

PRONewEngland Pest Management Network

Procedures and Template for Pest Management Crop Profiles

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Introduction

Crop profiles are a synopsis of pests and management options for a specified crop or other IPM setting, and a description of the context in which pest management activities take place. To make realistic estimates of pesticide risks, EPA needs information on how pesticides are used. New England crop profiles provide this information so that our region is accurately represented in federal pesticide registration decisions. A crop profile can also be directly useful to update pest management guidelines for a crop or setting. If such guidelines are not available, the crop profile helps fill that gap.

By using this template, your crop profile will meet all the USDA requirements. Northeastern IPM Center guidelines for crop profiles available at http://neipmc.org/rese_profinstr.cfm

A crop profile also serves as the foundation for a pest management strategic plan, but they are two separate documents. A crop profile provides a snapshot of current pest management practices for the crop in our region. It has the basic production statistics, synopses of cultural and worker activities in producing the crop especially as they relate to pest management, a summary for each pest describing its severity and frequency, the damage it causes, and how it is managed. For each pest, there is a table of descriptive information on the chemical controls used against it. For each active ingredient, there is information from the pest management tactic survey, Extension guidelines, and labels on how much it is used, how it is applied, application rates, and restrictions.

A crop profile is based on written documents and is essentially a reference document. A PMSP is the product of a two-day discussion among growers and commodity experts to understand why current practices are the way they are; to consider the strategic implications of the information recorded in the crop profile; and to identify and rank priority needs for research, education, and regulation.

Crop Profile Procedures

For the regional production summary, use the pest management tactic survey results and reports from the New England Agricultural Statistics Service.

Contact Extension specialists in New England to help write the worker activities and the crop production cultural practices sections.

To complete the individual pest summaries you will need information on frequency, damage, percent acres affected, timing of control, yield losses, regional differences, cultural controls, biological controls, and postharvest controls. Some of this information is not available in a published document you can cite, and will require the best guesses of Extension staff, researchers, agricultural chemical suppliers, and grower contacts. Percent of acres affected and damage assessments should be specified for typical values under good management, and potential values with a control failure.

For the tables you will need to list currently used pesticide options. Use data from the pest management tactic survey, Extension pest management publications and the contact persons listed above. Two good sources for pesticide label information are:

CDMS at <http://www.cdms.net/manuf/manuf.asp> and
C&P Press at <http://www.greenbook.net/Search/QuickSearch/>

How to Use This Crop Profile Template

Instructions and examples for using this template are located between rows of asterisks. Example text is in green Verdana font. Examples are provided for only a few short sections. For other sections, you can see examples in previous crop profiles online at <http://pronewengland.org/Content/PROInfoProfile.htm>

Red text indicates where crop specific content is needed.

Comments are written in maroon. Delete all comments before using this template to create a crop profile.

Formatting:

1. This file shows the content and formatting needed for your crop profile, with some explanations and examples. To use this template to create a new crop profile, save the file to a new name and then delete all the comment lines. This will leave with a shell outline of a crop profile. At the end of this file, there is a checklist for components that must be included in the completed crop profile.

2. The template uses Verdana font for text sections. Arial is used in tables because it requires less space. The crop profile will be published as a web document. Reproduction on paper is secondary. Verdana and Arial fonts are much easier to read on a computer screen than Times Roman.

Twelve-point font is a standardized minimum size. Do not use 10 point font. Larger font sizes (14, 16) can be used for titles.

Please avoid having page breaks in the middle of paragraphs or in the middle of tables, though sometimes with a long table it is unavoidable. Set Word's Table Properties – Row so that a row cannot break across pages. The tables in the template below have been set that way.

3. Please keep the Word document as simple as possible. Microsoft Word features such as automatic bulleted lists and formatting text by putting it into tables (beyond the tables supplied in the template) creates problems when converting a document for web publication. Please turn Word's automatic formatting features OFF when you create your crop profile. (Go to "Tools – Autoformat" and make sure that 'Automatic bulleted lists' and 'Automatic numbered lists' are unchecked.)

4. Report percentages rounded to the nearest whole number. Our surveys results do not allow reporting statistically significant results at the 0.1% level, and whole numbers are preferable for clarity.

