



IPM Institute of North America, Inc.

*Harnessing Marketplace Power to Improve Health, Environment and Economics*

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*2005 Children's  
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Recognition Award,  
U.S. Environmental  
Protection Agency  
Office of Children's  
Health Protection*

March 26th, 2013

To: IPM Institute Board of Directors

From: Kelly Adams

Re: 2012 Annual Progress Report

**Overview**

Continued expansion in activities and staffing in 2012 included eight new projects and three new staff members. We received funding for 12 out of 20 proposals in 2012 and included among those is our largest contract to date, received from a national retailer to develop a sustainability rating system for their supply chain. This project also provides support for continued development of the Pesticide Risk Mitigation Engine tool. Other funded projects include renewal funding for the NRCS and IPM and School IPM Working Groups, North Central IPM Center funds leveraged by our EPA PRIA (2) grant to execute school IPM surveys in North Central region states, and a University of Wisconsin Center for Integrated Agricultural Systems (UW CIAS) grant to advance our Midwest Apple IPM programs.

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4510 Regent St., Madison WI 53705

608 232-1410, Fax 608 232-1440

ipmworks@ipminstitute.org, www.ipminstitute.org

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## 1. 2012 MAJOR PROJECTS AND PROGRESS

**National Retailer Project** -- The IPM Institute was invited to present to a national retailer's leadership team in Sept 2011, a presentation that led to an invitation in May 2012 to propose the development of a sustainability standards and a rating system for the retailer's global produce supply chain. Before successfully proposing to design the sustainability rating system, the IPM Institute completed a comprehensive comparative analysis of existing eco and social certifications for the retailer. The proposed system builds on three resource metrics piloted by the Stewardship Index for Specialty Crops (SISC) and the pesticide risk assessment capabilities of PRiME. Our proposal was accepted; it includes comprehensive measures that encompass sustainable practices, efficiencies and outcomes. In addition to their request to complete the standards and rating development, the food retailer also made an investment in PRiME to support additional development, including new risk indices. IPM Institute hired two staff to support the standards and rating program and one staff to support PRiME development

To date we have developed an initial list of active ingredients that will be prohibited from the retailers' supply chain and are working intensively with them to complete preliminary standards and ratings. We identified a number of participants to pilot the program in the first quarter of 2013. After receiving feedback from that group, we will work with a third party to bring the standards and rating into an online tool and introduce them to targeted elements of the supply chain in the second quarter of 2013.

**Great Lakes Protection Fund (GLPF)** – Led by the Sandusky River Watershed Coalition and in collaboration with American Farmland Trust and Heidelberg University, the IPM Institute secured funding from GLPF in 2010 to implement practices identified due to their potential to reduce nutrient and sediment losses from US corn acres. The project provides agricultural retailers with the tools to expand upon their leadership role in crop resource management, by offering products and services that keep nutrients on the field. With leveraged funding from Ohio NRCS, we also worked with Agren, Inc. to initiate outreach to non-operator landowners in the Sandusky River Watershed on dissolved phosphorus challenges and solutions. Currently we are developing a watershed-level model, or “calculator” with Heidelberg University to forecast the effectiveness of different resource management practices on dissolved phosphorus and other nutrient losses from cropland. In the next year, we will continue to gather data from growers and retailers and run draft scenarios for retailers to reality check, refine and begin to build marketing and sales strategies to achieve target levels for reduced phosphorus losses.

**Eighth International IPM Symposium** – The 7<sup>th</sup> International IPM Symposium in Memphis this March drew over 630 attendees, including 88 international participants representing 36 countries and included more than 70 plenary sessions, mini-symposia, workshops and discussion sessions focusing on solutions to global pest challenges in agriculture and communities. The IPM Institute is coordinating preparations for the Eighth International IPM Symposium, set to take place in Salt Lake City, Utah during the week of March 23, 2015. Volunteer planning committees are currently working to finalize the meeting format and theme and will be focusing on outreach to potential attendees and the development of a website, plenary and program topics, and more in 2013. We continue to provide assistance to Symposium organizer Elaine Wolff by

participating on the finance/exhibits committee; coordinating monthly conference calls; maintaining the Symposium website and managing financial and subcontract administration.

### **North Central IPM Working Group: Increasing Adoption of IPM in Schools**

([www.ipminstitute.org/NC\\_IPMIS\\_Working\\_Group/main.htm](http://www.ipminstitute.org/NC_IPMIS_Working_Group/main.htm)) – The Working Group continues to provide support for school districts in the North Central region seeking to adopt IPM. In 2012, the Working Group held monthly conference calls, updated their regional priorities and wrote two articles for the June North Central IPM *Connections* Newsletter. We also supported the efforts of the *School IPM 2015* project by providing feedback for on-going PMSP revision and a new national survey tool, updating the project’s website and Facebook page, creating monthly *School IPM 2015* newsletters and building a national database of school contacts from a variety of sectors. With combined funding from the US EPA 2010 PRIA 2 grant and the North Central IPM Center, we continue to support school IPM coalitions in NE, MO and MI through marketing training resources and curriculum, hosting continued education for coalition leaders through conference calls, and gauging coalitions’ progress toward verifiable IPM through our Coalition and IPM School District surveys.

**School IPM 2015** ([www.schoolipm2015.com](http://www.schoolipm2015.com)) – In 2012, we were granted a one-year no-cost extension on our second US EPA Pesticide Registration Improvement Act (PRIA 2) grant (\$250,000), which funds coalition-building efforts in 15 new states including assistance to complete a multi-level school IPM survey in participating districts. As of December 2012, we completed the online IPM School District Survey in five states and initiated efforts in nine additional states with a response rate goal of 40% from school districts in each state. The IPM School District Survey asks districts to document asthma rates, pest management practices, including IPM policies and plans, pest management staffing, pest complaints and pest management costs. In fall of 2012, the IPM Institute was awarded a mini-grant from the North Central IPM Center via the USDA National Institute of Food and Agriculture (NIFA) to support completion of the IPM School District survey in all states in the North Central region (IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD and WI).

The second tier survey developed under the 2010 PRIA 2 grant is an online Coalition Survey, which is meant to gather year one and year two metrics for regional and statewide school IPM coalitions. The national school IPM steering committee also developed a State IPM Report Card Survey to follow-up to the 2008 State IPM Report Card Survey and distributed it to state lead agents that were knowledgeable about the status of IPM programs in their state. The survey results demonstrated a number of positive outcomes including increased engagement and federal funding for IPM. A brief summary of the report card results appeared in the [September School IPM 2015 Newsletter](#).

In summer of 2012, the national school IPM steering committee expanded its membership to include 11 regular members, 13 advisory members and one national-level consultant. A complete list of members and their roles and responsibilities can be found at: [http://www.ipminstitute.org/school\\_ipm\\_2015/steering\\_committee.htm](http://www.ipminstitute.org/school_ipm_2015/steering_committee.htm). The national school IPM steering committee continues to participate in monthly conference calls, which now regularly include a 20 to 30 minute educational component on topics such as children’s health, currently funded programs and best practices. The steering committee and four regional school

IPM working groups coordinate and support coalitions, demonstration sites and related projects. We also promote outreach efforts (periodical *School IPM 2015* newsletters, state-based and regional IPM training sessions, Facebook and Blogger accounts, etc.) and maintain a website with current school IPM-related news, resources and opportunities to join the national school IPM effort. Members of the national school IPM steering committee are currently leading efforts to finalize and publish a professional journal article on the topic of state-based pesticide regulations. The final article will be complete winter of 2012 and published in the spring of 2013.

**Pesticide Risk Mitigation Engine (PRiME) ([www.ipmprime.org](http://www.ipmprime.org))** – The PRiME web application is a software tool designed to help growers evaluate pesticide risks using the best-available science in an easy-to-use format. In the past year we have continued to keep the PRiME database up to date with pesticide products registered for agriculture in the U.S. as well as the physico-chemical and toxicology data required to calculate PRiME risk indices. We have begun work on a web-integrated utility to automate and streamline the process of updating our pesticide products database and a utility to enter, store and track toxicity data, as well as automate processes for calculating the toxicity endpoints used by PRiME, ensuring the transparency of our toxicity data by tracking the lineage (sources and calculations) of endpoints.

The PRiME team developed an interface to run batch calculations on large datasets with active ingredients (as opposed to registered products) and have used this interface for various data analysis projects using California's Pesticide Use Reporting (PUR) data and other sources. We developed a test version of site-specific pesticide fate and transfer modeling taking into account soil type, crop type, weather and risk mitigation measures. When integrated into the online interface, PRiME will be able to suggest potential risk mitigation measures based on pesticide formulation; crop type and risk index; and compare PRiME results with and without mitigation.

The PRiME project has received an investment from a national food retailer to support the tool's continuing development, including the addition of new risk indices. Ongoing support for PRiME will be generated through user fees of participants utilizing PRiME in the food retailer's supply chain. This summer, PRiME team member Paul Jepson hosted two webinars for IPM Coordinators, Extension, and NIFA staff interested in learning more about PRiME and its potential uses. The webinars were well-attended and generated much interest in the tool. We continue to pursue opportunities for the support and development of PRiME through grants and partnerships with public and private organizations and companies interested in incorporating PRiME into certification standards and sustainability programs.

**Green Shield Certified ([www.greenshieldcertified.org](http://www.greenshieldcertified.org))** -- Green Shield Certified (GSC) completed initial evaluations for two Pest Management Provider (PMP) services, three facilities and one PMP program in 2012. Eight PMP's and one facility were re-evaluated, and two past evaluated PMP's attained certification, bringing the number of certified pest management participants to 39 since 2007. Spurlock Museum, located on the University of Illinois campus in Urbana, Illinois, became the first museum certified under the Green Shield Certified facilities program. IPM Institute was also awarded a contract to revise and update an Integrated Pest Management Plan for a state Army National Guard program. This project will supplement income for the Green Shield program through the first quarter of 2013 as we continue to grow

sustainability through increased evaluation and annual certification fees. Green Shield implemented a strategic plan to ensure program sustainability and achieved a net positive budget for 2012 after multiple years of deficits.

**IPM STAR for Schools and Childcare Centers ([www.ipmstar.org](http://www.ipmstar.org))** –In collaboration with Carrie Foss of Washington State University, two new Washington school districts (Walla Walla Public Schools and Colville School District) became IPM STAR certified this year. Janet Hurley of Texas AgriLife Extension Service also evaluated two new Louisiana school districts which we will work to certify in 2013.

New York City Department of Education and Pasco School District completed re-evaluation and re-certification in 2012. IPM STAR also re-evaluated Seaford Union Free Community School District and Buffalo City Schools. We continue outreach to lapsed IPM STAR participants to bring their certification up-to-date and are working to help financially strained districts prioritize re-certification. In March 2012 the Southern Region School IPM Working Group made having an IPM STAR school district in each of its states a priority and will leverage funds for IPM STAR “train the trainer” events in their region.

**North Central NRCS and IPM Working Group: Growers Incentives for IPM (<http://www.nrcs.ipm.msu.edu>)** – The working group secured renewal funding beginning March 2012 and continues updates each month to the working group website with call minutes, information on the Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) and pertinent state and regional resources on agricultural IPM. In 2012 the group achieved success in expanding the geographic reach of its outreach efforts by working with NRCS to redirect policy decisions that would have limited 595 payments to pesticide mitigation needs and eliminated payments for prevention, avoidance and monitoring strategies.

