



United States Department of Agriculture
Natural Resources Conservation Service

NH State Supplement WQL21 – Integrated Pest Management for Organic Farming

High Level Integrated Pest Management (IPM)

1. A high level of IPM is achieved when >66% of possible points are attained using crop specific IPM guidesheets from the University of Massachusetts.

<http://www.umass.edu/umext/ipm/publications/guidelines/index.html>

OR

2. A high level of IPM is achieved when payment level is “high” using the Maine draft IPM jobsheet. This jobsheet may also be used for assistance in developing an IPM plan.

<http://www.maine.gov/agriculture/pi/IPM/documents/DraftIPMJobsheet.xls>

USDA-National Organic Program

1. State and Federal information on organic certification can be accessed here:

<http://www.nh.gov/agric/OrganicCertificationProgram.htm>

Water Quality and Air Quality Enhancement Activity – WQL21 – Integrated Pest Management for Organic Farming.



Enhancement Description

Managing pests on an organic farm, including farms transitioning to organic, with an Integrated Pest Management (IPM) system that relies on high level prevention, avoidance, monitoring, and suppression techniques that are based on an understanding of pest ecology. Organic IPM relies primarily on ecologically-based cultural and biological practices that result in healthy soil and habitat for beneficial organisms. Appropriate mitigation techniques are utilized to improve environmental risks from selected suppression techniques.

Land Use Applicability

This enhancement is applicable on cropland, pasture or rangeland that is certified organic or is in the process of transitioning to organic.

Benefits

Environmental benefits will be operation specific. Benefits may include but are not limited to improved water and air quality achieved through minimizing suppression risk to natural resources. This will include reducing pesticide risks in runoff, leaching, drift and volatilization, as well as impacts on pollinators, beneficial insects and wildlife. It may also include reduced soil erosion and sediment loss from tillage for weed control. Implementing IPM increases biodiversity on the farm while improving soil quality, resulting in a more stable farming system that helps to prevent pests from overwhelming the system.

Criteria for utilizing high level Integrated Pest Management (IPM)

IPM is a sustainable approach to pest management that combines the use of prevention, avoidance, monitoring and suppression strategies, to maintain pest populations below economically damaging levels, to minimize pest resistance, and to minimize harmful effects of pest control on human health and environmental resources. Components of a high level Organic IPM include proactive cultural and biological controls.

High level Organic IPM includes:

1. A written IPM plan and implementation of activities that include:
 - a. Prevention techniques such as cleaning equipment and gear when leaving an infested area, using pest-free seeds and transplants, irrigation scheduling to avoid situations conducive to disease development, etc.
 - b. Avoidance techniques such as maintaining healthy and diverse plant communities, using pest resistant varieties, crop rotation, refuge management, strip cropping, interplanting, intercropping, multiple cropping, etc.



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- c. Monitoring techniques such as pest scouting, degree-day modeling, weather forecasting, use of economic thresholds, etc. to help target suppression strategies and avoid routine preventative treatments.
 - d. Suppression techniques such as cultural and biological methods to reduce or eliminate a pest population or its impacts while minimizing risks to non-target organisms.
2. Only those substances listed in the National Organic Program regulations §205.601 and §205.603 may be used in the IPM program.
 3. Acreage must be certified organic or in the transition to organic process.

Documentation Requirements for utilizing high level Integrated Pest Management (IPM)

