Objective 2. Plan and implement a Vegetable Educator Exchange Program within the Northeast Region.
Objective 3. Develop IPM resources and educational programs for agricultural professionals in the Natural Resources Conservation Service, land grant universities, state agencies and other organizations and for vegetable farmers, to foster adoption of IPM through NRCS conservation programs.

The educator exchange program will raise the level of interaction among vegetable agricultural professionals in different parts of the region by funding travel to vegetable conferences that they would otherwise not attend. Educators will present their work at the conferences they attend, meet a new set of colleagues and growers, and return with new ideas, contacts and information that will be included in educational programs in their home area. Both of these projects will help overcome the fragmentation of programs and networks in our region, and will directly impact growers' ability to implement IPM.

The third objective builds upon our current project and is based on the next steps identified in a meeting we organized of NRCS conservationists and vegetable IPM specialists held December 1-2, 2005. This, too, will develop tools and educational programs for helping NRCS integrate vegetable IPM into its programs and helping growers use IPM as part of a broad, farm-wide water and soil conservation plan.

4a. Problem, Background and Justification

The vegetable industry in the Northeast consists of at least 12,000 farms that cultivate and harvest over 370,000 acres of vegetables (2002 Census of Agriculture). These figures do not include potatoes, strawberries, or greenhouse vegetable crops, which are important components on many vegetable farms. Farms range is size from 1 acre to >2000 acres, and vegetables are marketed in various ways -- for processing, through wholesale distributors or direct to supermarkets, as well as retail through farmstands, farmers markets, and Community Supported Agriculture. Relative to field crops, vegetables have high value per acre, with gross value ranging from about $1500 per acre for wholesale processing vegetables to >$30,000 per acre for intensively grown fresh market crops. Thus, as land values increase and farmers seek higher value crops with direct market potential in order to sustain their farms, farmers often turn from other commodities to vegetable production. Quality demands are high, and effective pest management is essential to meet market demand. Integrated pest management, when implemented through an on-farm monitoring program, has proven that it saves money, reduces health and environmental risks and provides effective control of pests.

The Northeast Vegetable IPM Working Group (Vegetable IWG) was established in 2002 under the umbrella of the Northeast Pest Management Center. The group represents diverse types of vegetable farmers, as well as consultants, University, state agency, and other agricultural professionals from the Northeast Region (see Attachment A, 2006 membership list). The group has met annually from 2002 to 2005, and has been actively engaged in defining and tackling priority needs. Several Vegetable Working Group projects have been funded by the Northeast IPM Center, including a vegetable IPM resource database, a regional Sweet Corn Pest Management Strategic Plan, and a project which is building stronger collaboration with Natural Resources Conservation Service personnel and programs to increase the use of IPM on vegetable

farms. This proposal seeks to follow through with additional components of the latter project, and undertake two new projects that meet priority needs identified by the working group.

At our 2005 meeting, which took place November 29-30 in Harrisburg PA, we reexamined our mission and goals, and defined them as follows:

Mission Statement.

The mission of the Northeast Vegetable IPM Working Group is to foster the development and use of IPM as a means to achieve ecological and economic sustainability of vegetable farms in the Northeast.

Goals of the Northeast Vegetable IPM Working Group

1. Identify and prioritize regional vegetable and strawberry IPM needs, in particular gaps in research, extension and regulation.
2. Represent the views of vegetable and strawberry farmers and other stakeholders to the Northeast IPM Center.
3. Develop, facilitate or implement appropriate research and educational projects that address work group priorities.
4. Strengthen partnerships and exchange of information among vegetable farmers, agricultural professionals, and other stakeholders throughout the Northeast region.

We adhere to definitions of IPM and the goals expressed in the National IPM Roadmap and the IPM Center's mission statement.

Need for a Vegetable Educator Exchange Program within the Northeast Region.

Historically, vegetable extension programs in the Northeast have functioned primarily on a state or sub-regional basis. There is strong collaboration in the mid-Atlantic region and in New England, as reflected by collaborative organization of major vegetable conferences and vegetable management guides. However, communication outside of these regions is far less active. A few speakers become well known and travel to other parts of the region, but many do not. It is common for agricultural professionals at the county or state level to be unaware of research or extension work that is taking place outside their nearby area, often within their specialty area and certainly outside of it. This situation leads to less collaboration, less information for growers, and less adoption of newly developed practices, to the detriment of the advancement of IPM and of sustainable vegetable production in general.