In May 2012 working group members from the University of Florida, Florida NRCS and Glades Crop Care organized a two-day training for Extension and NRCS personnel to increase their awareness of IPM opportunities for Florida growers. The training was funded with a \$5,000 critical and emerging needs fund grant from the Southern IPM center.

The group conducted a pilot of the IPM Practitioner exam using \$7,500 in North Central IPM Center (NCIPMC) discretionary funds during the 2012 National Alliance of Independent Crop Consultants (NAICC) annual meeting. Feedback suggest the exam and performance objectives are rigorous, covering key areas of resistance management, ecology, advantages/disadvantages of IPM and disease management. Suggested improvements are to include more information on weed management, and pest identification and biology. This spring the NAICC board of directors voted to create an IPM designation for their Certified Professional Crop Consultant certification.

The working group has secured an additional \$10,000 from the North Central and Southern IPM Centers for NRCS & IPM Working Group outreach efforts in 2012 that will carry into 2013. In 2013 working group outreach will focus on engaging national NRCS EQIP program and technical staff to educate on opportunities for EQIP 595, IPM CAPs and CSP to achieve resource

protection goals established by the NRCS. We will also continue to focus on objectives to increase consultant participation in the TSP program with additional exam pilot opportunities for the IPM practitioner exam project and working with NRCS and Extension to promote TSP training opportunities.

**BMP CHALLENGE Performance Guarantee Program ([www.bmpchallenge.org](http://www.bmpchallenge.org))** – Operated by Agflex in collaboration with American Farmland Trust, the IPM Institute and others, the BMP CHALLENGE offers a risk free yield guarantee to corn producers in 20 states. The program works with farmers to reduce nutrient and sediment outputs to local waterways while offering a financial safety net in case of profit loss. In addition to expanding proven best management practices for silage and grain, Agflex initiated specialty crop BMP CHALLENGE projects for broccoli in California and sweet corn in New York by partnering with the Cachuma Resource Conservation District and Cornell University respectively. In 2012, Agflex received funding from the North Central Risk Management Education Center (\$32,000) for precision-ag outreach and technical assistance, and from a Maryland Conservation Innovation Grant (\$75,000) for trials comparing farmers’ conventional practices to Cornell University’s Adapt-N online tool, a model that predicts fertilizer needs based on dynamic nitrogen processes, field conditions and weather.

**Natural Resources Defense Council (NRDC) Soil Metric** – Under contract with NRDC, we are evaluating existing soil quality metrics and using that assessment to develop a metric specifically for farmers in supply chain sustainability programs. The metric will be used to benchmark, compare and communicate performance in improving soil quality, with results representing both agronomic and environmental targets for soil health. Our goal is to develop an affordable metric that uses readily available soil testing facilities and can be implemented consistently in major growing regions worldwide.

**IPM Voice ([www.ipmvoice.org](http://www.ipmvoice.org))** – In 2012, IPM Voice focused on educating policymakers about the importance of IPM programs and ensuring a clear path for IPM funding and functions. For Fiscal Year 2012, the group saved \$3.6 million in IPM funding that had been slated for cuts and also secured authorization of the United State Department of Agriculture (USDA) Regional IPM Centers in the Senate version of the 2013 Farm Bill. Authorization ensures ongoing support for the Centers. IPM Voice organized a session on the future of IPM funding and awareness for the 7th International IPM Symposium in March. The group continues to circulate monthly newsletters to members and regularly updates its website with organization activities and other developments related to IPM. IPM Voice is currently reaching out to grower associations to assess their interest in IPM and concern for federal funding support of IPM as well as generating ideas and priorities for expanding public awareness of IPM in 2013.

**Northeast Eco Apple (<http://www.redtomato.org/ecoapple.php>)** – Red Tomato began the Eco Apple Project in 2005 with a third-party certification to New England orchards to verify their use of IPM and other ecologically sensitive production practices. Growers use the certification to differentiate Eco Apples in the market and gain a premium for their fruit. We continue our partnership with Red Tomato on this project, providing scientific and technical expertise on IPM practices. We also make annual updates to protocol that include approval or restriction on newly released products. This year the program certified 11 growers and 673 enrolled acres.

2012 also marked the third year of stone fruit grower certifications under an eco protocol. Using the Eco Apple Protocol and self assessment format, this protocol identifies best management practices for IPM in stone fruits, including peaches, nectarines, apricots and plums. We certified two growers and 60 acres for eco stone fruit.

This year we will work with growers to develop an IPM protocol for small fruit production in the northeast, beginning with blueberries. The 2012 season experienced an increase in protocol violations from several long-standing participants. In 2013 we will evaluate opportunities to improve our pesticide restriction decisions using the Pesticide Risk Mitigation Engine, which will allow us to address more site-specific management issues.

**Upper Midwest Apple IPM Programs** – IPM Institute continues to offer technical and other IPM assistance to apple growers throughout southern Wisconsin and southeastern Minnesota through our pest scouting program, NRCS Technical Service Provider (TSP) services and IPM certification. The start of the 2012 season was marked with extreme early season warming followed by freeze events which destroyed a majority of the region’s crop with 75% or higher losses experienced by many growers. This created an opportunity for our program to step up efforts to promote opportunities for IPM to help manage costs, in addition to managing risk and minimizing unnecessary pesticide use. Despite decreased participation by growers, the program was able to maintain a net positive budget.

The Apple IPM Scouting program continued its fourth season with 16 growers and 490 acres of apples enrolled. We also offered scouting, IPM outreach and field days to growers through the EPA Strategic Agricultural Initiative (SAI) project “Tree Fruit IPM Grower Network Expansion & High-level IPM Certification.” Participating growers received scouting assistance and guidance on IPM strategies, including grower meetings and trainings on PRiME. The program is currently training a second scout and anticipates expanding scouting services to other fruit crops including grapes and strawberries.

Our market-based IPM certification program True Earth Certified continued for the third year for growers who wholesale fruit through Wescott Agri Products. The program uses the Eco Apple protocol and received funding support through the SAI project. In 2012 three growers and 145 enrolled acres were certified, a decrease from previous years.

The Minnesota and Wisconsin NRCS EQIP 595 program provides growers with financial incentives to develop and implement an IPM system on their farm. One of the program requirements is for growers to work with qualified TSP’s to help design and evaluate the IPM system. We have provided TSP services to apple producers in Wisconsin since 2006 and 2012 was the first year 595 options were available for Minnesota orchardists. We now provide TSP services for six Minnesota orchards and seven Wisconsin Orchards.

**McDonald’s Potato IPM Project** – We continue work with McDonald’s major potato suppliers in the implementation of an online survey for growers to report their pesticide use and best practice adoption. We have been assisting the McDonald’s IPM survey team in expanding the grower survey to include questions regarding broader sustainability efforts, with the goal of harmonizing the McDonald’s survey with other programs, including the Sysco Sustainable

Ag/IPM program, the Sustainable Agriculture Initiative (SAI) Platform and USDA Good Agricultural Practices (GAP) program. We are also drafting a proposal to McDonald's suppliers for an audit process to verify grower responses to the survey.

**Entomological Foundation (EF)** – The Entomological Foundation board reluctantly elected to scale back activities and close its Maryland office in August 2012 due to multiple-year deficits which threatened the ability of the Foundation to meet its endowment obligations. Thomas Green served as board member for the organization and felt it had great potential to bolster IPM education and shared similar goals with our School IPM 2015 project. Former board president Sharron Quisenberry stepped down and the board elected Thomas Green to take her place. Since that time, the IPM Institute has volunteered staff time to provide bookkeeping and administrative support for the Foundation. We organized the Entomological Foundation awards reception and provided plenary session updates at the Entomological Society of America's (ESA) Annual Meeting in Memphis, Tennessee in November 2012. The Foundation received very positive feedback on our efforts from attendees, as well as an invite from David Gammel of ESA to organize the Insect Expo at the ESA International Congress of Entomology in Orlando in 2016. We have also secured funding from FMC Corporation to coordinate outreach efforts for their fellowship program and hired a new project assistant to support EF tasks.

With help from the IPM Institute, The Foundation successfully reduced its operating budget and decreased its deficit for the 2012 fiscal year by \$15,000. Funding commitments from Foundation supporters continue to be solicited and received. The Foundation is currently updating its strategic plan to focus on fundable priorities, and expects to emerge from IPM Institute support in 2013

**Sysco Sustainable Agriculture/IPM Initiative** – We continue to work with Sysco to facilitate adoption of IPM and other sustainable practices among their fruit and vegetable producers. The IPM Institute evaluates Sysco suppliers' written Sustainable Agriculture/IPM programs on an ongoing basis and provides recommendations for improvement. In March, we organized a session at the Seventh International IPM Symposium featuring presentations on IPM and sustainability in fruit and vegetable crops. The session included presentations by Sysco vice president of sustainable agriculture, Craig Watson, and three Sysco suppliers. We also assisted Sysco in compiling the 2011 processing season environmental indicator report, which revealed that Sysco's Sustainable Ag/IPM program now includes 747, 456 acres and nearly 5,000 growers of agricultural products worldwide. Suppliers continue to show their interest in and commitment to the program: in 2011, Sysco saw the highest number of suppliers to date report their annual environmental indicator data, and many suppliers that meet criteria to reduce the frequency of their Sysco Sustainable Agriculture/IPM audits have opted to continue with annual audits to keep improving management and outcomes.

## **OTHER ACTIVITIES**

We continue to respond to unsolicited inquiries from pest management professionals, facilities, retailers, parents, school administrators and media about IPM and pest-related issues. We keep our website content current with IPM-related news, job listings and resource links. Currently hits to the website average 1426 per month.

In addition, we:

- Participated on the US EPA Pesticide Policy Dialogue Committee, a formal stakeholder body managed by the Office of Pesticide Programs to provide input to EPA on plans and progress on pesticide issues. This committee meets twice annually for two days each.
- Served on the board of directors for the Entomological Foundation, which seeks to engage and sustain interest of school-aged children in science and insects. The Foundation seeks to establish an Educational Fund to distribute grants which help fund new programs, projects and services, as well as to expand the reach of the Foundation's programs and services. <http://entfdn.org>
- Reviewed and updated our employees loaded labor rates for charging staff time to grant and contract-funded projects. This rate allows us to recover all direct costs of having an individual perform tasks including salary, benefits, equipment and administrative support.
- Implemented a document retention and destruction policy.
- Under contract with NRDC, developed a white paper on pesticide risk to agricultural workers in the food industry supply chain.
- Reinvigorated the IPM Institute quarterly newsletter *IPM In The Marketplace*. The next issue of the IPM Institute newsletter will be circulated in April 2013.

## **2. 2012 PRESENTATIONS**

Measuring the Success of EPA's School IPM Initiative. EPA Pesticide Policy Dialogue Committee IPM Working Group. Arlington, VA. T. Green.

IPM: Answering the "So What?" Question. Organization for Economic Cooperation and Development. Queenstown, NZ. T. Green.

