

II. NORTH CENTRAL IPM CENTER

II. A. Organization

II.A.1. Core structure and personnel

In 2003, Larry Olsen (25% time) and Mike Gray (8.3% time) served as co-directors of the North Central Integrated Pest Management (NC IPM) Center, Lynnae Jess served as Assistant Director (75% time) and as the Michigan State Contact (25% time), Susan Ratcliffe served as IPM Facilitator (50% time), Mike Greifenkamp served as Information Technologist (100% time) and Sandy Osterbur served as administrative assistant (25% time).

In 2004, Michigan State University increased Lynnae Jess' Assistant Director appointment to 100% when the IPM Coordinators assumed the responsibilities of the state contacts. The North Central Region IPM (NC RIPM) Grants Program was folded into the NC IPM Center.

In 2005, Susan Ratcliffe became a Co-Director assuming additional Center leadership roles, Larry Olsen reduced his commitment from 25% to 16.7% after accepting the Interim Extension Ag Program Leader role at Michigan State University and Pat Bills (16.7%) was added to the staff at Michigan State University to provide limited computer technical support, software training for programs and databases managed at Michigan State University, and prepare the competitive funded final reports for posting on our web site. Educational background and professional experience relevant to NC IPM Center activities and responsibilities are provided in abbreviated curriculum vitae for Mike Gray (Appendix 1), Larry Olsen (Appendix 2), Susan Ratcliffe (Appendix 3), Lynnae Jess (Appendix 4) and Mike Greifenkamp (Appendix 5).

Mike Gray, Co-Director (8.3% FY03, FY04, FY05) activities and products:

Grant Programs

- NC RIPM Grants Program (Panel Manager, FY03, FY04, FY05)
- PMAP Grant Program (Regional Coordination Manager FY04, FY05)
- NC IPM State Contacts Grant Program (FY03)
- NC IPM Implementation Grants Program (FY04)
- NC IPM Working Groups (FY04)

Regional or National IPM Related Activities

- 5th National IPM Symposium (Plenary Speaker FY05)
- eGrants
- National IPM Coordinating Committee
- NC IPM Center Steering Committee
- NCR-201 IPM Coordinating Committee
- NCR-046 Corn Rootworm Management Guide

Publications

- NC RIPM Grants Program Publication (Co-Editor FY03, FY05)
- The NC IPM Center Connections Newsletter (Co-Editor, 15 issues)
- Quarterly Updates (Contributor FY03, FY04, FY05)
- Will the USDA IPM Centers and the National IPM Roadmap Increase IPM Accountability? – Responses to the 2001 General Accounting Office Report (Co-Author; American Entomologist, Spring 2004)

National and Regional Training

- Corn Rootworm Management (9 states, 731 participants)

Center Related Presentations

- **Increasing IPM Adoption with IPM Centers: Mission Impossible?** Entomological Society of America Annual Meeting Section E Symposium 2004, Salt Lake City, Utah (Symposium Organizer and Moderator)

Larry Olsen, Co-Director (25% FY03, FY04; 16.7% FY05) activities and products:

Grant Programs

- Principle Investigator for the NC IPM Center Grant
- NC IPM State Contacts Grant Program (Subcontract Coordination FY03)

- NC IPM Implementation Grants Program (Subcontract Coordination FY04, FY05)
- NC IPM Working Groups Grants Program (Subcontract Coordination FY04, FY05);
- NC IPM Documents Grants Program (Subcontract Coordination FY05)

Regional or National IPM Related Activities

- NC IPM Working Groups Liaison (FY04, FY05)
- NC IPM Center Steering Committee
- National IPM Coordinating Committee
- Liaison to IR-4

Publications

- Quarterly Updates (Editor FY03, FY04, FY05)

National and Regional Training

- NC IPM Center EPA-BEAD

Center Related Presentations

- **Increasing IPM Adoption with IPM Centers: Mission Impossible? IPM Centers' Roles in IPM Adoption: A Director's Perspective**, Entomological Society of America Annual Meeting Section E Symposium 2004, Salt Lake City, Utah (Symposium Organizer and Presenter)
- **USDA/CSREES North Central Integrated Pest Management Center**. Regional IR-4 Liaisons Conference, Indianapolis, Indiana (2003)
- **North Central IPM Center: Goals, Objectives, Management and Grants**. NC IR-4 Regional Liaisons Conference. Wheaton, Illinois (2004)
- Lead Role for Occupational Exposure to Pesticides (eight presentations)

Susan Ratcliffe, Co-Director (50% FY05); NC IPM Facilitator (50% FY03, FY04) activities and products:

Grant Programs

- NC RIPM Grants Program (FY03, FY04, FY05)
- NC IPM State Contacts Grant Program (FY03)
- NC IPM Implementation Grants Program (FY04)
- NC IPM Working Groups Grant Program (FY04)

Regional or National IPM Related Activities

- 4th National IPM Symposium (Symposium Co-Chair, Local Arrangements Chair)
- 5th National IPM Symposium (Symposium Co-Chair, Program Co-Chair, Funding Raising Committee, Local Arrangements Committee, Site Selection Committee)
- Legume Pest Information Platform for Extension and Education (PIPE) Project
- National IPM Coordinating Committee
- *Diabrotica* Genetics Consortium
- eGrants
- NC IPM Center Steering Committee
- NCR-201 IPM Coordinating Committee
- Soybean Rust NC-504 Committee
- Insect Resistance Management Training Module Review
- NCR-046 Corn Rootworm Management Guide
- State and Federal Technical Science Working Group on Soybean Rust
- NC-193 Regional Publication IPM of Midwest Landscapes (Marketing and Distribution)
- Corn Rootworm Guarantee Program

Publications

- NC Region IPM Grants Program Publication (Co-Editor FY03, FY05)
- Will the USDA IPM Centers and the National IPM Roadmap Increase IPM Accountability? – Responses to the 2001 General Accounting Office Report (Co-Author: American Entomologist, Spring 2004)
- The North Central IPM Center Connections Newsletter (Co-Editor, 15 issues)
- Quarterly Updates (Contributor FY03, FY04, FY05)
- Regional and National Pest Alerts (1.25 million copies distributed)

National and Regional Training

- Soybean Rust: Issues and Facts (11 states, 100 sites)
- *Phytophthora ramorum* Educate to Detect (PRED) (40 states, 115 sites)
- Corn Rootworm Management (9 states, 731 participants)
- Pink Hibiscus Mealybug (25 states, 45 sites)
- Environmental Lawn Care and Landscaping Initiative (scheduled for May, 2006)
- Soybean Rust Scout before You Spray Video (1,000 copies distributed)
- Evaluation and Measurement Training Teleconference (scheduled for May, 2006)

Center Related Presentations

- **Keynote: USDA Centers: A Regional Approach to Agricultural Security.** Illinois Crop Protection Technology Conference, Urbana, Illinois (January 2003)
- **Western Corn Rootworm Genetics: The As & Ts and Cs & Gs.** North Central Branch ESA Meeting, Kansas City Missouri (2004)
- ***Diabrotica virgifera virgifera*: A Lesson in Evolution?** International *Diabrotica* Conference, Kansas City, Missouri (December 2004)
- **Pest Management and Plant Diagnostic Centers: How do They Relate to PSEP?** 2004 North Central Region Pesticide Education & Certification Workshop (June 2004)
- ***Phytophthora ramorum* Educate to Detect (PRED).** Northeast Regional Community and Urban Integrated Pest Management Conference, Manchester, New Hampshire (April 2005)
- **Increasing IPM Adoption with IPM Centers: Mission Impossible?" Increasing Accountability: Are IPM Centers the Solution?** Entomological Society of America Annual Meeting Section E Symposium 2004, Salt Lake City, Utah (Symposium Organizer and Presenter)
- **The National Plant Diagnostic Network and Regional IPM Centers: Differences and Collaborative Efforts.** ESA National Meeting, Program Symposium, The Role of the National Plant Diagnostic Network (NPDN) and Land Grant University Cooperative Extension Services in Promoting the Early Detection of Exotic Pests. Ft. Lauderdale, Florida (November 2005)
- **Addressing the Spread of *Phytophthora ramorum*.** New England Grows Conference, Boston, Massachusetts (February 2006)

Lynnae Jess, Assistant Director (75% FY03, 100% FY04, FY05) activities and products:

Grant Programs

- NC IPM State Contacts Grant Program (Subcontract Coordination FY03)
- NC IPM Implementation Grants Program (Subcontract Coordination FY04, FY05)
- NC IPM Center Working Groups (Subcontract Coordination FY04, FY05)
- NC IPM Center IPM Documents (Subcontract Coordination FY05)

Regional or National IPM Related Activities

- Coordination of EPA and CSREES FQPA requests for North Central Region
- Soybean Rust NC-504 Committee (Member and Chair of first meeting)
- Soybean Rust Conference Planning Committee
- State and Federal Technical Science Working Group on Soybean Rust
- National IPM Coordinating Committee
- NC IPM Center Steering Committee
- National IPM Center Technical Committee
- National Pest Management Strategic Plan (PMSP) Policy Subcommittee
- National IPM Indicators Workgroup

- IPM Center Grant Review (Northeast, Western and Southern)
- National Plant Disease Recovery System (NPDRS) Working Group (Potato Wart Recovery Plan)

Publications

- Pest Management Strategic Plans (Reviewer FY03, FY04, FY05)
- Crop Profiles (Reviewer FY03, FY04, FY05)
- Quarterly updates (Co-editor FY03, FY04, FY05)
- Midwest Small Fruit Spray Guide and Midwest Tree Fruit Spray Guide (Contributing Author)

National and Regional Training

- NC IPM Center EPA-BEAD
- Increasing Access to Conservation Funds
- Endangered species information for pesticide applicators (web coordination)
- Pest Management Considerations in Conservation Planning Course (FY04, FY05)

Center Related Presentations

- Pesticide Safety Education Program Poster, Pesticide Safety Education Program Annual Meeting, Hawaii (Presenter FY03)

