II. Regional IPM Publications: Web-based Vegetable IPM Resource Database and *Northeast Vegetable and Strawberry Pest Identification Supplement*

4a. Problem, Background and Justification

A wealth of information on vegetable and strawberry IPM has been published in the Northeast, but most of this was developed at the state level or within one part of the region (New England or Mid-Atlantic, for instance). Often these resources are not known and used in other parts of the region, despite the fact that that they likely to be highly relevant and useful to growers in other states. One of the first objectives of the Vegetable IPM Working Group was to centralize and provide access to vegetable IPM information by making it available through the Northeastern IPM Center website. The Vegetable IPM Resource Database was created in 2004 a as a joint project of the Vegetable IWG and the Northeastern IPM Center. The goal has been to house data on all of the available information resources about Vegetable IPM in the Northeast in one database that can be searched by type of information, by crop, by state, or by pest. Searches yield links to University websites where electronic publications are available, or to websites that tell where and how to order hard copy publications. Types of information on the website include Guides, Alert/Advisories, IPM Element/Protocol/Guidelines, Field Guides, Newsletters, Fact Sheets, Resource Indexes, IPM Curricula, and Videos. This database is designed to incorporate information on any commodity or type of IPM system, from specific crops to school and community IPM.

The vegetable component of the database has >900 entries from the Northeastern states, (http://www.nepmc.org/vege_all.cfm). As more and more farmers use the Internet to seek out information, this selected, high quality database will help them to find information that is research-based, derived from a public source, appropriate for our bioregion and farming systems. It will also lead them to time-sensitive information such as pest alerts, disease forecasts, and newsletters. The web is, however, a constantly mutating entity with frequent web address changes and additions. A database that is not maintained can become detrimental to enhancing the use of IPM by frustrating information seekers or housing out-of date information. For the Vegetable IPM Resource Database to maintain relevancy and usefulness links need to be reviewed to insure all are live and it must be reviewed at the state level to ensure that nothing important is left out and that all information is current. A network of state contributors and a system for regular updates should be established to enable ongoing updates. The capacity to search for specific pests of each crop, and access to good pest identification information needs to be further developed. Links to commonly used search engines need to be incorporated into the website as much as possible. These database improvements and development were identified as a priority in the Vegetable IWG's 2003 meeting. Initial funding was obtained through our 2004 Vegetable IWG Partnership grant.

In the spring of 2006 we worked with Liz Thomas to identify issues with the site itself; largely centered around the visibility and accessibility of the database from the front page and on the functionality of the search utility. She is working with their design company to remedy these issues; some of them have already been resolved. On the content end, we received an export of the current resources from the database sometime last spring. We have identified and contacted individuals from each state who are willing to review and update their states resources, and sent

each of them a spreadsheet listing the database entries that need to be reviewed. We received some preliminary feedback from a few states before the summer field research season started; we are now picking up where we left off and beginning to follow up with our state contacts and with addressing the remaining design/functionality issues with the site itself.

Northeast Vegetable and Strawberry Pest Identification Supplement

The majority of vegetable growers in the region make pest management decisions without the benefit of a crop consultant or Extension agent who can walk the field with them (or for them), to help identify what insect, disease, or weed might be there. They have to make their own call on what the problem is and how to manage it. Yet, timely and correct identification of the pest is critical to proper selection of pesticides and cultural practices to address the problem. Inaccurate identification may lead to ineffective or unnecessary use of pesticides, or overlooking a problem that needed a timely response to save a crop – both of which are costly mistakes. While web resources are increasingly important, growers need informational tools they can hold in their hand, keep in the truck, and take to the field.

Growers rely heavily on the information in the vegetable production guides that serve states in the Northeast Region. There are three major recommendation guides: the mid-Atlantic *Commercial Vegetable Production Recommendations* (the same content is printed with separate state names for NJ, PA, MD, DE); Cornell Cooperative Extension's *The Integrated Crop and Pest Management Guidelines for Vegetables* (NY), and the *New England Vegetable Management Guide (*ME, VT, RI, MA, CT, NH). In total there are approximately 6,000 vegetable recommendation guides printed in the region. The Mid-Atlantic Guides include strawberry crop and pest management.

The *Northeast Vegetable and Strawberry Pest Identification Supplement* will fill an important need by providing a photograph of all of the weeds, insects, diseases, and physiological disorders that are listed in any of the three vegetable recommendation guides. It will include both vegetable and strawberry pests. It will expand the existing Photo ID Supplement published in 2004, a calendar format, soft cover, sturdy booklet with a high quality color photograph of every weed, insect and disease that is mentioned in the *New England Vegetable Management Guide*. The New England growers in our working group note that they keep it handy all the time. Consultants, growers, and extension specialists alike are eager to have one that covers the whole region. This project was supported by our 2006 partnership grant. We are seeking additional funding to cover more of the printing costs, to enable this to be distributed with the 2008 Management Guides/Recommends to growers throughout the region.

4b.Objectives and Anticipated Impacts

<u>Objective 1.</u> Complete, update, verify and promote the Northeast Vegetable Crop and Pest Management Resource Database.

Anticipated impacts: Growers, researchers and educators will be more able to find useful information about vegetable IPM in the Northeast more easily. They will become aware of timely alerts and newsletters published during the growing season. Use of the database and the

associated state websites will increase. Using these resources will help growers to incorporate more IPM into their farming practices.