(1) Entomological Foundation: An Independent, Not-for-Profit Educational Foundation. (2) Using the Pesticide Risk Mitigation Engine to Assess Pesticide Risk. (3) Entomological Foundation Update. Entomological Society of America Annual Meeting. Knoxville, TN.

Advanced IPM Techniques for Green Pest Management. Green Shield Certified Webinar. T. Green.

Urban IPM. eXtension Webinar. T. Green.

The Future of Urban Pest Management. Orkin Technical Forum. Atlanta, GA. T. Green.

Marketing Your Green Services. Green Shield Certified Webinar. T. Green.

Addressing the Adoption Challenge. Moderator, program symposium. Annual Meeting of the Soil and Water Conservation Service, Fort Worth, TX. T. Green.

Ag Retailers and Growers Working Together to Improve Water Quality in Ohio's Sandusky River Watershed. Annual Meeting of the Soil and Water Conservation Service, Fort Worth, TX. T. Green.

New Invasive Fruit Pests in the Upper Midwest: Brown Marmorated Stink Bug and Spotted Wing Drosophila. Apple Network Meeting, LaCrescent, MN. T. Green and P. Werts.

Putting the Green into Pest Management. National Apartment Association Education Conference, Boston, MA. T. Green.

PRiME in Action: Opportunities to Reduce Pesticide Impacts on Birds, Fish and other Non-targets. EquiTable Food Initiative. Watsonville, CA. T. Green.

Using the Pesticide Risk Mitigation Engine (PRiME) to Assess Pesticide Risks to Aquatic Ecosystems. National Land Grant and Sea Grant Water Quality Conference, Portland, OR. T. Green.

Ag Retailers and Growers Working Together to Improve Water Quality in Ohio's Sandusky River Watershed. National Land Grant and Sea Grant Water Quality Conference, Portland, OR. T. Green.

Stewardship Of Grazing, Forestry and Aquaculture: Best Management Practices, Appropriate Chemicals; Green Alternatives to Common Agricultural Methods. United Southern and Eastern Tribes Workshop. Nashville, TN. T. Green.

Approaches to Encourage Adoption of Best Management Practices: Soft Technologies in Use Today. Summit on Strategies to Manage Herbicide-Resistant Weeds, National Academy of Sciences, Washington, DC. T. Green.

IPM for School K-12 Grounds. Wisconsin Dells, WI. T. Green.

(1) IPM Voice, Partnership with NRCS. (2) Northeast Region Technical Committee on IPM Meeting. Memphis, TN. T. Green.

NRCS and IPM Working Group: Grower Incentives for IPM. International IPM Symposium. Memphis, TN. T. Green and P. Werts.

(1) School IPM 2015: Reducing Pest Problems and Pesticide Hazards in our Nation's Schools. (2) Authenticating IPM Service Providers, Programs and Facilities. (3) Green Shield Certification: What Do the Data Say? International IPM Symposium. (4) Reducing Pesticide Exposure Through Integrated Pest Management. (5) Reducing Pesticide Exposure Through Integrated Pest Management. (6) Closing Plenary. Moderator and Closing Thoughts. International IPM Symposium. Memphis, TN. T. Green.

IPM: The Only Way to Manage Pests. Facility Masters Webcast Series. Webinar. T. Green.

Promoting Conservation Agriculture Cost-Effectively. The Red Cedar Watershed Conference. Menomonie, WI. R. Ressler

### **3. 2012 PUBLICATIONS**

Bruns, Z. and D. Gouge. 2012. Creating a Healthy School Environment: Think Integrated Pest Management. *Arizona Association of School Business Officials The Edge*. January/February, p. 10.

Schmitz, J., Z. Bruns and T. Green. 2012. US School IPM “Report Cards” Show Progress. *The Connection*. North Central IPM Center, p. 9.  
<https://www.ncipmc.org/connection/Connection0113.pdf>

Schmitz, J., and T. Green. 2012. *IPM Tactics for Feral Cats*. 2 pp.  
[http://www.ipminstitute.org/school\\_ipm\\_2015/Feral\\_cats\\_pest\\_press.pdf](http://www.ipminstitute.org/school_ipm_2015/Feral_cats_pest_press.pdf)

Schmitz, J., T. Green, and Z. Bruns. 2012. Educating Schools About Bed Bugs. *Pest Management Professional*. October, 106 pp.

Schmitz, J., T.A. Green and Z. Bruns. 2012. Building out pests of interior spaces. *School Planning and Management*. January, p. 11.

Green, T.A., W. Pronschinske and L. Presley. 2012. *Reducing Pesticide Risks to Workers in Agriculture: Opportunities for Food Company Leadership*. 24 pp.

### **4. 2012 FUNDING OBTAINED**

#### **Grants: \$72,206**

North Central IPM Center, \$20,000 renewal funding to increase adoption of IPM in schools of the North Central region.

North Central IPM Center, \$20,000 renewal funding to increase collaboration among NRCS and IPM professionals in the North Central region, in collaboration with Michigan State University.

North Central IPM Center, \$10,000 to implement state-level and district-level surveys to measure IPM adoption, evaluate progress and identify priorities in schools in the North Central region.

North Central IPM Center, \$10,000 to address challenges and opportunities of the NRCS EQIP 595 program.

University of Wisconsin Center for Integrated Agricultural Systems, \$6,206 to advance the use of IPM with Midwest apple and grape growers.

USDA NIFA, \$6,000 for IPM Institute staff travel expenses to the Seventh International IPM Symposium.

**Contracts: \$1,173,499**

National Food Retailer. Contract for \$1,024,317 to develop and implement a sustainability rating system for produce supply chain.

Agflex, Inc. Contract for \$10,000 for project coordinator services by Rebecca Ressler and bookkeeping and grants management services provided by Kelly Adams and Jodi Schmitz for the corn producer guarantee project.

NRDC. Contract for \$20,000 to develop a white paper on pesticide risks to farm workers.

NRDC. Contract for \$6,000 to refine a soil quality metric based on soil organic matter potential.

State Army National Guard. \$14,682 to update IPM plan.

Beyond Pesticides. Ongoing contract for evaluating health care facilities for use of IPM.

Simplot, McCain and ConAgra. Ongoing contract to assist with McDonald's potato IPM program.

Sysco. Ongoing contract to assist with implementation of Sysco Sustainable Agriculture/IPM initiative with supplier base.

Apple IPM Program. \$30,000 in contracts with Wisconsin and Minnesota apple orchards for pest scouting services.

Red Tomato. Contract for \$8,500 to provide technical assistance for the Northeast Eco Apple Certification program.

Green Shield Certified Program. \$40,000 in contracts with certification participants in structural pest management industry and facility management.

**Unsuccessful Proposals: \$761,460**

USDA NIFA Specialty Crop Research Initiative Grant (\$27,800), submitted by North Carolina State University for "Integrated Management of Spotted Wing Drosophila in Eastern US Agriculture."

New York Farm Viability Institute Grant Program (\$150,000) submitted by Agflex, Inc. for "Optimizing Net Returns with Nitrogen Efficiency for Corn Production."

Pennsylvania NRCS CIG (\$75,000), submitted by Agflex, Inc. for "Optimizing Net Returns with Nitrogen Efficiency for Corn Production."

New York NRCS CIG (\$75,000), submitted by Agflex, Inc. for "Optimizing Net Returns with Nitrogen Efficiency for Corn Production."

Great Lakes Fish and Wildlife Restoration Act Grants Program (\$99,000), submitted by IPM Institute for “Agricultural Retailer resource management Solutions.”

USDA NIFA Small Business Innovation Research (SBIR) Grants Program (\$150,000), submitted by Agflex, Inc. for “Eliminating Weather Variability Risks.”

Northeast IPM Center IPM Partnership Grants Program (\$40,660), submitted by Red Tomato for “Minimizing Impact of Brown Marmorated Stink Bug and Spotted Wing Drosophila on Advanced IPM and Organic Production of Northeast Small Fruit.”

USDA Northeast Region Sustainable Agriculture Research and Education (SARE) Grants Program (\$144,000), submitted by Red Tomato for, “Advanced IPM Production and Marketing for Northeast Small Fruit.”

**Pending :\$170,900**

North Central IPM Center Grants Program (\$30,000), submitted by the IPM Institute to increase adoption of IPM in schools in the North Central region through the regional working group.

North Central IPM Center Grants Program (\$30,000), submitted by the IPM Institute to increase collaboration among NRCS and IPM professionals in the North Central region through the regional working group, in collaboration with Michigan State University.

Responsible Industry for a Sound Environment (RISE, \$74,900), submitted by the IPM Institute to implement IPM in rural schools.

RISE (\$36,000), submitted by the IPM Institute to increase and improve school IPM communications.

**4. Major 2013 Objectives**

1. Work with national retailer and project partners to finalize design and testing of the sustainability rating system and coordinate announcement to the retailer’s supply chain in Q3 2013.
2. Complete and present a business plan for agricultural retailers in the Sandusky River Watershed to provide resource management products and services with revenue potential.
3. Work with IPM Symposium coordinator and planning committees to determine schedule, theme, plenary speakers and concurrent session topics for the Eighth International IPM Symposium. Communicate with potential donors about opportunities to contribute and exhibit.
4. Finalize report for our EPA PRIA (2) award and North Central School IPM Survey grant, including completion of district and state-level surveys to track progress on school IPM

nationwide. Secure additional funding sources for continued support of school IPM coalition activities.

5. Pursue sustainable funding for PRiME through user subscriptions and donations including development of a newsletter to communicate PRiME advancements to potential users, distribution of a PRiME toolkit and participation in train-the-trainer workshops to encourage PRiME use by Extension and others.
6. Develop a custom PRiME user interface for food retailer supply chains; develop site-specific pesticide fate and transfer capabilities; integrate five new risk indices and streamline database maintenance operations.
7. Continue to recruit and re-certify Green Shield Certified program participants and incorporate new educational opportunities into the certification program. Focus on finalizing PMP revision standards, completion of 2013 State Army National Guard IPM Plan and launching individual IPM certification program.
8. Work with Extension School IPM partners to re-certify existing IPM STAR participants and recruit new schools to the program.
9. Expand our work with NRCS to support IPM adoption on a national scale, including development of IPM training opportunities for national and regional NRCS staff, further outreach to build support for an IPM practitioner exam for crop advisors through the NAICC, development of a strategic plan to operate on a balanced budget and continue to leverage funding from additional sources including Western, Southern and Northeastern Regional IPM Centers.
10. Expand the BMP CHALLENGE to more cost-effective, higher impact precision agriculture projects. Develop strategic plans for BMP CHALLENGE and Sandusky projects to secure sustainable funding.
11. Continue advancement of specialty crop IPM programs by providing airblast sprayer calibration and TSP support services for growers in Minnesota and Wisconsin enrolled in NRCS EQIP and the apple IPM scouting program; develop an eco berry protocol for Red Tomato producers in the Northeast and an advanced apple IPM eco protocol for suppliers to the Wescott Agri Products TruEarth sustainability certification program.
12. Improve McDonald's potato grower IPM survey by harmonizing questions and objectives with existing sustainability surveys and programs. Finalize and implement process to verify potato grower survey responses.
13. Advance the Sysco Sustainable/IPM program by identifying and addressing opportunities for improvement in water quality and conservation standards, metrics, outcomes and reporting.

