

Background and Descriptions of the Crop Protection and Pest Management Focus Areas

The Crop Protection and Pest Management (CPPM) program will provide support for integrated pest management (IPM) research, extension and education addressing five focus areas funded through a combination of competitive grant competitions. Support for the focus areas will be provided by the program areas described in the Crop Protection and Pest Management (CPPM) Competitive Grants Program. The focus areas are:

- 1) Plant Protection Tactics and Tools.
- 2) Diversified IPM Systems
- 3) Enhancing Agricultural Biosecurity
- 4) IPM for Sustainable Communities
- 5) Development of the Next Generation of IPM Scientists

Plant Protection Tactics and Tools. This focus area will support the discovery, development, and introduction of new pest management tactics for use in IPM systems. In some cases, this CPPM program focus area will facilitate development of new tactics that provide the breakthrough needed to fundamentally change a pest management system, resulting in greater profitability and smaller environmental and health risks. In other cases, the focus area will support the introduction of a new replacement tactic when a critical tactic is no longer available due to development of resistance to pesticides, regulatory action or marketing decisions of manufacturers. The loss of a key management tactic can have devastating impacts on productivity, product quality and profitability. Single tactics can be critical to a pest management system. Often one tactic provides the majority of the control and other methods slightly increase response while protecting the longevity or efficacy of the tactic. Also, because IPM systems must often be tailored to meet unique local, state, or regional conditions, development of innovative tactics and tools is a priority for effective nation-wide IPM systems.

Diversified IPM Systems. Diversified IPM systems represent the long-term sustainable solution to many pest management problems. This focus area will support long-term projects on the development and implementation of innovative IPM systems on an area-wide or landscape scale. Diversified IPM systems incorporate multiple tactics and take into account all factors relevant to entire production systems, including the effect of cropping sequences, livestock production, and the influence of external factors on the system. The outcomes associated with IPM systems projects will be reduced reliance on single pest management tactics, the reduction of potential risks to human health and the environment caused by pests or the use of pest management practices, and increased economic benefits of adopting IPM practices. IPM systems projects will often be multi-state or regional in scale and will involve multiple managed ecosystems with emphasis on enhanced stability and sustainability of IPM systems. The projects supported will be broad and systems-oriented efforts with involvement of relevant disciplinary and subject matter experts in plant and animal sciences, water quality, food safety, and other relevant areas.

Enhancing Agricultural Biosecurity. This focus area will support the development and maintenance of key information systems, networks, and decision support tools that provide the knowledge infrastructure needed for early detection and the application of science-based IPM systems for invasive, emerging and high-consequence pests that threaten U.S. agriculture. Early

warning and decision support systems such as the Integrated Pest Management Pest Information Platform for Extension and Education (ipmPIPE) have had a direct effect in biosecurity. This program will support formal and informal education/training programs, and the development of pest management data and information for pest managers, regulatory agencies, and policy makers to improve their ability to respond appropriately to endemic and invasive pests and diseases. Agricultural biosecurity could include development of new methods or the implementation of proven research in preparation for or a strategy against a known or expected threat.

IPM for Sustainable Communities. This focus area will support the direct application of IPM knowledge and expertise developed for agricultural systems, to non-traditional settings such as urban structures, landscapes and gardens, homes and schools. As IPM becomes more relevant in the areas that are fringe to agricultural crop production, much of what is learned can be applied to less traditional areas of food production and quality of life on the rural-urban interface. In recent years, interest has grown in local foods, organics, and urban food production in community supported agriculture, rooftop and neighborhood gardens, and high tunnel production in and around urban areas. IPM discoveries have application for urban pests (including Asian long-horned beetle, emerald ash borer, brown marmorated stinkbug, and laurel wilt) and in community gardens. In addition, knowledge gained from IPM research focused on crop protection can be applied to pest management efforts in structures and within living spaces in schools and homes.

Development of the Next Generation of IPM Scientists. This focus area will support pre-doctoral and post-doctoral education programs needed to prepare the next generation of IPM scientists. The IPM workforce is aging and students are challenged to find all of the appropriate IPM training at any one given institution. The CPPM program will support training programs for interdisciplinary IPM scientists and IPM discipline experts such as molecular systematists who are able to link to traditional methods. Support also will be provided for curriculum development, including distance education approaches to deliver web-based courses that address the intent of this focus area.