

Cornell University
Cooperative Extension

Annual Report 2005 - 2006
New York State Integrated Pest Management Program
Agriculture and Community IPM



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Annual Report 2005-06

The New York State Integrated Pest Management Program

Agriculture and Community IPM

Department of Agriculture and Markets - Contract No. C-200076
Department of Agriculture and Markets - Contract No. C-200135
Department of Environmental Conservation - Contract No. M-050061
Submitted June 30, 2006

Executive Summary

Our mission is to develop sustainable ways to manage pests and help people to use pest management methods that minimize health, environmental, and economic risks. We strive to make IPM the pest management solution for New York State. To accomplish our mission, program staff collaborate on and lead multidisciplinary, problem-solving research, engage stakeholders to ensure that appropriate priorities are set, and bring in additional IPM funding. We collaborate extensively with diverse audiences statewide to implement the use of a range of IPM practices. To ensure that we remain in a leadership role and do the best job possible for New York State, we continue to implement the excellent recommendations made by a USDA-CSREES review of our Program.

This year's Annual Report includes a compilation of reports on projects led or co-led by NYS IPM Program staff. IPM resources directly supported some of the projects, but many were supported by leveraged funds received from competitive state and federal grant programs as well as private sources. During FY 2005-2006 NYS IPM Program staff alone; or in partnership with others, had 40 active grants totaling \$7.75 million, of which \$1.1 million came to the IPM Program (see Summary of Grants, pg 8). This does not include base funds from USDA-CSREES, NYS Ag and Markets or NYS DEC.

Program staff continued to engage stakeholders reaching over 11,500 people face-to-face through 261 workshops, presentations, and demonstrations. Through our website we reached many more - visits to the NYS IPM website exceeded 1.2 million for 2005. The IPM Guidelines website for vegetables was visited 263,000 times. The grape IPM website received 13,000 hits from people looking for specialized grape pest management information. The NEWA (Network for Environment and Weather

Awareness) website that connects with nearly 40 electronic weather monitors in farmer's fields on a daily basis and forecasts various insect and disease pest occurrences on numerous crops received 119,000 contacts from 523 users in 2005. In addition, the program has, over the past few years, created and printed more than 258,000 copies of 31 different IPM-related publications for consumers to help them deal with mosquitoes, mice, cockroaches, and other pests.

For 2005-06, we are grateful for the higher core funding from New York State for agricultural IPM. This allowed us to fill vacant positions, including the Ornamentals IPM Coordinator and the Western NY Ornamentals IPM Extension Educator. In 2006-07 we expect to see the initial impact of these positions on the ornamentals industry. We also used some of these funds for a small grants program for applied researchers, extension staff, and private IPM practitioners. Recipients are using the resources to improve IPM techniques for several crops and introduce the concept of IPM to additional farmers. We are continuing to advance the science of IPM with the funded projects and we also look forward to seeing the results of several impact surveys being conducted to evaluate the value of our IPM efforts in previous years.

Our Community IPM Program continues to contribute to the pest management needs of our non-farm constituents. In 2005-06, Community IPM was again state-funded at a level of (\$300,000) that allows current staff and projects to continue and expand to a limited extent. For 2006-07 we anticipate a significant increase in funding that will allow us to continue important projects and initiate new ones.

Partnerships remain key to the success of the Program. We are appreciative of the long-standing partnership with the NYS Department of Agriculture and Markets and likewise for our partnership with the NYS Department of Environmental Conservation. We also are thankful for the many partnerships we have within Cornell Cooperative Extension and the College of Agriculture and Life Sciences and with agricultural, environmental, and government organizations. Working together, we are achieving the common goal of reducing the (sometimes opposing) risks from pests and pest control.

In 2006-07 we are looking forward to:

- Continuing to sponsor IPM projects through a grants program, to be led by faculty and extension educators, if funding permits
- Continuing to garner additional funds through competitive grants
- Initiating activity in arboriculture IPM in southeastern NY
- Making advances in k-12 IPM curriculum

Selected Program Accomplishments for 2005-2006

Agriculture IPM:

- An all day forum attended by 100 ag industry people was held to allow farmers to assess their participation in markets that demand information about farm production practices.
- Basic information on managing soybean aphid was presented to over 900 individuals at 19 meetings
- Field trials showed IPM practices reduced bacterial canker in tomatoes by using non-pesticide techniques.

- NEWA disease and insect forecast network operated nearly 40 weather instruments in growers' fields (including a 4 site expansion in ENY fruit) and recorded 107,327 website hits from 526 users seeking pest forecast information that they used to help make pest management decisions, representing an increase of over 60%.
- Evaluated 15 potato varieties for leafhopper tolerance in organic farm fields. Worked with chefs to evaluate the same varieties for cooking qualities.
- Small group meetings, email newsletter connections, and website access used to train over 500 growers in grape IPM practices. There were over 250 hits per week on the grape IPM websites offering this information.
- Evaluated a parasitic wasp, *Trichogramma ostrinia*, to control grape berry moth in vineyards. Results showed the wasp may be able to be part of a multi-pronged approach to the management of grape berry moth.
- Tactical Agriculture (TAg) Teams in several counties provided experiential IPM learning for 13 farms covering 8,900 acres of field crops. Participant test scores for IPM knowledge increased by at least 40%.
- A weekly field crops pest report distributed statewide for 22 issues in the 2005 growing season. Most recipients of the newsletter rated it "very useful" in making pest management decisions.
- A network of traps and weather stations (NEWA) were used to monitor internal lepidopteran pests of apples to assist farmers in the proper timing of control measures.
- Analysis of grower surveys conducted in 1995 and 2002 showed that New York fresh market sweet corn growers had adopted between 1 and 3 additional IPM practices during this period. Eleven IPM projects, 35 training sessions, 3 season long demonstrations and a supermarket incentive program contributed to this increase.
- Four new versions of Trac Software were released with over 300 copies distributed.
- A workshop for apple growers for using Trac software and computers to increase market advantage was developed and presented to 81 participants in 8 sessions.
- An on-farm soybean IPM education program conducted in the TAg format for 14 participants resulted in a doubling of test scores for IPM knowledge.
- In 20 corn plantings on 5 farms that do not spray their sweet corn for insects, alternative control measures for European corn borer, corn earworm and fall armyworm were successfully demonstrated.
- A pheromone trap network for sweet corn pests was operated in western New York to assist growers in determining if and when to take control measures for insect pests. This network has been able to assist growers on the 49,400 acres of sweet corn in New York to reduce their insecticide applications.
- Evaluated products for control of Rhabdochile needlecast of Christmas trees.
- Completed Greenhouse IPM Elements.

Across Ag & Community

- Provided leadership for 2 Northeast IPM Working groups.

Communications Team

- Produced a 20-year report on the Program for communication of long-term program accomplishments across New York State, to legislators, growers, pest managers and other stakeholders.
- Wrote and released 8 press releases.
- Revised the NYS IPM website, with transition to a database driven system. Site had more than 1.5 million hits.

Community IPM:

- In a project comparing pest management systems for golf course greens, quality of IPM greens almost always equaled that of conventional greens, and the environmental impact of IPM and "Reduced Risk" treatments was 80-85% lower than conventional.