14. Increase IPM Voice activities by developing a case statement for IPM and IPM Voice; engaging state and regional grower organization members; pursuing funding support from IPM service providers and pest control product manufacturers and continuing advocacy for IPM funding on the federal level.

### **Appendix A. Staff**

**Kelly Adams:** May 2008; Financial and grant administration, employee services management, former School IPM Project Coordinator. Kelly has a communications/research background as an Art History major from the University of Wisconsin-Madison. She also attended certificate classes at the Nelson Institute of Environmental Studies, which fueled an interest in sustainable agriculture and environmental health issues, particularly school and community-based projects.

**Mark Adelsperger:** July 2011; Resource Management Specialist, Great Lakes Protection Fund Project. Mark has a degree in Business Administration from Tiffin University in Tiffin, Ohio and a background in agriculture, sales and customer service. Mark's immersion in agriculture and enjoyment of the rural lifestyle reinforces his viewpoint that farming is an ever evolving way of life.

**Matt Anderson:** August 2009 – August 2012; Project Assistant, School IPM 2015 and North Central School IPM Working Group. Matt graduated with a B.S. from the University of Wisconsin-Madison in International Studies with an environmental focus in water resources management.

**Eva Ballering:** February 2013; Project Assistant, Apple IPM Program, NRCS and IPM Working Group: Growers' Incentives for IPM, Red Tomato Eco Apple Project and NRCS TSP services. Eva is a native Wisconsinite who studied sustainable agriculture and reclamation ecology at the University of Minnesota, Twin Cities. Before joining the IPM Institute she worked on an Organic farm and for various restoration projects in South Central Wisconsin.

**Zach Bruns:** May 2008; Project Assistant, School IPM 2015, general IPM Institute Information Technology work. Zach earned a B.A. in Communications and Rhetoric from the University of Wisconsin-Madison with a background in instructional technology support. He is an active member of Blackhawk Church and participates in the Wisconsin Track Club.

**Laura Geller:** September 2012; Project Assistant, Sustainable Supply Chain Development. Laura is a recent graduate of Oberlin College, with a degree in Environmental Studies and an emphasis on environmental health. Laura is originally from Ashland, Missouri and has previously worked with the Missouri Department of Natural Resources, USGS Columbia Environmental Research Center and Oberlin College's Environmental Studies Department as a research and teaching assistant. In addition to her work with the IPM Institute, Laura enjoys volunteering with Community GroundWorks and the Troy Kids' Garden.

**Samson Gimui, M.S.:** September 2012; Software Developer, PRiME. Samson received a B.S. in Computer Science from the University of Wisconsin-Eau Claire, and an M.S. in Information Technology from the University of Central Missouri. His non-technology interests include world geography, history, and cultures.

**Matthew Doyle Olson, M.A.:** August 2012; Project Coordinator, Sustainable Supply Chain Development. Matthew coordinates the development and operation of a sustainability rating system for a national food retail partner, their suppliers and our project team. Before joining the IPM Institute, his interest in food led Matthew to professional experiences milking cows, flipping burgers, administering grants, assisting bakers and analyzing financials. He studied Cognitive and Neuroscience Studies in Minnesota and Human Ecology in Maine, culminating in a thesis on the intersection of food, business and community development. Matthew is a Community Fellow in the 2012-2013 Sustainability Leadership program at Edgewood College.

**Wade Moder:** March 2011 – May 2012; Project Assistant, IPM & NRCS Working Group: Grower Incentives for IPM, Great Lakes Protection Fund. Wade completed his B.S. in Environmental Policy & Planning from UW-Green Bay in 2009. He has been involved in a variety of environmental projects, including watershed management, public land use, invasive species control, urban tree identification and GIS. Currently, Wade serves as Vice President on the Board of Directors for the Yahara River Grocery Cooperative in Stoughton, WI. As a lifelong Wisconsin native, Wade enjoys cooking, playing sports, traveling and being outside.

**Leigh Presley:** January 2010; Project Assistant, Sysco Sustainable Ag/IPM Initiative, McDonald's Potato IPM Project, IPM Voice, IPM Symposium and PRiME. Leigh received a B.S. in Landscape Architecture at the University of Wisconsin-Madison in 2009. Natural resource studies in landscape architecture and a summer internship in a county land and water conservation department piqued her interest in sustainable agriculture and conservation.

**Wade Pronschinske:** November 2007; Project Manager, PRiME. After working in airborne intelligence for the U.S., Army, Wade earned a B.A. from Northern Illinois University in Philosophy, followed by a M.A. in History and Philosophy of Science from Florida State University. His interest in environmental ethics led him to his current position as a project assistant in 2007, advancing through project coordinator to project manager in December 2009.

**Rebecca Ressler, M.S.:** November 2010; Project Coordinator, BMP CHALLENGE; Project Assistant, Great Lakes Protection Fund. Rebecca completed her M.S. in Water Resources Management with a certificate in Business, Environment and Social Responsibility from the University of Wisconsin-Madison in 2012. Her interest in sustainable risk management led her to this position working with corn producers to implement conservation measures while optimizing net returns.

**Jodi Schmitz:** June 2011; Administrative assistant, Green Shield Certified and IPM STAR, School IPM 2015 and IPM Institute Newsletters. Jodi is originally from Helena, Montana and received a B.A. in English Writing from Carroll College. She then went on to complete the publishing program at the University of Denver Publishing Institute. She is passionate about reading, writing, and yoga.

**Caitlin Seifert:** May 2011; Project Coordinator, Green Shield Certified and IPM STAR. Caitlin has a communications background as a Media Communications major from Webster University

and an outreach background as a Madison community organizer. Prior to joining the IPM Institute, she worked in K-12 education for two years which sparked an interest in school IPM.

**Mariel Snyder, M.S:** March 2013; Project Assistant, School IPM and Entomological Foundation. After earning her B.S. in Agricultural Communication from the University of Illinois, Mariel spent time interning for various environmental organizations, working on an organic farm, and gaining experience as an administrative assistant. Her love for the outdoors and recreation led her to pursue a Masters degree in Parks and Recreation from Western Illinois University. Mariel's passion for environmental conservation and community development make The IPM Institute a perfect fit. Her interests also include spending time with her dog Ottis and reading.

**Peter Werts:** May 2009; Project Coordinator, Apple IPM Program, NRCS-IPM Working Group: Growers' Incentives for IPM, Red Tomato Eco Apple Project and NRCS TSP services. Peter has a B.S. in Environmental Studies from Northland College in Ashland Wisconsin. Before coming to the IPM Institute he worked as one of the regional interns with the Wisconsin Eco-Apple project in the Bayfield region. His interest in IPM has been a natural progression building upon his knowledge and skills from his days working on the fruit farms in Bayfield Wisconsin while in college.

## **Appendix B. 2011 MAJOR PROJECTS AND PROGRESS**

### **5. 2011 MAJOR PROJECTS AND PROGRESS**

**Green Shield Certified ([www.greenshieldcertified.org](http://www.greenshieldcertified.org))** -- Green Shield Certified (GSC) completed initial evaluations for three Pest Management Provider (PMP) services, two facilities and one PMP program in 2011. Ten PMP's and one facility were re-evaluated, bringing the number of certified pest management participants to 37 since 2007. Springfield Hospital in Sykesville, Maryland, became the first health care facility certified under the Green Shield Certified Platinum for Health Care program. Green Shield continues the development of its strategic plan to ensure program sustainability, including recruitment of two additional evaluators in 2011 with a goal of increasing annual certifications by new companies and facilities.

Green Shield, in partnership with the Natural Resources Defense Council (NRDC), Pesticide Research Institute (PRI) and the San Francisco Department of the Environment (SFDE), held a conference call with the US Green Building Council to incorporate changes to IPM standards for the LEED 2012 revisions. Collaborating with PRI, Green Shield created a list of products that meet Tier III criteria of San Francisco's Reduced Risk Pesticide List. The list will be maintained on the IPM Institute website and accessible to the public.

**IPM STAR for Schools and Childcare Centers ([www.ipmstar.org](http://www.ipmstar.org))** --In collaboration with Janet Hurley of Texas AgriLife Extension Service, three new Houston suburb school districts (Katy, Klein and Spring Independent) became IPM STAR certified this year. Fort Drum also

earned new IPM STAR certification for their Child, Youth and School Services at their army base in New York.

Salt Lake City School District, Pittsburgh Public Schools and South Kitsap School District completed re-evaluation and re-certification in 2011. IPM STAR also re-evaluated another school district and is working with a community program to re-certify five other districts in that state. We continue outreach to lapsed IPM STAR participants to bring their certification up-to-date and aim to develop a strategic plan for program expansion in 2012.

**IPM Voice ([www.ipmvoice.org](http://www.ipmvoice.org))** -- IPM Voice incorporated as a non-profit in 2011 and is focusing time and resources on educating policymakers about the need for continued and expanded support for IPM in the federal budget. IPM Voice was instrumental in saving US Department of Agriculture Regional IPM Centers in the fiscal year 2011 budget by initiating a single contact to a key House decision maker—restoring full funding to the Centers. Thomas Green serves on the IPM Voice Board of Directors and the IPM Institute volunteered 230 hours in 2011 on IPM Voice organizational tasks, including securing membership funding to support IPM advocacy efforts in Washington D.C. The group circulates monthly newsletters to members and regularly updates its website with organization activities and other developments related to IPM. IPM Voice is preparing a session on the future of IPM funding for the 7th International IPM Symposium.

#### **North Central IPM Working Group: Increasing Adoption of IPM in Schools**

([www.ipminstitute.org/NC\\_IPMIS\\_Working\\_Group/main.htm](http://www.ipminstitute.org/NC_IPMIS_Working_Group/main.htm)) – The Working Group continues to provide support for school districts in the North Central region seeking to adopt IPM. In 2011, the Working Group held monthly conference calls, updated their regional priorities and wrote an article for the [September North Central IPM Connections Newsletter](#). We also supported the efforts of the *School IPM 2015* project by providing feedback for on-going PMSP revision and a new national survey tool, updating the project’s website and Facebook page, creating monthly School IPM 2015 newsletters and building a national database of school contacts from a variety of sectors. The Working Group completed demonstration sites in SD, IL, IN and NE. Demonstration schools use proven approaches, such as assessments, workshops, targeted newsletters and pest monitoring to successfully demonstrate IPM in their region and state. We also initiated school IPM coalitions in NE, MO and MI.

**School IPM 2015 ([www.schoolipm2015.com](http://www.schoolipm2015.com))** – Led by Thomas Green and Dawn Gouge, the national school IPM steering committee collected feedback from multiple stakeholders and made significant edits to the 2009 version of the PMSP document, including updating the national priorities, adding a bed bug section and revising the list of projects to date. PMSP Version 2.0 is available through the [2015 web page](#) and a final version will be submitted to the USDA in early 2012.

