

# 2007 University of Arkansas Combined Research and Extension Plan of Work

## Pest Management

### V(B). Program Knowledge Area(s)

#### 1. Program Knowledge Areas and Percentage

- 211 10% Insects, Mites, and Other Arthropods Affecting Plants
- 212 10% Pathogens and Nematodes Affecting Plants
- 216 30% Integrated Pest Management Systems
- 312 20% External Parasites and Pests of Animals
- 403 10% Waste Disposal, Recycling, and Reuse
- 721 10% Insects and Other Pests Affecting Humans
- 723 10% Hazards to Human Health and Safety

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

#### 1. Situation and priorities

Major row crops, forages, livestock, poultry and fruit, vegetable, turf crops and ornamentals in Arkansas are all intensively managed relative to input costs (pest control, feed, fertilizer, irrigation, etc.) to provide the highest profit margin possible for producers. The monoculture production system in many parts of the state has resulted in a number of severe pest problems. Of particular concern are various plant insect pests, plant diseases, weeds, nematodes, flies, and fire ants. Correct identification of these pests, and the availability of research-based information for control are of paramount importance for the continued success of our producers.

Each year many new crop cultivars come to the marketplace, generally with little information on pest or pesticide resistance. A goal of this program is to provide our growers with a rapid and accurate assessment of the resistance of new cultivars to the most common pests. The pest management program strives to provide support to clientele through applied research, leading to field demonstrations, educational materials and updated management recommendations to match local situations.

The intense use of pesticides in these commodities generates substantial market opportunities for pesticide companies, resulting often in the overuse of pesticides by growers and homeowners. In recent years, overuse of pesticides has created increasing problems with pesticide resistant organisms. Farmers and homeowners end up paying for wasted inputs and "super" pests in the short and long term. The incorrect use of pesticides and home pest management remedies can also contaminate surface and ground water.

By federal and state laws, applicators of restricted use pesticides must be certified or work under the direct supervision of a certified applicator who must be periodically recertified by attending educational programs on pesticide safety, IPM, etc. Arkansas, Louisiana, and Mississippi have chosen Pesticide Applicator Training as a multi-state cooperative effort.

As the urban population increases, more emphasis and demand will be placed on growing desirable and profitable horticultural crops for both large businesses and backyard gardeners. Gardening as a hobby or a necessity, continues to grow in popularity among urban and retired Arkansans. This creates an increase in the demand for expertise and training in the area of pest management which may impact everyone from the backyard gardener to the commercial producer.

The Human IPM program focuses on education of homeowners in proper methods of management of termites, fire ants, cockroaches, bees and other pests of human-health concern. The cases of West Nile Virus peaked at 42 in Arkansas during 2002 with 5 deaths recorded. Following the initiation of the Extension education program on mosquito control/disease prevention, human cases of West Nile fever dropped and no deaths were recorded.

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

#### 1. Assumptions made for the Program

This program is based on the county agent system and on basic and applied research funded by federal formula funds, grower check-off programs, competitive grants, and industry grants-in-aid. This system has been proven effective since 1914. Growers trust the Division of Agriculture for research based, unbiased, accurate, and up-to-date information. Well-trained crop consultants are more and more becoming a mainstay of the farmers' source of information. Considerable effort has been focused over the last few years in educating this segment of the industry as well as our county agents. Research-based information from field and greenhouse trials is provided to specialists and from them to county agents annually in the fall and early winter for use in educational programs via meetings, newsletters, annual printed and electronic updates and various software programs developed for growers and homeowners statewide. Effective education is best done at the local level by direct contact using experiential methods. This system has been successful in the past but must continually be adjusted as biological factors and production practices evolve.

Since 1976, the Pesticide Safety Education Program has provided the necessary training for certified applicators. Surveys of attendees have indicated that most who attend change their pesticide practices as a result. This program contacts/impacts more pesticide applicators than any other Extension program, but continued success is dependent upon sufficient funding. Federal funds have been cut by over 33% in the last few years. The program will continue to work only so long as the required funding is provided.