One of our major goals is to support professional training and communication across the region for agricultural professionals in vegetable IPM, because this will enhance our ability to meet other goals. We understand that the IPM Center has allocated a pool of $15,000 in support of a regional conference on vegetable IPM. At our 2005 working group meeting we discussed at length how to structure such a conference. We decided that our goals would be met most effectively by establishing an Agricultural Educator Exchange Program. Several factors led us to this decision:

1. Two multi-state vegetable and fruit conferences already take place (New England Vegetable and Fruit Conference in Manchester NH, and Mid-Atlantic Vegetable and Fruit Conference in Hershey PA); there are numerous state-level meetings as well (eg, New York Fruit

and Vegetable Expo in Syracuse, NY; NJ Vegetable and Fruit Conference, Atlantic City NJ). Growers are in the habit of attending these and are unlikely to attend a new, one-time conference specifically on IPM.

2. These conferences already provide current IPM information: IPM has been integrated into our programs. A conference specifically on IPM would not necessarily be a big draw or offer new and different information.

3. Giving educators an opportunity to get outside their normal sphere will have a multiplier effect, because each educator will transmit his or her knowledge to colleagues and growers, both as a visitor and when they return home.

4. Barriers to travel have increased recently, largely due to budget cuts in Extension programs. An exchange program will encourage travel and increase personal connections and transfer of information.

Need for additional IPM tools and educational programs to foster adoption of IPM through Natural Resource Conservation Service programs.

In 2004, the Vegetable IWG identified as a top priority the development of a collaborative partnership with the USDA Natural Resources Conservation Service (NRCS) in order to promote utilization of available resources and foster adoption of IPM through NRCS conservation programs. The NE IPM Center has also identified as a priority, 'the development of lists of standards with NRCS and helping farmers to practice IPM within these standards'. We included in our 1995 plan of work activities designed to initiate collaborations with NRCS. Over the past year we have 1) developed contacts and initiated working relationship with NRCS agencies in all of the northeastern states, 2) presented an IPM workshop and discussion forum at NRCS's annual regional technical conference in Rhode Island, and 3) organized and hosted a two-day meeting in Harrisburg, PA attended by 35 IPM specialists, federal and state agency representatives, IWG members, and NRCS representatives from across the northeast to identify needs and develop an implementation strategy for further partnership (see Attachment C).

NRCS conservation programs support farmers in planning and implementing conservation plans and practices, often including IPM. Under NRCS's Environmental Quality Incentive Program (EQIP), qualified growers are provided with financial assistance as an incentive for adopting practices that protect environmental quality. This program is an excellent fit for promoting greater adoption of IPM practices, especially 'cutting edge' practices that could be perceived as risky by farmers. The mission of the EQIP program and other NRCS technical assistance services is very much aligned with the goals of IPM, the NEIPM Center, and the National IPM Roadmap.

Unfortunately, recognition of the benefits of IPM, both in terms of environmental protection and farm profitability, is often overlooked in EQIP-funded projects. A recent survey showed that only 25% of vegetable and fruit growers were aware of the availability of EQIP incentives for IPM use (Brewer et al. 2004a). The same study showed that on average, less than 1% of EQIP funds allocated to grower contracts during 1997-2002 were used to implement pest management practices.

It is clear, through our discussions with NRCS representatives during this past year, that an opportunity exists to support greater utilization of IPM through NRCS conservation programs

on northeast vegetable farms. However, the diversity of crops and cropping practices characterizing northeast vegetable production presents some hurdles to be overcome. First, NRCS has relied largely on Cooperative Extension support for IPM. However, with dwindling staffing and capacity of Cooperative Extension programs to provide this technical support, a regional approach is needed. Second, the biological basis of IPM, its concepts, and language are relatively new to NRCS programs, which have historically focused on soil conservation and soil nutrient management practices.

Another challenge to including IPM into NRCS-supported farm conservation planning and implementation is that the tools used by NRCS do not fully incorporate IPM elements. At our meeting in Harrisburg, NRCS staff indicated that they would like to work with IPM specialists to incorporate more IPM elements into the fact sheets, cost lists, soil evaluation programs and other tools used by NRCS to deliver incentives and technical support to farms.

In a similar project in Michigan (Brewer et al. 2004b) modification of NRCS standards to include more IPM practices, coupled with training and outreach, was credited with doubling the number of projects funded and a nearly 8-fold increase in incentive payments allocated for IPM. Another successful collaboration between IPM specialists, fruit growers and NRCS in Pennsylvania has resulted in financial support for IPM scouting and other IPM practices. Over a quarter of $1 million has been given to fruit growers in Pennsylvania as part of an NRCS incentive program aimed at supporting environmentally friendly pest management and pesticide handling alternatives (Biddinger, D. and E. Rajotte, pers. com. http://paipm.cas.psu.edu/NewsReleases/ama.html). We anticipate that our proposed effort, if funded, will enable us to make similar gains in our region.

