Northeastern IPM Center – IPM Partnership Grants – 2009 – Proposal
Project Description

PD: Kathy Murray
Project Title: Educating the Next Generation of IPM Users: Supporting and Promoting IPM Education in Schools

1. Project Category: IPM Issues

2. Project Summary: Lawn and garden chemicals, disinfectants, repellents, flea and tick treatments, and insect sprays are routinely used in and around many homes. Many pesticides contain known or suspected carcinogens and neurotoxins, yet homeowners generally have no education on proper use of these toxic materials and little understanding of their risks. While pesticides, if used properly, are powerful tools to protect people, pets and property from disease or damage, the potential for misuse is high. In 2002, 93,532 people reported unintentional exposure to pesticides in the U.S. Forty-eight percent involved children under six years old. A significant portion of those incidents occurred in and around the home (Watson, et al. 2003). Education is needed, and school classrooms are an excellent place to start. Children are both current and future pesticide users, and an excellent conduit for educating parents. Integrated pest management (IPM) curricula have been developed and offered to teachers in Pennsylvania, Maine, and Connecticut. However, the extent to which these curricula are being used and the degree to which they are effective is not known. In order to make the most and best use of these curricula across the Northeast, we need to collaborate regionally to 1) identify and work with partners to assess needs, identify opportunities for partnership, and develop a plan for promoting and supporting K-12 IPM education; 2) develop and implement a survey to determine the extent of IPM education currently being taught in northeastern schools, 3) identify effective teacher-training approaches to promote utilization of IPM curricula, 4) align curricula to academic standards in three states; and 5) pilot a curriculum demonstration in three states. We anticipate this project will improve public understanding about IPM as a means to reduce pesticide risk, especially in and around homes and schools.

3. Background and Justification. Homeowners are purchasing and using pesticides at greater volumes than ever before, yet they generally have no education on proper use of these toxic materials and little understanding of their risks or of least-risk alternatives. For example, home and garden pesticide use tripled between 1999 and 2004 in Maine (Maine Board of Pesticides Control, 2005). Children, whose developing bodies are at increased risk of harm from pesticide exposure, encounter pesticides in the home, at school, and in the community. Repellents, disinfectants, louse shampoos, flea and tick treatments, lawn and garden chemicals, and insect sprays, are just a few of the many pesticides to which children and adults are routinely exposed in and around the home. Home and garden pesticide products are ubiquitous on the shelves of supermarkets, lawn and garden centers, and home improvement ‘big box’ stores. Most products are formulated and packaged for ready use, making them even more attractive as a quick fix for pest problems.

While some pesticides are powerful tools to protect people, pets and property from disease or damage, the potential for misuse is high. Many pesticides contain known or suspected

carcinogens and neurotoxins. Pesticide labels are usually printed in very small type and the instructions and cautions are spare and often ambiguous. Toxicity information is usually limited to a single 'signal word' with no accompanying explanation. In 2005 (the most recent data available) 93,532 people reported unintentional exposure to pesticides (not including disinfectants) in the U.S. Twenty percent of these self-reported cases required treatment in health care facilities and 48% involved children under six years old. Follow-up indicated clear poisoning symptoms in 20% of these cases. A significant portion of those incidents occurred at home.

Education is needed, and K-12 education is an excellent place to start. Children are both current and future pesticide users. They are also an excellent conduit for reaching parents. However, state and federal requirements for teaching specific elements of science, math, language arts, social studies and other topics leave no room for the addition of new topics such as IPM. The only effective way to ensure that students can learn IPM in the classroom is to align its concepts with required educational standards. For instance, IPM examples can be used as the basis for teaching required elements of science, math, social studies, language arts and more. Another barrier to teaching IPM in classrooms is that teachers have little or no knowledge about pests, pesticides and IPM because few university education programs offer IPM-related courses. This is an especially critical gap in K-12 school greenhouses, where the potential for misuse of and exposure to pesticides is high (Lyn Garling, pers. comm.).