1. A written organic IPM system plan for all of the offered acres. This plan should include each of the following items:
 - Pest prevention techniques
 - Pest avoidance techniques
 - Pest monitoring (scouting) techniques
 - Economic pest thresholds
 - Pesticide environmental risk analysis tool that was used for pesticides selected from the NOP Prohibited and Allowed Substance list (e.g., the NRCS Windows Pesticide Screening Tool - WIN-PST)
 - Approved pesticide application records with the specific management techniques that were utilized to reduce pesticide environmental risk (i.e., spot treatment, banding, pheromone traps, pesticide incorporation, etc.)
 - Land Grant University guidance, if available, should be followed for acceptable prevention, avoidance, monitoring and suppression techniques.
 - Map showing location of fields, acreage, beneficial insect habitat, etc.
 - Environmental assessment of non-chemical suppression methods, e.g. cultivation, burning
2. Copies of scouting reports and other IPM records used to monitor and evaluate the plans effectiveness.
3. If formal IPM Guidelines with a numeric scoring system have been developed and approved by Extension, a completed set of those guidelines can be substituted for the documentation requirements in number 1 above.

How to Use the IPM Job Sheet Integrated Pest Management (IPM) Job Sheet

This tool is under development by the Northeast Vegetable IPM Working Group in cooperation with Maine NRCS with input from vegetable specialists and conservation professionals throughout the US. It is designed to assist conservation planners and vegetable growers to develop the IPM component of a farm's conservation plan. We welcome your suggestions for improvement (contact Kathy Murray, Kathy.murray@maine.gov, 207-287-7616)

Here's how to use the IPM Jobsheet:

Step 1) Download the draft version Job Sheet from <http://www.maine.gov/agriculture/pi/IPM/NRCS.htm>. Click 'Enable Macros' in the dialog box that appears when you open the file.

Step 2) Click on the Farm Info tab and fill in the boxes to identify the farm, crops, management objectives, etc

Step 3) Click on the IPM Practices Tab. General IPM practices are listed in Column D, organized by type of action [e.g. Prevention (yellow), Avoidance (green), Monitoring (blue) and Suppression (orange)]. Each practice is defined specifically for a selected crop in Column E. To begin, select a crop family for the green box in cell F7 by clicking on the box, then on the small black triangle that pops up to the right of the box. Select a crop family from the pull-down menu that appears.

7	Currently Practicing (Benchmark)	Plan an implementation plan	Principle	Practices	Crop Family	Legume	Crucifera
8	<input type="checkbox"/>	<input type="checkbox"/>		Use certified seed and purchase transplants when available. (Example: Purchase certified seed and ensure plants are free of insects, diseases, and weeds before transplanting.)	Cucurbita Cucurbitaceae Pumpkin Squash Cucurbit	Use treated seed.	Use transplants grown in New England to avoid importing DISE that have already developed resistance to one or more classes of insecticide.
9	<input type="checkbox"/>	<input type="checkbox"/>		Prevent weeds from going to seed. (Example: Cultivate, pull, mow, flame, etc.)		Pea 2	2
10	<input type="checkbox"/>	<input type="checkbox"/>		Reduce moisture on plant surfaces to prevent disease incidence. (Example: Use drip irrigation or avoid overhead irrigation between 8 a.m. and midday to minimize disease.)		Pea 3	Maintain adequate soil water during seeding, transplanting, and period of rapid vegetative growth.
11	<input type="checkbox"/>	<input type="checkbox"/>		Employ methods to avoid spreading insects (pathogens, weeds, and insects). (Example: Work crop when dry, wear collected boots last, wash equipment between fields, etc.)		Pea 4	4
12	<input type="checkbox"/>	<input type="checkbox"/>		Destroy and/or remove crop residues for field sanitation procedures. Include fall tillage where appropriate to control weeds and break pest cycles. (Example: Plow under corn residue in the fall to control European corn borers.)		Pea 5	Incorporate and disk crop residues shortly after harvest.
13	<input type="checkbox"/>	<input type="checkbox"/>		Eliminate unwanted plants that serve as pest reservoirs, such as abandoned crops, volunteer corn from previous crop, or weed hosts of viruses.		Pea 6	6
14	<input type="checkbox"/>	<input type="checkbox"/>		Treat soil or plant tissue annually to determine proper fertility and pH levels for crop and lime application according to crop needs. Apply nutrients, fertilizers, and pH adjusting agents according to recommendations.		Pea 7	7
15	<input type="checkbox"/>	<input type="checkbox"/>		Rotate crops that break the pest cycle. Do not plant crops from the same family at less than recommended intervals for the identified pests.		Pea 8	8
16	<input type="checkbox"/>	<input type="checkbox"/>		Rotate crops to appropriate sites to optimize plant health and avoid known pests. (Example: Avoid planting corn in fields with a history of European corn borers.)		Pea 9	9

Next select the crop within that family from the pull-down menu in cell F8.