- Conducted a "learning community" project with 3 school districts in the Hudson Valley. This project tested a new model for long-term implementation of school IPM.
- Implemented a school IPM program to bring a cockroach problem under control in a Long Island school.
- Interviewed 38 NYS schools with strong IPM reputations to document practices of successful practitioners.
- Researched low-risk methods for management of stinging insects and ticks.
- Over 135 people were directly trained in IPM practices for municipalities.
- IPM specialists coordinated information sharing and communication among NYS communities implementing pesticide restriction laws-including Westchester and Suffolk Counties and New York City.
- Conducted an extensive national bed bug survey of 225 pest management industry professionals.
- Developed and delivered an IPM curriculum package to K-1 teachers from three schools in the Akwesasne Board of Education jurisdiction in conjunction with the St. Regis Mohawk Tribe.
- Contributed IPM content to the North Street Elementary School Summer Science camp in Geneva.
- Completed the "IPM Displays for the Public" project, sponsored by the NE IPM Center.
- Completed K-4 IPM curriculum in four modules: core IPM; Ladybugs and Insects; Dandelions and Plants; and Earthworms and Soils.

The reports that follow provide the details of the many projects conducted by IPM staff and others in FY 2005-06. As you will see, NYS IPM Program staff partner with many others at Cornell University and across the northeastern US.

NYS IPM Program Staff

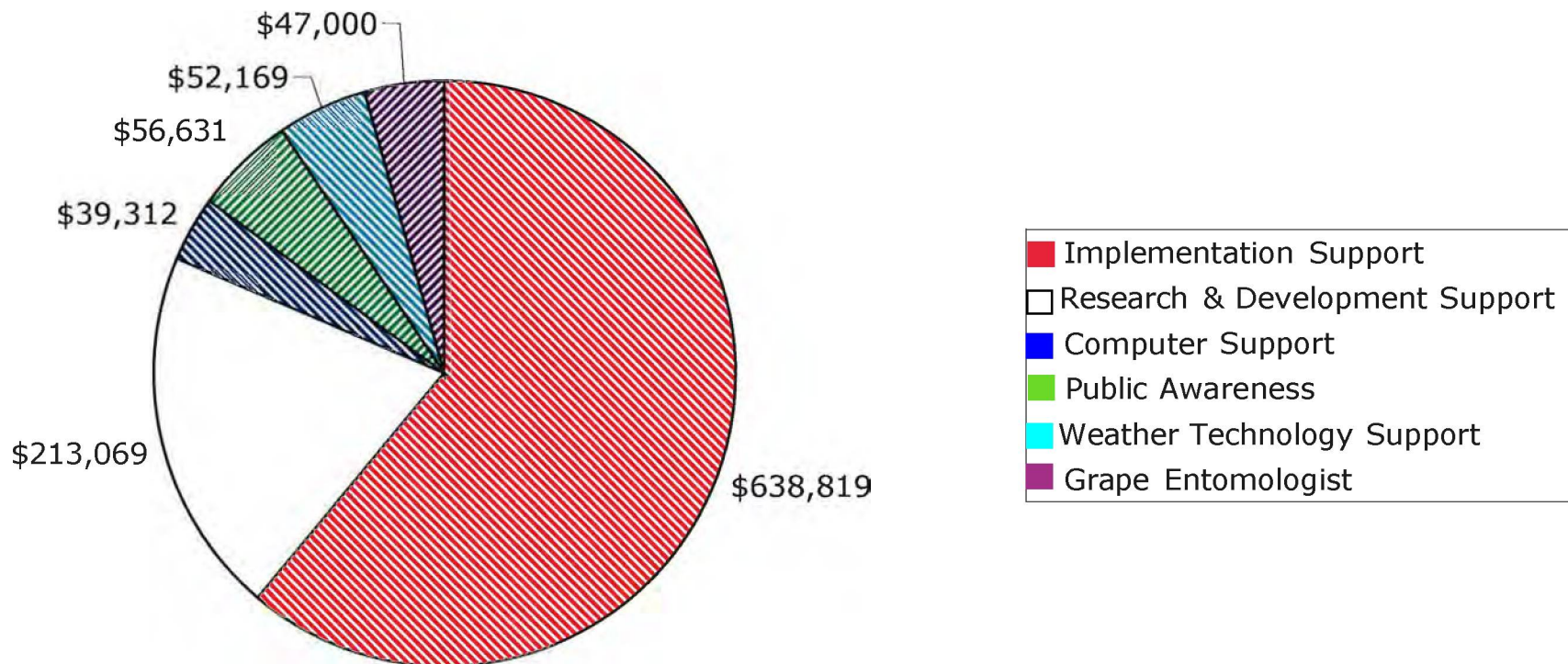
There are 13 academic appointments in the NYS IPM Program (not including the director, who is a professor): seven senior extension associates and six extension associates. All academic positions except the director are primarily funded through contracts with the NYS Department of Agriculture and Markets and the NYS Department of Environmental Conservation additional support comes from USDA: CSREES and competitive grant sources. Academic program staff have approximately 20% applied research responsibilities, 80% Extension responsibilities.

Donald Rutz, Ph.D., Director (appointed 2/1/06); Professor of Entomology
Michael Hoffmann, Ph.D., Director (through 1/31/06); Professor of Entomology
Curtis Petzoldt, Ph.D., Assistant Director; Vegetable IPM Coordinator
Jennifer Grant, Ph.D., Assistant Director; Community IPM Coordinator

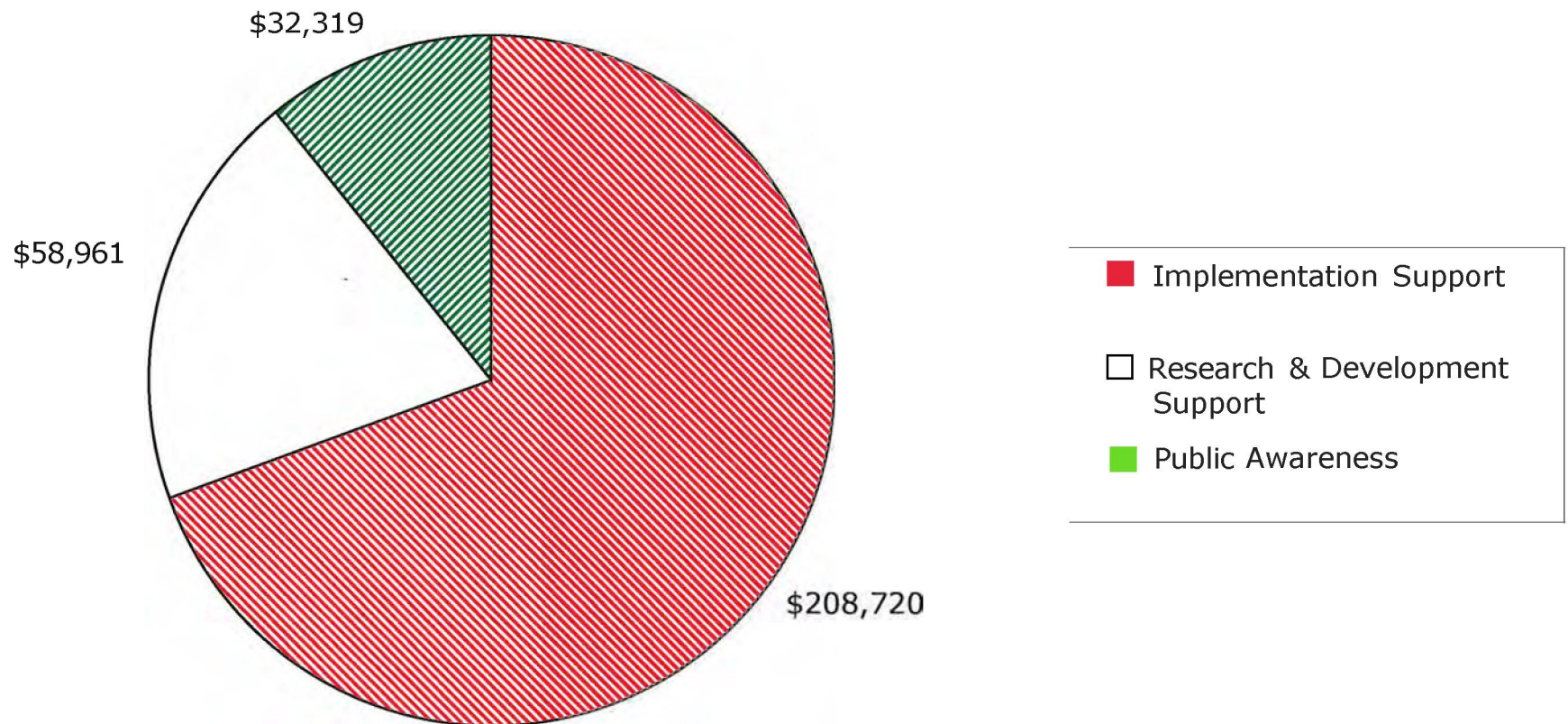
Sandy Antinelli, A.A.S., Accounts Representative
Lynn Braband, M.S., Community IPM Extension Educator
Juliet Carroll, Ph.D., Fruit IPM Coordinator
Claudia Coen, Ph.D., Community IPM Extension Educator
Gary Couch, M.S., Ornamentals IPM Extension Educator
Karen English, M.S., Webmaster
Jody Gangloff-Kaufmann, Ph.D., Community IPM Extension Educator
Janet Garlick, A.A.S., Administrator
John Gibbons, A.A.S., Weather Associate
Michele Kaufman, B.S., Administrative Assistant
Debra Marvin, A.A.S., Technician*
John Mishanec, M.A.T., Vegetable IPM Extension Educator
Judy Nedrow, B.S., Information Specialist*
Abby Seaman, M.S., Vegetable IPM Extension Educator
Julie Stavisky, M.S., Livestock/Field Crops IPM Extension Educator
Cheryl TenEyck, M.S., Computer Support
J. Keith Waldron, M.S., Livestock/Field Crops IPM Coordinator
Timothy Weigle, M.S., Fruit IPM Extension Educator
Kenneth Wise, M.S., Livestock/Field Crops IPM Extension Educator
Mary Woodsen, B.A., Writer and editor