We completed our 2008 U.S. EPA Pesticide Registration Improvement Act (PRIA 2) grant (\$250,000) to implement the National School IPM Strategic Plan in March 2011 and initiated activities under our second PRIA 2 grant (\$250,000), which funds coalition-building efforts in 15 new states including assistance to complete a multi-level school IPM survey in participating districts. The steering committee drafted a national survey tool modeled after one developed and

implemented in Oregon by Tim Stock of Oregon State University (OSU). The online survey will ask school districts to document asthma rates, pest management practices, including IPM policies and plans, pest management staffing, pest complaints and pest management costs. An additional survey is being developed for school districts interested in EPA Pesticide Environmental Stewardship Program (PESP) recognition to record metrics, increase PESP awareness, and track progress toward receiving gold level recognition.

The national school IPM steering committee continues to participate in monthly conference calls. The steering committee and four regional school IPM working groups coordinate and support coalitions (groups of schools serving as IPM leaders in their area), demonstration sites (one or more schools in a district serving as an IPM-teaching site) and related projects (e.g., development of IPM-oriented K-12 teaching curriculum). We also promote outreach efforts (periodical *School IPM 2015* newsletters, state-based and regional IPM training sessions, Facebook and Blogger accounts, etc.) and maintain a website with current school IPM-related news, resources and opportunities to join the national school IPM effort.

**Pesticide Risk Mitigation Engine (PRiME)** ([www.ipmprime.org](http://www.ipmprime.org)) – The PRiME web application is a software tool designed to help growers evaluate pesticide risks using the best-available science in an easy-to-use format. In September 2011, we concluded a four-year Conservation Innovation Grant to develop PRiME for US agriculture. PRiME-beta includes eight risk indices, first-tier pesticide fate and transfer modeling and a database of nearly all pesticide products registered for agricultural use in the US.

In the past year, we have established a development environment at the IPM Institute in order to work more closely with project partners at OSU, where PRiME is housed, and speed the pace of technical development. The development environment includes a standalone version of PRiME running at the IPM Institute and connected to the OSU development server via source control software, allowing team members to create work orders and edit PRiME simultaneously without losing information.

Our primary emphasis has been developing a more novice-friendly user interface as well as bulk importing of large datasets. In 2012, we will make great improvements to our pesticide fate and transfer modeling, making PRiME risk outputs more sensitive to differences in crop type, weather, application methods and landscape features (e.g. soil type, the presence of sensitive sites and the use of conservation practices).

The PRiME team will continue its efforts with funding from USDA National Institute of Food and Agriculture (NIFA) and Great Lakes Protection Fund (GLPF), as well as support from PRiME users. Following recent user interface improvements, we are now preparing for a more user-oriented marketing campaign, striving to support ongoing maintenance through nominal user fees.

**Northeast Eco Apple** (<http://www.redtomato.org/ecoapple.php>) – Red Tomato began the Eco Apple Project in 2005, offering third party certification to New England orchards to verify their use of IPM and other ecologically sensitive production practices. Growers use the certification to differentiate Eco Apples in the market and gain a premium for their fruit. We continue our

partnership with Red Tomato on this project, providing scientific and technical expertise on IPM practices. We updated the production protocol to include approval of, or restrictions on, newly released products. This year the program added 11 new participants for a total of 22 growers and 1,025 enrolled acres. Seventeen of these growers and 798 acres were certified. To date, 2011 Eco Apple sales totaled \$1.2 million to regional wholesalers, supermarkets and direct consumers. We also established a “Transitional Status” for growers interested in becoming Eco Apple producers, but who still need additional experience working with the protocol.

2011 marked the second year of stone fruit grower certifications under an eco protocol. Using the Eco Apple Protocol and self assessment format, this protocol identifies best management practices for IPM in stone fruits, including peaches, nectarines, apricots and plums. This year the program certified three growers and 84.25 acres.

### **North Central NRCS and IPM Working Group: Growers Incentives for IPM**

([www.ipm.msu.edu/work-group/home.htm](http://www.ipm.msu.edu/work-group/home.htm)) – The Working Group secured renewal funding beginning March 2011. We continue updates each month to the Working Group website with call minutes, information on the Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) and pertinent state and regional resources on agricultural IPM.

With funding through the Southern IPM Center Critical and Emerging Needs Grant program, the Group collaborated with the University of Florida and Glades Crop Care to organize a two-day workshop with Florida NRCS, Extension, IPM Consultants and growers to increase awareness of opportunities for IPM through NRCS conservation programs in July 2011. The group will also conduct a field day for NRCS in May 2012.

This year the Working Group began development of an IPM practitioner exam for crop advisors with funding through the North Central IPM Center (NCIPMC) Mini-grant Program. Thirteen IPM experts from industry, Extension, EPA, USDA NRCS and NIFA participated in a two-day comprehensive session to establish and set the groundwork for the proper infrastructure, exam components and performance objectives in September 2011. This project has a strong partnership with the National Alliance of Independent Crop Consultants (NAICC) and will be piloted during their annual meeting in 2012. The NAICC has agreed to recognize this exam as part of the criteria toward their Certified Professional Crop Consultant (CPCC) credential, which is recognized by the USDA NRCS to become a Technical Service Provider. In fall 2011 we secured additional funds from the NCIPMC and submitted a proposal to the Western IPM Center competitive grants program to build support for the project in the west.

To date the working group has secured an additional \$22,500 from the North Central and Southern IPM Centers for NRCS & IPM Working Group outreach efforts in 2011 and 2012. In 2012 working group outreach will continue to focus on further development of the exam, performance objectives and study resources for the IPM practitioner exam project and will focus on needed outreach to educate growers, consultants and Extension on significant changes to USDA NRCS programs which support grower adoption of IPM.

**Apple IPM Program** – IPM Institute continues to offer pest scouting services and technical assistance to apple growers throughout southern Wisconsin and eastern Minnesota. This marks the third year of the Apple Pest-Scouting program, with 15 growers and 874 acres of apples enrolled. The program is financially self-sustaining and generated no program losses the last two years. Scouting reports from each weekly or bi-weekly visit documented: insects, diseases and beneficial insects present, pesticides used and other items of concern to the grower. Growers also relied on the pest scout's knowledge to help understand pest lifecycles, pest thresholds and how to use degree days to predict pest threat levels and time treatments.

**True Earth Certified** -- In 2011 IPM Institute expanded this market-based IPM certification program with funding received through the EPA Strategic Agricultural Initiative (SAI) for the project "Tree Fruit IPM Grower Network Expansion & High-level IPM Certification." This funding supports work with our Apple IPM Program to help growers increase their level of IPM adoption and establish an IPM certification program in collaboration with a regional packer of the upper-Midwest apple crop. Participating growers receive scouting assistance and training on tree fruit IPM strategies with off-season grower meetings, in-season scouting assistance and training on PRiME. Growers who meet advanced IPM criteria established through the use of the Red Tomato Eco Apple Protocol may also be certified under the TruEarth Certified program through Wescott Agri Products. We certified six growers and 450 acres of apples this year.

**Wisconsin NRCS Environmental Quality Incentives Program 595 TSP Services**— In 2011 we increased our role in the preparation, review and submittal of USDA NRCS Environmental Quality Incentives Program (EQIP) 595 plans for orchards in Wisconsin. We provided assistance to John Aue of Threshold IPM Services and Jason Fischbach of Bayfield County Agricultural Extension to complete and submit contracted plans and reports for thirteen growers on 295 acres.

**Sysco Sustainable Agriculture/IPM Initiative** – We continue to work with Sysco to facilitate adoption of IPM and other sustainable practices among their fruit and vegetable producers. Over 81 suppliers are currently involved in Sysco's Sustainable Ag/IPM program, representing more than 4,000 growers of agricultural products worldwide. The IPM Institute evaluates suppliers' Sustainability/IPM programs on an ongoing basis and provides recommendations for improvement. In January of 2011, we assisted Sysco staff in coordinating their bi-annual Sustainable Ag/IPM Conference and Training for suppliers, growers, auditing agencies and other interested parties. The 2011 conference was a success, with 100% of conference survey respondents reporting they would attend again.

### **Seventh International IPM Symposium, March 27-29, 2012**

([www.ipmcenters.org/ipmsymposium12](http://www.ipmcenters.org/ipmsymposium12)) – The 7th International IPM Symposium will be held in Memphis, Tennessee, focusing on "IPM on the World Stage: Solutions to Global Pest Challenges." The program for the event includes eight plenary speakers with international impact, over 95 hours of concurrent oral presentations, two evenings of poster sessions, an awards banquet, IPM-related tours and numerous networking sessions. The planning committee has conducted extensive outreach through traditional venues such as press releases to media centers, as well as through social media including Facebook, Twitter and LinkedIn. Fundraising has been a challenge in 2011, but the planning committee has secured \$65,000 in support as of December 2011. Margaret Appleby, Ontario Ministry of Agriculture, Food and Rural Affairs;

Jill Schroeder, weed scientist with New Mexico State University; Rubella Govindasamy with North Dakota State University and Thomas Green are co-chairs.

**McDonald's Potato IPM Project** – In 2011, we continued work with McDonald's staff and major potato suppliers in the implementation of an online survey for growers to report their pesticide use and best practice adoption. The survey was tested among suppliers and growers, and we are currently working with McDonald's and others to refine and clarify survey questions based on 2010 results and user feedback.

**Boulder IPM Program** - IPM Institute, in collaboration with PRI and Osborne Organics, continued work with the City of Boulder to evaluate and propose improvements to their existing IPM program. Project team members are working to finalize a formal report to the City. This review was commissioned in the fall of 2010 and key findings show a significant reduction in pesticide use since implementation of the original IPM plan in 1993.

**Great Lakes Protection Fund (GLPF)** – Led by the Sandusky River Watershed Coalition and in collaboration with American Farmland Trust and Heidelberg University, IPM Institute secured funding from GLPF in 2010 to build on and use tools developed as part of a larger effort to reduce nutrient and sediment losses from US corn acres including projects targeting the Mississippi River Basin and Chesapeake Bay Watersheds. With leveraged funding from Ohio NRCS, we also worked with Agren and Heidelberg University to initiate outreach to absentee landowners in the Sandusky River Watershed on dissolved phosphorus challenges and solutions, and Soil and Water Assessment Tool (SWAT) analysis for farmers. We aim to enlist 80 to 100 farmers in this watershed in the next year to implement best practices for reduced phosphorus losses (see **Appendix F**).

**BMP CHALLENGE Performance Guarantee Program ([www.bmpchallenge.org](http://www.bmpchallenge.org))** – Operated by Agflex in collaboration with American Farmland Trust, the IPM Institute and others, the BMP CHALLENGE offers a risk free yield guarantee to corn producers in 18 states. The program works with farmers to reduce nutrient and sediment outputs to local waterways while offering a financial safety net in case of profit loss. In 2011, Agflex worked with American Farmland Trust through funding provided by the Pennsylvania Department of Environmental Protection and others, to produce a report that analyzed the results of the Planned Nitrogen Reduction pilot project, and studied the long-term effectiveness of nitrogen management performance guarantees and the feasibility of scaling-up to a state level. Additionally, the IPM Institute received a \$60,000 Conservation Innovation Grant for conservation agriculture work in Ohio, and Agflex received \$25,435 from American Farmland Trust for coordinating the BMP CHALLENGE program for sweet corn farmers in Suffolk County, New York. The BMP CHALLENGE program continues to develop through program additions including split nitrogen fertilizer applications in Illinois, and a guarantee program for tomatoes in California.