4b. Objectives and Anticipated Impacts

<u>Objective 2</u>. Plan and implement a Vegetable Educator Exchange Program within the Northeast Region.

As the Vegetable IPM Working Group seeks to communication among for agricultural professionals who work in the area of vegetable IPM, we recognize a need to overcome barriers that exist within the region. In a world that is awash in electronic communication, there is no substitute for personal, face-to-face connection. Getting to know colleagues and programs in other parts of the region will impact growers in numerous ways. Those participating in the educator exchange will provide educational programs based on what they learned from attending another conference that they would otherwise not be able to attend. They will also be in a position to develop collaborative projects or call on colleagues from another region to participate in educational programs in their home region. We expect that growers will gain by being more aware of the latest IPM research and practices taking place beyond the horizon. By including growers and crop consultants and agricultural professionals in other types of organizations besides land grant universities, we will broaden everyone's horizons, support respect among colleagues, and encourage interchange on a wide range of topics.

<u>Objective 3</u>. Develop IPM resources and educational programs for NRCS, University and other agricultural professionals and vegetable farmers to foster adoption of IPM through NRCS conservation programs.

We propose three major objectives:

1) Partner with the NE IPM Center staff to establish an information clearinghouse,

2) Work with NRCS staff in our region to develop or modify fact sheets, payment sheets, models and other tools used by NRCS to incorporate more IPM into their conservation programs for farmers, focusing initially on tools and resources for sweet corn IPM.

3) Organize farm tours for agricultural and IPM professionals (Cooperative Extension educators, NRCS staff, farmers, crop consultants and others) to demonstrate and showcase how IPM and conservation practices dovetail and fit within an overall farm production and conservation program.

We anticipate these objectives will result in increased awareness, applicability and utilization of incentives, cost-share funds, technical support and other tools available to assist in adoption of IPM.

A regional approach to networking will facilitate timely information exchange and improved technical expertise leading to enhanced delivery of technical and financial support for IPM adoption on the farm. NRCS programs are administered at the state level and there is considerable variation among different state programs in approaches and tools used. Farmers, and programs that support them, can benefit from a regional approach where examples of successful implementation of IPM practices within a conservation program can be shared across state lines. NRCS and IPM specialists agree on the value and benefit that will be realized from sharing ideas, information and tools among states within the region. By sharing information about innovative solutions developed and utilized in different states, farmers throughout the entire region will benefit.

This partnership will also enable IPM specialists and service providers to develop an improved understanding of how IPM practices fit within the framework of farmland stewardship and resource conservation. A good understanding of conservation objectives is critical to sustainable farming. IPM practices that are easily recognized as mitigating practices designed to conserve and protect air, land and water resources are more likely to be promoted by NRCS and built into their incentive structure, and more readily adopted by farmers. Our project will provide specific tools and improved inter-agency cooperation for increased adoption of IPM practices designed to address documented environmental problems such as air or water pollution, or destruction of beneficial biotic components of farm ecosystems.

This project directly meets two of the goals of the National IPM Roadmap: 1) improve economic benefits of IPM, and 2) minimize adverse environmental effects of pests and IPM practices. It also indirectly meets the third goal, which is to reduce potential human health risks from pests and the use of IPM practices.

The Vegetable IPM Working Group has demonstrated an ability to engage and work with representatives from a diverse array of agencies, organizations, and independent consultants and the farming community as evidenced by its past successes, including development of a resource database (2004), near completion of a pest management strategic plan (2004-2005), and our

NRCS/IPM strategic planning successes during the past year. Our proposed project will make a significant contribution to Northeast agriculture and will fill an important need.

4c. Approach and Procedures

<u>Objective 2</u>. Plan and organize a Vegetable Educator Exchange Program within the Northeast Region.

This program will be open to vegetable specialists, county agents, growers, crop consultants, or anyone who will be in contact with many vegetable growers and provides unbiased information (i.e. not dependent upon sales of agricultural products). Each will be asked to make an offer to present a talk on their area of expertise or knowledge at the conference that they attend; however, this will not be an absolute requirement since these decisions are made by the steering committee of the particular conference, often very far in advance. While we expect that many conferences attended will be within the Northeast but in a different state or subregion from the applicant, they could also include conferences that occur outside the Northeast region if this is well justified. Criteria would include demonstrated ability to present information gained to an audience of farmers in the home area, interest in IPM-related subjects, and involvement with vegetable crops or strawberries. While the specific amount to be offered to each educator is yet to be determined, it will probably be in the range of $500-$800, with encouragement to use matching funds if available. We hope to include 20-30 educators in the program from September 2006 to March 2007.