Mike Greifenkamp, Information Technologist (100% FY03, FY04, FY05) activities and products:

Grant Programs

- North Central Region IPM Grants Program (eGrants Programmer FY04, FY05)
- North Central IPM Implementation Grants Program (eGrants Programmer FY04, FY05)

Regional or National IPM Related Activities

- eGrants
- 5th National IPM Symposium (Web and Programming Support)
- *Diabrotica* Genetics Consortium (Web and Programming Support)
- Soybean Rust Preparation Efforts (Web and Programming Support)
- Soybean Aphid Suction Trap Network (Web and Programming Support)
- National IPM Center Technical Committee (North Central representative)
- Web Site Conversion to New Format
- Web Site Management (FY04, FY05)
- Web Server Maintenance (FY04, FY05)
- Information Systems Maintenance (University of Illinois FY03, FY04, FY05)
- Corn Rootworm Management Guide (Web and Programming Support)

Publications

- The North Central IPM Center Connections newsletter (Layout and Design, 15 issues)
- Quarterly updates (Contributor FY03, FY04, FY05)
- Portal Web Site Development (Soybean Rust, Sudden Oak Death, *Ralstonia*, Pink Hibiscus Mealybug, Brown Marmorated Stink Bug, Lobate Lac Scale, *Diabrotica* Consortium)

National and Regional Training

- *Phytophthora ramorum* Educate to Detect (Web and Programming Support)
- Corn Rootworm Management (Web and Programming Support)
- Pink Hibiscus Mealybug Teleconference (Web and Programming Support)

Pat Bills (16.7% FY05) activities and products:

Regional or National IPM Related Activities

- Information Systems Maintenance (Michigan State University FY03, FY04)
- Web Site Management (FY03)
- Web Server Maintenance (Michigan State University FY03, FY04)
- Portal Web Site Development (West Nile Virus)
- Pest Management Strategic Plans Database (FY05)

Publications

- Quarterly Update (Layout and Design FY04, FY05)
- Pesticide Safety Education Program Poster, Pesticide Safety Education Program Annual Meeting, Hawaii (Editor and Designer FY03)

National and Regional Training

- NC IPM Center EPA BEAD (Web and Programming Support FY04)

Sandy Osterbur, Administrative Assistant (25% FY03, FY04, FY05) assists with publication acquisitions and disseminations, office related support including travel for Mike Gray, Susan Ratcliffe and Mike Greifenkamp and account management for University of Illinois NCIPMC related grants.

II.A.2. Committees structures and membership

Steering Committee: The Steering Committee was established to ensure the NC IPM Center is responding to USDA interests in the pest management areas. Their roles are to provide direction and oversight of the Center, make final funding decisions for subcontracts and Center operations, and develop an evaluation plan for the Center. It meets quarterly either in person at regional meetings or on conference calls. Committee members include Janet Andersen, Office of Pesticide Programs, EPA; Michael Brewer, Associate Professor, IPM Coordinator, Michigan State University and Chair-Elect of NCR-201 (IPM Coordinators Committee); Al Jennings, Director, Office of Pest Management Policy; William Ravlin, Assistant Director of Ohio Agricultural Research and Development Center, The Ohio State University; Ann Sorensen, Director of American Farmland Trust; and Wendy Wintersteen, Dean of the College of Agriculture, Iowa State University and Administrative Advisor for NCR-201. At the first meeting of the Steering committee held in January, 2004 each member received an informational notebook containing important background information related to the NC IPM Center. Appendix 6 contains contact information for each Steering Committee member.

Advisory Committee: The NC IPM Center Advisory Committee will address the need of increased communication between state-based pest management programs, broadly representing the region and each agency/interest groups' programmatic interests, providing broad vision and guidance on priorities for pest management programs, and providing advice on the future of the NC IPM Center. It was recommended by the Steering Committee during the November 4-5, 2004 Committee meeting in Indianapolis that the new State Contacts (North Central Region IPM Coordinators: a sub-group of the NC IPM Coordinating Committee) also serve as the NC IPM Center Advisory Committee (Appendix 7). The NC IPM Coordinators meet as a group for one day with other members of the IPM Coordinating Committee and then meet with the NC IPM Center personnel the following day on an annual basis. The Extension IPM Coordinators work closely with numerous groups and agencies within their states including state advisory committees. They have the knowledge and ability to provide recommendations and priorities for regional IPM programming based on their interactions with their stakeholders. Appendix 8 contains a list of the NC IPM Extension Coordinators.

II.B. Programmatic Aspects

II.B.1. Identifying and Prioritizing IPM

The diversity of the activities of the NC IPM Center has allowed access to very broad input from both traditional and non-traditional audiences including members of commodity groups, regional technical committees, environmental groups, regulatory agencies, conservation groups and Land Grant personnel. The breadth of the interactions of NC IPM Center's activities is illustrated in sections II.B.2. Organizing and Coordinating Efforts to Address Identified Needs, II.B.3. Organizing Multi-state Communications Networks and II.B.4. Implementing Linkages with Other Regional and National Entities.

During the initial round of IPM Center funding (FY00-FY02) the NC IPM Center Advisory Committee was comprised of 21 individuals (Appendix 9). The first meeting was well attended, but many of the members questioned the reason for their participation at this level. Unfortunately, attendance by the NC IPM Center Advisory Committee members declined substantially over the next two years, culminating in only a handful of members attending the meeting in February 2003 that was held in Kansas City, Missouri. The Advisory Committee membership issue was shared with the NC IPM Center Steering Committee who recommended we make use of the existing infrastructures (Smith-Lever 3d IPM Programs) within the states comprised of the Land Grant University Research and Extension systems, commodity groups, state IPM Advisory Committees and other members of the IPM community.

The State IPM Extension Coordinators work with their appropriate state representation and the NC IPM Center to identify IPM priorities. Examples of output as a result of these interactions include the identification and development of pest alerts and training teleconferences coordinated by the NC IPM Center and other interested groups. Following the development and broad adoption of the National IPM Roadmap document, the NC IPM Center has incorporated important language from the document in to regional requests for applications including the NC RIPM Grants Program and the NC IPM Center Implementation Grants Program. Review of grant applications by tenured professors representing nationally recognized research and extension programs ensures unbiased, quality evaluations and funding recommendations based on scientific merit by leading experts.

Pest Management Strategic Plans have been used to identify regional IPM priorities and have successfully leveraged funds for the region through other grant programs. As the EPA continues to evaluate compounds and their usages in response to FQPA, requests for information are sent out to the regional centers, who in turn forward on to their state contacts. In the case of the NC IPM Center, these requests are forwarded to the state IPM Extension Coordinator who coordinates further dissemination of the requests.

II.B.2. Organizing and Coordinating Efforts to Address Identified Needs

II.B.2.a. Grant Programs

North Central Region IPM Grants Program FY04: Dr. Mike Gray managed the NC RIPM competitive grants program. The widely circulated RFA requested letters of intent to be submitted by September 19, 2003 and full proposals by October 17, 2003 (Appendix 10). The peer panel met on December 9-10, 2003, in Indianapolis, Indiana to evaluate each proposal. Each panelist was requested to develop a 1-page summary for each proposal they were assigned. Reviewers evaluated each proposal using the following items that were listed in the RFA: 1) the importance and relevance of the topic/program, 2) the appropriateness of objectives and scientific and/or educational merit, 3) the appropriateness of design and methodology, 4) the feasibility of attaining objectives, 5) the involvement of relevant disciplines, agencies, and organizations as appropriate, and 6) the education and experience of the project director. Each proposal was assigned a primary and secondary reviewer within their subject matter expertise. In all, 85 letters of intent to submit a proposal were received. Seventy-two proposals were received for peer panel consideration. Five of 44 research only, two of 16 research/Extension, and three of eight Extension only proposals were funded (Appendix 11).

North Central Region IPM Grants Program FY05: The most significant change in FY05 involved moving the submission and review process to an electronic web-based format with the cooperation of Michael Greifenkamp, NC IPM Center webmaster. Letters of Intent (66 received) were due October 4, 2004 and fully developed proposals (49 received) were due October 22, 2004. A paper original and two copies of the complete proposal were due by Friday, October 29, 2004. This submission process was implemented to reduce the volume of paper and allow submitters an additional week to obtain the necessary institutional signatures. All proposals

from applicants and reviews of panelists were submitted electronically. The peer panel met in St. Louis, Missouri on December 2-3, 2004. Each panelist was provided a CD that contained all proposals and primary/secondary reviews. Proposals were submitted for research only projects (33 received, six recommended for funding), research/extension projects (13 received, one recommended for funding), or extension/education projects (three received, one recommended for funding (Appendix 12).

North Central Region IPM Grants Program FY06: The FY06 RFA contains new priorities, to more closely align it with the IPM Roadmap, for research, extension and research/extension proposals (Appendix 13). The NC IPM provides support for the continuum of research and extension projects to increase the implementation of IPM. Projects may span the spectrum from development to implementation of new IPM tactics and systems to: 1) improve cost benefit analyses when adopting IPM practices; 2) reduce potential human health risks from pests and related management strategies; and 3) minimize adverse environmental effects from pests and related management strategies. Each proposal must include an evaluation and measurement component (use of the Logic Model is strongly encouraged) to determine the impact of the project. Areas of emphasis and specific topics addressed in the RFA are listed in Appendix 14. A total of 79 letters of Intent were received by the due date of Friday, September 16, 2005. Fully developed proposals were due in electronic format on Friday, October 21, 2005 and a paper original and two copies of the complete proposal were due by Friday, October 28, 2005. The Request for Application, Letter of Intent Submission form and Proposal Submission forms are located at <http://www.ncipmc.org/egrants/>. The peer panel met in St. Louis Missouri on December 13-14, 2005. Each panelist was provided a CD that contained all proposals and primary/secondary reviews. Of the 52 proposals submitted, 27 research only projects were received with six recommended for funding, 18 research/extension projects were received with two recommended for funding and seven extension/education projects were received with two recommended for funding.