* funded by competitive grants. Some staff are part-time.

Distribution of funds for the NYS IPM Program in Agriculture, 2005-2006



Distribution of funds for the NYS IPM Program in Community, 2005-2006



**NYS Integrated Pest Management Program
Summary of Grants
April 2005 through March 2006**

<u>Principal or Co-Principal Investigator</u>	<u>Source</u>		<u>Total\$ Amount</u>	<u>Total\$ Amount received by IPM</u>	<u>Title of Project</u>
State Resources:					
<u>Hoffmann</u>	NYS Ag & Mkt	4/1/05 - 3/31/06	\$1,000,000	\$1,000,000	Integrated Pest Management
<u>Hoffmann</u>	NYS Ag & Mkt	4/1/05 - 3/31/06	\$47,000	\$47,000	Grape Entomologist
<u>Hoffmann</u>	DEC	4/1/05 - 9/30/06	\$300,000	\$300,000	Community IPM
<u>Hoffmann</u>	NYS Ag & Mkt	1/1/04 - 9/15/06	\$65,000	\$65,000	Apiary IPM initiative
Federal Resources:					
<u>Hoffmann</u>	USDA/CSREES Smith-Lever 3(d)	10/1/04 - 9/30/05	\$91,205	\$91,205	Integrated Pest Management (Agriculture & Community)
<u>Hoffmann</u>	USDA /CSREES Smith-Lever 3(d)	10/1/05 - 9/30/06	\$92,811	\$92,811	Integrated Pest Management (Agriculture & Community)
Leveraged Resources:					
<u>Ayers, Hoffmann, Ko12linka-Loehr</u>	CSREES	9/16/03- 9/15/07	\$4,313,524	\$34,800	Northeastern Region Pest Management Center
<u>Petzoldt</u>	USDA/RAMP	9/15/01 - 9/14/05	\$518,333	\$518,333	Demonstration & Evaluation of Cucurbit Pest & Crop Mgmt System
<u>Weigle, English-Loeb, Hoffmann</u>	Viticulture Consortium	7/1/04 - 6/30/06	\$18,744	\$18,744	Addressing late-Season Grape Berry moth Damage
<u>Weigle, English-Loeb, Hoffmann</u>	Wine & Grape Foundation	4/1/05- 3/31/06	\$7,500	\$7,500	Addressing late-Season Grape Berry moth Damage
<u>Abawi, Wolfe, Van Es, Petzoldt, et al</u>	NE SARE	5/1/03- 12/31/06	\$209,841	\$0	Soil Health Assessment, Management and Training: Vegetable Production Systems
<u>Rangarajan, Petzoldt and others</u>	NE SARE	4/1/03- 3/30/06	\$174,288	\$0	Optimizing Reduced Tillage Systems for Vegetables Grown in the Upper Northeast
<u>Abawi, Wolfe, Van Es, Petzoldt, et al</u>	CCE Federal Formula Funds	10/1/04- 9/30/05	\$20,000	\$0	Establishment and Maintenance of Long - Term Soil Health Sites
<u>Losey, Waldron & Hajek</u>	NE Soybean Promotion Board	5/03-5/04	\$15,857	\$300	Comparison of Soybean Aphid Abundance and Yield Impact on NY Soybean Varieties and Survey of Soybean Aphid Natural Enemies
<u>Rutz, Kaufman, Waldron, Watson</u>	USDA Crops at Risk	2003-2005	\$296,000	\$0	Development and Implementation of a Cost Effective, Integrated Pasture Fly Management Program for the Eastern US
<u>Waldron, Lambo, Carroll, Petzoldt</u>	USDA/CSREES	9/15/03- 9/14/05	\$25,000	\$25,000	Development of IPM Elements for Key Crops in NYS
<u>Ko12linka-Loehr, Grant, Coen</u>	NEIPM	4/1/04 - 3/31/06	\$13,000	\$13,000	IPM Displays for the Public

