1. Title:
Integrated Pest Management (IPM) Research and Demonstration in New York Municipalities

2. Project Leaders:
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3. Cooperators:
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4. Type of grant:
- Pheromones; biorationals; microbials; conventional pesticides
- Cultural methods; sanitation; physical controls
- Training practitioners to use IPM techniques
- Public education

5. Project locations:
*For **research** projects:*
Northeastern United States

*For **demonstration/education** projects:*
New York City, Ontario County, NY, Suffolk County, NY, Westchester County, NY, and The St. Regis Mohawk Tribe (Territory on the NY/Canada border).

6. Abstract:
Pesticide reduction at the municipal level depends on the adoption and implementation of integrated pest management (IPM) and other best management practices. Many municipalities in New York and around the country are seeking to reduce or eliminate the use of pesticides. Within New York, local pesticide phase-out laws have been passed in eight cities and counties comprising a population of over 11 million people. To address the growing need for research and educational outreach for municipalities, specialists at NYS IPM conducted research projects on stinging insects trapping, low-risk tick management, and bed bugs (to be addressed in a separate report). In addition, outreach was accomplished through participation in decision-making pest management committees and with workshops designed to educate and promote adoption of IPM. It was determined that stinging insect traps are attractive to yellowjackets and must be used strategically in areas frequented by people. Over 135 people were trained directly by IPM specialists through workshops and presentations designed to promote IPM adoption. Also, a group meeting was organized by IPM specialists to bring together representatives from New York City, Suffolk and Westchester Counties, and an IPM Program expert from the City of San Francisco. This meeting was synergistic and created a sense of accomplishment among the communities working to reduce the impact of pesticides.

7. Background and justification:
The reduction of risks posed by pests and pesticides has become the goal of numerous municipalities in the United States. Many cities and counties have adopted local pesticide reduction or phase-out laws that severely restrict the use of the most risky pesticides, and place limits on the use of even the lowest risk products. Others are more informally interested in adopting IPM. However, these steps cannot be taken without guidance and expertise in the field of pest management. Pesticide reduction programs often rely upon scientists and extension

educators to ensure a good scientific base for decision-making. Communities are generally supportive of risk reduction efforts. Priorities established by the Northeast IPM Centers include such things as "Develop and present IPM implementation models, demonstrations, and programs, and communicate their existence and success", as reported by the Community IPM Working Group. The Pesticide Environmental Stewardship Program of the Environmental Protection Agency is committed to "reduce the health and environmental risks associated with pesticide use and implement pollution prevention strategies". The efforts of NYS IPM program specialists address these specific goals through research and educational outreach to audiences focused on pest management in municipal settings. NYS IPM staff have conducted research on alternative methods of pest management for wasps, bees, and ticks in community settings, including the use of traps and low-risk pesticide products. Efforts are ongoing and the goals are to provide solid recommendations for the use of trapping for wasps and bees, and techniques for the best use of the most effective low-risk products for management of ticks in the landscape. Audiences targeted include the homeowner, schools, and municipalities, especially parks and recreation facilities managers. IPM educational outreach for municipal workers and administration is intended to promote the use of IPM as a simple and logical way to manage pests. Demonstrations allow us to show inspection methods and detailed techniques for managing pests. The ultimate adoption of IPM by municipalities can reduce risks to human health and the environment, particularly to surface and ground water. Municipalities that choose to reduce pesticide use and adopt IPM are reducing the risk they pose to human health and natural resources, and setting an example for residents to follow. The outreach done by each municipality to its residents is valuable and supported by the IPM Program specialists.

8. Objectives:

1. Determine the best (optimal) uses of food-based trapping for the management of wasps and bees in community settings.
2. Test the use of several low-risk products for the management of ticks in community settings, especially parks.
3. Participate in municipal pesticide phase-out efforts, by offering expertise in Integrated Pest Management to city and county pesticide working groups.
4. Provide IPM training to municipal workers in administration as well as pest management roles.
5. Offer a way for those interested in municipal IPM to network and communicate.

9. Procedures:

1. For the management of wasps and bees, a series of food-based (juice) traps were placed at the top of 10 ft poles 20 feet apart in two square plots of 100ft x 100ft. These two plots were several hundred feet apart in a field. In the center of each plot were three more pole traps. At any given time, only one plot had perimeter traps, however both plots had center traps at all times. In 2005, two researchers at the NYS Agricultural Experiment Station were consulted about the overall design of the trials. Upon the suggestion of one of the researchers, we conducted two four-week trials rather than four two-week trials to evaluate how this might affect the rate of yellowjacket captures.

2. Lone star and black-legged ticks were collected during July and August in county parks in eastern Suffolk County, NY. Traditional drag mats, constructed of 3ft x 3ft white flannel squares attached to rods, were used to sample for ticks in wooded areas and fields where deer are known to live. Tick-infested cloths were brought back to the laboratory/office and directly treated with one of the following low-risk products: EcoPCO WPX, Victor Brand Concern (diatomaceous earth), NIC, and a control (no product). Mortality was recorded after 24 hours.

3. Specialists at NYSIPM attend and participate on committees in Westchester and Suffolk Counties, and in New York City. Participation includes attending monthly meetings, providing scientific and educational resources to the committees, actively pursuing applied research projects, helping to write reports and fact sheets, and approving applications for exemptions from the law (for pesticide use).