Impacts and results from projects funded through the NC RIPM Grants Program were highlighted regionally and nationally in publications released in December, 2003 featuring projects from 1998-2001 funding cycles (Appendix 15) and December, 2005 featuring projects from 2000-2004 funding cycles (Appendix 16). A total of 4,000 copies of the grants highlight have been distributed (2,000 of each).

State Contact Grants FY03: During FY03, the NC IPM Center released an RFA soliciting proposals for State Contacts with a maximum award of \$25,000 per state (Appendix 17). The RFA requested a part-time person in each state to serve as State Contact that cooperated and communicate with producers and industry to identify their IPM needs. The Center received 14 proposals and the external peer review panel recommended 12 proposals for funding although they expressed concerns with the quality of the proposals. The panel recommendations and proposals were forwarded to the NC IPM Center Steering Committee for review and approval of funding. The Steering Committee concurred with the panel's evaluation regarding the poor quality of the proposals, but agreed to fund the 12 proposals for 1 year (Appendix 18).

IPM Implementation Grants FY04: The NC IPM Center announced the availability of \$350,000 for this new IPM extension and education granting program (Appendix 19). The purpose of these regional funds was to provide a significant increase in support for the continuum of IPM demonstration and implementation projects or measurement of adoption of new IPM tactics and systems. Twenty four proposals were received requesting over \$1.8 million by the grant manager (Larry Olsen) at Michigan State University. The peer review panel met in St. Louis on April 11, 2005 to determine which proposals will be funded to increase the implementation of IPM in the NC region. A total of 24 proposals were received and five proposals were funded (Appendix 20).

North Central IPM Center Working Groups: On May 11, 2004 the NC IPM Center released an RFA to establish Working Groups (WG). The WGs are multi-disciplinary, multi-state commodity or issue based groups who will meet to identify and prioritize IPM needs, address human health, environmental health, and water quality impacts of IPM; build partnerships with key stakeholders; and address the goals of the National Roadmap for IPM including evaluation of IPM success. A total of 12 pre-proposals were received by the deadline of June 30, 2004. The NC IPM Center Steering Committee members reviewed the pre-proposals (Appendix 21). Five working groups were funded in 2004-2005 (Appendix 22).

North Central IPM Center Implementation and Working Group RFA 2006: This year the funding opportunities through the NC IPM Center will be combined in to one RFA that was released in January, 2006 (Appendix 23). A funding source through the NC IPM Center has been established to fund extension and

outreach projects in the region. Each of the five working groups currently funded will have an opportunity to apply for an additional year of funding if their groups are making significant progress in coordinating regional and national efforts to improve IPM implementation. In addition, funds will be available to fund new work groups if recommended by the external peer review panel. Funds also will be available for IPM related documents including pest management strategic plans, crop profiles, pest alerts and IPM management guides. For the third year of funding, the NC IPM Center has budgeted \$225,000 for working groups, \$300,000 for critical issues, \$60,000 for IPM documents including PMSP, crop profiles, pest alerts and management guides. In addition, approximately \$100,000 has been reserved for special projects.

New Grant Review Process for the Pest Management Alternatives Program: As part of the proposal review process for the USDA-CSREES sponsored Pest Management Alternatives Program (PMAP) Grants Program, CSREES plans to utilize a new set of review procedures for the current round of proposals that have been submitted for consideration. On April 26-28, 2006 a technical review panel will consider the merits of all proposals submitted from each of four regions across the United States. This technical review will constitute 60% of a given proposal's merit. A separate "relevancy" review also will be conducted and count for the remaining 40% of a proposal's merit. The relevancy review will be conducted on a regional basis. This will be the second time such a two-step review has been conducted for this specific program.

II.B.2.b. Regional or National IPM Related Activities

Soybean Rust Preparation Efforts: More than 200 soybean producers, scientists and industry experts participated in the Soybean Rust Conference "Management of Soybean Rust" held January 8, 2004 in St. Louis, Missouri. Lynnae Jess served on the planning committee for this conference and Ray Hammerschmidt from the North Central Plant Diagnostic Network spoke on the role of the regional diagnostic clinics in combating soybean rust. Audio recordings of all the speakers may be found at the American Soybean Association web page (www.soygrowers.com/library/rust). A national soybean rust committee, which the NC IPM Center served on, resulted in the submission of a national Section 18 for soybean rust to EPA on November 3, 2003, filed jointly by South Dakota (Marty Draper) and Minnesota (John Sierk). This Section 18 has been used as a model by the other states wishing to submit a Section 18 request. The North Central region conducted a teleconference training session to address soybean rust issues. The IPM Extension Coordinators were contacted to determine who should serve as the point of contact for each state as development of the program was shared across the region. The program was conducted on June 29, 2004 featuring speakers from APHIS, ARS, NC-504, OPMP and RMA. Susan Ratcliffe coordinated the regional effort as a representative from the NC IPM Center. Eleven states coordinated state-based participation with 100 sites across the North Central region. Each state had the opportunity to conduct a state specific teleconference to discuss their response plan following the regional teleconference. Following the training the presentations with audio overlay were posted to the web (<http://ncipmc.org/alerts/soybeanrust/conference.cfm>). In addition, 1,000 CDs of the *Soybean Rust: Issues and Facts* were distributed throughout the region to soybean producers and Extension personnel.

Evaluations from Soybean Rust: Issues and Facts participants are available on-line at <https://webs.aces.uiuc.edu/athome/soybeanrust/overallResults.asp>. Nine of the eleven participating states submitted evaluations from 93 of the 100 sites involved in the training session. The responses from those completing the evaluation forms were very positive. Overall evaluations indicated the majority of those in attendance represented crop consultants and agri-business personnel. These statistics are another indication that many Extension-based programming events reach large numbers of producers, in this instance indirectly. Attendees' responses are listed below:

- | | |
|--|--------------|
| • Teleconference met my expectations | 97.4% agreed |
| • Teleconference increased my knowledge about soybean rust | 99.5% agreed |
| • Teleconference increased my ability to identify soybean rust | 96.0% agreed |
| • Teleconference increased my understanding of IPM strategies | 96.4% agreed |

The respondents to the teleconference evaluation represent over 9.17 million acres of soybean production in the North Central region. Participating states and lead coordinators were: Illinois: Dave Feltes, Dean Malvick and Sharon Hough; Indiana: Greg Shaner; Iowa: Virgil Schmitt, Greg Tylka and Jerry DeWitt; Michigan: Ray

Hammerschmidt, Pat Hart; Minnesota: Lisa Behnken, Jim Kurle, Seth Naeve; Missouri: Laura Sweets; Nebraska: Loren J. Giesler; North Dakota: Carl Bradley; Ohio: Anne Dorrance; South Dakota: Marty Draper; Wisconsin: Bryan Jensen. A Section 18 Committee for Soybean Rust on Minor Legume Crops has also been initiated. This group is modeled after the Section 18 Committee for Soybean Rust on soybeans. Many of the North Central states participate on this committee. The committee has been meeting via conference calls. Dr. Ratcliffe coordinated efforts to send seven individuals to Brazil in February, 2005 to participate in a workshop to address soybean rust. Funding for this project is provided by CSREES and both the North Central and Southern IPM Centers. A training video, *Soybean Rust Scout Before You Spray*, was developed by the NC IPM Center from footage obtained by the Illinois Farm Bureau on the trip. A total of 1,000 CDs containing the video have been distributed nationally (Appendix 24). The video also is available on the web (<http://ncipmc.org/alerts/soybeanrust/index.cfm>) for viewing or download. A National Pest Alert for Soybean Rust is available in English and Spanish with a half a million copies distributed.

Following the confirmation of soybean rust in the United States, the regional IPM Centers have collaborated with numerous groups and agencies to assist soybean producers. The coordinated efforts have included NPDN, APHIS, OPMP, ARS, RMA, Land Grant University and industry personnel and culminated in an IPM-based approach with the development of a sentinel plot monitoring system, web-based information and notification system, and diagnostic protocols and training.

5th National IPM Symposium: The Fifth National IPM Symposium, "Delivering on a Promise," will be held in St. Louis, Missouri on April 4-6, 2006 at the Adam's Mark Hotel. Symposium sessions will address state of the art strategies and technologies to successfully solve pest problems in agricultural, recreational, natural and community settings. The symposium will begin with a plenary session followed by 65 sessions (22 mini-symposia, 35 workshops and eight round table discussions) during the next 2 days before concluding with a closing session (Appendix 25). Approximately 200 posters have been submitted for display during the two evening receptions to facilitate interaction by the attendees and presenters. The number of corporate contributors and governmental sponsors (Appendix 26) has grown since the 4th National IPM Symposium held in 2003, which we believe is a strong indication of the improved coordination within the IPM community. The Fourth IPM Symposium, held in 2003, attracted more than 700 research, education, government, industry and environmental and health advocacy professionals from 17 countries for 3 days of information sharing, networking and organizing on key pest management issues we face.

MOU with Regional Diagnostic Center: A Memorandum of Understanding between the NC IPM Center and the North Central Plant Diagnostic Network has been signed. The MOU explains the purpose of each entity and how we can work synergistically together. The role of the NCPDC is detection, diagnoses and response initiation. The NC IPM Center will have the role of notification of stakeholders and partners and cooperate in training material development. Response plans are to be established and activated by APHIS.

IR-4: Co-Director Larry Olsen has made presentations twice to the Regional IR-4 State Liaisons Committee about the goals, objectives, management and grants of the NC IPM Center and gave the participants a copy of the draft Nursery Crops Timeline. He announced the formation of the Steering Committee, State Contacts network and Working Groups. As the NC IPM Center, we provide our priorities for minor crop pesticides needs to the IR-4 program through input gathered from the Pest Management Strategic Planning meetings.

Diabrotica Genetics International Consortium: The NC IPM Center, together with representatives from EPA, ARS and Land Grant Universities joined together with international representatives from France, Germany, the United Kingdom and several other European countries to form the *Diabrotica* Genetics International Consortium to provide access to certain genetic materials to the members of the consortium to reduce duplication of research efforts and develop new cooperative relationships (Appendix 27). In December, 2004 a conference was held in Kansas City, Missouri to share current research and outreach findings with the membership. The NC IPM Center will host a web site for the consortium.