5. Using this template as a foundation will make creating your crop profile easier and faster, and will help us produce better reports.

Crop Profile for **Cropname** in New England **200X**

Compiled for the PRONewEngland Pest Management Network

Author name

University of **State**

Address: **xxxxxx**

Telephone: **(xxx) xxx-xxxx**

Email: **xxxxx**

Revised: **Month, day, year when final version submitted.**

Note: This profile is a comprehensive list of pests that may be encountered by New England **cropname** growers, and the approved pesticides that may be used to control them. Only a few pests actually require treatment on an individual farm in a single year. For each pest, all of the available effective options are listed. If treatment were needed, only one of those options would be used per application. Some pests require multiple applications for control, others only require a single application.

Table of Contents

Use page numbers for major sections only. Contents for non-crop settings might be different than shown below.

I. Introduction 3

II. Basic Commodity Information.....

Production statistics
Cultural practices
Worker Activities

III. Pest Management Overview

IV. Insect and Mite Pests.....

Pest 1
Pest 2
Pest 3 etc. as needed

V. Diseases.....

(fungi, bacteria, and other microscopic pests including nematodes)

Disease 1
Disease 2
Disease 3 etc. as needed

VI. Weeds.....

***** List by species, or by the weed groups below. *****

Annual Grass weeds
Annual Broadleaf weeds
Perennial Grass weeds
Perennial Broadleaf herbaceous weeds
Woody perennial and vine weeds

VII. Vertebrate Pests.....

Vertebrate 1
Vertebrate 2
Vertebrate 3 etc. as needed

VIII. Acknowledgements

References
Key Contacts and Resources
Reviewers

I. Introduction

Information for this crop profile was collected from a survey of New England **CropName** growers. The survey results are available at <http://pronewengland.org/INFO/PROInfoSurvey.htm>

A mailing list of growers from each New England state was acquired. Using the Dillman survey method, **XXX** surveys were sent to people on the mailing list in **Month Year**. **YY**% of people sent a survey sent a return response to either the first or second mailing. Of these, **ZZ**% identified themselves as actively producing **Cropname**. The total number of usable responses was **ZZZ**.

II. Basic Commodity Information

Production Statistics

Region Rank:.....**X** (6 states considered as a single unit)

% U.S. Production:..... **X** %

Acres Planted:..... **X**

Tons Harvested:..... **X**

Cash Value:.....**\$X**

Production Regions – Acres or other production units as appropriate:

Connecticut (**X**), Massachusetts (**X**), New Hampshire (**X**), Maine (**X**), Rhode Island (**X**), Vermont (**X**).

Above statistics are required and should be available from New England Agricultural Statistics Service. If you have individual state statistics to fill out the table below, please do so. This is encouraged but not required.

	CT	MA	ME
Rank in National Production:	Number	number	number
Percent U.S. Production:	x%	x%	x%
Acres Planted:	X	x	x
Harvested:	X lbs.	X lbs.	X lbs.
Value:	\$x million	\$x million	\$x million
Crop Destination(s):	Fresh Market x%, Processing x%	Fresh Market x%, Processing x%	Fresh Market x%, Processing x%
Production Regions:	Counties, or areas of state	Counties, or areas of state	Counties, or areas of state

	NH	RI	VT
Rank in National Production:	Number	number	number
Percent U.S. Production:	x%	x%	x%
Acres Planted:	X	x	x
Harvested:	X lbs.	X lbs.	X lbs.
Value:	\$x million	\$x million	\$x million
Crop Destination(s):	Fresh Market x%, Processing x%	Fresh Market x%, Processing x%	Fresh Market x%, Processing x%
Production Regions:	Counties, or areas of state	Counties, or areas of state	Counties, or areas of state

Cultural Practices

This section contains information on how the commodity is produced. Specific topics to cover will vary by commodity, and could include soil types, other site characteristics, irrigation practices, land preparation, planting times, thinning practices, farm characteristics such as other crops grown in conjunction with the subject crop, marketing considerations such as retail vs. wholesale, dominant cultivars, planting patterns, horticultural management. If there are intrastate or regional differences in these attributes, they should be described.