We propose to address the need for educating the public about risks of pests and pesticides and practical, effective non-pesticide pest management alternatives. IPM lessons and comprehensive curriculum kits have been developed to enable teachers to readily include IPM lessons in the classroom. A set of IPM curriculum kits developed at the University of Connecticut, with partial funding from the Northeastern IPM Center, engages students and their families in learning about insects, invasive plants, and other pests that occur in and around homes, buildings, farmland, and natural areas. These kits teach students what pests are (insects, weeds, pathogens), how to control them (mechanical, biological, chemical, cultural controls), and how to protect the environment by keeping our food and water safe and preserving biological diversity. The kits, developed in partnership with curriculum specialists and classroom teachers are widely recognized as a well-developed, comprehensive, and easy-to-use. Another set of K-12 IPM educational materials was developed by Pennsylvania State University in partnership with to support IPM education as required by Pennsylvania's educational standards.

Teaching should be consistent with the nature of scientific inquiry (AAAS 1990), therefore curricula used to teach science, math and technology should start with questions about nature, engage students actively, and concentrate on the collection and use of evidence. Both the Connecticut and the Pennsylvania IPM curricula utilize this approach and both offer an excellent basis of real-world problems for learning scientific and mathematical concepts.
Although teachers have been trained in the use of both the Pennsylvania and the Connecticut IPM curricula, there has never been an evaluation of the extent to which the lessons are being utilized and whether students are learning about IPM (Lyn Garling, pers. comm., Donna Ellis, pers. comm.). For example, Maine Agriculture in the Classroom program provided 25 of the Connecticut IPM curriculum kits to teachers participating in a week-long summer agricultural education program. However, instruction on the use of these curriculum kits was limited and there has not been any follow up to determine if the kits are currently in use. In order to make the

most and best use of these curricula, we need to determine whether IPM is currently being taught in schools, and what teacher training elements are most instrumental in ensuring that curricula will be used in the classroom. These lessons and curricula kits are tremendous resources that should be made more widely available. To do so will require that the lessons be aligned with academic standards in different states and that pilot demonstrations be conducted and promoted to increase awareness of, and demand for them, and an assessment must be done to determine the impact of this educational effort.

Our working group's members represent school facilities staff, school business officials, a teacher organization, PTA, land grant universities, state regulatory agencies, pest control professionals, and environmental advocates from 12 northeastern states. As such, our group is well positioned to engage stakeholders throughout the region to network and coordinate across states lines and among different organizations to conduct this project. We will share our methods and results with stakeholders across the country through our ongoing collaboration with other regional and national school IPM working groups. This project will benefit teachers, students, families and communities by increasing understanding of IPM practices that safeguard human health and the environment.

This proposal addresses nine priorities identified by the Northeastern IPM Center's School IPM Working Group: 1) we will conduct outreach to all school IPM stakeholders--directly to school teachers, staff, and students and indirectly to school facilities managers, administrators, pest management service providers and community members through classroom activities and take-home materials; 2) teachers will be educated about IPM; 3) we will conduct pilot demonstrations in schools in the northeast region; 4) we will implement and promote K-12 curriculum-based education; 5) we will promote Service Learning projects for school buildings/grounds and community settings; 6) we will promote inclusion of IPM in education standards/curriculum by aligning IPM curricula with existing science, math, social studies and language arts standards; 7) we will develop and utilize educational methods appropriate for the audience; 8) we will examine training methods used in teacher workshops to determine which approaches are most effective for training teachers how to teach students about IPM; and we will 9) evaluate the impact of our project to determine if the method employed are effective in educating teachers and students about IPM.

4. Objectives and Anticipated Impacts.

Objectives

1) Identify regional, state and local partners among teacher support organizations, departments of education, and other contacts and collaborate with them to assess needs, identify opportunities for partnership, and develop a plan for promoting and supporting K-12 IPM education.

2) Develop and implement a survey to determine the extent of IPM education currently being taught in northeastern schools.

3) Examine the effectiveness of teacher training in promoting the utilization of IPM curricula.

4) Align available K-12 curricula to academic standards in three states.

5) Pilot a K-12 IPM curriculum demonstration in one school district in each of three states.