Legume Pest Information Platform for Extension and Education (PIPE) Project: PIPE represents a new paradigm in pest management and will expand in 2006 based on discussion held on November 10, 2005 in Corvallis, Oregon (Appendix 28). There was consensus among participants that PIPE was a worthwhile concept that should be broadened to include other crops and pests in the future. It was decided that a simple PIPE mission statement was needed and that Paul Jepson and Scott Isard would draft it and pass it among participants. Many

participants volunteered to serve on a follow-up steering committee to develop a structure and an operations plan for PIPE. They included: Paul Jepson, George Taylor, Heyward Baker, Carla Thomas, Sue Ratcliffe, Rick Melnicoe, David Hannaway, Scott Isard, John Ayers, Ron Stinner, Rick Melnicoe, Jim VanKirk, and Coanne O'Hern. There was clear consensus that there is a compelling case for development of a national platform for IPM delivery. There was also abundant evidence of multiple systems that each have useful elements to offer a prototype national platform. There is also a strong case to be made for inter-agency and public-private sector collaboration which will be needed at unprecedented levels if this visionary concept is to be brought to fruition.

Information Requests: The NC IPM Center receives requests throughout the year from EPA via OPMP on pesticide use and usage. These requests are sent out to the IPM Coordinators in the states and they are asked to send the request on to the appropriate people in their state or respond themselves. If a state does not respond the IPM coordinator is contacted and sometimes the specialists are contacted directly by the IPM Center. The responses are coordinated into a single response when necessary and returned to OPMP and EPA. The Center has started using the database that the Western Region Information Request Coordinator has been using with great success. EPA has used the information gathered from this process to help in the re-registration of pesticides by finding out what the critical needs are, clarifying worker exposure issues and what replacements there may be if a pesticide registration is lost. A total of 34 information requests have been received by the NC IPM Center in 2003-2005 (Appendix 29). Some of these products were addressed in multiple years depending on where the product was in the re-registration process.

American Entomologist GAO Survey: Following the release of the Government Accounting Organization review of IPM and pesticide usage, Drs. Gray and Ratcliffe conducted a survey of the IPM coordinators regarding several IPM-related issues. The results of the survey appeared in an article in American Entomologist (Appendix 30)

Aphid Suction Trap Network: The NC IPM Center funded a suction trap network (\$24,800) that involves six states in the North Central Region (Appendix 31). Dr. David Voegtlin has used a suction trap network in Illinois for several years to evaluate the system's ability to predict population levels of soybean aphid the following year to assist growers in managing this invasive species that was first discovered in Wisconsin in 2000. The network contains 31 suction traps and trap information is available at <http://ncipmc.org/traps/index.cfm>. Individuals involved with the suction trap network will collaborate with other soybean aphid and soybean rust researchers this summer in the Legume PIPE project funded by USDA-Risk Management Agency. The NC IPM Center is working with Scott Isard, Penn State University and Bob O'Neil, Purdue University to coordinate a Soybean Aphid Workshop in conjunction with the IPM Symposium in April, 2006 to evaluate the new web reporting system.

Potato Wart Recovery Plan: USDA provided funds to develop recovery plans for a series of serious plant diseases of national importance. NC IPM Center personnel at Michigan State University are coordinating the development of the recovery plan for potato wart (*Synchytrium endobioticum*). The goal of a recovery plan is to review the current status and develop a plan to manage the disease in the event that it enters the United States. This is in response to Homeland Security Presidential Directive No. 9 (HSPD-9). A national working group of potato experts has been assembled from the top production areas in the United States to provide input for the potato wart recovery plan. Topics covered include disease spread, survey and detection methods, economic impact, diagnostic techniques, mitigation, disease management and research priorities.

Weeds to Watch Poster: This bulletin focuses on weed species with the potential to pose new threats for corn and soybean production in the Midwest. The poster contains pictures of 16 species, characterizes each species distribution, occurrence, identification characteristics and management tactics to aid in controlling the weed (Appendix 32). The publication is available on Iowa State University and University of Illinois web sites in pdf format (www.extension.iastate.edu/Publications/IPM72A.pdf and www.ipm.uiuc.edu/weeds/WeedstoWatch.pdf).

National IPM Coordinating Committee: The National IPM Coordinating meets annually with the IPM Center Directors. Discussion topics included regionalization of Pest Management Alternatives Program (PMAP) priorities, training needs for Natural Resources and Conservation Services (NRCS), updates from the regional IPM Centers, and the regional IPM Grants Programs. During the 2005 annual meeting in Washington D.C., the members recommended a National IPM Coordinators meeting be held in conjunction with the 5th National IPM

Symposium. The Chairs of the four regional IPM Coordinating Committees are working with their membership to develop an agenda for the meeting that will be held April, 3, 2006 in St. Louis, Missouri. **North Central Representatives include:** Wendy Wintersteen, Admin Adv-Ext; Mike Gray, NC Region IPM Grants Manager; William Ravlin, Admin Adv-AES; Mike Brewer, Chair-Elect NC-201; Sue Ratcliffe, Co-Director NC IPM Center; Larry Olsen, Co-Director NC IPM Center and Lynnae Jess, Assistant Director NC IPM Center.

Renewal for NC 201 Committee: Members of NCR-201 met April 12-13, 2005, in St. Louis for their annual meeting. In response to the change initiated by USDA-CSREES to address potential conflict of interest, the members of NC-201 were no longer authorized to review the Request for Applications of the NCR IPM Competitive Grants Program following regional input and public release. In response to the changes in review and administration of the NCR IPM Competitive Grants Program, NC-201 members agreed to develop a new justification and impact statement for committee renewal. Drs. Jerry DeWitt, Iowa State University; Gary Brewer, North Dakota State University; Chris Boerboom, University of Wisconsin and North Central IPM Center personnel volunteered to serve on the Writing Committee and developed a timeline to assist with the development of the new document. The new justification and impact statement has been submitted for review and the committee is awaiting approval.

Insect Resistance Management: The National Corn Growers' Association in cooperation with several biotechnology companies developed an on-line Insect Resistance Management Learning Center. The training module includes sections on insect resistance management (IRM), the Compliance Assurance Program (CAP), integrated pest management (IPM), European corn borer and corn rootworm. Tom Slunecka, National Corn Growers Association, Susan Ratcliffe, NC IPM Center, Richard Hellmich, Iowa State University, and Mark Boetel, North Dakota State University coordinated review of the training module by members of the North Central Technical Committees, NC-046 (Development, Optimization and Delivery of Management Strategies for Corn Rootworms) and NC-205 (Ecology and Management of European Corn Borer and Other Stalk-Boring Lepidoptera). The Insect Resistance Management Training modules are available at <http://www.ncga.com/biotechnology/IRMCenter/>.

Corn Rootworm Management Guide: Research and extension faculty, many members of NCR-046 Development, Optimization and Delivery of Management Strategies for Corn Rootworms, have written chapters for a Corn Rootworm Management Guide. The North Central IPM Center is collaborating with these individuals to assist in the preparation of the final document. The authors will finalize the text in early 2006 and hope to have the publication available in the near future.

IPM of Midwest Landscapes: Drs. Vera Krischik, University of Minnesota and John Davidson, University of Maryland served as editors for the newly published IPM of Midwest Landscapes. The full-color, 316 page publication was funded in part by a grant from USDA-CSREES North Central Region IPM Grants Program and developed by NCR Plant health: managing insect pests and diseases of landscape plants. The NC IPM Center collaborated with Dr. Krischik to promote the new publication and assisted with marketing and distribution.

II.B.2.c. Publications

Crop Profiles: Profiles provide for USDA and EPA pesticide use and usage data on major and minor crops. They provide the production story for a commodity, including current pest management practices, and look at current research activities directed at finding replacement strategies for pesticides of concern. They also contain worker activities that occur during the growing season and the number and contact information for interested content experts. Since September 2003, a total of 21 crop profiles were developed or updated by State Contacts and sent to Lynnae Jess for review (Appendix 33). A complete list of crop profiles completed in the North Central region is available on the web site: www.ncipmc.org/profiles.

Pest Management Strategic Plans: Pest Management Strategic Plans are developed with a coalition of scientists, crop consultants, industry representatives, environmental groups, commodity organizations, growers and EPA. These groups identify key pests, current pest management practices, reasons why other currently registered pesticides are not being used, possible new alternative practices or safer pesticides, their influence on current IPM programs, their short and long term impacts, and a realistic time estimate of how long it will take to transition to alternative practices. Through a facilitated process the top five research, education and regulatory concerns are identified. Since September 2003, a total of five pest management strategic plans (peppers, potato, pumpkin, sweet corn and northern wheat) were developed or

updated by State Contacts and sent to Lynnae Jess for review prior to posting on the internet). A complete list of the North Central Region pest management strategic plans is available on the web site: www.ncipmc.org/pmsp.