<u>Objective 2.</u> Complete the publication a *Northeast Vegetable and Strawberry Pest Identification Supplement,* to include photograph of the insects, diseases, weeds and non-pathogenic disorders of vegetables and strawberries in the Northeast region, and provide one copy to every person who purchases a 2008 vegetable management guide in the Northeast.

Anticipated impacts: A comprehensive photo ID supplement will result in improved identification of vegetable pests. This improved identification will allow growers to reduce the number of sprays necessary through early detection and a more rapid and more appropriate response. An additional benefit is that growers may be better able to select reduced-risk pesticides and biopesticides, when available. One of the disadvantages of these reduced-risk pesticides is that they have a much narrower target pest population than older pesticides. As a result, proper identification of weed, insect, and disease pests has become more critical. An increase in grower use of these products relative to older, more toxic pesticides will result in reduced risk to the environment, improvements in human health, and reduced pesticide risk.

A further impact will be enhancement of communication among vegetable specialists in the region. In the process of creating this publication we will discuss and review pests that are common to the whole region or unique to one area. Editors and vegetable specialists will become more familiar with each other's recommendation guides. The publication itself will make all users more aware of pest conditions throughout the region. A useful IPM tool that is well-received and widely used will enhance growers' awareness of the Vegetable IPM Working Group and the Northeast IPM Center.

4c. Approach and Procedures

1. Vegetable IPM Resources Database. As part of our 2005 Partnership grant we are working with the Center to fix some programming problems in the database that limit its usefulness, and we are working with specialists in the region to update and proof the data. The content update is being coordinated out of the UMass Vegetable Program office while the programming changes are being handled by the Center. We will work to make this database visible to commonly used search engines. UMass has identified a vegetable specialist or IPM coordinator in each state, who has agreed to review the current data and update it in spreadsheet format. This will be loaded back into the database. When all the search procedures are functioning well, we will get the word out to vegetable growers and educators through all of the available Extension channels. Additional funding is sought for some administrative support at UMass, for the person who will coordinate the project and help see it through to completion.

2. *Northeast Vegetable and Strawberry Pest Identification Supplement.* For each pest group there are two editors who represent geographic distribution:

Weeds: Rich Bonanno (MA, also general editor); Brad Majek (NJ)

Diseases and nonpathogenic disorders: Katherine Everts (MD/DE) and Robert Wick (MA)

Insects: Joanne Whalen (DE) and Ruth Hazzard (MA)

Strawberries: David Handley (ME) and Cathy Heidenreich (NY)

Lists have been compiled for all additional pests that we need, and we are in the process of gathering the photographs. We will select the best images that we can find among the specialists within or near the region. Expanding the Supplement to cover all of the pests and diseases of the Northeast will double its size from 213 images (9 per page, 27 pages) to about 430 images. Images are being gathered now, and we expect to have photographs compiled by the end of January 2007. Design and printing will be handled through the UMass Outreach Communications and Marketing department during spring 2007. The printed document will be ready for distribution with the 2008 recommendation guides.

The Vegetable Working group discussed cost and distribution at the 2006 meeting. We plan to print 10,000 copies (cost estimate for design and printing is $20,500, or $2.05 per copy) and distribute 6000, free of charge, to all growers in the region who purchase the 2008 editions of the Vegetable Recommendations or Guide within their state or region. Each state will receive Pest ID Supplements equal to the number of vegetable recommendation guides that it distributes. The additional 4,000 Photo ID Guides will be sold at a price adequate to build a dedicated fund that will be used to update and reprint a new Photo ID Guide, likely no sooner than 2010.

In budget and administration, this is a collaborative project with the New England Vegetable and Berry Growers Association, who received a grant from the Environmental Protection Agency Region I to update the New England Photo ID Supplement. Those funds are being applied to this expanded project. The original New England editors (Bonanno, Wick and Hazzard) remain the same. The EPA grant covers part of the design and printing cost ($6,000). Our 2006 Partnership grant covers editorship, and part of the printing ($3500). With this proposal, we seek additional funds to fully cover the cost of design and printing. While it would be possible to recoup the initial printing costs through a cover price, the working group believes that providing one free copy to virtually every commercial vegetable grower in the Northeast region will put into growers' hands an extremely useful and practical tool that will immediately enhance the use of IPM, at a very reasonable cost to the Northeast IPM Center partnership program.

d. Evaluation Plans.

1. Vegetable IPM Resources Database

We will document use of the database (hits per month). When we survey growers in 2008 regarding priority needs, we will include a question about their knowledge and use of database. There is also a form for feedback on the website. After the Database update is completed, we will notify leaders of Crop Surveys, Profiles and PMSP's, and ask them to include questions about the Vegetable Resource Database in future assessments of grower practices.

2. *Northeast Vegetable and Strawberry Pest Identification Supplement*

In New England, as part of the EPA project described above, growers will be surveyed regarding how their use of reduced-risk pesticides and other IPM techniques has changed as a result of new

resources, including the Pest ID Supplement. Crop surveys conducted in the Northeast as part of the state network projects include questions about what sources of information growers use. After the Supplement is published, we will notify leaders of Crop Surveys, Profiles and PMSP's, and ask them to include questions about the Pest ID Supplement in future assessments of grower practices.