## **OTHER ACTIVITIES**

We continue to respond to unsolicited inquiries per week from pest management professionals, parents, school administrators and media about IPM and pest-related issues. We keep our

website content current with IPM-related news, job listings and resource links. Currently hits to the website average nearly 1942 per month.

In addition, we:

- Participated on the US EPA Pesticide Policy Dialogue Committee, a formal stakeholder body managed by the Office of Pesticide Programs to provide input to EPA on plans and progress on pesticide issues. This committee meets twice annually for two days each.
- Served on the board of directors for the Entomological Foundation, which seeks to engage and sustain interest of school-aged children in science and insects. The Foundation seeks to establish an Educational Fund to distribute grants which help fund new programs, projects and services, as well as to expand the reach of the Foundation's programs and services. <http://entfdn.org>
- Reviewed and updated our employees loaded labor rates for charging staff time to grant and contract-funded projects. This rate allows us to recover all direct costs of having an individual perform tasks including salary, benefits, equipment and administrative support.
- Renewed health insurance benefits for our staff, providing for 60% of the cost of individual coverage. Employees pay for the other 40% and 100% of costs for coverage of other family members.
- Developed a plan to reinvigorate The IPM Institute quarterly newsletter *IPM In The Marketplace*, with a goal of increasing Institute membership and contributions from individual donors. The next issue of the IPM Institute newsletter will be circulated in January 2012.

## 6. 2011 PRESENTATIONS

Don't Let Your IPM Program Go Down the Drain; Taking Your IPM Program to a Higher Level. Texas IPM Coordinators Annual Meeting. San Marco, TX. T. Green

Identify, Clarify, Speak Out: Turning Young People onto Science Through Insects and Ensuring a Future for Entomology. Program Symposium, Entomological Society of America Annual Meeting. Reno, NV. T. Green

Effective Pest Management in Schools. Midwest Facility Masters Conference. Wisconsin Dells, WI. T. Green

IPM in Schools: Challenges, Opportunities and Implications for IPM in Agriculture; IPM in the Marketplace: What do Walmart, McDonald's and Sysco have to do with IPM?; Pesticide Risk Mitigation Engine: A Farmer-Friendly Online Tool for Field-Specific Risk Assessment and

Mitigation. Organization for Economic Cooperation and Development IPM Conference. Berlin, Germany. T. Green

IPM Specialty Certification. Certified Crop Advisor Program Directors Meeting. Charleston, SC. T. Green

Harnessing Marketplace Power to Improve Health, Environment and Economics. National Supermarket Chain Markets Executive Committee Meeting. Boston, MA. T. Green

Experiences with IPM and EQIP in North Central States; Options in Florida for IPM in NRCS Conservation Programs. Florida Small Farms and Alternative Enterprises Conference. Kissimmee, FL. T. Green and P. Werts

Opportunities for Agriculture to Address Resource Management Challenges in the Sandusky River Watershed. Galion and Mansfield, OH. T. Green

Protecting Children in Schools and Outdoor Environments. Promoting Community IPM for Preventing Tick-Borne Diseases, US EPA. Washington DC. T. Green

Feasibility of Financial Safety Net for Farmers to Deliver Substantial Gains in Conservation Adoption. Soil and Water Conservation Society Annual Meeting. Washington DC. T. Green

Establishing IPM Policies and Practices. Federal Green Challenge Webinar, US EPA. T. Green

IPM in the Marketplace: Buzz, Battles, Beef and Implications for the Future of IPM in the Public Sector. Dept. of Entomology, University of Wisconsin. Madison, WI. T. Green

Bed Bugs: IPM in Schools. Second National Bed Bug Summit, US EPA. Washington, DC. T. Green

Cost-Effective Adoption of Best Management Practices and the BMP CHALLENGE. Land Grant and Sea Grant National Water Conference, Washington, DC. T. Green

595 IPM Standard, Conservation Activity Plans. Midwest Course for Fruit IPM Coaches/Consultants. Madison, WI. T. Green and P. Werts

Sysco Sustainable Agriculture/IPM Conference. USDA NRCS IPM Conservation Activity Plans and PRiME: Opportunities for Evaluating and Improving your IPM Programs; Audit: Minimum Standards; Audit: Product-Specific Standards. Houston, TX. T. Green

Healthy Hospitals: Managing Facilities Without Toxic Pesticides Through Integrated Pest Management & Organic Land Care. Green Operations Series, Practice Greenhealth Webinars. T. Green

The Natural Resources Conservation Service Environmental Quality Incentives Program: An Opportunity for IPM. Minnesota Apple Growers Association Annual Meeting and trade Show. La Crosse, WI. P. Werts

The Natural Resources Conservation Service Environmental Quality Incentives Program: An Opportunity for IPM. Minnesota Fruit and Vegetable Growers Association Annual Meeting and trade Show. St. Cloud, MN. P. Werts

NRCS & IPM: Experiences in Expanding Grower Access to NRCS Programs for IPM in the North Central Region. Lincoln University In-Service IPM Training. Jefferson City, MO. P. Werts

Trap Placement and Monitoring Strategies for Apple Maggot and Codling Moth. Wisconsin Apple Growers Association Summer Field Day. Trempealeau, WI. P. Werts

IPM CAPS: An Opportunity for Wisconsin Farmers. Wisconsin State Technical Committee Meeting, Wisconsin NRCS State Headquarters. Madison, WI. P. Werts

### 3. 2011 PUBLICATIONS

Green, T.A., S. Kegly, C. Osborne and V. Kalkirtz. *Moving IPM Forward in the City of Boulder*. Report submitted to the City Council. 142 pp.

Green, T.A., J. Cubie, R. Ressler, M. Anderson, J. Baird, B. Brandt, J. McCarthy, M. Kieser and J. Gilbert. 2011. *Nitrogen Management Performance Guarantee System for Corn Producers in Pennsylvania: Feasibility to Improve Water Quality in the Chesapeake*. Report submitted to Pennsylvania Dept. of Environmental Protection. 56 pp.

Chambers, K., T. Green, D. Gouge, J. Hurley, T. Stock, Z. Bruns, M. Shour, C. Foss, F. Graham, K. Murray, L. Braband, S. Glick and M. Anderson. 2011. *The Business Case for Integrated Pest Management in Schools: Cutting Costs and Increasing Benefits*. 8 pp.  
[http://www.ipminstitute.org/school\\_ipm\\_2015/ipm\\_business\\_case.pdf](http://www.ipminstitute.org/school_ipm_2015/ipm_business_case.pdf)

Chambers, K., D. Gouge, T. Green, J. Hurley, T. Stock, Z. Bruns, M. Shour, C. Foss, F. Graham, K. Murray and S. Glick. 2011. *Coalition Operating Manual*. 6pp.  
[http://www.ipminstitute.org/school\\_ipm\\_2015/IPM\\_coalition\\_manual.pdf](http://www.ipminstitute.org/school_ipm_2015/IPM_coalition_manual.pdf)

Gouge, D., T. Green, K. Chambers, J. Hurley, T. Stock, M. Shour, C. Foss, L. Braband, F. Graham, K. Murray, S. Glick, Z. Bruns and M. Anderson. 2011. *Reducing Your Child's Asthma Using Integrated Pest Management: A Practical Guide for Parents Around the Home*. National School IPM Steering Committee. 4 pp.  
[http://www.ipminstitute.org/school\\_ipm\\_2015/ipm\\_asthma\\_document.pdf](http://www.ipminstitute.org/school_ipm_2015/ipm_asthma_document.pdf)

Green, T. 2011. Putting P in its place. *Ohio Farmer*. Nov. P 62. (**Appendix F**)

Green, T.A. January 2011. NRCS seeks to renew its TSP program by engaging more private-sector consultants. *Crops and Soils* 44(1):18-19.

#### **4. 2011 FUNDING OBTAINED**

##### **Grants**

University of Illinois, \$30,000 for cooperative pesticide recordkeeping program, evaluation and outreach for pesticide recordkeeping on tribal lands.

Ohio Natural Resources Conservation Service, \$60,000 for outreach to absentee landowners in the Sandusky River Watershed on dissolved phosphorus challenges and solutions, and SWAT analysis for farmers.

North Central IPM Center, \$30,000 renewal funding to increase adoption of IPM in schools of the North Central region.

North Central IPM Center, \$30,000 renewal funding to increase collaboration among NRCS and IPM professionals in the North Central region, in collaboration with Michigan State University.

North Central IPM Center, \$17,500, to develop a new certification option for IPM professionals in agriculture.

Southern IPM Center Critical and Emerging Needs Grant Program, \$5,000 to increase awareness of opportunities for IPM through NRCS Conservation Programs, in collaboration with University of Florida and Glades Crop Care

##### **Contracts**

Agflex, Inc. Contract for \$5,000 for bookkeeping and grants management services provided by Kelly Adams and Jodi Schmitz for the corn producer guarantee project.

Beyond Pesticides. Ongoing contract for evaluating health care facilities for use of IPM.

McDonald's. Ongoing contract to assist with potato IPM program.

Sysco. Ongoing contract to assist with implementation of Sysco Sustainable Agriculture/IPM initiative with supplier base.

Apple IPM Program. \$22,000 in contracts with Wisconsin and Minnesota apple orchards for pest scouting services.

Red Tomato. Contract for \$11,125 to provide technical assistance for the Northeast Eco Apple Certification program.

##### **Unsuccessful Proposals**

EPA School Integrated Pest Management Grant, submitted by the IPM Institute to implement a "Virtual Center of Excellence for School IPM" to deliver four tools to improve outcomes and accelerate adoption of high-level, verifiable IPM in all US Public Schools.

North Central Integrated Pest Management Critical Issues Grant for development of PRiME for field crops.

NRCS 2011 Conservation Innovation Grant, submitted by Red Tomato for an integrated market-based program to increase conservation adoption in specialty crops.

EPA Pesticide Registration Improvement Renewal Act (PRIA 2), submitted by Red Tomato to further develop the Eco Apple protocol and increase IPM adoption among fruit and vegetable producers in the Northeast.

**Pending**

Western IPM Center Competitive Grants Program, submitted by the IPM Institute to build support for and assist in the development of an IPM practitioner exam for pest management consultants in the Western Region.

North Central Risk Management Education Center 2012 Grants, submitted by the IPM Institute for outreach and guarantee payments to corn producers in Illinois to participate in the BMP CHALLENGE.

USDA National Institute of Food and Agriculture Grant Funds, submitted by the IPM Institute for travel to the 7<sup>th</sup> International IPM Symposium.