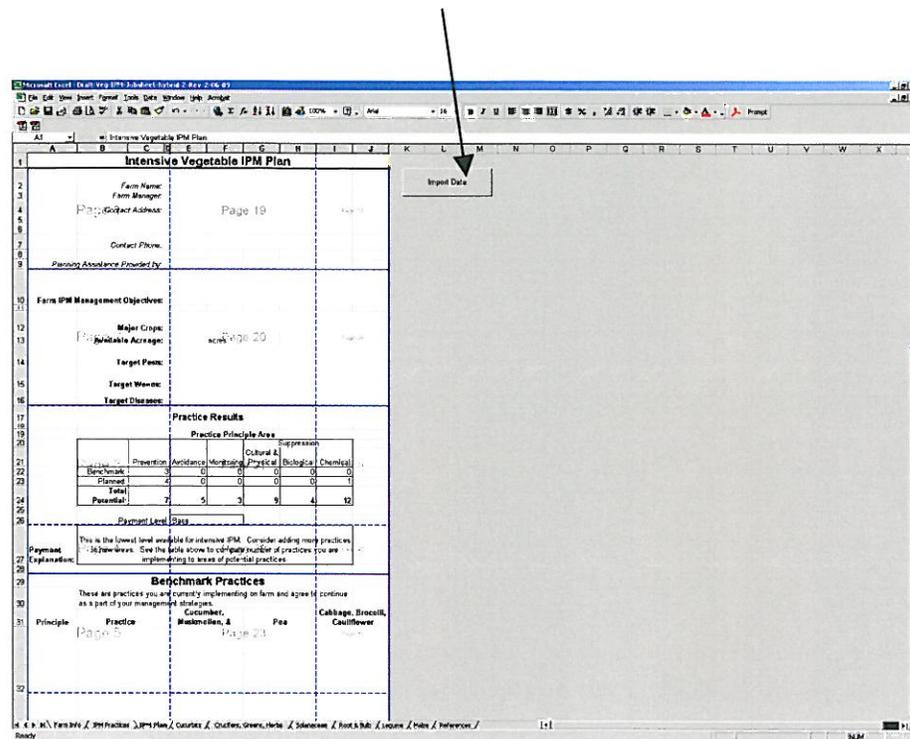
Step 4) For the selected crop, check boxes in Columns A for all the practices the grower is currently using and in Column B for new practices the grower plans to implement.

