDA-ARS Avian Disease and Oncology Laboratory (ADOL) is the Center of Excellence for avian oncology, genomics and immunogenetics research. ADOL's mission is to provide leadership in solving current and future problems in neoplastic and other viral diseases of poultry using basic and applied multidisciplinary team approaches, thereby benefiting the poultry industry and consumers. The core competencies at ADOL include poultry breeding, molecular biology, immunology, virology, pathology, immunogenetics, and genomics.

25 Cereal Crops Research Unit

The mission of the Cereal Crops Research Unit is to 1) identify and understand the biological processes affecting growth, development and properties of cereal grains, 2) evaluate findings for potential applications to improved cereal quality through germplasm development or altered production practices, and 3) provide support for barley and oat breeding and applied research programs. Provides malt and barley quality evaluation for development of all barley cultivars released in the U.S. for use in malting and brewing.

26 Cereal Disease Laboratory Research Unit

The mission of this laboratory is to reduce losses in wheat, oat, and barley to major diseases—including leaf rust, stem rust, and *Fusarium* head blight—through research on the biology of the pathogens that cause these diseases and methods to enhance disease resistance in small grains. Its scientists have expertise in the genetics of cereal crop disease resistance, population genetics of plant pathogens, plant disease epidemiology, plant-pathogen interactions, and genomics of cereal crop pathogens.

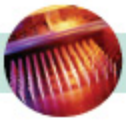
27 Corn & Soybean Research Unit

The Corn and Soybean Research Unit's mission is to reduce crop losses caused by corn and soybean viruses and to enhance soybean germplasm. Research is conducted to learn how viruses attack corn and soybeans, as well as how plants defend themselves—knowledge that will lead to improved methods to break disease cycles. Research to improve soybean germplasm is focused on identifying, characterizing, and manipulating genes involved in disease resistance and other traits.

28 Crop Production and Pest Control Research Unit

The Crop Production and Pest Control Research Unit conducts research to minimize crop losses due to insects and pathogens and to improve soybean quality. Specific projects are directed toward discovering genetic, biochemical, and molecular mechanisms that confer disease and insect resistance in grain crops and soybeans, and to influence the composition of soybean seeds. Information is applied to devise innovative strategies for disease control and to develop germplasm with improved quality and pest resistance.




37 Soft Wheat Quality Research Unit

This unit has two missions: 1) To evaluate quality of softwheat breeding lines and cultivars from the Eastern United States to ensure maintenance and/or improvement of milling and baking quality, and 2) to conduct research in the physics and chemistry of wheat and flour, with particular reference to quality and to development of new and improved tests for measuring and predicting quality. Both require close cooperation with breeders and with the milling and baking industries.

38 Soil and Water Management Research Unit

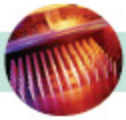
The Soil and Water Management Research Unit uses staff expertise and state-of-the-art laboratory and field analytical equipment to measure minute concentrations of agricultural chemicals and trace gases (including CO_2, N_2O, and the isotopes of carbon and nitrogen) to study the fate and transport of pesticides and nutrients, such as nitrogen and phosphorus, and the impact of agricultural practices on greenhouse gas emissions, carbon sequestration, and organic matter levels in soils.

39 Soil Drainage Research Unit

The most serious production problem facing agriculture in the cool, humid region of the U.S. is the management of excess water on agricultural lands to reduce or prevent detrimental on- and offsite impacts. The Soil Drainage Research Unit's mission is to develop and demonstrate integrated water management and cropping systems that support profitable agriculture and environmental protection within the region.

40 Soybean/Maize Germplasm, Pathology and Genetics Research Unit

The mission of this unit is to acquire, characterize, evaluate, maintain, utilize, and distribute germplasm accessions in the genus *Glycine*; identify genes controlling traits of economic importance in soybeans; investigate soybean-microbial interactions, including fungal pathogens, soybean cyst nematode and soybean-infecting viruses; acquire, maintain, develop, evaluate and distribute genetic and cytogenetic stocks of maize; and evaluate induction and characterize regulatory components of gene expression in maize in response to anaerobic stress.




29 Forest Products Laboratory

The USDA Forest Service's Forest Products Laboratory (FPL) is the nation's leading wood utilization research institute. Research focuses on pulp and paper products; uses of wood—including as structures, as fuel, and as a source for lignocellulosic-based nanoscale materials; wood preservation; wood and fungi identification; and finishing and restoration of wood products. In addition, FPL is responding to environmental pressures on forest resources by using cutting-edge techniques to study wood recycling; understand ecosystem-based forest management; and develop new ways to conserve, extend, and utilize forest resources in a sustainable manner.

