

Crop Biosecurity and Bioterrorism

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Events surrounding September 11, 2001, have focused attention on security and terrorism in all aspects of American life, but the agricultural community in the U.S. and elsewhere has been concerned about the security of our food supply for some time. Over the past few years, the introduction of exotic pests into the U.S., such as karnal bunt of wheat or the Russian grain aphid, and the recent outbreak of foot and mouth and mad cow diseases in Britain have all resulted in huge economic losses to agriculture and resulted in increased concern about crop and livestock biosecurity.

Events surrounding September 11 have also alerted us to another aspect of biosecurity and bioterrorism. During the investigation of these events, it was discovered that at least one of the World Trade Center terrorists had investigated the use of a “crop-dusting” plane for still unknown purposes. However, many felt that he could have been interested in more than just crashing a small plane into a building. Perhaps the intent was to use it to spray people, crops or livestock with a biological or chemical agent smuggled into the U.S. or even to disperse one of our many restricted-use pesticides in an illegal or dangerous manner. Although this would have seemed far-fetched just a few years ago, the sad circumstances of last fall illustrate that there are rogue groups around the world bent on wanton destruction and terrorism in other countries, including our own. Therefore, many persons feel that the time has come for at least a heightened awareness of crop and livestock security.

The basic need for that security is the protection of a stable, safe and inexpensive food supply. Our food supply in the U.S. consists of several components including large-scale commercial grain, oil and fiber crops and commercial fruit, vegetable and nut production.

In Arkansas, commercial grain, oil and fiber production are extremely important in the eastern half of the state, the Arkansas River Valley and southwestern Arkansas. Large row-crop farms are generally family owned and operated but may

involve several family members with a limited hired labor force. They are highly mechanized and capable of immense production in a very short time.

To operate efficiently, large-scale crop production is not very diverse and requires very few farmers. In other words, only a few crops are grown on enormous acreage within a fairly small area and only a few varieties are grown within each crop. Most of our population relies on very few people to produce the basis of the food supply.

This lack of diversity in crops and the reliance on such a small part of our population as producers increases the risk of economic sabotage through the purposeful introduction of exotic and destructive pests or by other means. However, Arkansas row-crop production is more diverse than certain places, growing rice, cotton, soybeans, wheat, corn and grain sorghum on significant acreage. In the Midwest, often only corn and soybeans occupy large areas. So the introduction, whether intentionally or by accident, of a new pest into our country poses a more significant threat than it might in other places. For example, a new disease or insect pest of rice could rapidly establish itself and damage large areas of the crop in eastern Arkansas because 1.5 million acres of rice in the state are near each other and our seed, production and grain handling systems are intertwined. While no one believes such pest introduction would wipe out production, even a 10 or 20 percent loss in one year would have a substantial impact on not only the Arkansas economy but on the United States, since we grow more than 45 percent of the nation’s rice.

What are the threats to crop production? These include:

- **Accidental introduction of new pests or diseases.**

There are many examples of this threat. New pests and diseases are introduced into the U.S. each year by people traveling to and from other countries or through our crop importing system. APHIS, the Agricultural Plant Health Inspection Service, is

responsible for preventing these introductions or containing them if accidentally introduced. A recent example of an introduction was karnal bunt of wheat which is a rather mild disease biologically. But because of various quarantine laws in different countries karnal bunt poses, a very important economic and political problem for wheat exports. Its introduction and discovery in Arizona, followed by discoveries in California, New Mexico and Texas, created and has continued widespread economic problems among U.S. wheat producers and grain buying companies.

- **Willful introduction of new pests or diseases.**

This threat is simply a purposeful application of the first. A malicious introduction of a new pest or disease would entail both intent and specialized knowledge. As far as we know, this has not occurred in crop production in the U.S. but remains a possibility. Many countries, including ours, have conducted research on the development of certain plant diseases as biological weapons for the use of damaging another country's crops. This is not as easy as it looks, however, and over time the unreliability of plant pathogens to produce disease led to an abandonment of this idea. Both of these threats are monitored, not only by APHIS, but also by the Extension Service in each state, and by agricultural field personnel and growers themselves. How so? Anything new and different attacking a crop in the U.S. is rapidly brought to the attention of county Extension agents, Extension specialists and university researchers. These professionals understand how to put in motion a response and who to notify to quickly address such a development.

- **Accidental contamination of crops or food products with chemical or biological agents.**
- **Willful contamination of crops or food products with chemical or biological agents.**

These threats have occurred on a limited basis in the U.S. and elsewhere but constant monitoring by the food/feed industry and FDA and rapid response by law enforcement and the medical profession has largely prevented widespread problems.

- **Accidental destruction of crops with chemical agents.**
- **Willful destruction of crops with chemical or biological agents.**

Accidental injury or even destruction of fields sometimes occurs when a pesticide applicator sprays the wrong herbicide by mistake. Accidental pesticide applications of this nature are quickly noted and Extension personnel can alert the Arkansas State Plant Board if necessary. The purposeful use of herbicides to destroy crops is unknown in the U.S. and would certainly be recognized immediately.

So, what can farmers and others in commercial agriculture do with respect to crop biosecurity? Common sense things, mostly.

- **Be more vigilant.**
- **Report unusual crop problems to the local county agent.**
- **Buy only the amount of pesticides needed for the season and avoid carryover.**
- **Keep pesticides locked up and control access to them.**
- **Keep a pesticide inventory.**
- **Don't import problems by bringing in seed or plants from other countries illegally. Go through proper channels to import crop products.**
- **Read and follow pesticide labels and make sure the applicator does as well.**
- **Lock and control access to pesticide application equipment, including airplanes.**

A safe, stable and inexpensive food supply is the foundation of any civilization. It makes sense to protect it from both accidental and willful injury. An increased awareness of crop biosecurity could help in the short and long term.