6) Identify and adapt available educational materials to support compliance with state pesticide regulations and educational standards in K-12 horticulture programs.

Anticipated Impacts. Our proposed project directly addresses goals of the IPM Roadmap for human and environmental health impacts, economic impacts and IPM implementation impacts as outlined below.

Safeguarding Human and Environmental Health Impacts. Our project will lead to an increase in the number of students, teachers, families, and other school community members aware of pest and pesticide risks, able to make informed decisions and choose least-risk approaches to managing pests in and around the home and in the community. We expect to increase awareness of pest and pesticide risks and least-risk IPM practices among students representing the next generation of pesticide users. We will reduce risk of pesticide exposure among students and teachers in school greenhouses. This proposed project is strengthened and its impacts widened because we will link it to activities aimed at promoting IPM adoption on school properties. By tying school IPM implementation to IPM education students, teachers, custodians, maintenance and kitchen staff, school volunteers and families will have the opportunity to engage in hands-on activities such as pest monitoring, prevention, avoidance and record-keeping. Therefore, we anticipate that K-12 educational benefits will ripple to families and communities through students, particularly though the use of take-home materials, homework, and service-learning projects. This is expected to result in improvement in the numbers of schools actively implementing high level IPM. Students, teachers and families will be able to implement what they learn at home, thereby minimizing pest and pesticide risks, reducing asthma triggers, and safeguarding the environment in the community.

Economic Impacts. Our project will provide curriculum materials and teacher training to schools in several states, thereby reducing costs normally incurred by those schools for teacher education and classroom learning materials especially for science, math and social studies. We anticipate schools and families will save money by reducing the money spent on pesticides.

IPM Implementation Impacts. By determining the extent to which IPM is currently included in K-12 education in public and private schools in all states in the Northeast we will be able to measure and document the impact of our project. We will also be able to concentrate our efforts in areas where little IPM education is currently offered to maximize our impact. We will also use the survey as an opportunity to educate about IPM, thus doubling its impact on the overall goal of promoting and supporting IPM education. Survey results will be made widely available to schools, communities and educational support organizations thus providing opportunities to set goals for improvement. We anticipate that the numbers of schools teaching IPM as part of their science, math, social studies, agriculture, and service learning curricula will increase. This will increase the numbers of future homeowners, policy makers, and other decision-makers who are knowledgeable about IPM as a means of minimizing pest and pesticide risks and safeguarding human health and the environment. We also anticipate that student learning about IPM will ripple through the community as students bring home educational materials, parents, community

volunteers and teachers will become engaged in IPM learning projects at school. We anticipate the ultimate impact will be reduced pesticide use.

5. Approach and Procedures.

1) Identify regional, state and local partners among teacher support organizations, departments of education, and other contacts throughout the region with whom we can collaborate to assess needs, identify opportunities for partnership, and develop a plan for promoting and supporting K-12 IPM education. In 2008, we began to identify and summarize available curricula currently used in the northeast (see appendix 2). We have enlisted support from stakeholders and developed collaborative relationships for implementing this proposed project with a number of partners including a state department of education (Maine Department of Education), three Cooperative Extension programs (University of Connecticut Cooperative Extension, New York State IPM Program, Pennsylvania State University Cooperative Extension), an agricultural K-12 education organization (Agriculture in the Classroom), a science teachers association (Maine Math and Science Alliance), a pest management company providing service to schools (Western Pest Services), and a statewide Parent Teacher Association (Maryland PTA)(see letters of support and collaboration in Appendix). Our collaborators have well-established relationships with their respective departments of education and teacher support organizations. We will capitalize on those relationships and will expand the list of partners and collaborators to include support from all sectors involved with school IPM and K-12 education, especially in science, math and horticulture. We will hold bi-monthly conference calls and will establish a listserv to facilitate communication as we work together to assess needs, identify further opportunities for partnership and collaboration, and develop a long-term plan for supporting sustainable IPM education in all the northeastern states.

