TACTICAL SCIENCES NETWORK

WHAT ARE TACTICAL SCIENCES AND WHY DO THEY MATTER?

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Tactical Sciences are the boots on the ground that apply proven research in biosecurity work for the American people. Our food supply, both plant and animal, is under constant assault by pests and pathogens that are introduced innocently through trade, agrotourism, and international travel. Tactical Sciences Network programs provide critical detection, diagnostics, and response and response functions to address these threats in real time. Together, these programs comprise a coordinated network of capabilities that form the backbone of our national pest and disease response infrastructure, ensuring the biosecurity of the U.S. food and agricultural system, valued at about $220 billion.

WHY DO TACTICAL SCIENCES MATTER?

Rapid and effective response to biosecurity threats is critical to national security. In the world of managing pests and diseases, Early Detection and Rapid Response (EDRR) is foundational. These concepts are closely connected with the strategies of Integrated Pest Management in plant systems of Prevention, Avoidance, Monitoring, and Suppression (PAMS). The concepts of EDRR and PAMS are critical to ensure that disease or infestation management is implemented before an outbreak reaches crisis proportions.

Biosecurity… is Agro-security… is Food Security… is National Security!

The threats are real. The threats are economic, political, and biological. They may come from environmental disasters, pests and diseases, or political conflict. For example, African Swine Fever in Southeast Asia disrupted local pork supplies, which increased global demand for U.S. pork. Similarly, the 2014 Crimean conflict disrupted Black Sea grain exports, contributing to the food shortage and political unrest in North Africa, which began due to prolonged drought in the region, and exacerbating uprisings during the "Arab Spring" that began in 2011.

WHAT PROGRAMS ARE INVOLVED?

USDA National Institute of Food and Agriculture (NIFA)-funded Tactical Sciences Network programs span a broad "threat-response continuum" and include key infrastructural pillars:

The National Plant Diagnostic Network (NPDN) and National Animal Health Laboratory Network (NAHLN) provide first-line diagnostic capacity. Their expertise often informs regulatory decisions and mobilizes federal and state response. These labs are largely based at Land-grant Universities, integrating research, education, and service of the faculty at those institutions. They work hand-in-hand with state Integrated Pest Management (IPM) programs and Regional IPM Centers, forming a connected web of expertise and communication.

The Inter-Regional Project #4 (IR-4) ensures that chemical and biological tools are available for specialty crop producers, who might otherwise lack registered pest management products. Its animal-agriculture equivalent, the **Minor Use Animal Drug Program (MUADP)**, fills similar gaps for producers of shrimp, ducks, and other minor species.

The Extension Disaster Education Network (EDEN) serves a vital communication and training function, disseminating information from Tactical Sciences Network programs to local emergency managers, extension agents, and community leaders. EDEN helps convert technical knowledge into community action.

"Several highly applied programs support boots on the ground coordination, Extension education, and research through the Crop Protection and Pest Management (CPPM) appropriation to **USDA-NIFA. The Regional Integrated Pest Management Centers (RIPMC)** generate multistate pest assessments and educational materials, interact with federal and state agencies, help coordinate state and federal efforts, and respond to critical issues. The state integrated pest management (IPM) programs, known as the **Extension Implementation Program (EIP),** within the CPPM, educates producers, practitioners and stakeholders through demonstrations and programs promoting safe and effective pest management. New sustainable pest management solutions, tools, and tactics for biosecurity are developed through the **Applied Agricultural Research and Development (ARDP)** program.

WHY ARE THE TACTICAL SCIENCES NETWORK PROGRAMS IMPORTANT?

Affordable, abundant food depends on functional pest and disease management systems. Tactical Sciences Network programs are a national asset, protecting agriculture, trade, and public health. While no system can prevent every outbreak, these programs provide the early detection and coordinated response needed to minimize losses and sustain productivity. As one plant disease expert stated: If these programs ceased to exist, they would have to be recreated to respond to the next critical outbreak.

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