30 Invasive Weed Management Research Unit

The mission of the Invasive Weed Management Research Unit is to optimize weed management systems that integrate biological, chemical, cultural, and mechanical approaches within the context of ecological principles. To accomplish this mission, its projects are aimed at gaining fundamental knowledge of crop-weed interactions, seed-associated microorganisms, and organisms involved in chemical fate.

31 Livestock Behavior Research Unit

The Livestock Behavior Research Unit conducts multidisciplinary research to address challenges to animal well-being and pre-harvest food safety. The unit's dynamic team is composed of three ethologists, an immunologist, a neuroscientist, and a bacteriologist. Together with faculty from Purdue University, this unit is the most significant force in terms of scientists and facilities to address animal well-being issues in the U.S.

32 National Center for Agricultural Utilization Research

The National Center for Agricultural Utilization Research (NCAUR) is the largest of four USDA-ARS federal utilization centers and a world-class bioscience research facility. Its mission is to find new uses and markets for U.S. agricultural commodities. The multidisciplinary staff at NCAUR focuses on metabolic engineering, fermentation, food safety, environmental quality, biomaterials, crop protection and pest control, and processing technologies to transform raw agricultural materials into commercial products, including fuels, cosmetics, and industrial lubricants.

33 National Soil Erosion Research Laboratory

The National Soil Erosion Research Laboratory is the national and international focal center for soil erosion research. It researches soil erosion processes and develops prediction tools for assessing the effectiveness of conservation practices in reducing soil erosion. Current research studies soil erosion processes and their onsite impacts on soil quality and offsite water quality effects. Basic research findings are used to develop science-based erosion prediction technology for conservation planning.

34 North Appalachian Experimental Watershed

The North Appalachian Experimental Watershed (NAEW), a world-renowned 1050-acre outdoor laboratory for land and water management research, is composed of many small (1-7 acre) and large (40-300 acre) watersheds that are closely monitored. Land management practices are implemented on the watersheds, and watershed-scale effects on hydrology, water quality, and soil resources are evaluated. Studies involving grazing, conservation tillage, soil macropores, precipitation modeling, hydrologic instrumentation, mining/reclamation, and soil carbon have been evaluated.

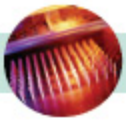
35 North Central Soil Conservation Research Laboratory

The North Central Soil Conservation Research Laboratory's (NCSCRL) mission is to develop environmentally, economically and socially sustainable cropping systems in a unique transitional agro-ecological zone between the prairies and the Great Plains. The highly variable, wet, cool and highly productive soils, coupled with short, variable growing seasons, challenge farmers, soil scientists, and agronomists. NCSCRL uses an integrated systems approach to identify and mitigate potential impacts of climate change on agriculture and natural resources.

36 Photosynthesis Research Unit

The mission of this Unit is to identify molecular, biochemical and genetic determinants of photosynthate production and distribution in crop plants and to utilize this new information to address specific agricultural problems of national importance including those associated with global climate change.

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41 Sugarbeet and Bean Research Unit

The Sugarbeet and Bean Research Unit conducts research to develop: 1) physiological, biochemical, molecular, and genetic strategies and technologies that will improve production efficiency, food quality, and disease resistance, and result in new germplasm and improved varieties of dry beans and sugarbeets; and 2) new and/or improved engineering methods and technologies for assessing, grading, and sorting tree fruits and vegetables to assure their post-harvest quality, wholesomeness, and marketability.

42 U.S. Dairy Forage Research Center

The mission of the U.S. Dairy Forage Research Center is to develop the knowledge and tools needed to enhance sustainable and competitive dairy forage systems that protect the environment; promote animal health; and ensure a safe, healthy food supply.

43 Vegetable Crop Research Unit

The mission of the Vegetable Crop Research Unit is to investigate the genetics, cytogenetics, taxonomy, gene flow, disease resistance, molecular biology, and breeding strategies of vegetable crops. This includes the investigation of chromosome behavior, phylogeny, pest resistance, intra-and interspecific crossing, nutritional quality, flavor, storage quality, and effects of environmental stress on the *Solanum* species, carrot, cucumber, onion and garlic. This also includes the use of exotic germplasm, germplasm enhancement, and development of production technologies where needed.




FEDERAL LABORATORY CONSORTIUM

FLC

FOR TECHNOLOGY TRANSFER

MIDWEST REGION

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