

Agriculture Research: Guarding America's Food and Fiber Security

With the atrocities of last autumn, our nation entered a new era, one in which vigilance truly is the price of freedom. And while public attention has focused on other targets and other threats, American agriculture—the sector that not only feeds and clothes us, but also accounts for 16 percent of GDP and 27 percent of total export value—is more vulnerable than ever to attacks, both natural and man-made.

In the vanguard of efforts to protect American agriculture are the scientists and institutions devoted to agricultural research. Their goal: to improve and protect the well-being of Americans (and people the world over) by ensuring a safe, high-quality, affordable, and sustainable supply of food and fiber.



The Threats

In an increasingly connected world, American agriculture can no longer count on oceans, mountains, and distance to keep out all of the weeds, pathogens, pests, and poisons that threaten it. Whether intentional or unintentional, man-made or naturally occurring, attacks on our food and fiber system could result in enormous human and economic costs.

- North Carolina, 1959. An unintended introduction of a noxious parasitic weed infested over 450,000 acres requiring extensive quarantine and eradication. Total direct cost: \$300 million
- Michigan, 1973. An accidental contamination of livestock feed with fire retardant resulted in the slaughter of 30,000 cattle, 4,500 hogs, and 1.5 million chickens. Total direct cost: \$215 million.
- Oregon, 1984. The intentional contamination of restaurant food by a cult resulted in 751 people getting salmonella poisoning. Total direct cost: unknown.
- Belgium, 1999. An accidental contamination of livestock feed with dioxin resulted in the slaughter of 50,000 hogs and 3.3 million chickens. Total direct cost: \$850 million.

In each of these examples, the total direct cost is only part of the story. In addition to the loss of livestock, and yields are the costs that ripple out into the economy—those associated with health care, income loss, quarantine, eradication, and higher food prices. The total cost to human health and well-being and the indirect costs to the economy are nearly impossible to estimate but are undoubtedly huge. In 2001, the enormous level of impact was seen in the United Kingdom with the outbreak of foot and mouth disease that, according to USDA's Economic Research Service, cost the economy between \$3.6 and 11.6 billion.

The Defense

Defending the food and fiber system is no easy task. Geographically disperse, diverse in its methods and products, and connected upstream and down to a wide range of other industries, it presents literally thousands of targets for attack. Nonetheless, the agricultural research system has a long history of success in keeping the system safe. From figuring out how to mass produce penicillin in the 1940s to quashing the threat of witchweed in the 1960s to currently bioengineering cattle that resist mastitis, the research efforts of USDA and the nation's universities (with critical support from the Cooperative State Research, Education, and Extension Service) have kept American agriculture safe and productive.

Who is CoFARM?

American Dairy Science Association

www.aces.uiuc.edu/~gregm/adsa

American Institute of Biological Sciences

www.aibs.org

American Phytopathological Society

www.apsnet.org

American Soc. of Agricultural Engineers

www.asae.org

American Society of Agronomy

www.agronomy.org/asa.html

American Society of Animal Science

www.asas.org

American Soc. for Horticultural Science

www.ashs.org

American Society for Microbiology

www.asmsusa.org

American Soc. for Nutritional Sciences

www.nutrition.org

American Society of Plant Biologists

www.aspb.org

Council on Food Ag & Resource Economics

www.cfare.org

Crop Science Society of America

www.crops.org/sssa.html

Entomological Society of America

www.entsoc.org

Federation of Animal Science Societies

www.fass.org

Genetics Society of America

<http://www.faseb.org/genetics/gsa/>

Institute of Food Technologists

www.ift.org

Poultry Science Association

www.psa.uiuc.edu

Rural Sociological Society

www.lapop.lsu.edu/rss/

Society of Nematologists

www.ianr.unl.edu/son/

Soil Science Society of America

www.soils.org/sssa.html

Weed Science Society of America

www.wssa.net

The Coalition on Funding Agricultural Research Missions (CoFARM) is a broadly based coalition united by a commitment to advance and sustain investment in our nation's fundamental and applied agricultural research. CoFARM was formed in 1990 to better advocate the benefits of food and agricultural research. Since then, public investment in agricultural research has become erratic and may be inadequate to meet the challenges of the next century. CoFARM's 21 member societies represent individual investigators from scientific and professional organizations.

*Learn more about CoFARM and
Agricultural Research at
WWW.COFARM.ORG
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More important than past success, however, is current readiness. And while the scientists and institutions are as dedicated as ever, the capacity to guard American agriculture, and Americans, is stretched thin—in some instances, too thin.

The fact is, all emergencies begin as local emergencies, for example, animal disease outbreaks are first responded to by local veterinarians, that must refer the case to the state level who in turn issues the notification to USDA. Any delay in diagnosis and referral increases the impact, and the time from onset to diagnosis and initiation of control is absolutely critical in determining the severity and impact of any outbreak. Our nation must have an extensive, widely deployed, well-coordinated, well-equipped, and appropriately staffed detection, diagnostic, and response system. While elements of that system exist, the system itself is less than adequate for the critical tasks at hand. There is, however, no need to reinvent the wheel. Models exist that are based upon the principles of prevention, early detection, and rapid response. Excellent examples include the Center for Disease Control's method for coping with disease outbreaks and the National Interagency Fire Center's strategy for dealing with unwanted wildfires. What is needed is support—specifically, support to:

- Create a national inventory of expertise and facility capacity;
- Improve communication among these experts and facilities and other appropriate agencies and personnel;
- Conduct comprehensive risk analyses of the various potential threats;
- Develop standardized test methods for pathogen detection, and effective vaccines and other treatments for these pathogens, for humans, animals, and plants.
- Develop rapid identification and mobilize experts and diagnostic facilities across the country in the event of an emergency;
- Develop sector-specific models that provide detailed guidance on responding to attacks;
- Develop and conduct training programs in response procedures for use at all levels and in all sectors of the food and fiber system;
- Develop and conduct media and consumer education and outreach campaigns to better inform the nation about potential threats and ways to guard against them.

With adequate support, the nation's agricultural research system can and will continue to ensure the safety, integrity, and productivity of America's food and fiber sector, and in doing so ensure the health and well-being of Americans.