2) Develop and implement a survey to determine the extent of IPM education currently being taught in northeastern schools. Working with our partners, we will develop a simple, easy-to-use web-based survey instrument and will encourage teachers and school curriculum coordinators to participate determine how much IPM is currently being offered in public and private K-12 schools in the northeast. We will utilize teacher support organizations such as the Maine Math and Science Alliance and Agriculture in the Classroom to promote the survey to teachers, thereby relying on peer-to-peer communication to relate the importance of the survey, offer a small incentive, and solicit participation. We will utilize a modified Dillman method (Salant and Dillman 1994) to promote participation, including an advance letter (by e-mail), from a representative of a respected local organization, explaining the importance of the survey, as well as, follow-up reminders and thank-you messages. To encourage participation, a small incentive will be offered such as a pest identification aids or complimentary workshop registration. The results will be used to determine a baseline against which future survey results can be compared to measure the impact of this project and other IPM educational efforts. Survey results will be made widely available through the Northeastern IPM Center, the National School IPM Working Group, the NESIWG membership, newsletters and press releases.

3) Examine the effectiveness of teacher training in promoting the utilization of IPM curricula in the classroom. We will contact past teacher workshop participants in PA, ME, MA, and CT and ask them to respond to a modified survey that will include extra questions aimed at determining if those teachers have implemented IPM curricula in the classroom, why or

why not, student learning outcomes, and specific suggestions for improving training. As in Objective 2, we will utilize a modified Dillman method (Salant and Dillman 1994) to promote participation, including an advance letter (by e-mail) from a locally respected representative explaining the importance of the survey and follow-up reminders and thank-you messages. To encourage participation, an incentive will be offered such as a pest identification aids or complimentary workshop registration. The results will be used to evaluate the effectiveness of past teacher training approaches, and incorporate needed changes to improve training methods to be used in Objectives 5 and 6. This survey will also be administered to participants in teacher trainings offered as part of this project and survey results will be compared with survey of past participants to assess the impact of our improved teacher training methods. Survey results will be made widely available through the Northeastern IPM Center, the National School IPM Working Group, the NESIWG membership, newsletters and press releases.

4) Collaborate with partners among state departments of education and others to align available K-12 curricula to academic standards in three states. Every state has a comprehensive set of state-specific educational standards which leave almost no classroom time for teaching additional topics. Curricula aligned with state-specific standards allow teachers to use them, while also meeting state-mandated requirements. We will work with education specialists at state departments of education to align the IPM curricula with standards in three states. Because state standards have changed since the Connecticut and Pennsylvania curricula were developed, the curricula must now be realigned. These curricula must also be aligned with standards in the other states where demonstrations will take place (Objective 5). We will document the process and tabulate the alignments so they can be used as models for aligning curricula to other state standards in the future.

5) Pilot a K-12 IPM curriculum demonstration in one school district in each of three states. Using input from partners, collaborators, and teacher surveys (Objective 3) we will develop and implement a curriculum demonstration in two elementary grades (one lower elementary grade and one middle-school grade) in one school district in each of three states. With out partners we will select suitable school districts and will solicit support from school administrators, teachers, curriculum coordinators, and educational support organizations such as Agriculture in the Classroom and Maine Math and Science Alliance to promote and facilitate implementation of these demonstrations. Teachers will be recruited, provided with training in how to use the curricula and conduct assessments, and offered additional assistance such as classroom visits by Cooperative Extension educators. We will work closely with these teachers to provide support as needed. We will also work with school administrators and promote the project to the entire school community through school-wide displays, IPM activity days, PTA meetings, school and district newsletters, community events and press releases. We will develop and utilize take-home educational materials and homework assignments requiring family input to assess level of knowledge about pests, pesticides and IPM in the home, and to educate families about least risk approaches to managing household and garden pests. We will work with teachers to collect aggregated responses to these ‘home survey homework assignments’ to measure level of knowledge before and after implementing the curricula in these demonstration classrooms.