To illustrate the impact of pest management strategic plans on research and extension efforts by Land Grant Universities and ultimately on growers' production practices we have included information regarding the Carrot PMSP. Dr. Mary Hausbeck and other Land Grant personnel in Michigan participated in the Carrot PMSP. The priorities identified at the PMSP led to the development of a RAMP grant proposal by Dr. Hausbeck and Land Grant personnel from Wisconsin, New York and New Jersey. The group was awarded a USDA's Risk Avoidance and Mitigation Program (RAMP) grant worth over \$2 million over a five year period. The RAMP grant has helped growers to reduce the amount of pesticides that are used to produce carrots for both fresh and processed consumption. This reduction was a result of combined methods of better spray coverage, use of scouting for disease and insects, implementation of disease forecasters and insect infectivity thresholds, and selection of resistant varieties. Using the TOM-CAST disease forecaster resulted in an average savings of \$49.48 per acre in Michigan. In 2003, commercial field trials in Wisconsin reduced the number of sprays by 2 or 3 when compared to a 2001 grower survey. Initiating spray programs by scouting were found to save up to 5-6 sprays compared to a 7-day program. TOM-CAST was used to effectively manage foliar disease on 61% of carrot acreage in four Michigan counties in 2005, preventing a minimum of 5,559 pounds of chlorothalonil from entering the environment. This has helped Michigan carrot growers to maintain their contracts with processors in the state. Research also showed that alternation of reduced risk fungicides in a program with an industry standard such as Bravo could reduce applications of B2 carcinogens by up to 50% without compromising foliar disease control. The use of Quadris as a replacement for Rovral will result in fungicide cost savings of \$48.04 per acre (4 applications), and reduce residues in carrots and carrot products, which are important in maintaining certain processor contracts worth \$2,636,000 to the industry. Fungicide trials in Wisconsin showed new reduce risk fungicide programs have decreased the total active ingredient and total toxicity of season-long program by 1-4.5 lb active ingredient/A and 160-450 toxicity units, respectively. New York carrot growers are averaging <50% of fungicide sprays used in previous years by scouting and using 25% blight incidence thresholds to initiate fungicide treatments. Monitoring of leafhopper migration in Wisconsin enabled growers to save 2-3 early-season insecticide sprays. Michigan and Wisconsin research with the Aster Yellows index was found to save 3-8 sprays per season. The use of the Aster Yellows index for scheduling insecticide sprays to control aster leafhoppers has saved \$44/A and reduced insecticides applied by 0.33 pounds of active ingredient/A in 2005. New spray technology (the Proptec) was designed and built for spraying carrots and was used in herbicide and fungicide trials. It is an effective tool in applying herbicides without resulting in phytotoxicity. Nutrient studies documented the importance of good nitrogen (N), phosphorus (P), potassium (K) management program. By applying adequate amounts of P and K, value of the carrot crop was increased about \$300/A by investing \$55-\$70. For each 100 acres grown on low to medium P and K soils, this amounts to an increase in net income of \$23,000-\$24,000. Topdressing N, as needed, for a carrot crop can improve net income by over \$60,000 for 100 acres of carrots. Additional information regarding the success of the Carrot PMSP and resulting RAMP grant is located in Appendix 34.

North Central IPM Connection: The NC IPM Center has developed a monthly newsletter that focuses on regional IPM successes and activities. The NC IPM Center Connection has been disseminated broadly via the internet and email. Articles featured in past issues have been highlighted in IPMNet News and the CSREES Plant Sciences Updates. The November issue, located at www.ncipmc.org/connection along with the other 14 issues, features a multi-state, multi-agency school IPM effort (Appendix 35).

Center Updates: The "Center Update" prepared three times each year for the National IPM Centers Directors' meeting reports on the activities and programs of the NC IPM Center, based upon the Center's objectives, to the national IPM Center Steering committee, the other Regional IPM Center directors and their staff and national Program staff from USDA and EPA (Appendix 36). A copy of the Update is forwarded to the North Central Land Grant Administrators and IPM Coordinators to keep them informed of our activities.

Pest Alerts: The first pest alert developed in 2000 by the regional USDA-CSREES IPM Centers was the Regional Pest Alert for Soybean Aphid from the North Central region. The process to develop a pest alert begins by an individual(s) identifying an emerging pest issue of regional or national importance and preparing text, usually 1,000 words or less. Images are selected for inclusion in the alert and forwarded to a photo editor. The text is reviewed by other researchers and educators as part of a peer review process prior to final editing by a scientific editor. The edited images and text then go to the graphic designer for layout. Since the development of the first regional pest alert, collaborative arrangements have expanded to include APHIS, National Plant

Diagnostic Network, ARS, National Plant Health Board and the Land-Grant Universities. In addition to printed copies, pdfs and html versions were made available on the internet. Links to pest alerts and links to additional pest-based information are available on the web at www.ncipmc.org/alerts. The early pest alerts were authored by Susan Ratcliffe, but as interest in the pest alerts has expanded others have authored pest alerts while the production of the pest alerts are coordinated by the North Central IPM Center. Eleven pest alerts (nine national and two regional) have been completed and another five pest alerts are under development (Appendices 37-47). A Wanted poster was developed as part of the Sudden Oak Death education program (Appendix 48).

To date, over 1.25 million copies of pest alerts have been distributed, typically through the existing Extension and Regulatory systems. Although as illustrated in the following NC IPM Center Connection newsletter article, novel approaches have been used to educate the public using the pest alerts. **“Eagle Scout Helps “Fight the Bite: While many of us were relaxing and enjoying the long 4th of July weekend, Taylor Blauer, a member of Boy Scout Troop 1205 in Riverton, Utah, was busy educating his community about West Nile Virus to fulfill his Eagle Scout requirements. Taylor developed and staffed an educational booth for the Riverton 4th of July celebration. He answered questions and distributed copies of the National Pest Alert on West Nile Virus provided by the North Central IPM Center and displayed posters from the Utah Department of Health “Fight the Bite” Program. On July 6, 2004, Taylor and his fellow scouts delivered copies of the National Pest Alert on West Nile Virus to residents in their neighborhood and “Fight the Bite” posters to local businesses. The North Central IPM Center was pleased to have the opportunity to collaborate with Taylor on this project and wish him luck in his future scouting activities.”**

II.B.2.d. National and Regional Training

In an attempt to disseminate new and emerging pest management information in a cost effective manner, a teleconference training system was developed in cooperation with leading research and extension experts. The first training teleconference was **Soybean Rust: Issues and Facts Training Teleconference** conducted by the North Central IPM Center to address soybean rust issues. Members of the Planning Committee included Dr. Greg Tylka and Mr. Virgil Schmitt, Iowa State University; Drs. Lisa Behnken, Jim Kurlle and Seth Naeve, University of Minnesota; Dr. Roger Borges, University of Wisconsin; Dr. Dean Malvick and Mr. Dave Feltes, University of Illinois; and Dr. Susan Ratcliffe, North Central IPM Center. The IPM Extension Coordinators were contacted to determine who should serve as the point of contact for each state as development of the program was shared across the region. The program was conducted on June 29, 2004. Presentations were provided by Drs. Matthew Royer, Animal and Plant Health Inspection Service (APHIS); Glen Hartman and Monte Miles, Agricultural Research Service (ARS); X.B. Yang, Chair of the North Central Technical Committee for Soybean Rust (NC-504); Kent Smith, Office of Pest Management Policy (OPMP); and David Bell, USDA Risk Management Agency (RMA). Eleven states in the north central region coordinated state-based participation with 100 sites across the region. Each state had the opportunity to conduct a state-specific teleconference to discuss their response plan following the regional teleconference. The regional session was recorded and is available for download with the PowerPoint presentations at <http://ncipm.org/soybeanrust/conference.cfm>. In addition, the PowerPoint presentations with audio overlay were available on CD (1,000 distributed) for use in future training sessions. Since that time, numerous groups have collaborated to develop additional national and regional training teleconferences. Many of the participants have indicated their value for this type of approach due to the reduction in travel time and expenses.

Sudden Oak Death National Training Teleconference: A training teleconference to educate first responders to the potential threat of *Phytophthora ramorum* (aka Sudden Oak Death) was conducted on October 26, 2004. The training involved 115 sites from 40 states with a total of 731 participants. The program was funded by the U.S. Forest Service and involved the collaboration of USDA-CSREES IPM Centers and the National Plant Diagnostic Network, the Animal and Plant Health Inspection Service (APHIS), and the National Plant Health Board (Appendix 49).

Pink Hibiscus Mealybug Training Teleconference: On June 1st we had 25 states participate in the training with a total of 45 sites and 146 participants. Participating states include: Arizona, California, Colorado, Florida, Hawaii, Indiana, Iowa, Louisiana, Maryland, Missouri, Nebraska, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Virginia, West Virginia,

and Wisconsin. Participation and evaluation details are available in Appendix 50 and the training program is available for viewing on the internet and on CD (Appendix 51).

Corn Rootworm Management: Situation, Issues & Options Training Teleconferences: On February 4 and 11, 2005 two teleconferences entitled: “Corn Rootworm Management: Situation, Issues & Options” were held and attracted over 750 participants from nine states in the North Central Region. Participating states and site coordinators included Illinois (Kevin Steffey and Dave Feltes, University of Illinois Extension), Indiana (Rick Foster, Purdue University), Iowa (Virgil Schmitt, Iowa State University Extension), Kansas (Randy Higgins and Jerry Wilde, Kansas State University), Minnesota (Ken Ostlie, University of Minnesota), Nebraska (Robert Wright, University of Nebraska - Lincoln), Ohio (Ron Hammond, The Ohio State University), South Dakota (Darrell Deneke, South Dakota State University), and Wisconsin (Bryan Jensen, University of Wisconsin). Prior to the first training teleconference, participants were asked to complete a survey designed to evaluate their current knowledge of corn rootworm biology and management options. Following the second training session, participants were asked to complete a second questionnaire to assess the educational value of the training teleconferences (Appendix 52).

Evaluation and Measurement Symposium Sessions and Training Teleconferences: The NC IPM Center has placed a strong emphasis on the use of evaluation processes as part of its pest management efforts. In cooperation with national efforts, two sessions on evaluation and measurement will be held during the 5th National IPM Symposium. Following the symposium in April, additional training teleconferences will be conducted in cooperation with the NC IPM Center Metric working Group to provide additional education opportunities throughout the region for individuals involved in IPM research and implementation projects. We have provided funding for a Working Group on evaluation, and have given them additional funds to assist with the national coordinated evaluation effort.

Environmental Lawn Care and Landscaping Initiative: The NC IPM Center has been approached to assist the members of the Environmental Lawn Care and Landscaping Initiative to develop a training teleconference. Participants in the initiative include governmental, industry and environmental interests. Development of training materials is currently underway.