Worker Activities

This section describes worker activities during the growing season, especially those that could involve worker exposure to pesticide residues. Include notes (as relevant for the crop) on: field preparation, planting, fertilizing, hand weeding, pruning, thinning, scouting, plant training, spot-treatments, mowing, harvesting etc.

Any comments on timing, frequency, and degree of worker exposure to pesticide treated areas are helpful. This section has become more important as EPA has focused on personal protective equipment (PPE) and reentry intervals (REI) as tools for pesticide risk mitigation.

Worker activity 1

- Comment about worker activity 1. Why it is done.
- When it is done.
- Amount of worker contact with pesticide treated surfaces from this activity.
- Comments about PPE and REI
- Other Comments.

Repeat for Worker activity 2, 3, 4 etc.

Pruning

* Pruning is used to maintain a balance between vegetative growth and fruit production that allows for adequate penetration of sunlight, chemical treatments, and air flow.

* Most orchards are pruned once during each winter dormant season, and usually do not begin until 3 or 4 months from the previous season's final pesticide application. Summer pruning, undertaken in late July and early August, is less extensive and focuses primarily on unproductive vegetative sprouts blocking light from ripening fruit.

* Winter pruning is not expected to cause pesticide exposure because it takes place months after the previous application. However, winter pruning can extend into the start of the next growing season, which could result in

pruning being done after early season pesticide application. Summer pruning involves extensive contact with foliage.

* Wearing protective clothing can be problematic in summer heat, and heat stroke risk poses more immediate and severe health concerns than pesticide exposure.

* While there is usually some flexibility for timing summer pesticide sprays, prolonged REIs create scheduling problems for summer pruning that must be done within a time window of a few weeks. "

End of Example

III. Pest Management Overview:

This is a brief synopsis of results from the Pest Management Tactic Survey. This should include a link to the survey summary document online at PRONewEngland.org

Example:

New England growers identified weeds in general as the most important pest category. Insect and disease problems were ranked in importance with those pests affecting fruit directly (especially pear psylla, plum curculio, and tarnished plant bug) seen as the most problematic. Other pests including mites, pear scab, fire blight, and vertebrates were identified as important peach orchard pests.

New England Growers rely most heavily on New England Extension Pest Management guides and twilight meetings for information on pear pest management. There is limited use of web sites for supporting information. Trade publications and pesticide dealers/field persons were identified as the least important sources of information for making pest management decisions.

New England pear growers cite product efficacy and risk of phytotoxic response as the most important characteristics considered when choosing a pesticide. Potential impacts on the environment and non-target species, human toxicity, and cost were next in importance. Safe packaging such as water soluble bags was identified as the least important characteristic growers consider when making pesticide choices.

A summary of responses to the New England Pear Pest Management Tactic Survey are online at <http://pronewengland.org/Content/PROInfoSurvey.htm>

End of Example

IV. Insects and Mites

Separate individual insect and mite pests into the priority groups shown below.

Group A – Insect and mite pests identified by survey as most important

Pestname 1 ***** Name is in Verdana 16 bold font *****

Type of Pest:

Taxonomic group the pest belongs to, i.e. insect, mite, fungus, bacteria, annual grass, annual broadleaf plant, perennial grass, perennial herbaceous broadleaf, perennial woody plant.

Frequency of Occurrence:

i.e. yearly, sporadic, or weather related.

Damage Caused:

In what way does the pest decrease production or value of the crop? *****

% Acres Affected:

Percent of crop typically affected and potentially affected in each growing season or crop cycle.

Timing of Control:

When is the pest typically controlled?

Yield Losses:

Yield losses in a typical year, potential yield losses without control.

Regional Differences:

Note any differences in pest pressure or management within New England, and between New England and the rest of the U.S.

Cultural Control Practices:

Identify and discuss any cultural practices (e.g. planting dates, resistant varieties, row spacing) used to manage the pest.

Biological Control Practices:

Discuss any biological control programs that are relevant for the pest/commodity, include pheromone use if applicable.

Postharvest Control Practices:

Discuss any postharvest management practices that affect management of growing season pests; also describe pre- and postharvest practices used to manage postharvest pests, include storage treatments.

Other Issues:

Discuss any export or food processor restrictions that may limit the use of one or more active ingredients or management practices. Describe on-going research on strategies to replace pesticide control for this pest. Discuss any other relevant issues involving management of this pest.