North Central IPM Center Grants Program, submitted by the IPM Institute to increase adoption of IPM in schools in the North Central region through the regional working group

North Central IPM Center Grants Program, submitted by the IPM Institute to increase collaboration among NRCS and IPM professionals in the North Central region through the regional working group, in collaboration with Michigan State University

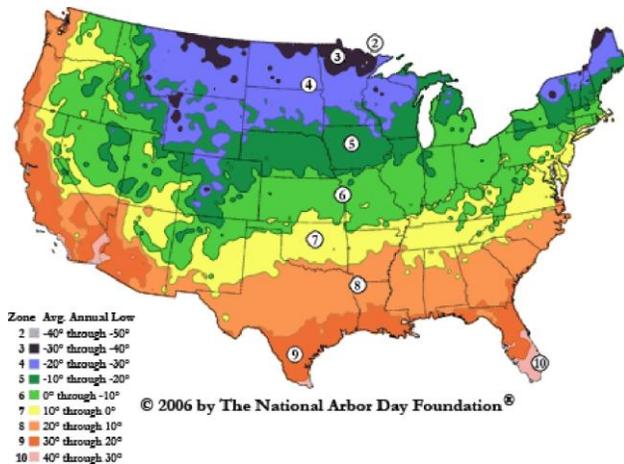
National Supermarket Chain Market Contract, submitted by IPM Institute to develop a sustainable agriculture/IPM initiative to their food products supply chain.

Natural Resources Defense Council Contract, submitted by the IPM Institute for development of a white paper on working with food companies to reduce pesticide risks to farm workers.

# Overseeding Turf in Northern Regions

Pest Press

March 2013



The U.S. is divided into regions to help growers determine which plants will thrive in their location. For the purposes of this document, the northern region includes zones 2-6, or everything in purple, blue and green on the map.

Overseeding, or adding grass seed to established turf, can improve the health and attractiveness of lawns and the playability of athletic fields. Overseeding also promotes thick turf that outcompetes perennial broadleaf weeds and eliminates bare spots where weeds can gain a foothold, reducing reliance on herbicides.

## Assess your turf first

The two most important variables to evaluate before overseeding are the density, or the number of grass plants growing in a square foot, and the level of soil compaction. No bare ground should be visible in turfgrass areas, although natural density will vary by grass type. Turf varieties with a lower density and coarser leaf texture can require a higher mowing height and more regular overseeding to produce better quality turf. Additionally, some varieties such as fescue do not produce runners, and will greatly benefit from periodic overseeding.

Soil compaction is an ongoing challenge in athletic fields. Compaction occurs when air around soil particles, called pore space, is squeezed out. Overseeding a field that is compacted will have little or no long-term benefit; there is simply no room for new turf roots to grow. Compaction can be alleviated mechanically by core aeration, solid tine aeration or slicing to create air space. Over time,

compost top dressing, organic slow-release fertilizers and aggressive overseeding will build soil organic matter and biomass including roots and beneficial organisms such as earthworms, improving resistance to compaction.

Other problems that should be addressed prior to overseeding to ensure seedlings germinate and remain healthy are poor drainage, insufficient or excess water, poor soil fertility and excess thatch. Be sure to note where turf is doing poorly and consider sun and shade. Grasses that need full sun may not thrive in shade and shade-tolerant varieties may wilt in too much sun. In a non-athletic field situation, keep in mind that tree roots compete with grass roots for water and nutrients. Grass planted around trees may have a harder time becoming established and alternative ground covers should be considered if so. The right plant in the right place is the rule for turf and other plants.



Overseeding, proper watering, and avoiding compaction results in thick, healthy root systems and few weeds. Photo courtesy of Chip Osborne.

## Timing

In northern regions of the US, the fall is the best time to grow grass. The genetics of cool-season turf grasses are such that shorter, cooler days in fall are ideal for seeding and establishment. If an herbicide is to be used, delay treatment for four to six weeks after the new grass seed germinates. Herbicides can be harsh on seedlings and can be a major cause of poor seedling establishment.

## Choose the right variety

Seed choice is largely determined by climate. Western, northern and eastern areas of the US generally need cool season grasses such as Kentucky bluegrass, perennial ryegrass and fine and tall fescues. In these regions, bentgrass is preferable for golf courses and tennis and croquet courts.

Purchase good quality seed native to your area whenever possible. Mixtures of two or more species of grass can help reduce losses in the event of disease. Check the label to avoid buying seed with a high percentage of weed seeds. Consider purchasing a higher quality seed mixture, as cheaper mixtures typically contain a higher percentage of weed seeds. Look at national and local turf trial results, which should be available for most seed species and cultivars.

## Proper watering essential

The most important factor for seed germination is seed to soil contact. A heavy watering immediately after seeding will help achieve this contact. Then water lightly on a daily basis until the grass seed germinates, which generally takes ten to 20 days. After germination, water grass less frequently and let water soak more deeply to encourage deeper root growth. Grass establishment will take three to six weeks. After the seedlings become established, water at the recommended level for the type of grass used.

## Overseeding technique

Before seeding, rake and dethatch the turf if necessary. Then, simply broadcast the seed by hand or with a spreader, or use a "slit seeder" which opens a small furrow in established turf by cutting through the thatch layer. Slit seeding offers better seed to soil contact, so less seed may be needed

than with broadcast seeding. To avoid a striped appearance where new grass grows, consider making two passes, each at 50 percent of the recommended rate, and at 45 degree angles to each other. This diamond pattern will more evenly distribute the new seed over the turf area.



If you broadcast seed, aerate the turf several times before seeding to expose more soil. Core aerating tines that remove soil plugs are best. After seeding, water heavily right away to help settle seeds stuck in the thatch layer and avoid growth only in aeration holes, which results in a spotted appearance. Another way to avoid this spotted look is to choose grass varieties such as Kentucky bluegrass, which has a creeping growing habit that can deter clumping.

For either seeding method, plan on using about five pounds of seed for every 1,000 square feet of turf.

Regardless of how you overseed, keep records of your pre-assessment, the methods you use and your results. Those records will be invaluable to help you learn what works best for your climate and sites.

Pest Press Produced By:

Jodi Schmitz, Dr. Thomas Green and Caitlin Seifert, IPM Institute of North America, Inc.

Special thanks to Chip Osborne, founder and president of Osborne Organics, LLC, and the National School IPM Steering Committee for reviewing this document.

For more information about the School IPM 2015 initiative, visit [www.schoolipm2015.com](http://www.schoolipm2015.com).

## MAINTENANCE & OPERATIONS | JODI SCHMITZ, THOMAS GREEN AND ZACH BRUNS

# Building Out Pests of Interior Spaces

DESIGNING WITH SOME FORETHOUGHT CAN KEEP YOU FROM BEING BUGGED BY PESTS.

**P**ESTS ARE MORE THAN ANNUISANCE. FLIES CARRY staph, E. coli and salmonella and can be feeding on feces and garbage one minute, and resting on food and food prep surfaces the next. Exposure to cockroaches can cause asthma and trigger asthma attacks. They also carry germs that can cause pneumonia, diarrhea and food poisoning. Rodents transmit hantavirus, typhus and SARS, and can chew on electrical wiring, causing shorts and fires. No school should put up with these pests, or unnecessary pesticide use.

Designing, maintaining and operating school buildings and grounds with a focus on pest prevention pays off in fewer pest complaints — up to 90 percent fewer — and less pesticide use. This article focuses on pest proofing in kitchens and cafeterias, classrooms and other interior spaces in new construction and existing school buildings.

### Well Designed Contributes to Pest Free

Kitchens provide a particular challenge to pest management with many opportunities for pests to access food, water and harborage, the elements they need to survive and thrive. To discourage pests, flooring in food service areas should be durable and easy to clean. Traditional ceramic tile floors have a tendency to crack and deteriorate over time, allowing water and organic material to penetrate and attract pests. Epoxy finishes and sealed concrete floors are growing in popularity and, if maintained properly, do not provide harborage for pests.

Failure to plan enough storage space leads to unnecessary clutter and items being stored on the floor and stacked against walls. Dr. Michael Merchant, professor and extension urban entomologist at Texas AgriLife Extension Service, recommends space-efficient stainless steel shelving on wheels and 12 to 18 inches of clearance under all shelves to allow for inspection and cleaning. Wire-rack shelving prevents food particles and other debris from collecting on shelves.

Dry floor drains are an open invitation for pests to enter your facility, especially American cockroaches and rodents. Ensuring that traps in infrequently used drains are filled with water can prevent pest entry. Mineral oil can also be added to slow evaporation. Alternatively, rubber trap guards can be used to seal infrequently used drains, while allowing water to pass through when the drain is needed. All drains should be located in accessible places, with

easily removed covers, so they can be inspected and cleaned properly.

### Sealing Out Pests

Suspended ceilings, which leave space above for ductwork or wiring, “can become super-highways for rodents,” says Dr. Chris Geiger, municipal toxics reduction coordinator for the San Francisco Department of the Environment. All penetrations for ducts, wires or pipes in these and other areas should be sealed to prevent rodents from traveling easily from one part of the building to another, using fire-stop sealant where recommended or required.

According to Geiger, “To facilitate easy inspections, plumbing and electrical areas of the building should be designed with easy access in mind.” Leaking pipes provide a source of water for pests including mold. Mechanical, electrical and information technology rooms or closets generally have penetrations that may require inspection and maintenance, and also often contain heat sources that are attractive to pests.

Cockroaches are thigmotactic, meaning they prefer to rest where surfaces touch both the top and bottom of their bodies. This makes crevices behind bulletin boards, paper towel dispensers, mirrors and even paper announcements tacked to the wall good hiding places. These are especially attractive to roaches when they are located in kitchens, which can also provide convenient food and water sources. Permanent wall-mounted fixtures should be sealed around the edges. Papers should be taped all the way around the edges to prevent cockroaches from getting underneath.

Remember that even with initial pest-proofing or building renovations, school facility managers should conduct a thorough walk-through annually to check for cracks and crevices, broken door sweeps, moisture and mold growth, termite tunnels and bird roosts. Although a contracted PMP may be providing regular updates, school staff should also conduct their own evaluation as part of their oversight. A written IPM inspection checklist can be used for periodic inspections, listing each area to be inspected and providing a space to note needed repairs. Geiger summarizes, “It all boils down to food, water, harborage and access. If you can minimize those things, you’re making good progress towards an effective IPM program.” <sup>92</sup>

» For more information on school IPM, visit [www.schoolipm2015.com](http://www.schoolipm2015.com). To subscribe to the FREE monthly School IPM 2015 eNewsletter, please send your name and contact information to [newsletter@schoolipm2015.com](mailto:newsletter@schoolipm2015.com).

# IPM Tactics for Managing Feral Cats

Pest Press

September 2012

Feral cats can be more than just a nuisance. Cat feces and cat scratches or bites can result in bacterial infections or illness.<sup>5</sup> Rabies, ringworm, tapeworms and toxoplasmosis can be transmitted from cats to humans. Cats can also kill birds and small mammals. A University of Georgia study led by Kerrie Anne Loyd, a doctoral candidate at UGA's Warnell School of Forestry, found that 30% of roaming house cats kill prey—two per week on average.<sup>6</sup> When they move on, feral cats often leave fleas behind.

Domestic cats are classified as indoor, limited-range, free-range or feral. According to the American Veterinary Medical Association (AVMA), feral cats are born outside and are never socialized in the first 24 weeks of their lives.

## Habitat Modification

Habitat modification involves changing the landscape to reduce the availability of food, water and shelter available to feral cats inhabiting an area.<sup>3</sup> If cats are removed from an area without eliminating these necessities, they are likely to return.