<u>Principal or Co-Principal Investigator</u>	<u>Source</u>		<u>Totals Amount</u>	<u>Totals Amount received by IPM</u>	<u>Title of Project</u>
<u>Carroll</u>	NEIPM	5/1/04- 4/30/06	\$15,000	\$15,000	Promoting Apple IPM Implementation In Eastern NY Orchards by Expansion of the Northeast Weather Association (NEWA)
<u>Hoffmann, Lesser, et al.</u>	Rural Business-Coop Service, USDA	3/1/04- 2/28/06	\$993,200	\$92,274	New York Farm Viability Institute: The Center for Value-Added Agriculture.
<u>Seaman</u>	NE SARE Partnership	5/1/04- 4/30/05	\$9,670	\$9,670	Screening potato varieties commonly grown by organic farmers for susceptibility to damage and yield reduction caused by potato leafhopper.
<u>Carroll</u>	NE SARE Partnership	5/1/04- 4/30/05	\$9,841	\$9,841	Promoting Apple IPM Implementation In Eastern NY Orchards by Expansion of the Northeast Weather Association (NEWA)
<u>Waldron, Rutz, Kaufman</u>	NESARE Partnership	5/1/04- 4/30/05	\$9,125	\$9,125	Expanding Livestock IPM in the NE: An IPM Training Opportunity for NE US Animal Agriculture Industry Personnel
<u>Shultz, Curtis</u>	NEIPM Partnership	4/1/04- 9/15/05	\$10,000	\$10,000	Developing the first regional IPM core training manual for wildlife control operators in the Northeast
<u>Braband</u>	NEIPM Partnership	7/1/04- 06/30/06	\$53,785	\$53,785	School IPM Leadership Training Program: Developing a Learning Community
<u>Gangloff-Kaufmann</u>	NEIPM Partnership	5/1/04 - 3/14/06	\$19,874	\$19,874	Development of a Pest Profile and a Strategic Plan for the Resurgence of Bed Bugs in the United States
<u>Seaman</u>	New York Farm Viability Institute	3/1/04- 9/30/05	\$9,868	\$9,868	"Clean Corn" for organic and no-spray sweet corn growers
<u>Braband</u>	St. Regis Mohawk Tribe/EPA	6/1/04- 12/31/05	\$9,671	\$9,671	Assessment of the Need for a Pesticide Management Plan - - Outreach
<u>Carroll</u>	New York Farm Viability Institute	3/1/04- 9/30/05	\$5,808	\$5,808	Computer Confidence, Internet Ease, Excel Basics & Trac Software: a workshop for apple growers to enhance their market edge
<u>Rutz, Kaufman, Waldron, Watson</u>	USDA Crops at Risk		\$296,000	\$400	Development and Implementation of a Cost Effective, Integrated Pasture Fly Management Program for the Eastern US
<u>Carroll, Joki</u>	New York Farm Viability Institute	10/1/04- 9/30/05	\$6,452	\$6,452	Computer Confidence, Internet Ease, Excel Basics & Trac Software: a workshop for apple growers to enhance their market edge
<u>Couch</u>	New York Farm Viability Institute	10/1/04- 9/30/05	\$4,900	\$4,900	Integrated Management of Fungus Gnats in Production Greenhouses
<u>Grant, Rossi, Peck</u>	NEIPM	5/05 -3/08	\$99,027	\$64,875	Long-term Evaluation and Improvement of Golf Turf Management Systems with Reduced Chemical Pesticide Inputs

<u>Principal or Co-Principal Investigator</u>	<u>Source</u>		<u>Total\$ Amount</u>	<u>Total\$ Amount received by IPM</u>	<u>Title of Project</u>
Robinson, Agnello, <u>Carroll</u> , et al.	HatchNYG 632458	10/1/04- 9/30/05	\$60,000		Development of an Integrated Fruit Production Protocol (IFP) for NY Apples
Koeller, <u>Carroll</u> , Cooley, Biggs	NEIPM Partnership	6/1/05 - 5/31/08	\$177,785	\$15,497	Site-Specific Management of Resistance (SMOR) in the Control of Apple Scab: Final Phase of Development & Implementation
<u>Grant</u> , Klass	NEIPM	4/05 - 3/06	\$49,997	\$49,997	IPM in and Around the Home: Northeast Guidelines
<u>Staviskx, Wise,</u> <u>Waldron</u>	NE Soybean Production	4/1/05 - 3/31/06	\$7,777	\$7,777	An On-Farm Soybean IPM Education Program
<u>Braband</u> , Malinoski	NEIPM Partnership	1/1/05 - 12/31/05	\$15,000	\$15,000	Northeast IPM Center Community IPM Working Group Plan of Work for 2005
Losey, <u>Waldron</u> , Hajek, Allee	NE Soybean Production	4/1/05 - 3/31/06	\$16,357	\$200	Evaluation of economic injury level, biological control, and host plant resistance for soybean aphid in NY.
Snedeker, <u>Grant</u> Levitan	NYS Department of Health		\$100,000	\$10,659	Breast Cancer and Environmental Risk Factors in NYS: <i>Environmental Chemical Carcinogens in the Home and Workplace</i>
<u>Grant</u>	Private Anonymous Foundation	9/1/05 - 8/31/06	\$15,000	\$15,000	Teaching IPM: From Field to Classroom
<u>Braband</u>	NEIPM Partnership	1/1/06- 12/31/06	\$19,250	\$19,250	Northeastern IPM Center Community IPM Working Group Plan of Work 2006
<u>Seaman</u> , Tingey, Power	NEIPM	3/06-2/07	\$16,194	\$16,194	Potato Varietal Mixtures for Potato Leafhopper Management on Organic Farms
<u>Wise, Staviskx</u> , <u>Waldron</u>	Northeast SARE	6/06- 10/07	\$24,225	\$24,225	Tactical Agriculture (Tag) Train-the-Trainer Workshop
<u>Staviskx</u> , <u>Wise,</u> <u>Waldron</u>	NE Soybean Promotion Board	4/06-3/07	\$14,258	\$14,258	On-farm Soybean IPM Education Program
<u>Grant</u>	NYSTA	2/06-2/08	\$5,831	\$5,831	Trac Turf: Software for Documentation of Pest Management Practices for New York State Turfgrass
Vians, <u>Waldron</u> , Hansen, Hall	NEIPM Partnership Grant	2005-2006	\$79,470	\$700	Reducing Potato leafhopper (PLH) Impacts through PLH-resistant Cultivars Intercropped with Perennial Forage Grass

Publications Authored by NYS IPM Staff, 2005-2006

(IPM staff member shown in bold)

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Agnello, A.M., Landers, A.J., Rosenberger, D.A., Robinson, T.L., **Carroll, J.E.**, Cheng, L., Curtis, P.D., Breth, D.I. and Hoying, S.A. 2006. Pest Management Guidelines for Commercial Tree-Fruit Production 2006. Cornell Cooperative Extension, Ithaca. 252 pp.

de Assis Filho, F.M. **J. Stavisky**, S.R. Reitz, C.M. Deom, and J. L. Sherwood. 2005. Midgut infection by tomatato spotted wilt virus and vector incompetence of *Frankliniella tritici*. Journal of Applied Entomology, Vol 129, Issue 9/10, pp. 548-550.

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NOTE: Although this IPM Program Strategic Plan was developed in 2001 for a five year horizon, much of it is still applicable. We have updated those areas to note accomplishments and additional needs.

THE NYS IPM PROGRAM FIVE-YEAR STRATEGIC PLAN, 2001-2006

Our Vision: IPM is *the* pest management solution for New York State.

A. Basis of the 2001 Strategic Plan

B. Expand Program Areas to Better Serve Our Stakeholders

1. Areas Common to Agricultural and Community IPM
2. Areas Specific to Agricultural IPM
3. Areas Specific to Community IPM
4. Integration of Community and Agricultural IPM
5. Other Environmental Issues

C. Strengthen Educational Outreach

1. New Technologies
2. Curriculum Development
3. New and Diverse Audiences

D. Promote IPM

1. Communication with Stakeholders
2. Public Awareness of IPM
3. Supportive Alliances to Promote IPM

E. Increase Emphasis on Professional Development

1. Cornell Cooperative Extension's Commitment to Excellence
2. Professional Development

F. Broaden Funding Sources

1. Strategies to Increase Funding Base
2. Competitive Grants
3. IPM Foundation
4. Private Foundations

A. BASIS OF THE 2001 STRATEGIC PLAN

This strategic plan was developed with participation of all NYS IPM Program staff, particularly through the ideas expressed at the NYS IPM Program's staff retreat on April 5, 2001. The NYS IPM Operating and Executive Committees have also contributed to the plan. The strategic plan builds on the program's 1994 Long-Range Plan, which was developed with input from the statewide IPM Grower Advisory Committee, commodity work teams (e.g., faculty, extension educators, stakeholders), the governor's office, the-state legislature, and environmental and consumer advocates.