Chemical Controls for Pestname:

List alphabetically by active ingredient.

For each active ingredient used to manage the pest, include the following:

Column 1 - chemical name and formulations

Column 2 - percent of crop treated in a growing season, type of application (aerial, ground, chemigation, banded, broadcast, in-furrow etc.), and timing (pre-plant, foliar, 5-leaf stage, etc.)

Column 3 - typical application rates,

Column 4 - typical number of applications per growing season or crop cycle

Columns 5 & 6 - pre-harvest interval and reentry interval

Column 7 – Comments on importance of the chemical to IPM or resistance management. Describe any factors that influence efficacy of the pesticide.

Note for this and all following pesticide tables:

Since more than one material may be used during a growing season, or not all growers may treat for a pest, the % numbers may not add up to 100%. Only those pesticides listed by growers in survey are included in these tables.)

Pesticide	Survey Data (% growers reporting use, % acreage, efficacy rating) and Application Notes	Typical Dose	Typical Number of Applications	PHI days	REI hours	Comments
active ingredient chemical name and Brand name(s)						

Continue for Pests 2, 3 etc. Continue sequential numbering of pests under subsequent categories. For example, if there are 3 pests in Group A, then first pest in Group B will be #4.

Example of a pest profile:

Borers, Dogwood borer and Roundheaded apple tree borer

Type of Pest: Insect

Frequency of Occurrence: Borers are not normally a problem in established orchards where orchard grass and weed growth near the tree trunks is kept in check, close-fitting plastic spiral vole guards are removed at petal fall, and summer insecticide sprays are made for other pests. Dogwood borers seem to be increasing as a pest of dwarf apple orchards, particularly in southern New England. Susceptible scion/rootstock combinations are attractive and very likely to be infested where dogwood borers occur on wild and orchard hosts. Borer damage has increased with increased use of M9 and M26 rootstocks prone to burr knot formation, and are a serious problem in low spray orchards.

Damage Caused: Girdling of trunk, variable weakening of tree including tree death on young trees. Adult borers lay eggs that hatch into bark/wood-tunneling larvae. Burr-knots on rootstocks are particularly attractive to adults as a place to lay eggs. Often, tunneling and damage is concentrated in burr-knots, however, severe infestation with girdling can result in loss of productivity and decline/death of the whole tree. Young trees are most susceptible.

% Acres Affected: < 25% with potential 100% of new plantings with dwarf rootstocks such as M26 and M9

Timing of Control: June through August for insecticides with short residual control. Single Lorsban application seems to provide season-long control.

Yield Losses: Unknown losses due to reduced productivity. Damage can range from five to 100%, depending on orchard block, tree age, cultivar, and rootstock. Primarily a result of young tree decline or death, thus affecting the long-term productivity of the orchard. Whole orchards of new plantings have been killed. General OP applications relegate borers to secondary pest, but where susceptible rootstocks are planted and insecticide frequency is low, this pest has serious damage potential.

Regional Differences: Unknown, but may be more common in Massachusetts, Connecticut, and Rhode Island.

Cultural Control Practices: Planting rootstocks that do not have a tendency to form burr-knots; planting graft union just above ground line;

avoid use of solid plastic mouse guards, or at least remove them during the growing season; maintain clean, debris and weed-free area around base of tree. Removal of vole guards, vegetation control around young trees.

Biological Control Practices: Bird predation contributes to suppression but is not adequate to prevent damage.

Postharvest Control Practices: NA

Other Issues: Few sprays are applied specifically against borers in established orchards, but borer control is important in new plantings. In established plantings, borers are controlled by applications against other pests (PC and AM). Reduction in foliar insecticide applications during June – August would increase the significance of this pest. Continued availability of chlorpyrifos is important, as it is the most effective option when borer damage prevention treatment is needed.