4. Specialists at NYSIPM organized and conducted integrated pest management-based workshops for New York City Transit workers, NYC Dept of Health and Mental Hygiene employees, Westchester County administrators and workers, the pesticide reduction and phase-out work groups in Southeastern NY, Suffolk County employees, and the members of St. Regis Mohawk Tribe. Workshops consisted of a variety of teaching tools, including slide presentations, question and answer sessions, group discussions, and interactive demonstration.

5. IPM Staff manage an electronic list devoted to municipal pesticide reduction, which maintains over 50 members.

10. Results and discussion:

Feel free to include any charts, graphs, and photos. Scan them into your soft copy document if necessary.

Management of potentially dangerous pests, such as wasps, bees, and ticks, with lower-risk products has become a priority for several municipalities in NY and the focus of various research projects in the IPM Program. Research on the use of traps for wasp and bee management suggests that the traps are attracting yellowjackets, not merely intercepting them. This research finding has importance for use recommendations. Traps, when used to reduce yellowjackets in an area, must be placed a certain distance from the area of human activity (concession stand, picnic area). It is not clear what distance is best. When trying to keep an area free of yellowjackets, it may be sensible to place all traps at one end of the area, away from human activity, rather than placing traps around the entire perimeter. Further research will help clarify these questions, as well as other aspects of wasp and bee management. Overall, careful trapping of yellowjackets reduces risk to human health and the environment because trapping can lower the chances of being stung and should limit the need to use aerosol insecticides.

Effective, low-risk products for the management of ticks are needed to address the increased number of tick encounters in Suffolk and Westchester Counties, and possibly even New York City. Suffolk County, in particular, has several college campuses and many public parks that fall under the pesticide phase-out law. Ticks, especially Lone Star and blacklegged ticks, are rampant in these areas. Lyme disease and deer are common. Students at the community colleges regularly complain that their shoes are infested with larval ticks (Lone Star ticks). Product trials were conducted by IPM and cooperative extension staff to seek alternatives to conventional pesticides for tick management. Unfortunately, these product trials did not produce adequate results. An attempt was made to collect nymph (second or third instar) ticks, because larval (first instar) ticks are too small and vulnerable to work with. They are also not the disease-transmitting stage. However, we could not find enough nymph ticks during the two months when sampling was done to run trials. We did attempt to treat larvae with products, directly on the drag mat cloths. However, when removed from their habitat, the larvae died quickly (within 48 hours) presumably from dehydration. All ticks died in all trials. Research into this area is needed, and more work will be conducted in the 2006 season.

Several municipalities in New York State are implementing pesticide reduction and phase-out local laws. Almost every effort is spearheaded by a committee. IPM specialists have been involved with each major effort at some point. In 2005, work focused on the downstate

municipalities of Westchester and Suffolk County, and New York City. One IPM Specialist is a voting member of the Westchester County Pest Management Committee, an advisory member of the Suffolk County Citizen's Advisory Council, and serves as an advisor to the staff of the New York City Department of Health and Mental Hygiene, Pesticide Working Group. In these roles the NYS IPM Program maintains contact with those involved in real-life implementation of large IPM programs, as well as environmental and health advocates focused locally on pesticide use reduction. In this role, the IPM Specialist advises for best management practices for insect, disease, and weed problems based on current research. These groups have been successful over the past few years in reducing pesticide use in their respective municipalities. However, in some cases that reduction has leveled off, and the goal of the law has yet to be completely achieved. Further involvement, through research and outreach, will help bring municipalities closer to their objectives.

A significant portion of efforts made to implement IPM at the municipal level is the organization and delivery of presentations, workshops, and other educational events for all those engaged in municipal pesticide use reduction. Specialists at the NYS IPM Program conducted several workshops for a variety of audiences. For the New York City Transit Authority, 12 workers were taught many basics of IPM as a part of their 30-hour pesticide applicator course. The New York City Department of Health and Mental Hygiene received IPM training for 50 workers who would be responsible for mosquito control duties. Ten facilities workers of the St. Regis Mohawk Tribe were trained in IPM through an EPA grant. Topics covered were basic concepts of IPM, state pesticide regulations, turf IPM, and structural IPM. The topics were repeated for a workshop co-organized by Cornell Cooperative Extension of Clinton County and attended by about 20 school workers and other public facilities maintenance staff. In Suffolk County, 25 administrative workers participated in a hands-on IPM walk-through workshop and discussion that focused on the kitchen and outside perimeter of a catering facility. Each participant received educational materials, including the NYS IPM Publication "Integrated Pest Management for Municipal Buildings" (IPM Pub. #612, 3/02).

As part of a two-day event, combined with other workshops and meetings, 45 administrative and facilities workers from Westchester County attended a workshop devoted to a review of the county pesticide phase-out law, ways to successfully implement IPM in the County, and where to get resources, including expert help with IPM. Dr. Chris Geiger, IPM Program Manager from the City and County of San Francisco, California, also presented information about the successes and challenges of his program's work is reducing pesticide use in San Francisco. In addition to workshops, a roundtable meeting was organized by an IPM Program specialist to network the municipalities of Suffolk and Westchester Counties, New York City and the City of San Francisco in their pesticide reduction efforts.

Many of the individuals attending the IPM workshops of 2005 were in decision-making administrative roles. Education of administrators may have a very positive impact on the implementation of IPM in municipal settings in New York and elsewhere. By reaching decision-makers as well as those implementing IPM, a support system is built where workers are invested in doing IPM, and administrative officials are supportive of their efforts.

11. References:

"Integrated Pest Management for Municipal Buildings" J. Gangloff-Kaufmann and J. Shultz. New York State Integrated Pest Management Publication #612. March 2002.