The 2001 Strategic Plan identifies ways the program can expand its breadth by applying the-expertise of program staff, faculty, and cooperative extension available at Cornell University to ongoing and emerging challenges in New York State, including the issues at the interface between the urban and agricultural sectors. In this plan, we challenge ourselves to enhance and expand our contributions to the citizens of New York and beyond by strengthening our educational outreach. We address our vision of making IPM "*the* pest management solution for New Yorkers" by making IPM expertise more accessible to all audiences who can benefit from our knowledge. Finally, in this plan we emphasize two goals designed to ensure we have the resources to serve our stakeholders effectively: (1) to continue to develop a complete and professionally energized staff, and (2) to broaden our range of funding sources so that we have the means to respond more fully to all our stakeholders' needs.

On an annual basis, we will evaluate our progress with respect to this strategic plan. At each annual review, we will adjust goals and objectives to ensure that we are effectively satisfying the charge given to us by our state funding agencies (the NYS Department of Agriculture and Markets, the NYS Department of Environmental Conservation), achieving the goals set in our Performance Planning and Reporting System (PPRS) plan of work to the USDA Cooperative State Research, Education, and Extension Service (CSREES) (Smith-Lever 3(d)), and meeting the needs of our stakeholders.

B. EXPAND PROGRAM AREAS TO BETTER SERVE OUR STAKEHOLDERS

During the early years of the NYS IPM Program, the focus was on short-term research and implementation of practices that reduced or optimized the use of pesticides. As the program developed and implemented those practices in cooperation with Cornell faculty, extension staff, growers, and private-sector agricultural advisors, efforts began to expand beyond the traditional scouting and pesticide application decision-making paradigm for IPM. As additional resources became available, all IPM tactics were supported, including development of pest-resistant cultivars and biological, cultural, and mechanical controls, as well as the efficacious use of pesticides if needed. In recent years, the NYS IPM Program has participated in projects that include optimizing fertilizer use, managing manure in environmentally sound ways, optimizing crop production techniques from an environmental standpoint, marketing IPM products, using best management practices for greenhouses to protect water quality, and developing regional weather monitoring systems that pertain to pests and crops.

The program must continue to promote innovations in IPM research and implementation and evolve to meet new challenges, such as those associated with invasive species, application of biotechnology, pest resistance, and a general public that often does not appreciate or understand agriculture. We must foster a new paradigm based on ecological principles as we develop and deliver IPM strategies, rather than remaining dependent on single tactics, such as pesticides. We also need to incorporate additional crop management components-especially those related to environmental issues (e.g., water quality)-under the umbrella of IPM.

It is clear that in the future the NYS IPM Program will need to continue to expand its horizons in the agricultural arena and beyond through the community IPM effort. The

Community IPM Program needs to develop the expertise and resources that its large constituency is demanding. (For example, many schools and municipalities in the state have recently been prohibited from using chemical pesticides; and public safety requires that pests such as weeds on airport runways, wasps on school playgrounds, and vegetative overgrowth along roadways be managed sufficiently.) Challenges arise from issues of common interest to the nonagricultural and agricultural constituencies, often resulting from the need to ensure that pest management practices of any type (pest or crop management) are economical and environmentally sound. The NYS IPM Program is well positioned to begin to expand programming at the agricultural/urban interface because of the strong traditional agricultural IPM effort and the new community IPM effort.

In the next 5 to 10 years, our program will maintain its traditional strength and expand its efforts in the following areas.

1. Areas Common to Agricultural and Community IPM

Objective 1. Support longer-term discipline-specific and multidisciplinary research.

Overview: To make major strides in some pest-crop situations and community settings, the NYS IPM Program needs to invest in more long-term and fundamental research that involves plant and animal protection and production disciplines (applied ecology, classical biological control, vertebrate biology, and plant breeding-including biotechnology), structural and agricultural engineering, and city planning. In agriculture, long-term crop rotation and whole-farm studies need to be addressed. Likewise, community IPM research should focus on complex settings such as whole school districts, apartment buildings and golf courses.

Action steps

- Take advantage of opportunities to influence national and state policy by emphasizing the value of long-term, ecologically based research.
- Encourage researchers to pursue existing resources from federal and other sources that would support this type of research.
- Seek additional financial support through the state and other sources to support researchers engaged in long-term, ecologically based research with an emphasis on integration of pest, crop, and structural/landscape management tactics.

Objective 2. Improve our ability to assess the economic impacts of IPM.

Overview: One major reason why pest managers may be reluctant to incorporate proven IPM strategies into their day-to-day operations is that the ultimate cost to them and their customers or clients often is unknown. Thus, pest managers need information on how to incorporate economic considerations into their pest management decisions. Information on costs and benefits is also needed by citizens that manage pests in their own homes, as well as people who shape pest management policy such as environmental and public health advocates, administrators and legislators. The addition of expertise in pest management economics would enable us to inform clients more fully about this important aspect of IPM implementation.

Action steps

- Continue to fund National Agricultural Statistics Service (NASS) surveys to establish baselines and measure changes in IPM adoption.
- Strengthen relationships with faculty who have appropriate expertise in agricultural economics.

- Assess the need for staff or consulting expertise in management economics.
- Assess costs and benefits of IPM in a variety of community settings.
- Include economic analyses and case studies in IPM training.

Objective 3. Expand the community and agricultural IPM grants program.

Overview: The community IPM grants program only existed in 2000 and 2001, and brought about increased research, diagnostic capabilities, and educational outreach for the NYS IPM Program, especially within Cornell University and the Cornell Cooperative Extension system. Reinstating this program and expanding it in both size and audience, would build upon these successes. The agricultural grants program has a long, strong history, but funding ability has been reduced, as a result of several years of level funding and increased program costs. Additional funding would expand and rejuvenate a wide array of IPM research and implementation. In 2005 neither of these grants programs existed due to funding loss., however, an agricultural grants program is being funded for 2006. It is imperative to redevelop and maintain these grants programs through various funding sources.

Action steps

- Increase the size of the funding bases available for both the community and agricultural grants programs in order to permit more projects to be funded and at higher levels.
- Market the community grants program to a broader spectrum of potential grant recipients (in addition to Cornell University and CCE), such as urban pest management professionals working in landscapes or structural pest management.

Objective 4. Promote a systems approach to IPM development and implementation and encourage basic systems research.

Overview: Few in the land-grant system look at pest/ crop/ site management in a systems manner. We have had several such projects in the past few years evaluating vegetables, strawberries, organic production, field crops, and golf course turf. These projects are valuable tools for assessing the status of our IPM progress. They can help demonstrate IPM tactics to audiences, provide incentives and motivation for interdisciplinary work, offer insight into the effects of one pest complex on others, present opportunities for looking at IPM in an ecological way, and show those funding our program that we are making progress in economic and environmentally sound IPM. Ideally, the projects last for many years to determine whether managing pests under different systems results in different consequences. Our specific objective should be to fund at least one systems project in each agricultural program area (vegetables, fruit, livestock and field crops, and ornamentals), and several community settings (e.g. schools, apartment buildings, homes and parks).

Action steps

- Obtain state funding for a technician to assign to each systems project that would be part of our annual appropriations for agriculture and community.
- Principal investigators (coordinators and area educators) on each systems project apply for additional supplementary support from outside organizations, as appropriate.

Objective 5. Review/Reestablish the Communications Team.

