# TACTICAL SCIENCE ASSESSMENT: COMMUNICATIONS

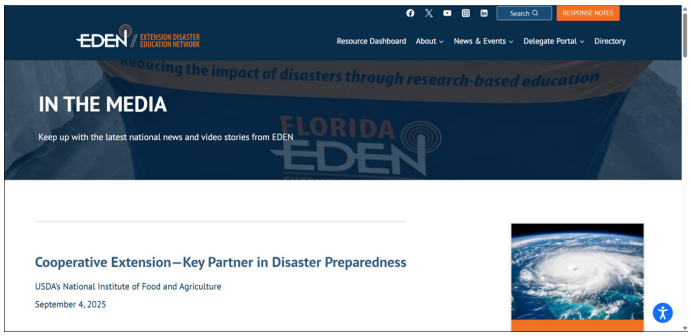
## PROGRAMS WITH SHARED CONCERNS:

- *National Plant Diagnostic Network (NPDN)*
- *National Animal Health Laboratory Network (NAHLN)*
- *Inter-Regional Project #4 (IR-4)*
- *Minor Use Animal Drug Program (MUADP)*
- *National Integrated Pest Management Coordinating Committee (NIPMCC)*
- *Crop Protection and Pest Management Program (CPPM)*
- *Regional Integrated Pest Management Centers (RIPMC)*
- *Extension Implementation Programs (EIP)*
- *Extension Disaster Education Network (EDEN)*

## STRENGTHENING COMMUNICATION ACROSS TACTICAL SCIENCE PROGRAMS

All programs identified above recognize communication as a critical challenge — both internally within their networks and externally with other tactical science initiatives and stakeholders. Panelists agreed that the most pressing needs include:

- Developing a unified communication strategy that aligns messaging across programs and geographic locations, while celebrating achievements.
- Educating stakeholders on the purpose and value of tactical science programs — why they were created, the gaps they fill, and the benefits they deliver to users and communities.
- Enhancing academic engagement on host campuses to foster awareness, collaboration, and institutional support.




Extension Disaster Education Network's website, extensiondisaster.net/.

## OPPORTUNITIES FOR CROSS-PROGRAM COLLABORATION

Several collaborative challenges could be addressed more effectively through coordinated efforts. For instance, mycotoxins in animal feed — especially affecting swine health — present a shared concern:

- NPDN labs may detect early signs through ear rot samples.
- NAHLN labs could observe cases of mycotoxicosis in livestock.
- EDEN can amplify communication about emerging risks to broader audiences.

This issue connects multiple domains, including human food safety, and illustrates the potential for integrated action. Success will require a marketing component to raise visibility and understanding.

OneHealth offers a model of cross-agency collaboration (involving EPA, FDA, USDA-APHIS, and others), though it notably excluded plant systems—a missed opportunity to link with many tactical science programs. Effective partnerships at this scale demand federal-level commitment, which is beyond the control of individual programs.

Currently, tactical science programs engage in some collaboration, but it is under-publicized and not widely recognized as value-added. The pane noted that the term "tactical science" itself is often perceived as vague and poorly understood. Establishing a clear identity for the Tactical Sciences as a "network of networks" remains a challenge, especially given limited resources.

While decision-makers may be familiar with individual programs like IR-4 or SARE, the broader tactical sciences umbrella includes many small, underfunded initiatives that are often overlooked.


Website for Integrated Pest Management, ipmcenters.org.

## TARGET AUDIENCES FOR TACTICAL SCIENCE COMMUNICATION

### Internal Audiences:

- Partner agencies: Share educational materials to build understanding.
- Partner programs: Exchange newsletters to foster familiarity and alignment.
- Land-grant university administrations: Emphasize the biosecurity value of tactical science programs and their role as a portal into the university's commitment to community well-being.

### External Audiences:

- Professional societies: Many colleagues may lack awareness of applied sciences.
- Industry: Engage research and technical representatives in crop and animal health sectors.
- General public: Raise awareness of risks and the role of tactical science programs in crisis response.
- Decision-makers: Stress that losing tactical science programs would make future crisis response more difficult and costly.

## CORE MESSAGES ABOUT TACTICAL SCIENCES

Pests, pathogens, and emerging diseases pose ongoing threats to food, feed, fiber, and natural resources.

Climate change intensifies pest pressures — this is a message that must be widely understood through education.