Chemical Controls for Dogwood borer and Roundhead apple tree borer:

Pesticide	Survey Data (% growers reporting use, % acreage, efficacy rating) and Application Notes	Typical Dose	Number of Applications	PHI days	REI hours	Comments
chlorpyrifos - Lorsban 4 EC or Lorsban 50WS	Use reported by 44% of growers, used on 52% of acreage. Excellent/Good/Poor rating score 60 / 6 / 0. Apply as trunk spray until petal fall. Application by backpack sprayer, directed lower nozzle from airblast sprayer, or by brushing with or without latex paint to make a slurry	1.5 qt. or lb. per 100 gals.	1	28	96	Single application even in dormant season can give yearlong protection. Requires supplemental label.

Endosulfan - Thiodan 50WP	Use reported by 4% of growers, used on 2% of acreage. Excellent/Good/Poor rating score 1 / 4 / 1. Apply as trunk spray in June – August, otherwise same as above.	1.5 lb. per 100 gals.	1 - 4	21	24	Much less residual efficacy than chlorpyrifos, requires repeated applications
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End of example

Group B – Insect and mite pests identified by survey as significant problems in some years

***** Use same format for Groups B and C as for Group A. *****

Group C – Insect and mite pests identified by survey as infrequent problems

IV. Diseases (and nematodes if applicable)

Separate individual disease pests into priority groups labeled as follows:

Group A – Diseases identified by survey as most important

Disease 1 **** see instructions in Insect and Mites. Name in Verdana
16 bold font ****

Type of Pest:

Frequency of Occurrence:

Damage Caused:

% Acres Affected:

Timing of Control:

Yield Losses:

Regional Differences:

Cultural Control Practices:

Biological Control Practices:

Postharvest Control Practices:

Other Issues:

Chemical Controls for **Disease name**

Pesticide	Survey Data (% growers reporting use, % acreage, efficacy rating) and Application Notes	Typical Dose	Typical Number of Appli- cations	PHI days	REI hours	Comments
active ingredient chemical name and Brand name(s)						

Disease 2 Etc.

Group B – Diseases identified by survey as significant problems in some years

Group C – Diseases identified by survey as infrequent pest problems

V. Weeds

Weeds can be listed by group or by individual species, or both, i.e. groups but with special attention to a few problematic individual weed species. If weeds are discussed as individual species, then break into Groups A - Most important, Group B – significant, and Group C – infrequent, as was done above for insect and disease pests.

Grouping can be by botanical characteristics (as shown in template tables below) but you could also organize by management timing (pre-emergence, post-emergence, both).

Annual Grass Weeds **** see instructions in Insect and Mites.

Name in Verdana 16 bold font *****

Frequency of Occurrence:

Damage Caused:

Percent acres affected:

Timing of Control:

Yield Losses:

Regional Differences:

Cultural Control Practices:

Biological control:

Postharvest Control Practices:

Other Issues:

Chemical Controls for Annual Grass weeds

Pesticide	Survey Data (% growers reporting use, % acreage, efficacy rating) and Application Notes	Typical Dose	Typical Number of Appli- cations	PHI days	REI hours	Comments
active ingredient chemical name and Brand name(s)						

 Repeat for other weed groups, Annual broadleaf, Perennial grasses,
 Perennial herbaceous broadleaf, Woody perennial, and Vines.

Annual Broadleaf weeds

- Frequency of Occurrence:
- Damage Caused:
- Percent acres affected:
- Timing of Control:
- Yield Losses:
- Regional Differences:
- Cultural Control Practices:
- Biological control:
- Postharvest Control Practices:
- Other Issues:

VI. Vertebrate Pests

As there will be only a few of these, no need to categorize into Groups A, B, and C.

Vertebrate pest 1:

Type of pest:

Frequency of Occurrence:

Damage Caused:

Percent acres affected:

Timing of Control:

Yield Losses:

Regional Differences:

Cultural Control Practices:

Biological control:

Postharvest Control Practices:

Other Issues:

Chemical Controls for Vertebrate pests

Pesticide	Survey Data (% growers reporting use, % acreage, efficacy rating) and Application Notes	Typical Dose	Typical Number of Applications	PHI days	REI hours	Comments
active ingredient chemical name and Brand name(s)						

Vertebrate Pest 2 etc.

VII. Acknowledgements and Contacts

References

This is list of the documents used to create the crop profile. No need to number references. Since you will usually have references for an IPM tactic survey and the New England Ag Statistics Service, I have included those two references as examples below.