Overview: In early 2005 the Communications Team Leader left the IPM Program for another position. Also in 2005 a staff writer that had worked on several IPM projects left the program due to relocation. Currently two members of the team remain: a webmaster/ graphic artist (75% FIE) and a staff writer (60% FIE). These individuals now report to the Assistant Directors and are working on only the core essential communications projects required to keep the program functioning. The Program needs to assess the current communications needs of the Community and Agriculture IPM Programs to determine the proper course of action for the possibility of rehiring.

Action steps

- Review the communications needs of the program
- Determine which of the positions (Team Leader or Staff writer or both) to fill to meet those needs
- Proceed with position description development and hiring if position(s) needed

2. Areas Specific to Agricultural IPM

Objective 1. Respond to stakeholders' needs by placing IPM specialists in commodity and geographic areas of the state that are currently underserved.

Overview: The model for IPM staffing in agriculture commodity program areas is a three-person team. The team is lead by an IPM coordinator with primary statewide responsibilities to assemble and disseminate a comprehensive IPM system for each crop in the program area. Two IPM area educators have primary responsibility for the implementation of these IPM systems on farms. For most commodity areas the two area educators divide the state into east and west halves depending on where concentrations of crops in the program areas exist. For fruit, existing IPM area educators cover central and western New York, but we need to hire additional staff for the Hudson Valley (and, to a lesser extent, Long Island), where there are significant opportunities for the implementation of IPM.

Action steps

- Hire a fruit IPM area educator for eastern New York State.

3. Areas Specific to Community IPM

Objective 1. Expand outreach efforts in existing community IPM programs to meet the needs of stakeholders.

Overview: The Community IPM Program was initiated to respond to an enormous number of pest problems and concerns about pest management practices and exposures in sites that do not fall under the umbrella of traditional agriculture but that have direct effects on the health and safety of the majority of the state's residents. School buildings and grounds, parks, residential landscapes, and multiple dwelling buildings are just a few examples of sites that harbor microbial and animal pests. Opportunities for the Community IPM Program to contribute to the needs of stakeholders are essentially unlimited, and under the current staffing we are unable to adequately respond to the exceptionally large number of requests from these audiences. Cornell Cooperative

Extension horticultural extension educators and others have identified a large gap currently within our program's outreach to be the IPM of insects and diseases of woody plants in public and residential landscapes. A need has also been expressed to reach out more directly with IPM information to home dwellers. Finally, New York City is the state's (and nation's) largest metropolitan area with unique needs but is generally underserved by our program.

Action steps

- Develop two teams for school outreach. Each team will include a structural specialist and a grounds specialist. One team will serve southeastern New York (Long Island, NYC, and the Lower Hudson River Valley). The second team will cover the rest of the state. These teams will provide on-site interaction with schools and similar settings.
- Hire an arborist/woody ornamental IPM specialist. This individual would be stationed in southeastern New York State but would have statewide responsibilities.
- Hire a technician to work with each IPM specialist or team. These technicians will supervise day-to-day implementation of IPM and carry out research tasks, thereby multiplying the efforts of each specialist.
- Organize and conduct IPM training sessions at the community level for residents.
- Hire a community IPM specialist for New York City (or other major urban area).
- Work with other Cornell academic departments to improve the research base for addressing community IPM issues.
- Develop an IPM manual that includes topics such as: what is IPM, developing an IPM policy, less-toxic pest management and specific implementations strategies for a variety of settings. Produce the manual in a notebook style so that it can be customized for different audiences and updated periodically.

Objective 2. Expand outreach to new areas of pest management not actively covered by our program.

Overview: The NYS IPM Program has been a leader in environmentally sensitive pest management in schools and municipalities. Pest problems (and pesticide use) are common in many other contexts in New York State. An expanded program of facilitating IPM implementation is needed.

Action steps

- Develop IPM programs and hire additional staff to address needs in
 - medical care facilities such as hospitals and nursing homes,
 - vegetation management of rights-of-ways,
 - restaurants,
 - homes.

Objective 3. Increase research and education on biological control and other nontoxic approaches to pest management in community scenarios.

Overview: If we are to manage pests without depending on pesticides, we must have IPM strategies available that are environmentally sensitive, effective, and practical. We will promote biological control and other tactics that are currently limited, especially in structural pest management. We will also promote other alternatives such as pest exclusion, resistant plant varieties, and suppressive ground covers. The demand for nontoxic approaches is heightened by current and pending legislation for schools and other public sectors in New York State.

Action steps

- Conduct applied research on potential biological pest management options through staff programming and in cooperation with Cornell researchers.
- Conduct demonstrations on the use of biological control and other nontoxic methods to control pests in community contexts.
- Provide IPM staff with access to laboratory and research facilities, as needed.
- Develop outreach programs to promote the adoption of effective alternatives to pesticides.

4. Integration of Community and Agricultural IPM

Objective 1. Increase the integration of agricultural and community IPM both within our program and in our outreach efforts.

Overview: The general public tends to have a low interest in agriculture but a high interest in environmental issues. Integrating IPM agricultural and community efforts will assist in communicating the role of IPM in maintaining the nation's food supply and environmental quality. Such an integration can also provide solutions to conflicts at the agricultural-urban interface. For example, pestiferous flies invading our urban areas have the potential to result in extremely poor agricultural-community relations often accompanied by very costly litigation.

Action steps

- Continue to develop outreach materials designed to link community and agricultural IPM in the minds of stakeholders (e.g., annual report, other publications, public service announcements).
- Establish a verifiable IPM identity of products and services so that consumers will recognize the connection between agricultural IPM practices and their own purchasing power. The IPM identity would apply to food products as well as lawn care and garden products, greenhouse- and nursery-grown plants, and Christmas trees
- Encourage urban community leaders and local government officials to visit nearby farms to learn how IPM can reduce community concerns (e.g., flies, aerial spraying); and encourage growers to visit green markets in urban areas through regular tours.
- Conduct research on IPM alternatives that would foster resolution of conflict at the agricultural-urban interface (e.g., watershed projects, spraying conflicts, nuisance flies).

5. Other Environmental and Public Health Issues

Objective 1. Continue to lend our expertise to projects that connect pest management to water quality, and begin to address nutrient management as it relates to water quality in the agricultural and nonagricultural sectors.

Overview: The expertise at Cornell and in our program can be extremely useful in addressing water quality issues related to pesticides and nutrients, which are of great public and political concern. Our program is well suited to help address these issues because they are closely linked to IPM. By establishing a role in this realm, we will not only address our stakeholders' needs in new ways but will also form new alliances and sources of support.

Action steps

- Incorporate issues related to leaching and runoff of nutrients in IPM outreach programming.
- Partner with Cornell programs (e.g., the New York State Water Resources Institute, Agricultural Environmental Management [AEM]) and other organizations (e.g., USGS) that are primarily interested in water quality issues.
- Create a funding category for water quality projects in the grants program.

Objective 2. Expand and refine efforts in risk management.

Overview: The Environmental Impact Quotient (EIQ), as it currently exists, provides a guide to the potential environmental impact from the use of a pesticide. This concept should be expanded to include the environmental impact of other pest and crop management practices (e.g., fossil fuel consumption associated with weed cultivation) as they relate to risks to human health and the environment. Better risk management information will help to ensure that the program is addressing high priority issues.

Action steps

- Partner with existing risk management expertise at Cornell (Center for the Environment, BCERF) and elsewhere to refine and expand the knowledge and information base associated with pest and crop management practices in both agricultural and urban environments.
- Support short-term projects that focus on developing measures of risks through the grants program.
- Adapt the EIQ for greenhouse edible crops and nonfood crops (e.g., nursery stock and bedding plants), as well as for turfgrass and landscape maintenance.
- Partner with BCERF to provide pest management information as it relates to human health risks.