SYSCO Assists Suppliers with IPM Implementation: In 1977, SYSCO (Systems and Services Company), became the leading supplier of “meals prepared away from home” operations in North America. Today, SYSCO’s sales and service customer relationships exceed 400,000. SYSCO remains committed to helping their clients succeed in today’s foodservice industry by initiating a new Sustainable/Integrated Pest Management Training Program. Implementation of this program will begin with SYSCO’s suppliers of frozen and canned fruits and vegetables. Suppliers and growers will document current environmentally friendly production practices based on SYSCO’s evaluation standards as part of the program. Tom Green, President of the IPM Institute and Shane Sampels, SYSCO Sr. Manager of Quality Assurance and Georgiann Miller, SYSCO Program Quality Manager developed the program and conducted training sessions in Sacramento, California and Chicago, Illinois for suppliers in February, 2005. Susan Ratcliffe attended the SYSCO training session and spoke to the trainees regarding the existing state-based IPM research and extension resources in the North Central Region to assist with IPM implementation.

Training CDs: Following regional or national teleconference training sessions, the presentations with audio overlay are available on the North Central IPM Center web site as Quicktime movies.

- Sudden Oak Death Training CD 250 copies
- Soybean Rust: Issues and Facts Training CD 1,000 copies
- Soybean Rust Scout Before You Spray Training CD (Appendix 53) 1,000 copies
- Pink Hibiscus Mealybug Training CD 100 copies

NRCS Training: Increasing Access to Conservation Funds Training: IPM adoption increased in specialty crops of western Michigan following a 3-year pilot project designed to encourage grower participation in a USDA conservation program (Environmental Quality Incentives Program (EQIP)) that supports IPM use as a conservation tool. Working within EQIP's advisory structure to improve support of IPM, and engaging the grower community locally to increase grower participation, EQIP funds allocated for IPM increased to 10-20% of funds requested in grower contracts (compared to 1-3% previously). Grower participation also increased more than two-fold. To expand the project's reach the NC IPM Center, along with the Michigan IPM Coordinator, will develop

and deliver a web cast training series (three 2-hour sessions) aimed at regional University/Agency IPM professionals. The three sessions will cover the following topics: 1) Analyzing local EQIP priorities and incentive payment structure; 2) Working within the NRCS advisory process; and 3) Engaging growers and supporting groups locally. Those trained will have increased skills to interact within the EQIP structure and the grower community in order to increase IPM adoption as financially aided by EQIP.

EPA BEAD Training Workshop: The NC IPM Center hosted a training workshop in Holland Michigan from June 28 – July 2, 2004, for personnel from the Environmental Protection Agency (EPA) Office of Pesticide Programs and a representative from the EPA Region 5 Pesticide Program. Dr. Larry Olsen and Ms. Lynnae Jess, Michigan State University, coordinated the program that focused on woody ornamental production, economics, pest management including weeds, insects and diseases and potential worker exposure to pesticides. A CD-ROM containing all PowerPoint presentations, reference documents and photos of the week's activities was provided to participants.

Endangered Species Information for Pesticide Applicators: The NC IPM Center at Michigan State University has received a grant from the Region 5 EPA office via Michigan Department of Agriculture to "Develop Endangered Species Information for Michigan Pesticide Applicators." They collaborated with the MDA and EPA to make information readily and easily available so applicators can comply with the pesticide restrictions related to the Endangered Species Act. Information is already available on many endangered species but not in one convenient location for applicators. It is the intention that when the Michigan web site is completed, it will be available for other states to adopt for their use.

II.B.2.e. Center Related Presentations

Entomological Society of America Symposium: The North Central IPM Center organized a Section E Symposium entitled Increasing IPM Adoption with IPM Centers: Mission Impossible? that was held on November 17, 2004 at the National Entomological Society of America meeting in Salt Lake City, Utah. Speakers included Drs. William Coli, Charles Benbrook, Edwin Rajotte, Larry Olsen, Michael Fitzner and Susan Ratcliffe, and Mr. Al Averitt, past President of the National Association of Independent Crop Consultants (NAICC). Dr. Michael Gray served as moderator for the session.

2004 North Central Region Pesticide Education & Certification Workshop: The 2004 conference was sponsored this year by University of Missouri Extension and the Missouri Department of Agriculture on June 7-9 in St. Louis. The program is attended by the State Pesticide Safety and Education Program Coordinators and their staff, other pesticide use educators, county and regional extension educators, state and federal pesticide regulatory officials, USDA personnel and industry-government liaison representatives. Dr. Ratcliffe was invited to speak to the group regarding coordination and collaboration between IPM Centers, the National Plant Diagnostic Network and the Pesticide Safety Education Program. The presentation "Pest Management and Plant Diagnostic Centers: How do they Relate to PSEP?" is located at <http://ipm.missouri.edu/pat/plant%20diagnostic%20centers.ppt>.

Northeast Regional Community and Urban IPM Conference: The regional conference was held in Manchester, New Hampshire in the spring of 2005. As part of the Invasive Species Symposium, Dr. Ratcliffe was invited to discuss the national response to sudden oak death during a session entitled "***Phytophthora ramorum Educate to Detect (PRED)***."

New England Grows: A second invitation to discuss this project has been extended by New England Grows Conference. Dr. Ratcliffe will present an hour long session entitled "***Staying Ahead of Sudden Oak Death***" in Boston on February 1, 2006. The session will discuss the importance of teamwork with numerous agencies to coordinate responses to *P. ramorum* infected nursery stock, although the training and coordination efforts are applicable to all pest management issues.

Entomological Society of America: To provide greater insight in to the roles of the National Plant Diagnostic Network and the regional IPM Centers, several members of these two groups including NC IPM Center personnel organized a Section E ESA Symposium "***The Role of the National Plant Diagnostic Network (NPDN) and Land Grant University Cooperative Extension Services in Promoting the Early in promoting the Early Detection of Exotic Pests.***" Dr. Ratcliffe co-moderated the session and presented a session entitled "***The National Plant Diagnostic Network and regional IPM Centers: Differences and Collaborative Efforts.***"

II.B.3. Organizing Multi-state Communication Networks

The North Central IPM Center has made significant progress developing a strong multi-state communication network involving existing infrastructure within the region including the 1862 Land Grant Universities Researchers and Extension Specialists, Extension IPM Coordinators, state advisory committees and numerous stakeholder groups within the region.

State Contacts: The State Contacts helped develop IPM Program materials and surveys, linked to other state-based pest management programs, responded to IPM information requests from USDA, EPA and other related programs, developed crop profiles and organized PMSP meetings. During FY03 questions were raised from state contacts, IPM coordinators and Steering Committee members regarding the roles of the state contacts and the IPM coordinators. The Steering Committee agreed that a point of contact in each state regarding IPM and pesticide issues is important but agreed to investigate if this role could be the responsibility of each State's IPM Extension Coordinator (Appendix 54). The Administrative Advisor of NCR-201 contacted the Experiment Station Directors and/or the Deans and Extension Directors regarding the opportunity for the IPM Coordinators to serve as IPM contacts with the NC IPM Center.

The North Central Region Integrated Pest Management (NC RIPM) Extension Coordinators began service as state contacts for the North Central IPM Center beginning October 1, 2004. During the annual meeting of NCR-201, April 6 – 7, 2004, Indianapolis, Indiana, the NCRIPM Extension Coordinators voted unanimously to assume the role of state contacts for the North Central Integrated Pest Management (NC IPM) Center in response to the recommendation from the NC IPM Center Steering Committee. Responsibilities include responding to requests from the Environmental Protection Agency (EPA), Office of Pest Management Policy (OPMP), Cooperative State Research, Education and Extension Service (CSREES) and the NC IPM Center and serving as a liaison between their state IPM programs and the NC IPM Center.

In addition to improving coordination of state IPM programs within the region, this new approach increased the level of competitive funding available by \$300,000 annually for regional IPM working groups and IPM implementation issues of regional importance.

Initially, questions and concerns were expressed by Center leadership in the other regions regarding the use of Extension IPM coordinators to fulfill the role of state contacts without compensation. However, the Steering Committee's recommendation was based on the fact that the Extension IPM coordinators currently receive funding through the Smith-Lever 3d program to support state-based IPM. In addition, the Steering Committee indicated due to the relatively low number of FQPA-related requests from EPA and OPMP (about one per month) in the North Central Region, the new responsibilities assumed by the Extension IPM coordinators should not over burden the group. The current state contact structure has been in place for 1-year and during the joint annual meeting between the North Central IPM Center personnel and the Extension IPM coordinators it was agreed the coordinators would continue in the role of state contacts.

Center personnel and coordinators continue to work to improve the information network and a new system is under development to streamline the FQPA request and response process. State contacts include Mike Gray, University of Illinois; Jon Tollefson, Iowa State University; Rick Foster, Purdue University; Sharon Dobesh, Kansas State University; Mike Brewer, Michigan State University; Ian MacRae, University of Minnesota; Wayne Bailey, University of Missouri; Robert Wright, University of Nebraska – Lincoln; Marcia McMullen, North Dakota State University; Joe Kovach, The Ohio State University; Darrell Deneke, South Dakota State University; and Bryan Jensen, University of Wisconsin (contact information is located in Appendix 10).