1	A	B	C	D	E	F	G	H	I	J	K	L	M
7	Currently Practicing (Benchmark)	Plan on Implementing (Planned)	Principle	Practices	Example/References Plant Family	Cucurbit Cucumber, Melon, & Watermelon	Legume Pea	Crucifera Cabbage, Broccoli, Cauliflower					
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PREVENTION	Use certified pest-free seeds and pest-free transplants where available. (Example: Purchase certified seed and ensure plants are free of insects, diseases, and weeds before transplanting.)	Plant only certified disease-free seed and transplants Seed decay: Buy treated seed		Use treated seed	Use transplants grown in New England to avoid importing OSM that have already developed resistance to one or more classes of insecticides					
9	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Prevent weeds from going to seed. (Example: Cultivate, pull, mow, flame, etc.)	Cultivate, pull, mow, flame, etc. as necessary to prevent weeds from going to seed.		Pea 2	2					
10	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Reduce moisture on plant surfaces to prevent disease incidence. (Example: Use drip irrigation or avoid overhead irrigation between 6 p.m. and midnight to minimize disease)	Use drip irrigation and raised beds. Avoid overhead irrigation.		Pea 3	3	Maintain adequate soil water during seeding, transplanting, and period of rapid vegetative growth.				
11	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Employ methods to avoid spreading pests (pathogens, weeds, and insects). (Example: Work crop when dry, work infested fields last, wash equipment between fields, etc.)	Avoid working in fields when foliage is wet. Anthracnose, Alternaria leaf spot, black rot: Plow down deeply all infested crop debris after harvest. Avoid wounding fruit during harvesting. Immerse fruit in clean water containing 120 ppm chlorine.		Pea 4	4					
12	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Destroy and/or remove crop residues for field sanitation procedures. Include fall tillage where appropriate to control weeds and break pest cycles. (Example: Plow under corn refuse in the fall to control European corn borer)	Remove and destroy virus-infected plants Plow crop residue under promptly after harvest.		Pea 5	5	Incorporate and disk crop residues shortly after harvest				
13	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Eliminate unmanaged plants that serve as pest reservoirs, such as abandoned crops, volunteers from previous crop, or weed hosts of viruses.	Control all weeds, especially volunteer cucurbits, chickweed, pokeweed, and milkweed		Pea aphid: Harvest or spray nearby alfalfa, vetch, or clover before winged adults are formed in the spring.	6					
14	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Test soil or plant tissue annually to determine proper fertility and pH levels for crop and time application according to crop needs. Apply nutrients, fertilizers, and pH-adjusting agents according to recommendations.	Apply lime according to soil test to maintain soil pH at 6.0-6.8. Watermelon can tolerate pH down to 5.5. If fertilizer cannot be banded at planting, add the band fertilizer amount to preplant broadcast application. Use drip irrigation and raised beds. Avoid overhead irrigation. Control all weeds, especially volunteer cucurbits, chickweed, pokeweed, and milkweed. If growing plants on plastic mulch, nitrogen can be applied through trickle or overhead irrigation or addressed along the edge of the plastic mulch. Folar feeding rate is 4.5 lb urea/A.		Apply lime according to soil test to maintain soil pH at 6.5-6.8. Refer to NEVMG p145-147 for nutrient recommendations. May inoculate seed at planting time with the appropriate species of Rhizobium bacterium. May address with an additional 25 lb of nitrogen if Rhizobium is not present, or leaching has occurred, or if early peas are desired. Apply less nitrogen fertilizer if manure or legume sod was plowed down.	Apply lime according to soil test to maintain soil pH at 6.5-6.8. If the level of boron in the soil is low apply as an additive to the fertilizer. Refer to NEVMG p95 for plant nutrient recommendations. Apply less nitrogen fertilizer if manure or legume sod was plowed down.					
15	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Rotate crops that break the pest cycle. Do not plant Cucurbit, Crucifers, Greens, herbs, Solanaceae, Root & Tub, Legume, Pease, References /	Rotate out of cucurbits for at least 2		Use 3-4 year rotation	6	Cabbage maggot: Rotate				

Technical information about selected practices and additional resources can be found by clicking on the References tab. References are hotlinked so if you are working on an internet enabled computer, click on the URL listed to open your browser and be directed to that resource.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Maine IPM Practices for Vegetable Production Reference List																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Step 5) Click on the IPM Plan tab. Click Import Data button



Step 6) Review practices with grower. If necessary, revise the plan by doing Steps 3-5 again to make changes to select or unselect IPM practices for each crop.

Step 7). Save the file under a unique name (e.g. FarmerBrownIPMPlan.xls), print a copy of the IPM plan.

NOTE: The Practice Results table and Payment Explanation table are presented for example only and are not fully functional in this draft version of the Job Sheet. Each state NRCS office will want to make decisions about whether to set minimum numbers of IPM practices or tiered payment levels.