C. STRENGTHEN EDUCATIONAL OUTREACH

Educational outreach has been a cornerstone of the NYS IPM Program. Past and current programs include cooperative demonstrations, written materials (such as manuals and brochures), IPM labeling, and the internet technologies. To make widespread implementation of IPM a reality in New York State, we will strengthen our focus on educating stakeholders. By tapping into the power of new communication technologies, we will reach wider audiences more directly, and we'll be able to offer New Yorkers increasingly useful, sophisticated information. We will promote the incorporation of IPM principles into current school curricula so that future generations will have a strong foundation for understanding and practicing IPM. We will also establish outreach efforts that specifically target stakeholders who have previously lacked access to IPM education.

1. New Technologies

Objective 1. Continue to expand our presence on the internet to support outreach goals.

Overview: We envision enhancing our main website (as well as key, linked, supplemental websites) so that it can serve as "one-stop shopping" for IPM information.

Action steps

- Develop additional "Integrated Crop and Pest Management Guidelines" to be disseminated over the internet and linked to our main website. (3 additional guidelines on the web)

- Create additional links to websites containing valuable information from relevant disciplines.

Objective 2. Develop and use expertise in distance learning.

Overview: Through distance learning, we can efficiently communicate with our constituencies and reach new stakeholders.

Action steps

- Develop expertise in distance-learning methods through consultation with Cornell experts (e.g., in the Department of Education) and others.
- Provide inservice training to NYS IPM Program staff on the development of distance learning.
- Expand distance learning outreach efforts and evaluate the outcomes for broader application within the NYS IPM Program.

Objective 3. Establish ways of collecting and sharing information efficiently and effectively using new technologies.

Overview: Technology is rapidly changing how information is generated and communicated. To maintain a "cutting edge" in this arena, IPM staff need to investigate and promote the use of appropriate technology.

Action steps

- Investigate the potential use of the following in our programming:
 - Hand-held communication devices that would allow IPM practitioners to access information from various Internet sources and enter and transmit data online from remote locations.
 - Precision mapping technologies, such as geographic information systems and global positioning systems (GIS / GPS), that would allow us to map data in specific locations to better understand long-term geographic patterns in pest management phenomena (e.g., disease epidemics and pest population shifts).
 - Digital diagnostics, which would allow users to submit digital images of pests and crop stress symptoms to be analyzed at a central diagnostic facility. This technology would also allow us to quickly disseminate information on pest outbreaks.

2. Curriculum Development

Objective 1. Develop ways to integrate IPM into school curricula.

Overview: A recent survey (*New York Times* 7/18/00) indicated that public interest in agriculture is low, whereas environmental concerns rank high. Well-designed school curricula can help connect the two, as well as promote support for the concept and practice of IPM in both agricultural and nonagricultural settings. To be effective, such curricula must fit well into existing educational goals.

In 2004 an opportunity presented itself to pursue a School Curriculum Project. As of 2006, 4 complete modules have been developed for kindergarten through fourth grade. These modules encompass multiple learning styles and learning objectives, as required by the NYS education standards, and have been piloted in several NYS schools. In addition, an undergraduate course for Cornell Biology and Education students was created to help develop supplementary IPM learning materials.

Action steps

- Engage educational organizations (e.g., the NYS Department of Education, teachers' unions, Parent Teacher Associations, BOCES) to identify their needs and respond by developing new resources and programs.
- Tie into curricula that are already being developed in other states, such as Pennsylvania and Connecticut.
- Test resources and program outreach with select school districts.

3 New and Diverse Audiences

Objective 1. Produce resources that will help us to reach new and diverse audiences through our 1PM education efforts.

Overview: As we continue to move beyond the audiences that have traditionally been served by the NYS 1PM Program, we must expand our outreach approach to previously neglected stakeholders (e.g., those of varying cultural backgrounds and income levels). In particular, we recognize that there is a need for 1PM information among non-English speakers. There are, for example, two million Spanish-speaking residents in New York State, most of whom are in New York City. Poverty, illiteracy, and lack of interest also impede successful 1PM outreach efforts. We need to explore ways to meet the needs of all underserved groups.

Action steps

- Identify specific non-English-speaking groups in both agricultural and community settings who need information about 1PM, and produce resources in appropriate languages.
- Develop methods for reaching out to New Yorkers directly (e.g., billboards, newspapers, television ads, and public service announcements).
- Continue to develop outreach materials that address the unique learning needs and styles of diverse clientele.

D. PROMOTE 1PM

One of our most important tasks is creating awareness of 1PM and of the NYS IPM Program. This effort serves our vision of making 1PM "the pest management solution for New Yorkers." By marketing the 1PM concept and our program to stakeholders, we hope to attract their attention and intrigue them. This awareness of 1PM helps to prepare stakeholders for the next step—IPM education and adoption. Promoting the program will make potential supporters aware of our strengths so that, for example, the press will use us as a resource for information and legislators will know how their constituencies are benefiting from 1PM projects in their districts.

1. Communication with Stakeholders

Objective 1. Conduct audience research to enhance our effectiveness in communicating with stakeholders.

Overview: We will conduct audience research to be sure that we're reaching out with the most effective tools and with a message that will be well understood.

Action steps

- Work with survey and focus group researchers (both within and outside of Cornell) to develop ways of evaluating the effectiveness of existing outreach tools.

- Conduct pilot tests with new outreach materials to fine-tune and select the most successful presentation avenues.

Objective 2. Develop innovative ways of identifying and documenting the program's impacts so that we can more readily share the results of our work with our stakeholders and funders.

Overview: It is important for us to document the positive impacts of our work on human health, the environment, and the economy, and to know the extent of IPM implementation resulting from our outreach efforts.

Action steps

- Expand reporting requirements for IPM staff and grant recipients to highlight human health, environmental, and economic impacts.
- Expand follow-up surveys (e.g., NASS) of constituencies to quantify levels of IPM adoption.

2. Public Awareness of IPM

Objective 1. Improve general name recognition of IPM.

Overview: **Our vision is for IPM to become a household word.** We'd like our program's name and purpose to be more immediately recognizable so that all stakeholders will turn to IPM as an option. This general awareness of the IPM concept will lead people toward the next steps-IPM education and use-when they have a need to manage pests.

Action steps

- Improve brand image through the use of logos and/ or slogans to promote an IPM identity that can be easily recognized and understood.
- Develop and strengthen a verifiable IPM identity for products and services.
- Work in cooperation with 4-H programs, "Agriculture in the Classroom," and related efforts to promote the IPM concept to youth.
- Expand marketing expertise to promote our program and IPM in general.

Objective 2. Increase profile in public and controversial issues.

Overview: We should be willing to offer information about issues that are high-profile and/ or controversial. These issues could attract positive attention for the college, CCE, and the NYS IPM Program, as long as we are careful to target our efforts in a way that is consistent with our mission and sensitive to the agendas of others.

Action steps

- Identify issues for which we are uniquely positioned to offer expert advice or where we can identify a niche for our expertise that needs to be filled (e.g., the phaseout of pesticides in urban settings or conflicts at the agricultural-urban interface).
- Establish a proactive strategy for informing the media about these topics and making them aware of IPM staff's expertise.

3. Supportive Alliances to Promote IPM

Objective 1. Initiate and develop relationships with various media to foster increased media interest in and coverage of IPM topics.

Overview: We should be more proactive in our relationship with the media, initiating contact in ways that will spark interest and draw media attention to the program and CCE. We want the media to view our program as an expert resource that it can turn to repeatedly.