6) Partner with state agencies and education organizations to identify and adapt available educational materials to support compliance with state pesticide regulations and

educational standards in K-12 horticulture programs. Greenhouse IPM educational materials are available through most northeast Cooperative Extension programs. Notably, New York State IPM Program, Pennsylvania State University Cooperative Extension and Maryland Cooperative Extension have developed excellent greenhouse IPM resources that we will utilize to develop IPM lessons and educational assessments for use by teachers in school horticultural programs. One of our collaborators, Lyn Garling at Pennsylvania State University, who has much experience in developing K-12 educational materials and working with school horticulture teachers will provide leadership for this part of the project. We will work with our partners to identify at least one suitable school district and teacher with whom we will partner to conduct a pilot demonstration of a school greenhouse IPM curriculum and accompanying learning assessments. We will seek structured feedback from the teacher, and aggregated feedback provided to the teacher from students to make revisions to the curriculum before making it widely available through the NE IPM Center and educational partners such as teacher associations, state departments of education, and Agriculture in the Classroom.

Project Timetable:
Obj. 1. *Identify partners and develop a plan to advance K-12 IPM education.* Identify partners, key contacts, collaborators, establish listserv and schedule bimonthly conference calls. March 2009. Outline draft plan October 2009, revise, send out for review March 2010, submit final plan to NE IPM Center December 2010.

Obj. 2. *Survey teachers to assess level of IPM currently taught.* Develop survey March 2009, implement survey Apr-May 2009. Report results June 2009.

Obj. 3. *Survey past workshop participants.* Develop survey Mar 2009, implement survey Apr-May 2009. Summarize results June 2009

Obj. 4. *Align curricula with state standards.* Identify and recruit collaborators June 2009, draft alignments Sept 2009, send out for review, revise, finalize alignments Dec 2009.

Obj. 5. *Demonstrate curricula.* Identify participating school districts June 2009. Conduct teacher workshops July-Aug 2009. Implement demonstrations Sept ’09-June 2010. Assess results June 2010. Conduct additional teacher and train the trainer workshops July-Aug 2010. Assess impacts of demonstrations and teacher trainings August-Dec 2010.

Obj. 6. *Develop and Pilot School Greenhouse IPM Curriculum.* Identify pilot schools and participating teachers April 2009. Draft curriculum Sept 2009. Send out for review, revise, final version completed December 2009. Implement pilot demo Jan-June 2010. Assess effectiveness and impacts Sept 2010.

6. Evaluation Plans. We will verify that our project objectives have been met by the following measures of success. 1) Successful development of a long-term plan for supporting sustainable IPM education in all the northeastern states. The plan will be made widely available through the NE IPM Center and will serve as a living document to be updated periodically, especially as additional partnerships are formed, new information becomes available and fresh opportunities created. 2) Successful implementation of a survey of educators participating in past workshops and workshops conducted as part of this project. The PD (Kathy Murray) and collaborators

(Lynn Braband, Lyn Garling, Donna Ellis) all have experience in conducting statistically valid surveys and experience with web-based surveys, and most of us have taken graduate level statistics courses. We will use the widely accepted Dillman survey method (Salant and Dillman, 1994). 3) Successful alignment of K-12 IPM curricula to state educational standards in three states, alignment of new greenhouse IPM curriculum we will develop as part of this project to academic standards in three states. 4) Successful implementation of curriculum demonstrations in two elementary grades and one middle- or high school horticulture program in each of three states. Numbers of students participating in instruction, numbers of teachers implementing the curricula, numbers of school volunteers, school staff, and administrators participating in IPM education activities will used as a measure of impact. Effectiveness will be measured through collection of aggregated educational assessment scores of students and aggregated responses of family members to 'home survey homework assignments' to measure level of knowledge before and after implementing the curricula in demonstration classrooms. In addition, we will ask teacher workshop participants who have not yet implemented the IPM curricula to implement an assessment and a homework assignment to collect and report aggregated student scores and aggregated family member responses to assess level of knowledge about IPM among students and families in schools lacking IPM education. All data, reports, and assessments will be made widely available through newsletters, press releases, websites, conference calls, and listservs throughout the northeastern region and will be shared with other regional and national school IPM working groups to extend the knowledge gained to support and promote adoption of IPM education in K-12 classrooms.