*"A colony of feral cats on a school campus should not be tolerated, from the human health perspective alone. The school board and administration needs to be solidly behind this."*

*- Lynn Braband, NYS Community IPM Program of Cornell University*

- Fix leaky pipes and downspouts that can lead to pooling water.
- Secure dumpster and garbage can lids. Place trash in enclosed areas to exclude cats.
- Remove bird feeders or place them at least ten feet from anything cats can hide under.
- Educate staff about not providing food and water for feral cats. Consider prohibiting staff from feeding wildlife including feral cats.
- Ensure students know these cats are not pets, and can be aggressive and carry diseases.

## Exclusion

Remove lumber, unused equipment and debris that might provide shelter. Seal holes in buildings. Use fencing or netting to keep cats from getting under buildings. Use one-quarter-inch mesh screen to block vents and other entry points into structures. "Rat walls," L-shaped mesh screens partially buried to discourage digging, can be attached to foundations or decks.<sup>7</sup> Install well-fitted skirts around portable classrooms. Cat spikes can be used on ledges to discourage perching. Perimeter fencing should be six feet tall with a rounded overhang to prevent climbing.



## Trapping

Only experienced professionals should trap cats. If you choose to move feral cats, work with a shelter or local rescue organization. Releasing cats elsewhere may be illegal, and cats can return or become trap shy, making it more difficult to catch them again. Cage-type traps can include a single or double door and should be at least 30 inches long. Ensure that traps have a wide handle guard to protect the handler during transport. Set enough traps to catch every cat in the immediate area. Place traps out of sight in locations where cats feel safe. Consider pre-baiting traps with the doors wired open for a few days to acclimate cats. Dry cat food, tuna, mackerel and sardines in oil make good baits. Trappers should be aware that skunks often enter cat traps.

## Fertility Control

The Humane Society of the United States advocates Trap-Neuter-Return (TNR), in which feral cats are trapped, spayed or neutered, vaccinated against rabies and returned to their original territory.<sup>2</sup> Costs to neuter and vaccinate can be upwards of \$100; some organizations reduce fees for feral cats. Models estimate that more than 70 percent of a feral cat population must be spayed or neutered before the population will decline.<sup>3</sup> TNR programs are not desirable for school grounds. Feral cats pose a health risk and should not live there.<sup>5</sup> TNR does not address disease and predation.

## Repellents and Chemicals

US EPA has registered several products for repelling house cats but they have not been proven effective against feral cats. Most are applied on the ground and emit an odor. Repellents are designed for use on a micro level, such as around a small garden, making their use on a school campus impractical.<sup>5</sup>

Additionally, some locations may be so attractive to cats that they will disregard repellents. Special care should be taken when applying any chemicals around

sensitive school environments. There are no toxicants or poisons labeled for use on cats, making their use illegal.

## Frightening Devices

Most frightening devices have been ineffective at consistently keeping cats away.<sup>3</sup> One option is motion-activated sprinklers, which spray cats when they walk in front of a sensor. Of course, these can only be deployed in areas free of student and staff traffic.

## Euthanasia

Feral cat euthanasia is an emotionally charged, highly debated issue. AVMA accepts several methods of euthanasia for feral cats. Euthanasia should always be performed by a veterinarian or other trained professional.<sup>1</sup> Schools should work with their pest management provider, local humane society or animal control agency to determine the best course of action.

## IPM Plans for Feral Cats

The Armed Forces Pest Management Board created an IPM policy for stray animals on military installations, which can be modified for use in schools.<sup>4</sup> Schools can also include a section in their IPM plan on feral cats.

Pest Press Produced By: Jodi Schmitz and Dr. Thomas Green, IPM Institute of North America, Inc. Special thanks to the National School IPM Steering Committee for reviewing this document. For more information about the School IPM 2015 initiative, visit [www.schoolipm2015.com](http://www.schoolipm2015.com).

### References:

1. *Animal Handling, Euthanasia and Disposal Information*. Retrieved August 8, 2012 from Internet Center for Wildlife Damage Management website, [www.icwdm.org/wildlife/euthanasia/default.aspx](http://www.icwdm.org/wildlife/euthanasia/default.aspx).
2. *Feral Cats: Frequently Asked Questions*. Retrieved August 6, 2012 from Humane Society of the United States website, <http://www.ianrpubs.unl.edu/epublic/live/ec1781/build/ec1781.pdf>.
3. Hildreth, A.M., S.M. Vantassel, and S.E. Hygnstrom. (2010). *Feral Cats and Their Management*. University of Nebraska-Lincoln Extension. Retrieved from <http://www.ianrpubs.unl.edu/epublic/live/ec1781/build/ec1781.pdf>.
4. Information Services Division, Armed Forces Pest Management Board. (2012). *Integrated Management of Stray Animals on Military Installations*. Retrieved from Armed Forces Pest Management Board website, [www.afpmb.org/sites/default/files/pubs/techguides/tg37.pdf](http://www.afpmb.org/sites/default/files/pubs/techguides/tg37.pdf).
5. Interview with Lynn Braband, community IPM extension area educator, NYS Community IPM Program of Cornell University.
6. Loyd, Kerrie Anne. (2012). *The KittyCams project: A window into the world of free-roaming cats*. (Doctoral dissertation, University of Georgia). Video presentation of research project available at [www.kittycams.uga.edu/research.html](http://www.kittycams.uga.edu/research.html).
7. NYS Department of Environmental Conservation and Cornell University. (2004). *Best practices for nuisance wildlife control operators*. Retrieved from [www.nwco.net](http://www.nwco.net).

## Appendix F.

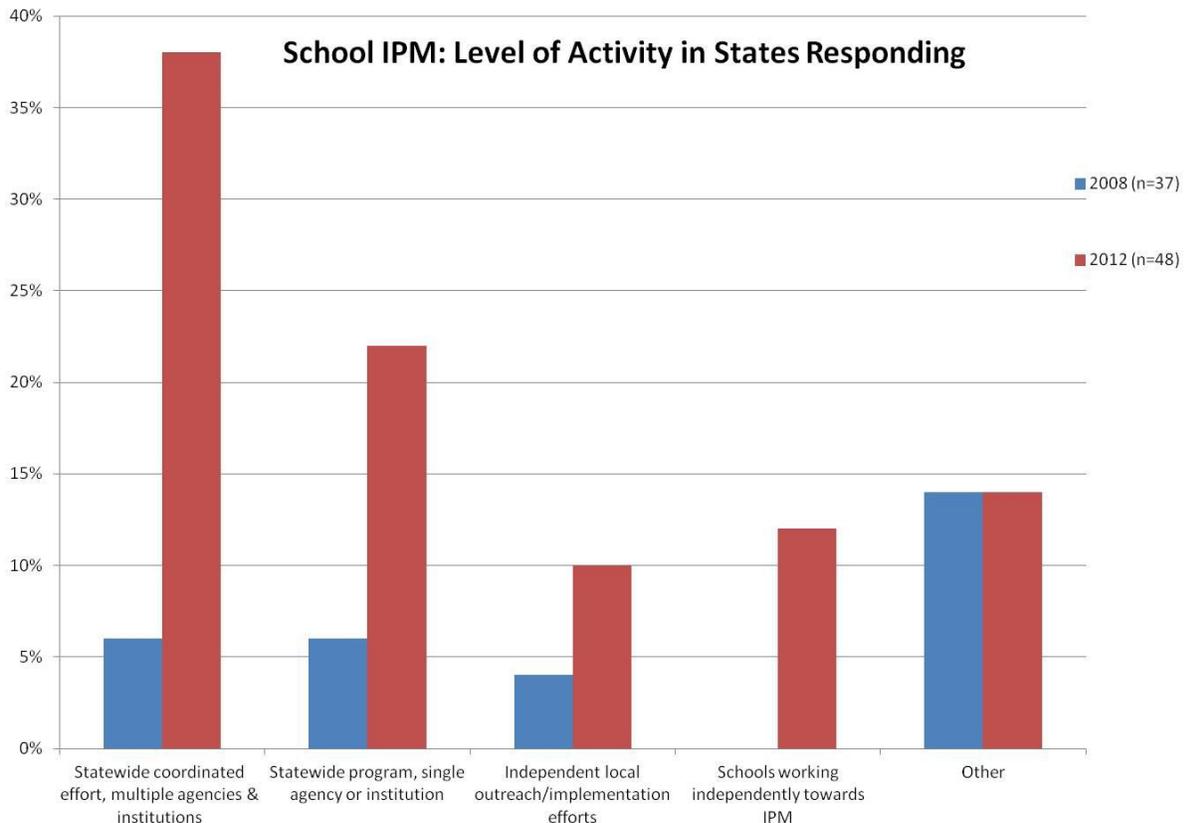
### US School IPM “Report Cards” Show Progress

In 2006, a national school IPM working group was formed to coordinate and accelerate school IPM adoption in US public schools. Since then, over \$4.4 million has been leveraged from the US Environmental Protection Agency (EPA), four regional USDA IPM Centers, USDA National Institute for Food and Agriculture, the US Department of Health and Human Services Centers for Disease Control and Prevention (CDC), state lead agencies and others to support school IPM. The North Central IPM Center has funded the North Central Region School IPM Working Group since 2006, and has also funded several special projects including school district surveys in our region.

School IPM demonstrations and regional school district coalitions have impacted over 4.5 million students and 400,000 staff. The national working group, composed of four regional working groups and coordinated by a steering committee, has grown to more than 240 members.

In 2008, the Working Group distributed a survey to knowledgeable leaders in each state who could best report on the status of school IPM in their state. This year, with support from a 2010 US EPA Pesticide Registration Improvement Renewal Act (PRIA 2) grant, a follow-up online survey was completed. Thanks to the efforts of the many state leaders, results were obtained from 37 states in 2008 and 49 states in 2012. Results show progress for school IPM implementation in the last four years, including:

- States reporting a statewide, coordinated IPM effort with multiple agencies and institutions engaged jumped from five in 2008 (10% of respondents) to 21 in 2012 (42% of respondents).



## Appendix F.

- The number of school staff who attended IPM trainings was more than three times higher in 2012 than 2008. Additionally, the number of school districts that provided internal IPM training programs increased from 44 in 2008 to 906 in 2012.
- States reported an average of eight different types of IPM communications (e.g. newsletters, listservs, webinars) distributed to school districts in 2008, increasing to an average of 21 in 2012. This amounted to a total of 165 communications in 2008 and 737 in 2012. The total number of school districts receiving these communications also increased from 1,793 in 2008 to 3,530 in 2012.
- Nationally, public funding budgeted for school IPM increased from \$14,500 per state in 2008 to over \$33,000 per state in 2012.

The Working Group is also collecting responses on two additional surveys—a coalition survey and a school district survey. Coalition school districts will complete the survey as a training exercise, and update it periodically to gauge progress. The school district survey is intended to measure progress towards the goal of implementing IPM in all US public schools by 2015; it is being emailed to public school districts in partnership with leaders in each state. Results will be used to update the action plan in *School IPM 2015*, the pest management strategic plan for US schools. More information on the School IPM 2015 initiative can be found [here](#).