POTATO IPM PROTOCOL
for
PRINCE EDWARD ISLAND

Integrated Pest Management (IPM):

*An* *knowledge-based, decision-making process that uses all available techniques (Chemical, Cultural, and Biological) to suppress pests in an effective, economical, and environmentally sound manner.*

This Protocol is designed to assist growers in determining what level of IPM they are currently practicing. It is designed to be used on a field by field basis so if you are using it to assess your ‘whole farm’ - you should answer the questions with respect to practices that you are using on the majority (>50%) of your acreage.
Pre & Planting Level IPM Decisions

What is your current crop rotation?
3-year ___3 points
4-year ___5 points
5-year ___8 points

Did you: (check all that apply)
Plant certified/better Seed ___3 points
Warm seed before planting to variety/region specific ___3 points
temperatures as recommended
Plant min. of 1.5oz or whole seed piece to establish vigor ___3 points
Plant at soil temperature of 10 C and/or increasing temps. ___3 points
Correctly space seed and meet hill specifications for variety/region ___3 points
Suberitize seed (allow for proper wound curing time before planting for certain varieties.) ___5 points

Soil and Water Management Level IPM Decisions

Do you: (check all that apply)
Soil test for fertility/nutrient levels ___4 points
Soil test for pH and OM levels ___4 points
Credit N for Manure/Compost or plow down crops ___4 points
Do you add Manure/Compost or other OM to build your soil ___4 points
Split your applications of Nitrogen over the growing season ___4 points

Nutrient Management Plan implemented on your farm ___5 points

How do you control nematodes? (Check one only)
Chemically through fumigation? ___0 points
Biologically through rotations with antagonistic or non-host crops ___4 points

What soil conservation practices do you use on this field? (Check all that apply)
Plant a winter cover crop or spread hay mulch (1.5 T/ac) on fields ___5 points
that require a winter cover.
Apply hay mulch across sloped areas of the field ___2 points
Practice residue management ___4 points
Leave a grassed headland on lower end of field if drills are ___5 points
running up and down the slope
Use of other soil conservation measures (terracing, strip cropping etc...) ___5 points
Scouting and IPM

What method of scouting do you most commonly use? (Check one only)

Informal observations during routine farming operations ___1 points
Observations based on what was happening on the edge of the field. ___2 point
Crop Scouts focused mainly on potential hot spots or where there is a history of problems in the past. ___5 points
Crop scouts followed specific patterns through the field (field borders and interior). ___7 points

Whose scouting data did you primarily use to make management decisions for this field? (Check one only)

Independent crop consultants ___5 points
IPM trained Farm Employee/Owner ___6 points

How many scouting trips were made during growing season in this field? (Check only one)

Once every two weeks (emergence to topkill) ___2 points
Once per week (emergence to topkill) ___5 points
More than once per week if pest outbreak occurs (emergence to topkill) ___7 points

Why did you scout? (Check all that apply)

To determine when levels of pests in a field reach threshold levels and to reduce environmental impact by using less pesticide. ___4 points
To check on effectiveness of a pest control measure? ___2 points
In response to a local or recent pest report you heard or read about? ___2 points
To monitor areas of the fields where you knew pests were already a problem. ___2 points

Which of the following best represents how you or your farm manager kept track of the scouting information collected on this field? (Check one)

No written or electronic records of scouting data were kept ___0 points
Written records kept in a file ___1 point
Written records for each field and consecutive years kept together to track pest pressure over time for this field ___2 points

Weed IPM Decisions

When treating weed problems in this field do you (check all that apply):

Keep records of previous weed problems and control in this field ___3 points
Apply herbicides and cultivate to control weeds ___2 points
Rotate herbicide mode of actions to avoid resistance ___3 points
Manage problem weeds in rotational crops ___3 points

**Use mechanical tillage only (no herbicides)** ___5 points

**Clean all equipment when moving between fields to prevent weed spread** ___3 points

**Top-killing with a ‘topper’ and or root-cutter that reduces chemical desiccant** ___5 points

**Insect IPM Decisions**

CPB and PFB

To prevent and monitor CPB populations do you: (check all that apply)

*Plant trap crops/barrier crops or use an in-furrow insecticide on field borders to slow CPB migration into the field* ___5 points

Do you try to rotate your potato fields to provide spatial separation from last years fields ___5 points

Do you Scout CPB densities once per week using regionally accepted scouting pattern and threshold levels ___3 points

Do you control CPB and PFB using: (check one only)

- Very High Hazard Insecticide ___0 points
- Moderate Hazard Insecticide ___2 points
- Low to Very Low Hazard Insecticide ___5 points

If only some areas of the field have reached the Economic Threshold do you: (check one)

Spot spray those areas ___4 points
Spray the entire field ___0 points

Do you try to minimize chemical resistance by (check all that apply):

Rotating control products with different modes of action ___5 points

*Regularly testing CPB populations for resistance to the common Insecticides* ___4 points
Do you control CPB by any of the following non-chemical methods: (check all that apply)