7. Cooperation, Institutional Units, and Key Personnel Involved. Kathy Murray (Maine Department of Agriculture) will lead this project with collaborators, on behalf of the Northeast School IPM Working Group (Membership list in Appendix).
Project Collaborators: Lynn Braband, Working Group Co-leader (Cornell University), Lyn Garling, (Pennsylvania State University Cooperative Extension), Donna Ellis (University of Connecticut Cooperative Extension), Felicia Motherway (parent and former horticulture teacher, Exeter, NH), will lead implementation of this project. In addition, cooperators with Maine Math and Science Alliance will provide guidance for this project, and will provide contacts with teachers including their mailing list for our surveys. The Maine Department of Agriculture will provide assistance for aligning curricula with academic standards. Mary Tomlinson (Maine Department of Agriculture) will provide support for coordinating multistate cooperation and technical support for development and implementation of materials, surveys and training.

References Cited

American Association for the Advancement of Science (AAAS). 1990. Science for All Americans.

Salant, P. and DA Dillman. 1994. How to Conduct Your Own Survey. John Wiley and Sons. New York.

Watson, WA, et al. 2003. Annual Report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. American Journal of Emergency Medicine, 21:353-421.

Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

I. Respondent				
	Name	Margaret Silgato	Matthew Remmen	Edward Crow
	Title	Pesticide Training Coordinator	Technical Services Manager	Entomologist Supervisor
	Phone	401.874.5997	800.342.2848 x523	410.841.5710
	Fax			410.841.2765
	E-Mail	siligato@uri.edu	mremmen@westernpest.com	crowea@mda.state.md.us
	State	Rhode Island	New Jersey	Maryland
	Organization	University of Rhode Island	Rutgers University	MD Dept of Agriculture, Pesticide Regulation Section
	Completion Date	11/6/2008	11/11/2008	11/10/2008
	Other Individuals	None	See bottom	None
II. State Demographics(http://nces.ed.gov/programs/stateprofiles/)				
1	Number Public School Districts	338		24
2	Number K-12 Children	153,422	1,395,602	404,365
	K1-12 IPM CURRICULUM Resources Used by K-12 Schools	RI has no Educational resources.		IPM for School Greenhouse Operations – a collection of presentations, resource lists, guidelines, checklists and more, primarily for implementing IPM in school greenhouses. Appropriate for grade 9-12 agricultural and technology education programs
				Maryland does not have any K1-12 IPM Curriculum, however they do provide some environmental education.
				http://www.marylandpublicschools.org/MSDE/programs/environment/

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Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

	State	Rhode Island	New Jersey	Maryland

Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

I. Respondent				
	Name	Lyn Garling	Carol Westinghouse	Trevor Battle
	Title	Manager of Programs PA IPM Program	Cleaning for Health, Program Manager	Environmental Health Inspector
	Phone	814.863.8884	802.626.8643	617.626.1775
	Fax	814.865.3048		
	E-Mail	ljg5@psu.edu	westies@ecoisp.com	trevor.battle@state.ma.us
	State	Pennsylvania	Vermont	Massachusetts
	Organization	Penn State University	INFORM, Inc.	MA Dept of Agricultural Resources
	Completion Date	11/10/2008	11/6/2008	11/14/2008
	Other Individuals		Dept of Health, Envision Program	
II. State Demographics(http://nces.ed.gov/programs/stateprofile				
1	Number Public School Districts	500	307	500
2	Number K-12 Children	1,821,383	94,000	971,909
	K1-12 IPM CURRICULUM Resources Used by K-12 Schools	The PA IPM Program is a collaboration w. the PA Dept of Agriculture. The PDA IPM Coordinator (Cathy Thomas) has one staff person (Sarah Pickel) who is beginning school visitations to provide "compliance assistance" for schools to meet the requirements of the PA school IPM laws. Our school IPM resources are quite large (see our PA IPM website http://paipm.cas.psu.edu/ under "school IPM" and include a downloadable manual "IPM for Pennsylvania Schools: A How-to Manual" and many other links and useful information - both for administrators and teachers who wish to include IPM in their curricula.		To my knowledge, there is currently no curriculum in Massachusetts K-12 schools relative to Integrated Pest Management. .

Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

	State	Pennsylvania	Vermont	Massachusetts

Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

I. Respondent				
	Name	Lynn Braband	Kathy Murray	Diane Jorsey
	Title			Environmental Analyst III
	Phone	585.461.1000 x 241	207-287-7616	860/424-3328
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	E-Mail	lab45@cornell.edu	kathy.murray@maine.gov	diane.jorsey@ct.gov
	State	New York	Maine	Connecticut
	Organization	NYS Community IPM Program at Cornell University	Maine Department of Agric, Food, & Rural Resources	Department of Environmental Protection
	Completion Date	11/13/2008	11/17/2008	11/12/2008
	Other Individuals	NYS Community IPM Program at Cornell University		Donna Ellis, University of Connecticut,Senior Extension Educator and Co-Chair, Connecticut Invasive Plant Working Group (CIPWG)
II. State Demographics(http://nces.ed.gov/programs/stateprofile				
1	Number Public School Districts	703 + 30 BOCES	260 (to be consolidated to 80 in 2009)	169 towns/149 districts
2	Number K-12 Children	2,815,581	190,031 (public)	570,539
			14012 (private)	
	K1-12 IPM CURRICULUM Resources Used by K-12 Schools	New York's K-12 IPM curriculum: It is part of Cornell's "Science of Life Explorations (SOLE) through Agriculture". The web site is below.	Project Food, Land & People, Resources for Learning. Offered to Maine teachers through Maine Agriculture in the Classroom Program. This curriculum includes several insect-related and pest management-related lessons in it. And from Maryland: IPM for School Greenhouse Operations. List of Entomology and Pest Management Education Resources (compiled by Maine School IPM Program) – distributed at K-12 educational events and teacher training events (file attached). Article on Teaching Kids about Creepy Crawlies, published in Maine Ag in the Classroom Newsletter (see attached) Additional resources available at these great websites:	In CT we developed a school curriculum on IPM that currently is available for grades K/1 (dual-grade modules), 2/3, 4/5, and 7/8. We have limited numbers of curriculum kits available for our state and other states upon request, but we would be very interested in working with the region to print more of these and have them available on a wider basis. We are open to incorporating materials from other states if we do reprint the IPM curriculum. The curriculum kits include stand-alone lessons (approx. 25 lessons per dual-grade module) with supplemental materials (handouts, overheads, supplements, videos, books, posters, games, picture cards, puppet for lower grades, etc.
		http://www.nyaged.org/aitc/educators/lesson.htm	http://www.epa.gov/pesticides/ipm/	UConn Integrated Pest Management: www.hort.uconn.edu/ipm
			http://www.members.aol.com/YESbugs/bugclub.html	CT Invasive Plant Working Group (CIPWG): www.hort.uconn.edu/cipwg
			http://www.epa.gov/region6/6pd/bingo/	
			http://www.ipminstitute.org/homework.htm	

Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

	State	New York	Maine	Connecticut
			http://paipm.cas.psu.edu/schools/schoolEduc.htm	

Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

I. Respondent		
	Name	Philip D. Smith
	Title	Compliance Assistance Specialist
	Phone	304-558-2209
	Fax	
	E-Mail	psmith@ag.state.wv.us
	State	West Virginia
	Organization	WV Department of Agriculture
	Completion Date	11/13/2008
	Other Individuals	Dr. Peggy Powell, Compliance Assistance Supervisor, WVDA
		WVU Extension – Dr. Mary Beth Bennett, Dr. Rakesh Chandran
II. State Demographics(http://nces.ed.gov/programs/stateprofile		
1	Number Public School Districts	55
2	Number K-12 Children	281,000
	K1-12 IPM CURRICULUM Resources Used by K-12 Schools	

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Select Annual School IPM Report Card Survey Responses related to **K1-12 IPM Curriculum** (*with additional information*)

