



**IR-4 NORTH  
CENTRAL REGION  
RESEARCH CENTER**

**MICHIGAN STATE UNIVERSITY**



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## **2022 ANNUAL REPORT**

(January 1 – December 31, 2022)

### **A. Mission and Goals of the North Central Region IR-4 Program**

**The mission** of the NC Region IR-4 program is to ensure that safe and effective pest management tools are available for growers of specialty crops, including ornamental crops, and for minor uses on major crops through the generation of high quality field and laboratory data.

**The goals of the program** are to identify pest management needs for these crops in the region, to participate in the prioritization of these needs at the national level, to conduct field research and analytical studies that develop the information to obtain clearances and label additions from USEPA to meet these needs, and, finally, to make information available on the status and progress of these studies and their final outcome to growers and other interested parties.

### **B. Background and Justification**

The IR-4 Minor/Specialty Crop Pest Management Project (IR-4 Project) is a comprehensive, national program that consists of six units working together on a common mission to meet the nationally defined goals and objectives presented above. The national program is currently comprised of: IR-4 National Headquarters (IR-4 HQ), four Regional IR-4 Centers (Northeast, North Central, Southern and Western), and the USDA Agricultural Research Service (USDA-ARS) Office of Minor Uses. The North Central Region (NCR) program is responsible for the operations of the program in the 12 states of the region (IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD and WI) and has been located at Michigan State University (MSU) since the inception of the regional programs in 1967. The NCR program, while located at MSU, has developed three field research centers in Michigan and Wisconsin, and works with other field research cooperators around the region, has established an advanced laboratory unit at MSU, and, in response to the Good Laboratory Practice (GLP) requirements of EPA, has developed a group of Quality Assurance personnel to serve the region. The NC program also works co-operatively with the USDA-ARS IR-4 field research unit located at Wooster, OH. Each of the 12 states of the Region has one or more State Liaison Representatives who identify research needs in their state and transmit back the activities of the program to interested parties within their state.

In the NCR program, needs are identified and prioritized by research and extension personnel, farmers, grower organizations and others at a regional meeting, and prioritized at a National Food Use Workshop. Field trials in which pest management chemicals are applied to food crops are conducted and crop samples

are collected and analyzed for the magnitude of residues. All food use research is conducted under the requirements for Good Laboratory Practice issued by the USEPA. The analytical reports, after Quality Assurance checks, are forwarded to USEPA as petitions for the development of clearances for these materials. Efficacy (performance) studies on key pests that are currently difficult to control are also funded where this is deemed necessary to obtain later clearances for these pests. Like food uses, ornamental projects are prioritized at a specific workshop and assigned to collaborators in the NCR. The ornamentals projects focus on efficacy and crop safety (phytotoxicity) with primary emphasis on pests for which no satisfactory controls currently exist. The reports are sent to the registrants of the chemicals to assist in obtaining label amendments to include new crops and pests. Projects to conduct research and efficacy demonstrations with biopesticides are also solicited and prioritized nationally at the annual Biopesticide Workshop.

The plant protection industry has limited economic incentive to conduct the research necessary to obtain registrations for most specialty crops. To fill this pest management gap, IR-4 develops the data that provide legal, effective, safe and IPM-compatible pest control agents. Without this program, many specialty crops could no longer be produced in the USA with severe economic implications for American agriculture, food processors, and consumers. Specialty crop growers and food processors are the primary beneficiary of the IR-4 Project by having legal access to effective pest management products, but the general public also benefits by having a safe, healthy, and reasonably priced food supply.

### **C. Budget**

Funding for the NCR IR-4 program comes primarily from USDA/NIFA as an annual competitive research grant. We received \$1,136,558 for FY22. The starting date for the FY22 funding was August 15, 2022.

### **D. Overview of Productivity in 2022**

This was a productive year for the IR-4 North Central Region. Field Research Directors (FRD) effectively worked around weather-related events, such as frosts and flooding, to carry out field trials to completion. Outputs and positive impacts of IR-4 continue to be highly valued by US specialty crop growers.

### **E. Challenges**

NIFA's shift of IR-4 from a "special research grant" (not allowing IDC) to a "cooperative agreement" model (allowing up to 10% IDC) now provides overhead to host institutions. After 12 years of flat funding by NIFA, the 2022 grant included a modest increase, which will help cover the portion of overall grant funds (IDC) that will go to host institutions. In October of 2021 the IR-4 PMC decided to shut-down the NC Regional lab at MSU, as well as the regional QA unit. The shut-down process of all active research in the lab was completed by July 31, 2022, and the MBI building was vacated by December 31, 2022. Going forward all NC regional QA needs will be coordinated by IR-4 HQ.

### **F. Personnel Changes/Additions in 2022**

The decision to shut-down the NC Regional lab and QA unit impacted the employment of 10 full-time or part-time personnel, many who have worked here for multiple decades. Their service to US specialty crop growers has been greatly appreciated. None-the-less, the NC IR-4 field program will continue to play a critical role in the overall program mission. New roles in the NC Region include Nicole Soldan becoming the NC Regional Field Coordinator.

NC Field: Reid Smeda of Missouri has agreed to be a state Liaison.

**G. Regional IR-4 Activities:**

**Field Research**

(Ms. Nicole Soldan)

**Food Uses:** As a result of the 2021 NC Regional IR-4 Advisory Committee Meeting in East Lansing, MI, the subsequent IR-4 Food Use Workshop, and the National Research Planning Meeting, the NC Region conducted 57 food crop field residue trials, 22 product performance trials, and 6 Integrated Solutions projects.