- Don’t need to spray - high population of beneficial insects __5 points
- Propane flamers/Crop vacuum __3 points
- Plastic-lined trench bordering field __3 points

Green Peach (and Potato) Aphids

Do you monitor for aphids by: (check one only)
- Scouting weekly using yellow-pan traps __2 points
- Scouting weekly by using leaflet counts __4 points

Do you control aphids using: (check one only)
- Very High Hazard Insecticide __0 points
- Moderate Hazard Insecticide __2 points
- Low to Very Low Hazard Insecticide __5 points
- Promote population of beneficial insects __5 points

Do you use any of the following cultural methods to control aphids and prevent resistance: (check all that apply).
- Field borders are planted to a grass or trap crop to attract aphids out of potatoes and reduce virus transmission __5 points
- Do you manage insecticide resistance by rotating chemical groups __3 points

European Corn Borer

To control corn borer do you: (check all that apply)
- Scout fields and determine if population warrants a control measure __5 points
- then flag egg masses to coincide control measures with peak egg hatch
- Spray on a weekly basis for corn borer after the first egg mass is found __0 points
Potato Disease Level IPM Decisions

Do you use any of the following sanitation techniques to prevent disease spread on your farm? (Check all that apply).

**Remove volunteer potatoes from last years potato fields in your farming rotation**
- Rogue disease-infected plants from appropriate fields [3 points]
- Eliminate all potato cull piles [1 point]
- Use disease tolerant varieties whenever possible [3 points]
- Disinfect trucks that haul seed from off farm [3 points]
- Top-kill fields according to label instructions to prevent late season infection of potato diseases [3 points]

To prevent disease infection of your field do you: (check all that apply)

**Use disease forecasting model for early/late blight through use of on-farm weather station data. (Blitecast)**
- Time fungicides according to weather conditions & the Blight Severity Index on the Pest Information Line [4 points]
- Scout fields for late blight on a regular basis [3 points]
- Follow recommended days between vinekill and harvest to ensure proper skin set and reduce risk of disease infection [2 points]
- Use a preventative fungicide on a regular basis [2 points]

If Blight is found in the field do you:
- Spot kill or remove blight infected plants and surrounding areas to reduce the spread of the disease [2 points]

Farm Management IPM Decisions

How often do you calibrate your spray equipment: (check one only)
- All sprayers are calibrated at the start of the season [3 points]
- Re-calibrate midseason [4 points]

**Confirm that the appropriate rate has been applied through the use of a sprayer monitor.** [5 points]
Do you maximize sprayer efficiency by: (check all that apply)

Adjust sprayer variables (nozzles, pressure, boom height, water volume, etc...) to ensure proper canopy coverage through out the growing season. ___4 points

- Banding spray on top of the rows early in the season ___3 points
- Using sprayers with new technology (air assist, electrostatic, GPS or Injection pump etc...) to ensure proper canopy coverage.

Do you keep: (check all that apply)

- Records of cultivar and planting date for each field ___3 points
- Records of all weekly spray applications ___3 points
- Records of the effectiveness of the control measures for each field ___3 points

Do you get involved in Research and Continuing Education: (check all that apply)

- Do owners and employees receive safety training? ___3 points
- Involved in demonstration plots to test emerging and innovative farming techniques ___3 points
- Attend information sessions or field tours etc... to keep up to date ___3 points
- Do you leave buffer zones on field edges near watercourses ___3 points

- Any areas on farm left as Conservation areas (ie. Ducks Unlimited, Island Nature Trust, etc...) ___3 points
Harvest and Storage level IPM Decisions

During harvest do you: (check all that apply)

Evaluate all fields for potential harvest or storage disease problems ___3 points
Harvest during proper weather conditions ___2 points
Do diagnostic bruise testing during harvest to determine % bruise and adjust equipment accordingly ___5 points

During potato storage do you: (check all that apply)
Disinfect storage area (prior to storage period) ___2 points
Have an adequate curing period to promote wound healing ___2 points
Maintain RH depending on crop conditions in storage ___2 points
Monitor moisture and temperature relationships to prevent condensation on the top of the pile, which may lead to soft rot and other storage diseases ___2 points
Have a ‘through the pile’ storage ventilation system in place ___2 points

Use heat gun to monitor hot spots ___2 points
Use a CO₂ monitor when storing processing potatoes ___2 points

SCORING - The protocol is based on a total value of 230 points (not including bonus points - in italics). Count up your total number of points obtained and use the scale below to determine where you fit in the IPM Continuum.

<table>
<thead>
<tr>
<th>No IPM</th>
<th>Emerging</th>
<th>Basic</th>
<th>Established</th>
<th>Advanced</th>
<th>Optimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;60%</td>
<td>60-75%</td>
<td>75-85%</td>
<td>85-95%</td>
<td>95-100%</td>
<td>&gt;100%</td>
</tr>
</tbody>
</table>

< 138 points  = No IPM
139-173 pts  = Emerging IPM
174-196 pts  = Basic IPM
197-219 pts  = Established IPM
219-230 pts  = Advanced IPM
> 230 pts     = Optimal IPM