Working Groups: NC IPM Center Working Groups serve as the organizational basis for most of the Center's IPM core functions. Commodity or issue-based Working Groups were established late in the year one grant to address human health, environmental health, water quality impacts, and they need to address the issue of economic benefit of IPM adoption. They are comprised of stakeholders, researchers, extension specialists, and representatives from governmental agencies. The role of these Working Groups is to identify and prioritize regional IPM issues, and address the goals of the National Roadmap for IPM and the NC IPM Center Mission Statement. Each Working Group will be responsible for compiling a comprehensive set of IPM definitions for program areas associated with their mission. They will develop new IPM definitions where none exist and update definitions periodically. With these definitions they will conduct surveys of IPM adoption that serve as a current baseline and to determine future increases in IPM implementation along the continuum. To conduct these surveys,

Working Group members, along with NC IPM Center personnel will work with the National Agricultural Statistics Service (NASS) to develop commodity-based surveys. Subsequent annual surveys will allow regional and national evaluation of changes in IPM adoption. Coordination of these survey efforts by the NC IPM Center will help assess trends in IPM implementation by commodity and reduce duplication efforts. Frequently, IPM programs fail to stress the economic benefits to stakeholders. The NC IPM Center and the Working Groups will incorporate economics into their implementation programs and establish an economic index to allow stakeholders to evaluate the economic impact of alternative management practices enabling them to make economically-based treatment

Further expansion of the multi-state information network was achieved through the establishment of the NC IPM Center Working Groups. On May 11, 2004 the NC IPM Center released a RFA to establish Working Groups (WG). The WGs are multidisciplinary, multi-state commodity or issue based groups who will meet to identify and prioritize IPM needs; address human health, environmental health, and water quality impacts of IPM; build partnerships with key stakeholders; and address the goals of the National Roadmap for IPM including evaluation of IPM successes. Eight pre-proposals were received June 30, 2004 and were evaluated by the Steering Committee in July. Those rated highest were invited to submit fully developed proposals by August 30, 2004. The Steering Committee and Directors evaluated the fully developed proposals and five WGs were recommended for funding (\$30,000 or less per WG).

The Working Groups are: Developing Standardized Measurement Tools for Program Evaluation led by Carol Pilcher at Iowa State University, Implementing IPM for Insect Pests on Ornamental Crops Under Commercial Greenhouse and Nursery Production led by Dave Margolies at Kansas State University, Great Lakes Vegetable Production led by Jim Jasinski at The Ohio State University (Appendix 55), Pulse Crops Production led by Brad Ruden at South Dakota State University (Appendix 56), and Potato IPM led by Jeff Wyman at the University of Wisconsin.

Stakeholder Panel: The NC IPM Center is organizing a stakeholder panel designed to represent regional interests outside of the existing infrastructures. A small group of less than 15 individuals comprised of regional leaders with broad interests including agriculture, consumer, environmental and human health. The panel will function similar to the Federal IPM Coordinating Committee with primary functions to share IPM related information with one another and identify novel linkages with the existing infrastructure at the regional and state levels. The North Central IPM Center will work with the panel to facilitate the new linkages. The NC IPM Center Co-Directors in an effort to share information regarding the Regional IPM Center have visited Land Grant Universities in Illinois, Iowa, Michigan, Missouri, Nebraska, Ohio, South Dakota and Wisconsin. The visits included discussions with administrators and faculty to learn about their programs and to strengthen collaborative relationships. These visits have assisted in identification of existing IPM programs throughout the region, allowing the Co-Directors to facilitate multi-state IPM efforts.

II.B.4. Implementing Linkages with Other Regional and National Entities

The NC IPM Center has developed numerous linkages with regional and national organizations including other federal, state and local governmental agencies, regional and state-based Land Grant University programs, commodity groups and agricultural businesses. In many instances, multiple linkages were developed to address a single issue such as soybean rust or sudden oak death. The following groups and organizations have developed linkages with the NC IPM Center as indicated below:

Agassiz Crop Consulting: Wheat Pest Management Strategic Plan

Agraquest: 5th National IPM Symposium

Agren, Inc.: Corn Rootworm Guarantee Program

Agricultural Research Service (ARS): Soybean Rust Pest Alert, Soybean Rust Training, Sudden Oak Death Pest Alert, *Ralstonia solanacearum* Pest Alert, Lobate Lac Scale Pest Alert, Pink Hibiscus Mealybug Pest Alert, Pink Hibiscus Mealybug Training, *Phytophthora ramorum* Educate to Detect (PRED) Program, 5th National IPM Symposium, *Diabrotica* Genetics Consortium, 4th National IPM Symposium

Agronomy and Horticulture Services, LLC: Environmental Lawn Care and Landscaping Initiative

Alabama Department of Agriculture and Industries: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Alexander Farms, Inc., Joliet, Illinois: Pumpkin Pest Management Strategic Plan

Alliances for the Chesapeake Bay: Environmental Lawn Care and Landscaping Initiative

American Mosquito Control Association: Mosquito Training Module, West Nile Virus Pest Alert

American Nursery & Landscape Association: Environmental Lawn Care and Landscaping Initiative

American Soybean Association: Soybean Rust, Legume PIPE Project

American Wild Woodland Ginseng Corporation: Ginseng Pest Management Strategic Plan

Angel Crop Consulting: Wheat Pest Management Strategic Plan

Animal and Plant Health Inspection Service (APHIS): Soybean Rust Training Coordination, Soybean Rust Pest Alert, Sudden Oak Death Training Coordination, Sudden Oak Death Pest Alert, Citrus Greening Pest Alert, Legume PIPE Project, Brown Marmorated Stink Bug Pest Alert, *Ralstonia solanacearum* Pest Alert, Soybean Aphid Pest Alert, Pink Hibiscus Mealybug Pest Alert, Pink Hibiscus Mealybug Training Coordination, *Phytophthora ramorum* Educate to Detect (PRED) Program Coordination, 5th National IPM Symposium, 4th National IPM Symposium

Arizona Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Auburn University: *Phytophthora ramorum* Educate to Detect (PRED) Program

Audubon International: Environmental Lawn Care and Landscaping Initiative

Augusto Cesar Sandino Cooperative: 5th National IPM Symposium

BASF: 5th National IPM Symposium, 4th National IPM Symposium

BioWorks, Inc.: 5th National IPM Symposium

Black Gold Farms: Potato Pest Management Strategic Plan

Business for the Bay/Chesapeake Bay Program Office: Environmental Lawn Care and Landscaping Initiative

Campbell's: 5th National IPM Symposium, 4th National IPM Symposium

Center for Disease Control (CDC): Mosquito Training Module

Center for Resource Management: Environmental Lawn Care and Landscaping Initiative

Clemson University: Pink Hibiscus Mealybug Training

Colorado State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training, *Diabrotica* Genetics Consortium

Cornell University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Coulter Farms, Westville, Illinois: Pumpkin Pest Management Strategic Plan

County Line Growers, Grant Park, Illinois: Pumpkin Pest Management Strategic Plan

CropLife America: 5th National IPM Symposium, 4th National IPM Symposium

Crop Care Consultants: Potato Pest Management Strategic Plan

Delaware APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program

Delaware Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program

DelMonte Foods: 5th National IPM Symposium, 4th National IPM Symposium

Dow AgroSciences: 5th National IM Symposium, 4th National IPM Symposium

Environmental Protection Agency (EPA) : BEAD Training, Crop Timelines, 5th National IPM Symposium, Environmental Lawn Care and Landscaping Initiative, Increasing Access to Conservation Funds Training, Mosquito Training Module, *Diabrotica* Genetics Consortium, Ginseng Pest Management Strategic Plan, 4th National IPM Symposium

Federal IPM Coordinating Committee: Mosquito Training Module, 5th National IPM Symposium

Felix Zeloski Farms: Potato Pest Management Strategic Plan

Florida Department of Agriculture and Consumer Services: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Frey Farms, Poseyville, Indiana and Keenes, Illinois: Pumpkin Pest Management Strategic Plan

Frito Lay: Potato Pest Management Strategic Plan

General Mills Green Giant: 5th National IPM Symposium

Georg-August-University, Institute for Plant Pathology and Plant Protection: *Diabrotica* Genetics Consortium
Gerber: 5th National IPM Symposium, 4th National IPM Symposium
Ginseng Board of Wisconsin: Ginseng Pest Management Strategic Plan
Golf Course Superintendents Association of America: Environmental Lawn Care and Landscaping Initiative
Hawaii Department of Agriculture: Pink Hibiscus Mealybug Training
Health Canada, Pest Management Regulatory Agency: 5th National IPM Symposium
Hilger Farm Market, Ft. Wayne, Indiana: Pumpkin Pest Management Strategic Plan
Huntington Orchards, Inc., Huntington, Indiana: Pumpkin Pest Management Strategic Plan
Idaho Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program
Illinois Farm Bureau: Soybean Rust Scouting Video
Illinois Natural History Survey: *Diabrotica* Genetics Consortium, Soybean Aphid Suction Trap Network
Iowa Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training
Iowa State University: Corn Rootworm Management Training, Soybean Rust Issues and Facts Training, *Diabrotica* Genetics Consortium
IPM Institute of America: 5th National IPM Symposium, Sustainable Agriculture/IPM Initiative, Corn Rootworm Guarantee Program
IR-4: 5th National IPM Symposium, Cromptime Lines, Ginseng Pest Management Strategic Plan, 4th National IPM Symposium
Kansas State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Corn Rootworm Management Training
Land Grant Universities: Corn Rootworm Management Training Coordination, Soybean Aphid Pest Alert, Soybean Aphid Suction Trap Network, Legume PIPE Project, Soybean Rust Pest Alert, Soybean Rust Training coordination, Soybean Rust Scouting Video, Sudden Oak Death Pest Alert, *Phytophthora ramorum* Educate to Detect (PRED) Program Coordination, *Ralstonia* Pest Alert, Pink Hibiscus Mealybug Pest Alert, Increasing Access to Conservation Funds Training, BEAD Training, Environmental Lawn Care and Landscaping Initiative, 5th National IPM Symposium, 4th National IPM Symposium
Louisiana Greater New Orleans Master Gardeners: Pink Hibiscus Mealybug Training
Louisiana State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training
Maine APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program
Maine Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program
Maryland APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program
Maryland Department of Agriculture: Sudden Oak Death Pest Alert, *Phytophthora ramorum* Educate to Detect (PRED) Program, Sudden Oak Death WANTED Poster, Brown Marmorated Stink Bug Pest Alert
Master Gardener Coordinators: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training
McCain Foods USA: Potato Pest Management Strategic Plan
McCloud Services: 5th National IPM Symposium
MeisterPro Information Resources: 5th National IPM Symposium
Michigan Department of Agriculture: Ginseng Pest Management Strategic Plan, Pink Hibiscus Mealybug Training
Michigan State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Soybean Rust Issues and Facts Training
Miller's Market, Inc., Neponset, Illinois: Pumpkin Pest Management Strategic Plan
Minnesota Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program
Mississippi State University: *Diabrotica* Genetics Consortium
Missouri APHIS PPQ: Pink Hibiscus Mealybug Training
Missouri Department of Conservation: *Phytophthora ramorum* Educate to Detect (PRED) Program
Monsanto Company: *Diabrotica* Genetics Consortium, 5th National IPM Symposium
National Agricultural Statistics Service (NASS): 5th National IPM Symposium