**U.S. Agriculture is Vulnerable to Weeds, Diseases, Insects and Other Pest Threats**

***Ongoing Investment in Integrated Pest Management Safeguards America's Agricultural Industry and Food Supply***

The COVID pandemic illuminated many truths about the U.S. economy but few more important than this: Agriculture is a vital American industry. That was driven home by empty store shelves, rationed quantities of food staples, and panic buying of food. In 2020, for the first time in most Americans' lives, there was no guarantee the food they wanted would be available. Agriculture, food and related industries contributed $1.05 trillion to U.S. gross domestic product in 2017. In addition, 22 million jobs were related to agricultural and food sectors in 2018 — 11 percent of total U.S. employment. These facts reveal that American agriculture is absolutely vital to the fabric of U.S. livelihoods, yet uncomfortably fragile.

**Pests are a constant threat to U.S. agriculture — Especially invasive species**

Pests are endemic to agriculture and American farmers spent $9 billion on crop-protecting chemical pesticides — herbicides, insecticides and fungicides — in 2019 alone. That figure does not include the costs of pesticide application, nor does it capture all the other ways growers manage pests. In the U.S., growers lose an estimated 10 to 35 percent of their crops to pests. When an invasive insect, disease or weed is introduced, the economic impact and ecological disruptions can be extreme.

**The long-term solution to pest challenges — Integrated Pest Management**

The science of IPM can prevent resistant pest populations from emerging. As the name implies, IPM integrates multiple pest management tactics across seasons to protect crops. Because a number of different strategies and technologies are alternated and combined, no individual control method is overused and pest resistance is slowed or even stopped.

**Integrated Pest Management infrastructure, funding and the regional IPM centers**

The U.S. Department of Agriculture's National Institute of Food and Agriculture is the major funder of IPM research in the U.S. Because IPM is used in so many different arenas, IPM research is supported through a variety of federal programs: Specialty Crop Research Initiative grants, Agriculture and Food Research Initiative grants, Organic Research and Extension Initiative grants and the Sustainable Agriculture program.

IPM is most directly supported through the federal Crop Protection and Pest Management grant program, which was formed when several budget lines were consolidated in 2014. Funding for IPM took dramatic cuts — more than $63 million — during that consolidation and has remained static for many years.

***COVID was a wake-up call to the importance and fragility of American agriculture, but the development of vaccines within a single year is also an incredible testament of the power of directed science to solve important problems.*** IPM is a direct application of scientific research into the nation's important pest management problems, and funding IPM Infrastructure and the Regional IPM Centers are vital for protecting US. agricultural production.

The National Integrated Pest Management Coordinating Committee is a committee of the Experiment Station Committee on Organization and Policy and the Extension Committee on Organization and Policy within the Association of Public and Land-grant Universities governing structure. It assists in development of reports and strategic plans on pest management issues and pursues activities that facilitate coordination and collaboration nationally among and between IPM research and extension at the land-grant universities, and between the land-grants and federal agencies involved in IPM. Learn more at: https://tinyurl.com/d7yx9ny6

National IPM Coordinating Committee educational flyer on weeds, diseases, insects and other pest threats can be view at: escop.info/wp-content/uploads/2017/05/NIPMCC_OVERVIEW_ONEPAGE_20210419.pdf

Tactical science programs safeguard biosecurity by addressing invasive pests and diseases in crops and livestock.

## BARRIERS TO COMMUNICATION AND COLLABORATION

Limited time and funding restrict the capacity of program staff to engage in additional communication efforts. Their focus remains on core program delivery and stakeholder engagement.

Relationship-building is essential for network success. Trust, shared training, and familiarity are foundational — but building a "network of networks" is a significant leap beyond current expectations.

Stakeholder networks could be valuable for ongoing engagement, mutual understanding, and strategic alignment.