Action steps

- Make the media aware of our staff's expertise and availability for sharing knowledge (e.g., initiate a media conference by providing a list of IPM experts within the program and within the Cornell system, topics they will address, and contacts).
- Write feature stories for magazines and newspapers to introduce the IPM concept to new audiences, using a "NYS IPM Program" byline where possible to enhance name recognition.
- Issue routine news releases to heighten the visibility of the program and IPM at Cornell throughout the state.

Objective 2. Strengthen relationships with legislators to help them see the relevance of our work to their constituencies.

Overview: We will be able to establish stronger relationships with New York State legislators and other government representatives if we make them more aware of how our work benefits their districts and constituencies.

Action steps

- Establish a system for routinely informing legislators about projects important to them in their districts.
- Conduct or participate in IPM field days/ tours for state legislators.

Objective 3. Expand collaboration and strategic alliances.

Overview: Strengthening our program's ties with a range of stakeholders is essential to successfully promoting IPM implementation. These stakeholders include other Cornell programs (e.g., Program for Breast Cancer and Environmental Risk Factors [BCERF], Pesticide Management Education Program [PMEP], CCE County Associations), state agencies, industry organizations, environmental advocates, and other states. New partnerships (e.g., with teachers' organizations, restaurant associations) are also needed.

Action steps

- Maintain active and diverse advisory councils for all agricultural commodity groups and community IPM.
- Pursue multistate projects.
- Interact with other Cornell programs to pool expertise and resources, and thus maximize impact.
- Participate in the training of new county extension educators to encourage them to make full use of our program's resources.
- Maintain and develop partnerships and new program emphases (e.g., working with teachers' organizations on IPM curriculum development).
- Participate in speaking tours for Cornell alumni.

E. INCREASE EMPHASIS ON PROFESSIONAL DEVELOPMENT

Our ability to meet key program goals, such as expanding the breadth of the program and strengthening our ability to educate stakeholders, requires that our staff be energized and interactive. A team approach to staff management will help to foster staff commitment, which rises when workers are more deeply involved in decisions. A commitment to professional development will allow staff to excel as they are exposed to new techniques and stimulated by new ideas.

1. Cornell Cooperative Extension's Commitment to Excellence

Objective 1. Implement staff development practices that will enable the NYS IPM Program to meet Cornell Cooperative Extension's plan for a Commitment to Excellence.

Overview: Cornell Cooperative Extension (CCE) is currently renewing itself through a project called Commitment to Excellence (CtE). CCE's goal is to develop educational programs that are recognized nationally for their high quality. Excellence in staffing and professional development is central to achieving the organization's revitalization outcomes. CCE states that this excellence should be encouraged through comprehensive approaches for recruitment and retention of diverse and highly qualified staff. In an environment of increasingly diverse stakeholders, staff must have the ability and capacity to focus on diverse needs and concerns of these multiple audiences. Among the methods CCE has recommended for addressing these needs is an advanced studies requirement for educators. In addition, professional development opportunities—in both content areas and educational processes—are needed for professional renewal.

Action steps

- Develop procedures within the NYS 1PM Program that are consistent with CCE's specific recommendations for expanding staff's professional expertise through ongoing education.
- Follow CCE's recommended methods for evaluating excellence for individual performance management and reappointment decisions.
- Work with CCE and Cornell administration to develop promotion plans and competitive salaries that will enable the program to attract and retain staff of the caliber needed to achieve CCE's excellence goals.

2. Professional Development

Objective 1. Strengthen the team approach to staff management.

Overview: An example of a team approach to staff management would be the following scenario: Staff members form teams around a purpose (such as communications) and subject matter (such as community IPM). As team members, they are guided by a leader yet are integrally involved in the functioning of the team (e.g., by sharing facilitation of meetings), for planning, for making decisions, and for professional growth. They share a common vision and play on the strengths and leadership capabilities of their members.

Action steps

- Train 1PM staff in the principles of team management.
- Convene teams regularly and develop team plans of work.

Objective 2. Foster skill improvement among staff by offering new experiences.

Overview: Supporting the program's employees in their professional growth will help us to attract and retain qualified staff.

Action steps

Encourage staff to develop a professional growth plan by taking advantage of opportunities such as

- Employee Degree Program,
- continuing education,
- professional seminars, conferences, and workshops,
- setting professional goals and objectives with supervisors,
- mentoring.

F. BROADEN FUNDING SOURCES

The opportunities to address the pest management needs of the citizens of New York are unlimited, and increased funding would allow us to respond more effectively to these needs. Funding from the state for the agricultural IPM effort has been relatively static since 1993, whereas the support of community IPM rapidly increased in its first few years of existence and has been inconsistent since. Efforts to maintain and increase funding from the state need to be ongoing. Critical to this process is maintaining close contact with the College of Agriculture and Life Sciences (CALS), the College of Human Ecology, CCE administrations, Cornell's Office of Government Affairs, the NYS Department of Agriculture and Markets, and the NYS Department of Environmental Conservation. It is also essential that we establish and maintain a good relationship with key stakeholders who are willing to communicate IPM needs to the appropriate decision makers.

A key component of our success is that we are most accountable for state resources provided to the program and that we are addressing the needs of New York's citizens. Future efforts to increase state funding should include connecting NYS IPM Program activities with legislative districts, as discussed under our goal of "Promoting IPM" (Objective C-2-"strengthen relationships with legislators"). NYS IPM staff need to continue to seek funds through competitive grants programs and to pursue other sources such as private foundations. Sizable funding from foundations is possible and would permit expanded programming in several areas (e.g., the development of an IPM center on campus for agricultural and urban clientele). The environmental and health benefits of IPM are strong selling points and should be used to engage new sources of funding.

1. Strategies to Increase Base Funding

Objective 1. Strengthen and build new alliances with stakeholder groups and federal, state, and local governments.

Overview: The NYS IPM Program is engaged with many stakeholder groups that are supportive of the concept and practice of IPM. Effective interaction with these groups and with federal, state, and local government is essential to developing and maintaining productive relationships in today's competitive funding and public relations arenas.

Action steps

- Partner with governmental organizations, the private sector (e.g., pest managers), and public health and environmental advocacy groups that will support our work and our funding.
- Explore connecting community and agricultural IPM in ways that will create opportunities for new funding sources.

- Direct efforts to establish community IPM funding as an item in the governor's budget as opposed to a vulnerable legislative-member add-on.

2 Competitive Grants

Objective 1. Pursue competitive grants from federal and nongovernmental sources.

Overview: Obtaining grants will allow our program to expand beyond the base of our state funds and increase connections with other organizations interested in IPM and environmental issues. Leveraging state funds reflects well on the program.

Action steps

- Develop staff grant writing and grant management skills through training.
- Designate a grants coordinator on staff to seek out opportunities and convey to staff.

3 Private Foundations

Objective 1. Obtain resources from private foundations for support of IPM programming efforts.

Overview: The mission of NYS IPM, to reduce risks to the environment and human health, positions us well to gain support from private foundations that focus on addressing these issues. Our connections with the food supply, risks to children in schools, and risks associated with places where we live, work, and play provide us with strong selling points when approaching foundations. Potential projects include the construction of an IPM demonstration and information center at Cornell, an associated mobile IPM unit, and the reinvigoration of the dialogue series to address issues at the agricultural-urban interface.

Action steps

- Assign part of IPM staff the role of identifying possible sources of private funding.
- Partner with CALS, CCE, the Cornell Development Office, and university administration to identify potential foundations and prepare proposals.