National Alliance of Independent Crop Consultants: ESA symposium, 5th National IPM Symposium

National Arbor Day Foundation: Environmental Lawn Care and Landscaping Initiative

National Corn Growers' Association: Insect Resistance Management for Biotechnology

National Association of Independent Crop Consultants: 5th National IPM Symposium

National Foundation for IPM Education: 5th National IPM Symposium

National Gardening Association: Environmental Lawn Care and Landscaping Initiative

National Institute of Agricultural Research (INRA) : *Diabrotica* Genetics Consortium

National IPM Coordinating Committee: ESA symposium, 5th National IPM Symposium

National Park Service: 5th National IPM Symposium

National Pest Management Association: Mosquito Training Module

National Plant Board: pink hibiscus mealybug pest alert, *Phytophthora ramorum* Educate to Detect (PRED) Program

National Plant Diagnostic Network (NPDN): Pink Hibiscus Mealybug Training, Pink Hibiscus Mealybug Pest Alert, Lobate Lac Scale Pest Alert, *Phytophthora ramorum* Educate to Detect (PRED) Program, Sudden Oak Death Pest Alert, Sudden Oak Death WANTED Poster

National Science Foundation (NSF) Center for IPM: 5th National IPM Symposium

Natural Resources and Conservation Services (NRCS): Increasing Access to Conservation Funds Training

NC-205 Ecology and Management of European Corn Borer and Other Lepidopteran Pests of Corn: Insect Resistance Management Training

NC-504 Soybean Rust: A New Pest of Soybean Production: Soybean Rust Training

NCR-046 Development, Optimization and Delivery of Management Strategies for Corn Rootworms: Insect Resistance Management Training, Corn Rootworm Management Guide

NCR-193 Plant health: managing insect pests and diseases of landscape plants: IPM of Midwest Landscapes

NCR- 201 Integrated Pest Management: NC IPM Center State Contacts, NC IPM Center Advisory Committee, 5th National IPM Symposium

Nebraska Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program

Nestle USA, Morton, Illinois: Pumpkin Pest Management Strategic Plan

New Hampshire Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program

New Hampshire Forest Service: *Phytophthora ramorum* Educate to Detect (PRED) Program

New Jersey APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program

New Jersey Forest Service: *Phytophthora ramorum* Educate to Detect (PRED) Program

New Mexico APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

New Mexico State University: Pink Hibiscus Mealybug Training

North Carolina APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program

North Carolina Department of Agriculture and Consumer Services: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

North Carolina State University: Pink Hibiscus Mealybug Training

North Dakota APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program

North Dakota State Seed Department: Potato Pest Management Strategic Plan

North Dakota State University: Soybean Rust Issues and Facts Training

North Dakota Wheat Commission: Wheat Pest Management Strategic Plan

Northeastern IPM Center: Brown Marmorated Stink Bug Pest Alert, 5th National IPM Symposium, 4th National IPM Symposium

Northern Plains Potato Growers Association: Potato Pest Management Strategic Plan

Office of Pest Management Policy (OPMP): 5th National IPM Symposium, Pest Management Strategic Plans, CSREES Information Requests, 4th National IPM Symposium

Ohio Department of Agriculture: Pink Hibiscus Mealybug Training

Oklahoma Department of Agriculture: Pink Hibiscus Mealybug Training

Oklahoma State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Ontario Ministry of Agriculture and Food: 5th National IPM Symposium
Oregon APHIS PPQ: Pink Hibiscus Mealybug Training
Oregon Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program
Orkin Commercial Services: 5th National IPM Symposium
Pennsylvania APHIS PPQ: Pink Hibiscus Mealybug Training
Pennsylvania Department of Agriculture: Pink Hibiscus Mealybug Training
Pennsylvania State University: Pink Hibiscus Mealybug Training, *Diabrotica* Genetics Consortium
Pest Pros, Wisconsin: Potato Pest Management Strategic Plan
Pesticide Safety Education Program (PSEP): *Phytophthora ramorum* Educate to Detect (PRED) Program, Mosquito Training Module
Pioneer HiBred International: *Diabrotica* Genetics Consortium
Pro Ag Crop Consultants: Potato Pest Management Strategic Plan
Professional Lawn Care Association of America: Environmental Lawn Care and Landscaping Initiative
Purdue University - *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training, Soybean Rust Issues and Facts Training, *Diabrotica* Genetics Consortium
Randy's Vegetables, Dundee, Illinois: Pumpkin Pest Management Strategic Plan
Red River Valley Potato Growers: Potato Pest Management Strategic Plan
Responsible Industry for a Sound Environment (RISE): Environmental Lawn Care and Landscaping Initiative
Rhode Island Division of Agriculture and Resource Marketing: *Phytophthora ramorum* Educate to Detect (PRED) Program
Risk Management Agency (RMA): Soybean Rust Training, Legume PIPE Project
San Antonio Water System: Environmental Lawn Care and Landscaping Initiative
Scotts Miracle-Gro Company: Environmental Lawn Care and Landscaping Initiative
Seneca Foods Corp., Princeville, Illinois: Pumpkin Pest Management Strategic Plan
South Carolina APHIS PPQ: Pink Hibiscus Mealybug Training
South Dakota Department of Agriculture: Wheat Pest Management Strategic Plan
South Dakota State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training, Soybean Rust Issues and Facts Training
South Dakota Wheat Commission: Wheat Pest Management Strategic Plan
Southern Illinois University, Carbondale, Illinois: Pumpkin Pest Management Strategic Plan
Southern IPM Center: Lobate Lac Scale Pest Alert, 5th National IPM Symposium, 4th National IPM Symposium
Syngenta AG Products, Inc.: Ginseng Pest Management Strategic Plan
Syngenta Crop Protection: 5th National IPM Symposium
Sysco: 5th National IPM Symposium, Sustainable Agriculture/IPM Initiative
Tennessee APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program
Texas A & M University: Pink Hibiscus Mealybug Training
Texas APHIS PPQ: Pink Hibiscus Mealybug Training
Texas Department of Agriculture: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training
The Ohio State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training, Corn Rootworm Management Training, Soybean Rust Issues and Facts Training
The TORO Company: Environmental Lawn Care and Landscaping Initiative
TruGreen Companies: Environmental Lawn Care and Landscaping Initiative
United Agri Products: Potato Pest Management Strategic Plan
United Soybean Board: Soybean Rust, Legume PIPE Project
United States Agency for International Development (USAID): 5th National IPM Symposium
United States Department of Defense: Mosquito Training Module
United States Forest Service: Sudden Oak Death Pest Alerts, Sudden Oak Death WANTED Poster, *Phytophthora ramorum* Educate to Detect (PRED) Program, 5th National IPM Symposium
United States National Arboretum: 5th National IPM Symposium
University of Arkansas: *Diabrotica* Genetics Consortium

University of California: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

University of Connecticut: *Phytophthora ramorum* Educate to Detect (PRED) Program

University of Florida: Pink Hibiscus Mealybug Training

University of Guelph: *Diabrotica* Genetics Consortium

University of Hawaii: Pink Hibiscus Mealybug Training

University of Idaho: *Phytophthora ramorum* Educate to Detect (PRED) Program

University of Illinois: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training, Corn Rootworm Management Training, Soybean Rust Issues and Facts Training, *Diabrotica* Genetics Consortium

University of Kentucky: *Phytophthora ramorum* Educate to Detect (PRED) Program

University of Maryland: Pink Hibiscus Mealybug Training, *Diabrotica* Genetics Consortium

University of Missouri: *Phytophthora ramorum* Educate to Detect (PRED) Program, Soybean Rust Issues and Facts Training, *Diabrotica* Genetics Consortium

University of Minnesota: Corn Rootworm Management Training, Soybean Rust Issues and Facts Training

University of Nebraska: Pink Hibiscus Mealybug Training, Corn Rootworm Management Training, Soybean Rust Issues and Facts Training, *Diabrotica* Genetics Consortium

University of Tennessee: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

University of Vermont: *Phytophthora ramorum* Educate to Detect (PRED) Program, *Diabrotica* Genetics Consortium

University of Virginia: *Phytophthora ramorum* Educate to Detect (PRED) Program

University of Wisconsin: Corn Rootworm Management Training, Soybean Rust Issues and Facts Training, *Diabrotica* Genetics Consortium

Utah State University: *Phytophthora ramorum* Educate to Detect (PRED) Program

Vermont APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Virginia Department of Agriculture and Consumer Services: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Virginia Polytechnic Institute and State University: *Phytophthora ramorum* Educate to Detect (PRED) Program, Pink Hibiscus Mealybug Training

Washington University of the District of Columbia: *Phytophthora ramorum* Educate to Detect (PRED) Program

Waterman's Farm Market: Pumpkin Pest Management Strategic Plan

Welch's National Grape Cooperative: 4th National IPM Symposium

West Virginia APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program

Western IPM Center: 5th National IPM Symposium, 4th National IPM Symposium

Wildlife Habitat Council: Environmental Lawn Care and Landscaping Initiative

Wisconsin APHIS PPQ: *Phytophthora ramorum* Educate to Detect (PRED) Program

Wisconsin Department of Agriculture: Ginseng Pest Management Strategic Plan, Pink Hibiscus Mealybug Training

Wisconsin Ginseng and Herb Co-Op: Ginseng Pest Management Strategic Plan

Wisconsin Ginseng Growers Association: Ginseng Pest Management Strategic Plan

Wisconsin Potato and Vegetable Growers Association: Potato Pest Management Strategic Plan