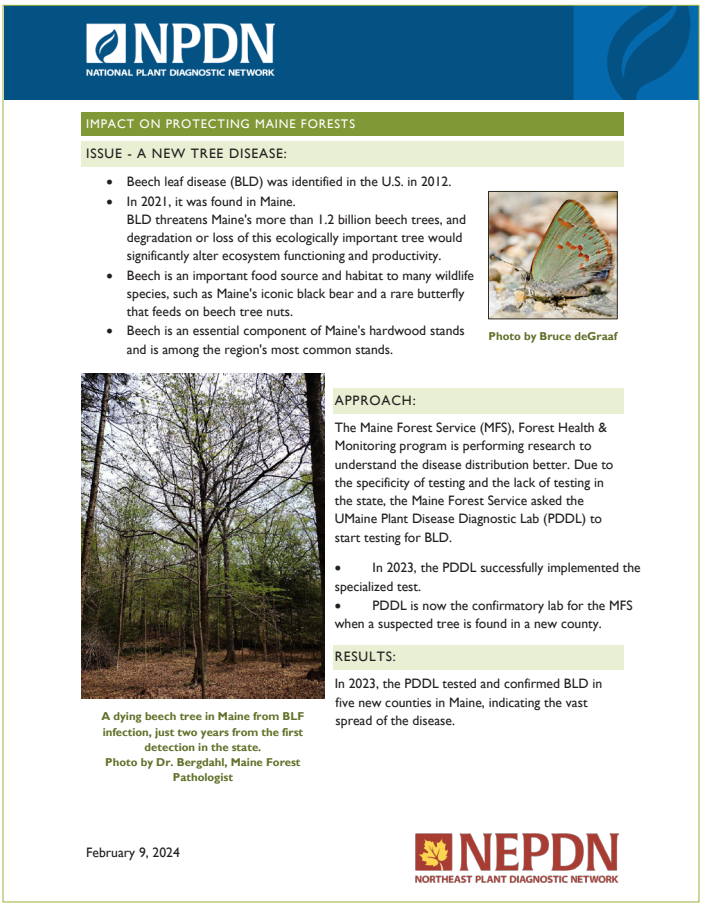
While occasional emails may help share information, they do not foster the deep relationships needed for effective collaboration. Communication is often seen as the easiest path to expanding tactical science visibility — but in practice, it is far more complex.

## RECOMMENDATIONS FOR NIFA

» Address program isolation: Encourage cross-program coordination to highlight shared benefits and foster a broader sense of purpose.

» Appoint a communication coordinator: A central point of contact would streamline messaging, provide continuity, and support strategic outreach.

» Promote newsletter sharing: Circulating updates among program leaders can build familiarity and spark collaboration.



NPDN
NATIONAL PLANT DIAGNOSTIC NETWORK

IMPACT ON PROTECTING MAINE FORESTS

ISSUE - A NEW TREE DISEASE:

- Beech leaf disease (BLD) was identified in the U.S. in 2012.
- In 2021, it was found in Maine.
  BLD threatens Maine's more than 1.2 billion beech trees, and degradation or loss of this ecologically important tree would significantly alter ecosystem functioning and productivity.
- Beech is an important food source and habitat to many wildlife species, such as Maine's iconic black bear and a rare butterfly that feeds on beech tree nuts.
- Beech is an essential component of Maine's hardwood stands and is among the region's most common stands.

Photo by Bruce deGraaf

A dying beech tree in Maine from BLF infection, just two years from the first detection in the state.
Photo by Dr. Bergdahl, Maine Forest Pathologist

APPROACH:

The Maine Forest Service (MFS), Forest Health & Monitoring program is performing research to understand the disease distribution better. Due to the specificity of testing and the lack of testing in the state, the Maine Forest Service asked the UMaine Plant Disease Diagnostic Lab (PDDL) to start testing for BLD.

- In 2023, the PDDL successfully implemented the specialized test.
- PDDL is now the confirmatory lab for the MFS when a suspected tree is found in a new county.

RESULTS:

In 2023, the PDDL tested and confirmed BLD in five new counties in Maine, indicating the vast spread of the disease.

February 9, 2024

NEPDN
NORTHEAST PLANT DIAGNOSTIC NETWORK

National Plant Diagnostic Network's educational flyer on protecting forests from Beech leaf disease covers the impact it can have on forests in Maine, how to monitor the diesease and the results of their research. Credit: npdn.org/sites/npdnd9b.ceris.purdue.edu/files/basic-page/UM%20Impact%20Statement_BLD_20240209_.pdf

TACTICAL SCIENCES
NETWORK

Kansas State University
1041 Pat Roberts Hall
1900 Denison Ave
Manhattan, KS 66506-5620
Phone: 785-532-6193
Email: info@tacticalsciences.org

National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

This project was supported by the Agriculture and Food Research Initiative Competitive Grant no. 2019-67013- 29812 from the USDA's National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy.

Layout and design by Communications Solutions at Kansas State University, College of Agriculture