

Pest Management Planning & Program Evaluation Logic Model (2009-2013)

Brief Program Summary

Insect, weed and disease pests affect all the major agricultural commodities in Arkansas including row-crops (cotton, wheat, rice, soybeans and corn), livestock, poultry, fruit and vegetable crops, ornamental shrubs, trees, and turf. The loss of many traditional low cost animal and crop protection chemicals without replacement by effective alternatives limits available management options. The advent of new limitations to meet the requirements of the Food Quality Protection Act will limit crop protection options further. New discoveries from research on host plant resistance and pest biology continue to provide alternatives, but must be integrated into our crop and animal production systems. Significant work remains to be done to minimize losses from pests, diseases and weeds in all major animal and crop commodities of importance to Arkansas.

Integrated pest management (IPM) is an essential research and educational program that helps agricultural producers and homeowners control pests more efficiently and reduce their reliance on pesticides. Increasing concerns for producers and homeowners include pesticide drift, soil and water quality; pesticide resistance, and the utilization of Genetically Modified Organisms (GMO).

Although most of the destructive pests are endemic, an increasing numbers of problem species are finding their way to the United States from outside our borders. Adapting Division of Agriculture activities to cope with these threats is a primary consideration for planning future pest management research and extension efforts.

Continued use of pesticides can lead to resistance and overuse of pesticides, which can result in contamination of water supplies. Division of Agriculture research scientists and Extension faculty conduct research and train county agents on the latest pest management research. Pest management and pesticide applicator training is then conducted statewide each year by county agents and faculty through various means to inform producers and homeowners about recommended effective and environmentally friendly chemical and non-chemical research based pest management and pesticide use practices.

The human IPM program focuses on the management of insect pests that impact humans, and has resulted in considerable benefit to the citizens of the state. These insect pests pose both direct and indirect threats to human health and well-being, as well as having the potential to adversely impact the value of property.

ASSUMPTIONS

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 of 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. The program will continue to work only so long as the required funding is provided.

Although county agents have comprehensive knowledge of pest management in major commodities and horticulture crops, emphasis on ornamental and vegetable pests is critical. Agents are making more "house calls" than ever before. Homeowner questions about stresses and diseases in horticultural plants are putting increased demands on Division of Agriculture faculty. Education and training of faculty will better equip faculty 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 recognition and adoption of IPM practices by clientele. We use both direct and indirect methods to educate the public, based on fact-based recommendations.

Inputs Resources & Activities	If, then	Methods	If, then	Target Audience(s) Participation	If, then	Short-Term Impact	Medium-Term Impact	If, then	Long-Term Impact
<ul style="list-style-type: none"> 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; and integrating new knowledge in plant and animal genomics and basic science into the development new pest management strategies. Our methods will include 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, web-based information, and/or applied on- farm research. Extension Pest 	➔	<p>Direct Methods</p> <ul style="list-style-type: none"> One-on-One Intervention Other 1 (On-Farm Research) Education Class Group Discussion Workshop Other 2 (Field Days/Diagnostic Services) Demonstrations <p>Indirect Methods</p> <ul style="list-style-type: none"> Public Service Announcement Other 1 (Scientific/Technical Publication) Other 2 (Grant Proposals/File Patents) Web sites Newsletters 	➔	<ul style="list-style-type: none"> Crop producers Livestock producers Division of Agriculture personnel Agricultural consultants Agricultural industry personnel Pesticide applicators Pest Control Operators Homeowners Golf course superintendents Commercial pest management personnel Master gardeners Commercial landscapers Landscape management staff Public Health Officials Other researchers Students Extension Specialists Research Funding Personnel and Agencies Policy and Decision Makers Regulatory Personnel State Plant Board Personnel 	➔	<p>Indicators:</p> <ul style="list-style-type: none"> # of participants intending to adopt IPM practices # of participants gaining knowledge of IPM practices # of participants gaining knowledge of proper pesticide application practices # of participants passing commercial pesticide certification exams Peer Reviewed Publications. 	<p>Indicators:</p> <ul style="list-style-type: none"> Refereed Journal Publications # of producers adopting one or more IPM practices # of homeowners adopting one or more IPM practices # of participants adopting one or more proper pesticide application practices # of diagnostic submissions # of producers using computer-assisted programs # of clients using scouting programs # of pest monitoring traps utilized 	➔	<p>Indicators:</p> <ul style="list-style-type: none"> Annual soybean yield - bushels per acre Annual value of soybean production (1,000 Dollars) Annual rice (all) yield -- pounds per acre Annual value of rice (all) production (1,000 dollars) Annual cotton (all) yield -- pounds per acre % of soybean acreage receiving herbicide applications Pounds (1,000) of herbicides applied to planted soybean acreage % of soybean acreage receiving insecticide applications Pounds (1,000) of insecticides applied to planted soybean acreage % of soybean acreage receiving fungicide applications Pounds (1,000) of fungicides applied to planted

<p>Management education will be delivered through the following programs and methods, targeting issues specific to Arkansas:</p> <ul style="list-style-type: none"> ○ 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- 				<ul style="list-style-type: none"> • General Public 					soybean acreage
--	--	--	--	--	--	--	--	--	-----------------

<p>commercial applicators.</p> <ul style="list-style-type: none"> ○ The Cotton, Rice and Soybean IPM Programs offer simple grant funding for county extension education efforts focused primarily on integrated pest management of cotton, rice and soybean pests. County extension education efforts are aimed at improving crop production and pest management through adoption of research-based recommendations. ○ The Rice, Soybean, and Wheat Pathology Programs assist county extension programs to 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 									
---	--	--	--	--	--	--	--	--	--

<p>avoid costly losses from soybean diseases and nematodes.</p> <ul style="list-style-type: none"> ○ As part of the Diversified IPM Program, urban and commercial horticulture educational programs are delivered to train urban and commercial vegetable, ornamental, turf and fruit clientele in pest and 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 include Africanized bees, termites, and fire ants in residential settings. Delivery methods include presentations at educational meetings and workshops, extension publications and newsletters, web- 									
--	--	--	--	--	--	--	--	--	--