Publication name in italics. Author or Editor. Year published. Publisher (e.g. University of XXX Cooperative Extension for regional pest management publications). Web address if source is online.

New England Cropname Pest Management Tactic Survey, author, year, PRONewEngland Pest Management Network, <http://PRONewEngland.org/....etc>.

Report Name, New England Agricultural Statistics Service, <http://www.nass.usda.gov/nh/....etc>.

Key Contacts and Resources

Identify commodity experts in New England. Include their mailing address, phone number and email address.

Use same bibliographic format as above for publications. List the print and online publications - including Extension bulletins, newsletters, and websites – that are the major information sources for people managing pests on this crop in New England. Also, include key educational events for practitioners, industry personnel, and University staff.

For example, entries for a vegetable crop, cite the annual New England Vegetable Production Guide and the annual New England Vegetable and Small Fruit Growers Meeting. State level entries would be the contact information for the Extension vegetable IPM program in each state, and a list of the basic program activities in each state (e.g. newsletter, pest hotline phone number, winter meeting, summer field day and/or twilight meetings etc.).

The intent is to give the reader an overview the core components of the New England Extension IPM programs and other IPM resources for the crop.

State
Name
Affiliation
Address
Telephone
Email

Resource publication name in italics. Author or Editor. Year published. Publisher (e.g. University of XXX Cooperative Extension for regional pest management publications). Web address if source is online.

Reviewers

You must have a reviewer from each state. Only list people who indicate they actually went through the draft crop profile to check for accuracy and clarity.

The crop profile is not done until you have received an approval from an expert contact or the network state liaison for each New England state. Receiving no response is not adequate to assume that approval is implicit. Until you have an approval from each state, you must send reminders to the state liaison until you have an approval.

If the profile author does not have of an expert contact to provide review for a state, it is the responsibility of the state liaison to provide review and approval, or to find someone in their state qualified to do so.

Format for listing reviewers is shown below. The names of state liaisons are placed here as a convenience as the default reviewer contacts for each state.

State
Name
Affiliation
Address
Telephone
Email

Connecticut

Candace Bartholomew
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cbarthol@canr1.cag.uconn.edu

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PRONewEngland Pest Management Network Crop Profile Checklist

1. _____ Author name and contact info, crop profile last revision date on first page.

2. _____ Table of Contents

3. _____ Production information for the crop in New England

- a) Number of producers
- b) Acreage
- c) Production per acre
- d) Economic value

4. _____ Overview of cultural practices – How the crop is grown, with emphasis on any practices that affect pest management.

5. _____ Overview of worker activities – With emphasis on any activities that could lead to worker exposure to pesticide residue.

6. _____ Coverage of each pest group, even if only to say there are no significant pests in that group. The pest groups are:

- a) Insects and Mites
- b) Diseases and Nematodes
- c) Weeds
- d) Vertebrates

7. _____ For each significant pest:

- a) Frequency
- b) Damage description
- c) Percent of acres affected
- d) Timing of control actions
- e) Yield losses
- f) Regional differences (within New England, and between New England and rest of U.S.) in pest significance or damage
- g) Cultural controls
- h) Biological controls
- i) Postharvest controls

8. _____ References, with citation that includes:
a) Author
b) Title
c) Source publication (e.g. name of journal or book that contains the cited article)
d) Publisher
e) Year of publication
f) Web address if applicable.

9. _____ Run spell checker and verify that items 1–8 have been met. Send draft to each PRONewEngland Pest Management Network state liaison for review. Add line numbers to the file before sending. This makes it easier for reviewers to identify location of specific suggested changes. Steps to add line numbers in Microsoft Word 2003:

On the File menu, click Page Setup, and then click the Layout tab.

In the Apply to box, click Whole document.

Click Line Numbers.

Select the 'Add line numbering' check box.

10. _____ Incorporate review comments received. Add list of Reviewers to the end of the document. Remove line numbers. Send electronic copies of the final document to any expert contacts who helped create it, and to Glen.

Congratulations, you are done!

Glen posts the document on PRONewEngland.org, and submits it to the Northeastern IPM Center for their approval and submission to the National Crop Profile database. Upon acceptance into the national database, the link on PRONewEngland.org is changed from the local file to the national database.