

2007 University of Arkansas Combined Research and Extension Plan of Work

Agricultural & Food Biosecurity

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

- 212 50% Pathogens and Nematodes Affecting Plants
- 311 25% Animal Diseases
- 712 25% Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxins

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Biosecurity research and educational outreach is critical to the sustainability of Arkansas agriculture, the public health, and our state economy. Biosecurity research and educational programming requires an integrated approach, working with state and federal agencies, regulatory officials and policy makers in a partnership to analyze and manage risks in the sectors of food safety, animal life and health, plant life and public health. Through research and educational outreach, Division of Agriculture faculty work with the general public, state/federal agency personnel, consumers, growers/producers and allied industry personnel to promote biosecurity risk management planning and prevention practices designed to reduce/prevent the spread and movement of infectious diseases.

Accurate and timely diagnosis is fundamental to animal and plant protection and crop biosecurity. Infectious diseases introduced onto a farm operation can have a devastating effect on cash flow and equity. Diseases cost the Arkansas poultry industry an estimated 10% of the total bird value each year. In Arkansas this means that diseases may cost the industry as much as \$230 million a year. Severe disease outbreaks such as the 1983-1984 avian influenza outbreaks in Pennsylvania resulted in the eradication of over 17 million birds, at a cost of over \$65 million dollars to that state.

Asian soybean rust (ASBR) entered the United States, including Arkansas, in late 2004 and has successfully wintered in Florida since. ASBR infected soybean crops in several southeastern U.S. states during 2005 but was largely contained by a near record drought system in the Mississippi River Valley. The pathogen did become established in Texas and Mexico during late 2005, increasing the risk for a major epidemic in 2006 and subsequent years for Arkansas and the Midwest. This disease is capable of severely crippling the Arkansas and U.S. soybean industry because there are no resistant cultivars or cultural management techniques available. Fungicides will be the only control option for several years and their use is largely guesswork under U.S. conditions, since local efficacy and timing data are unavailable.

There are also many pathogens and pests of soybean that are not in the United States yet, so monitoring of the soybean crop for existing and potentially exotic pests is a meaningful crop biosecurity measure. The Arkansas Nematode Diagnostic Laboratory provides nematode identification and assessment of risk across all crops and commodities produced in the state. The importance of crop monitoring for biosecurity purposes has increased with the increase in globalization of agriculture and the resulting movement of products into the United States from other countries. A single introduction of a new pest or pest strain could result in millions of lost dollars in income, higher prices to consumers, and interruptions in the marketplace.

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Biosecurity policy, protocols, and practices are critical to the health of Arkansas' citizens and the state economy. Biosecurity can be difficult to maintain because of the very complex interrelationship between pathogens, management and biosecurity. While developing and implementing biosecurity is difficult, it is the cheapest, most effective method of disease control available, and no disease prevention program will work without it. Everyone is at risk for food-borne illnesses-diseases caused by pathogens or toxins ingested with food. Contamination of our food supply, both domestic and imported is a growing concern. Increased collaboration with regulatory officials, state health officials, policy-makers, growers/producers, and the general public is a key strategy for maximizing key resources for an effective biosecurity strategy and plan. Research, education and outreach must be integrated for effective public policy development, implementation planning, and impact assessment.

Biosecurity risk assessment, animal and plant diagnostics, and improved surveillance are key technologies in biosecurity.

2. Ultimate goal(s) of this Program

- « To improve animal biosecurity and reduce the risk of a disease threat in poultry and livestock operations
- « To improve the security of plant health through early identification and management of invasive plant pathogens and nematodes
- « To improve consumer/general public biosecurity through education to prevent food born and infectious disease in response to natural disasters or terrorism

V(F). Planned Program (Activity)

1. Activity for the Program

Individual consultations
Workshops

Farm visits
Field Days
Sentinel Plots
Spore Traps
Interviews
Source water contamination training
Disease detection and prevention training
Food Safety Training
Diagnosis training
Diagnostic Visits
Plant & Animal Diagnostic Testing
Disaster relief training
Emergency preparedness training
Grain Handling & Storage Industry security training
Production of education materials
Mass Media (print, radio, TV)
Newsletters & Direct Mailing
Scientific symposia & technical conferences for industry personnel to determine flock or herd health status
Collaborative planning meetings with state/federal agencies and regulatory officials