	State	West Virginia

APPENDIX A

Northeast Pest Management Center
School IPM Working Group - Membership 2008

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APPENDIX B

School IPM Priorities
Identified by the NE School IPM Working Group October 2008

Management

- Form a stakeholder organization coalition to advocate for establishment of IPM laws and policies where none exist
- Implement and enforce existing laws and policies at the highest level of economic and regulatory accountability
- Identify and piggyback with ongoing environmental health efforts and coordinate with partners in promoting IPM to help schools to meet health, high performance and safety, economic, and energy efficiency goals.
- Track and disseminate information about program performance, short-term and lifecycle costs, and health benefits
- Promote 'IPM certification' award system for schools and companies
- Ensure that IPM principles and practices, especially those addressing schools, are included in the national Pesticide Applicator Training (PAT) standards
- Ensure that PAT systems in each state include and test for information about IPM, especially in those categories addressing schools (such as structural and turf/landscape)
- At level of the school district, establish diverse local stakeholder advisory committees to implement proven IPM strategies and practices
- At the local level, establish diverse, stakeholder advisory committees to implement and document proven IPM practices
- Promote adoption of a uniform school IPM service ticket (note, this would have to be done in cooperation with state regulatory agencies to ensure reporting requirements are met).

Education/Outreach

- Conduct outreach to all stakeholder groups (teachers, staff, students, facilities managers, administration, policy makers, regulators, vendors, building owners, occupants, community members)
- Educate teachers about classroom IPM
- Coordinate and piggyback education efforts with parallel efforts (ie green cleaning, indoor air quality (IAQ), mold issues, low/no volatile organic compounds (VOCs), industry associations, energy efficiency)

- Outreach to schools and the public about the relationship between organic turf care and IPM
- Conduct pilot demonstrations in schools in the northeast region
- Implement/promote K-12 curriculum-based education.
- Employ Service Learning for school buildings/grounds and community settings
- Promote inclusion of IPM in education standards/curriculum
- Educate policy makers about the needs and benefits of IPM in terms of dollars, health, academic performance
- Promote inclusion of IPM lessons into teacher education programs at universities.
- Improve linkages between regulatory agencies and extension
- Develop and utilize educational methods appropriate for the audience (particularly for urban audiences)

Research

- Identify efficacious least-risk products and tools to manage pests
- Evaluate efficacy and risk/benefits of EPA-exempt (25b) products
- Compile data/information on effects of pesticides and pests on children's health and academic performance and influence of IPM in addressing health and performance indicators
- Impact of pest management on school environmental health impact (eg school's well water, school gardens, use on adjacent properties) (NOTE: there was disagreement among WG participants as to whether this priority should be kept included).
- Evaluate building design, construction, renovation, and maintenance criteria (such as 'green buildings', LEED (Leadership in Energy and Environmental Design), LEED for Schools EB (Existing Buildings), CHPS (Coalition of High Performing Schools), EPA (Environmental Protection Agency) Tools for Schools (Indoor Air Quality), HealthySEAT (School Environmental Assessment Tool), sports fields and landscape design criteria, etc) for presence of IPM principles and practices and rates of adoption. Provide recommendations for inclusion of IPM principles/tactics in these criteria.
- In-depth inspections of schools to determine what pest management practices are really being used
- Research on effective teaching methods to teach students and teachers about IPM
- Research and evaluate outreach methods to educate community (especially school families) about IPM
- Compile and evaluate state requirements and resources for school IPM

Regulatory

- Implement existing IPM laws and policies, at the level of fiduciary and regulatory accountability, and establish these laws and policies where none exist
- Evaluate regulatory approaches to use of EPA exempt (25 b) products. Are these products accessible for use by schools under existing regulations?
- Create model language and definitions for school IPM and define "school". Should regulations apply to just public K-12 or should they include private K-12, daycare, colleges, etc?
- Quantify costs to regulatory agencies for enforcement of school ipm regulations.
- Identify and promote interagency cooperation among regulatory, health, insurance, education, and other agencies.
- Advocate for funds for enforcement of pesticide regulations
- Incorporate IPM into school wellness legislation
- Influence change at Federal level (SEPA, NCLB, HHPS Act)
- Include students and teachers in OSHA-like protections