Table 1. 2022 NCR FOOD GLP AND EFFICACY/CROP SAFETY PROJECTS

2022 Studies	FRD
11 GLP	Chapman, Scott (WI)
1 E/CS	Chapman, Scott (WI)
5 GLP	Robinson, A. (OH)
0 E/CS	Robinson, A. (OH)
6 GLP	Hausbeck, Dr. Mary (MI)
3 E/CS	Hausbeck, Dr. Mary
14 GLP	Heider, Daniel J. (WI)
3 E/CS	Heider, Daniel J. (WI)
9 GLP	Reicks, Graig (SD)
1 E/CS	Reicks, Graig
1 GLP	Jenks, Dr. Brian (ND)
2 E/CS	Meyers, Stephen L. (IN)
6 GLP	Wheeler, Celeste (MI)
9 GLP	Chaudhari, Dr. Sushila (MI)
6 E/CS	Chaudhari, Dr. Sushila (MI)

**Environmental Horticulture:** As a result of the 2020 Environmental Horticulture Prioritization workshop, in 2022 NCR conducted 5 trials to assess the safety of pesticides on ornamental crops and 3 efficacy studies. The outcomes of these projects will help to deliver new pesticide registrations in ornamentals, expand registrant labeling through positive performance data, and enhance their adoption through demonstration of their effectiveness in controlling pests. See the Table 2 for details.

Table 2. 2022 NCR ENVIRONMENTAL HORTICULTURE PROJECTS

Project Title	Protocol	State	Cooperator
New Pest Products Crop Safety - Foliar	22-007	MI	Saha
Regional Botryosphaeria Canker Efficacy	22-022	IN	Beckerman
Regional Bio Nematode Efficacy	21-016	MI	Quintanilla
Pythium Efficacy	22-009	MI	Hausbeck
Regional Botrytis Efficacy	22-023	MI	Hausbeck
In-Season Pre Herbicide Crop Safety	22-017	OH	Mathers
Non Oomycete Root Rot Efficacy - Rhizoctonia	22-013	OH	Hand
Phytophthora Efficacy	22-010	OH	Hand
In-Season Pre Herbicide Crop Safety	22-017	OH	Robinson

**Integrated Solutions:** As a result of the 2020 Integrated Solutions Prioritization Workshop, in 2022 NCR cooperators conducted 6 Integrated Solutions projects. With the outcomes of these projects we expect to better service the needs of the IR-4 stakeholders by integrating products. It will take advantage of the considerable increase in development of efficacious biopesticides that are increasingly playing a more significant role in both conventional and organic agricultural production systems.

Table 4: Integrated Solutions Projects in the NC Region in 2022

Title	Principal Investigator
Thrips/ Green Onion	Cathy Herms, Ohio State University
Powdery and Downy Mildew/ Organic Cucurbits	Mary Hausbeck, Michigan State University
Phytophthora Rot Summer Squash	Mary Hausbeck, Michigan State University
Bitter Rot in Apple	Janna Beckerman, Purdue University
Oomycete in Hemp	Janna Beckerman, Purdue University
Root Rot in Mung Bean	Daren Mueller

**Outreach and Collaborative Activities:**

Extension and outreach activities included increasing awareness of IR-4 to stakeholders through zoom calls, phone calls, and email. We gained several new IR-4 stakeholders that want to be involved for the North Central Region.

**Laboratory Program**

The NC Lab was successfully shut-down in 2022, including the completion of residue studies, transfer of some studies to the Western Regional lab, and GLP files transferred to IR-4 HQ.

**Quality Assurance Program**

The personnel in the QAU that were involved in NCR activities in 2022 were:

<u>Quality Assurance Officers</u>	<u>Area of Responsibility</u>
Dr. Zhongxiao Michael Chen	Regional QAU management, inspections, and audits
Dr. Ehab Abdelraheem	Analytical Lab Inspections
Ms. Eileen Nelson	UW-Madison IR-4 Research Center

**NCR State Researchers Participating in the IR-4 Program for 2022**

(\* indicates State Liaison Representative)

<b>ILLINOIS</b> Open*	<b>MICHIGAN</b> M. Hausbeck J. Wise N. Soldan	<b>MINNESOTA</b> A. Robinson*	<b>OHIO</b> D. Doohan* H. Mathers F. Hand Allison Robinson	<b>WISCONSIN</b> D. Heider* S. Chapman R. Groves*
<b>INDIANA</b> J. Beckerman S. Meyers	B. Zandstra E. Hotchkiss M. Quintanilla S. Chaudhari D. Saha	<b>NEBRASKA</b> A. Jhala*		
<b>IOWA</b> R. Hartzler*		<b>NORTH DAKOTA</b> Andy Robinson* B. Jenks	<b>SOUTH DAKOTA</b> S. Clay* G. Reicks	
<b>KANSAS</b> Open*	<b>MISSOURI</b> Reid Smeda*	<b>INDEPENDENT CONTRACTORS</b> J. Spotanski		

**NC Liaison Committee Officers**

G. Reicks - Chairperson  
T. Van Woerkom - Vice Chairperson  
W. Jiang - Secretary

**NC Region Administrative Advisor**

D. Buhler - Administrative Advisor

**MSU Leader Lab**

J. Wise - NC Region Director  
N. Soldan - Regional Field Coordinator  
S. Erhardt - Regional Lab Coordinator  
W. Jiang - Associate Regional Lab Coordinator  
L. Geissel - Research Assistant  
S. Kumar - Research Assistant  
D. Haddad - Research Assistant  
R. Fader - Laboratory Technologist  
B. Arnold - Research Assistant  
Z. Chen - QAU Coordinator  
E. Abdelraheem - QAU lab

**Field Research Center Directors**

MI: S. Chaudhari  
MI: C. Wheeler  
WI: S. Chapman and D. Heider

**Field QA**

Z. Chen, MI  
D. Killilea, ND  
E. Nelson, WI