Although county agents have a more comprehensive knowledge of pest management in major commodities and than horticulture crops, real

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needs for emphasis in the ornamental and vegetable arena are being realized. Agents are making more "house calls" for homeowner pest problems than ever before. Homeowner questions regarding biotic and abiotic diseases in horticultural plants are putting an increasing demand on Division of Agriculture time and efforts. Education and training of faculty, use of the internet and other electronic outreach methods will better equip them to address these problems.

Research demonstrates the benefit of pest management for the support of human health and well-being. This program focuses on increasing clientele recognition and adoption of IPM practices. The approaches we use include direct delivery of methods as well as indirect methods, recognizing each method has its own best applicability. Education of the public also requires replacing hysteria and myths associated with some pests (particularly Africanized bees) with fact-based recommendations about management and behavioral changes by the public.

## **2. Ultimate goal(s) of this Program**

- « To reduce the impact of major pests on animal and crop production systems and urban landscapes in Arkansas
- « To make clientele more aware of critical crop insect, disease, and weed problems that they may face in the state and improve their understanding and management of same.
- « To reduce accidental pesticide exposures and pesticide complaints, and to promote environmental improvements in agricultural and urban areas in Arkansas.
- « To reduce overall pesticide use – or at least make pesticide use as efficient as possible, and prevent or minimize periodic disasters caused by pest outbreaks resulting in highly stable and efficient crop and livestock production.
- « To provide near-real-time cultivar reaction information available to growers and others involved in Arkansas crop production.
- « To increase the knowledge and awareness of insects, plant diseases and weeds and their impact for urban and commercial clientele and to educate and train Extension personnel to address pest problems.
- « Consistent application of Division of Agriculture recommendations by the public to reduce incidence of human-health issues caused by insects, while decreasing over-reliance on and misuse of pesticides

## **V(F). Planned Program (Activity)**

### **1. Activity for the Program**

The University of Arkansas Division of Agriculture research program in pest management will reduce the impacts of major pests by:

- « Increasing the knowledge base on major pests, diseases, and weeds of importance to Arkansas
- « Developing improved crop protection strategies and technologies for our major crop systems.
- « Integrating new knowledge in plant and animal genomics and basic science into the development new pest management strategies.

Extension Pest Management education will be delivered through the following programs and methods, targeting issues specific to Arkansas:

- « The Cotton Nematode and Disease Management Program supports and assists county extension programs in the state, particularly the Delta region to better identify, understand, and manage major cotton diseases in Arkansas.
- « The Pesticide Applicator Training Program provides initial certification and recertification training sessions for private and commercial/non-commercial pesticide applicators statewide each year. County agricultural Extension agents provide the training for private applicators (farmers), and the pesticide assessment specialist is responsible for training the commercial/non-commercial applicators.
- « The Rice and Soybean IPM Programs offer simple grant funding for county extension education efforts focused primarily on integrated pest management of rice and soybean principles. County extension education efforts are aimed at improving rice and soybean production and pest management through the adoption of scientifically-based management recommendations.
- « The Rice, Soybean, and Wheat Pathology Programs assist county extension programs in the state educate growers and others involved to better identify, understand and manage the many rice, soybean, and wheat diseases in Arkansas.
- « The Soybean Cultivar Disease Screening Program assists soybean producers in selecting the most appropriate soybean cultivars for their farms to avoid costly losses from soybean diseases and nematodes.
- « Urban and commercial horticulture educational programs are delivered to train urban and commercial vegetable, ornamental, turf and fruit clientele in the state of Arkansas in the area of best plant disease management practices.
- « Human Integrated Pest Management will develop sound recommendations for IPM targeting pests affecting humans, and to deliver the recommendations to a variety of sectors of the public. Pests to be targeted in developing the recommendations include Africanized bees, termites, and fire ants in residential settings. Delivery methods include presentations at educational meetings and workshops, extension publications and newsletters, development of web-based materials and visits to households of affected citizens.

Output/Methods: Grower meetings, training extension agents and crop consultants, educational newsletters, Extension publications, visits to individual growers /homeowners, diagnosis of pest problems, newspaper/magazine /professional journal articles, interviews, field days and demonstrations, web-based information, and/or applied on- farm research.