Steps in the program would include:

1. Define the criteria and application process; compile available lists of vegetable educators.
2. Get the word out – send letters to grower associations, IPM coordinators, lists of educators obtained from each state; announce at meetings. Use the IPM Center website to post an application form.
3. Establish a panel, timetable and process for reviewing applications; one that does not require expensive panel meetings.
4. For those selected, there will be expectations to follow up in the following ways: provide one presentation or educational program to growers in the home area; write one article for a grower newsletter, which will also be posted on the Center website; participate on the next conference planning committee for the vegetable conference in the home state to make use of new professional contacts to invite speakers to the region.
5. Develop a process to report to the Working Group and gather impacts of the project. Include number of people in audiences who are exposed to the information gained by that educator (multiplier effect), new information gained, new partnerships developed. Evaluation will be done in April-May 2007 with a follow-up one year later.

Funds requested in this proposal will enable the working group to plan and implement this program. It will require administrative time to advertise, make contacts, track applications, assist the review team, communicate with selected educators, and conduct evaluation. The funds to be used for travel have been set aside as conference funds by the IPM Center. Participants will submit travel costs directly to the IPM Center.

Objective 3. Develop IPM resources and educational programs for NRCS, University and other agricultural professionals and vegetable farmers to foster adoption of IPM through NRCS conservation programs.

We have already developed a team consisting of NRCS representatives from each of the states in our region, as well as technical and program leaders from regional and national NRCS offices. These NRCS staff met with the Vegetable IWG, along with representatives from Cooperative Extension, EPA, state agencies, and two non-profit organizations at a two-day meeting we organized in December 2005. At that meeting, it was agreed by the participants that specific IPM and NRCS resources should be modified to improve their applicability to vegetable IPM and conservation.

We will contact team members to establish a subcommittee of IPM specialists, NRCS technical and program staff, growers and other agricultural professionals to work with us to adapt existing materials. These materials are used by NRCS programs to assist growers in adopting IPM-related conservation practices.

We will pilot the modification of these materials using sweet corn as the model. This is an important high value crop grown extensively throughout the northeast. Sweet corn IPM practices are widely credited with reducing environmental and human health risks associated with pests and pesticides. In addition, this is a logical crop to use as a model for future work because we are nearing completion of the sweet corn Pest Management Strategic Plan (PMSP) for our region. We will adapt IPM guidelines or elements ('guide sheets') for sweet corn (such as those published in New York and Massachusetts) to define their conservation benefits and expand their regionality. We may also develop cost lists for specific practices, a pest management calculator, an NRCS EQIP pest management guide for sweet corn, advanced pest management fact sheets for sweet corn (eg for biological control using the parasitic wasp, *Trichogramma ostriniae* and pest scouting techniques).

We will also review the 'RUSLE' soil evaluation tool used by NRCS to identify opportunities for applying it to vegetable and strawberry cropping systems as part of a pest management program and within the framework of the NRCS Conservation Security Program. We will include indicators of how IPM practices relate to protection of ' soil water, animals, plants, humans, and air 'resource concerns' – as used by NRCS, in the final edition of the sweet corn PMSP, to the extent that such information is available.

Finally, we will organize and offer three or more farm tours in summer 2006, as a pilot program to highlight the integration of conservation and IPM farm plans and practices. Farm tours provide a proven and powerful means of demonstrating effective farming practices. We will work with Cooperative Extension, grower associations and NRCS to select appropriate sites, enlist cooperation of the different organizations, and promote of the tours to appropriate audiences. We will work with NRCS Eastern Regional Technical Center staff to explore opportunities for including an IPM workshop and/or farm tour as part of their annual conference.

4d. Evaluation Plans

Objective 2: We will develop a process for participants in the Educator Exchange to report to the working group on impacts of the project. This will include the number of people in audiences who are exposed to the information gained by that educator (multiplier effect) and their feedback on what they learned or new practices they plan to try. We will also ask participants to describe new information they gained, and new partnerships developed. Invitations to speakers from other regions at subsequent conferences will also be included. Evaluation will be done in April-May 2007 with a follow-up one year later.

Objective 3: We will ask each state NRCS program to report, to the extent that they are allowed, on numbers of vegetable growers enrolled in their conservation programs in each year from 2004 to 2007. Other measurements of impact will include evaluations at on-farm tours. Increase in the number of contractual arrangements between NRCS and University or private consultants related to IPM implementation will be measured as well. The NE IPM Center Website will develop an information center related to this project, and its use will be monitored. Changes in Pest Management standards or IPM guidelines, or changes in use of IPM guidelines or practices, will also be assessed.

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