

Invasive Species Management:
IPM considerations
for producers and garden owners

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So...What is IPM?

- Integrated Pest Management (IPM) is an approach that has evolved over recent decades to manage pests (usually in agricultural crops).
- IPM programs follow an information gathering and decision-making approach to managing pests with a goal to provide acceptable control and prevention.
- IPM is more than just a combination of treatments; treatments are only one of the components of an IPM program.

And... What does IPM have to do with Invasive Species?

The main focus of the Agriculture Branch is on the agricultural sector and our client base. Issues may be isolated instances or of a broader concern.

- Weed pests (leafy spurge, perennial sow thistle, Canada thistle, oxeye daisy...)
- Insect pests (slug, lepidoptera and sawfly species...)
- Diseases and pathogens (fungal, bacterial, viral)

Components of IPM

- IDENTIFICATION - identify the pest
- MONITORING - monitor the pest population and / or damage
- ACTION DECISIONS - use injury and action levels to decide when to treat
- TREATMENTS – several classes including preventative measures
- EVALUATION - evaluate the effect of treatments

Identification

- It is essential to identify pests and pest problems correctly to plan effective control programs.
- The key to effective control is knowing the biology of the pest, including the life cycle, behaviour patterns and habitat preferences.
- A thorough knowledge of the biology of the target species.

Monitoring

- Monitoring is an essential component of an IPM program.
- Provides information about the pest population and the site as well as the conditions that contribute to the pest problem.
- Monitoring is used to detect pest populations at an early stage when they are easier to control, assess the size of pest populations, determine the damage levels and to evaluate program success.
- It is essential to keep detailed, written records.

Monitoring Traps

Traps to monitor insect and rodent populations: pheromone traps, sticky traps, baited traps. These are valuable tools for pinpointing an infestation and estimating the size of a population.

- **Pheromone Traps:**

- Pheromone traps contain synthetic pheromones that mimic the pheromones produced by insects
- The pheromone trap is a very effective monitoring tool because it is so specific. Usually a different pheromone is needed for each species of insect being monitored.
 - sex pheromones are emitted by females to attract males
 - aggregation pheromones are emitted to attract others
 - alarm pheromones are emitted to warn others

- **Sticky Traps:**

- Sticky traps are used to monitor either flying or crawling insects. They can also be used as a control measure
- To prevent dust from coating sticky traps, they can be placed inside open ended tubes that allow pests access.



Action Decisions

In IPM, deciding when to take action and apply treatments is based on the information from a monitoring program. Treatments are not made according to a predetermined schedule but only when and where monitoring has shown they are needed. Determining when treatments are needed involves two concepts or threshold levels:

- **Injury level** is the unacceptable level of injury or damage from a particular pest population. What injury level is unacceptable depends on the pest and where it is. The concept of "injury" includes economic damage to goods and structures, medical or health hazards posed by pests, and aesthetic tolerability.
- **Action level** is when a particular treatment should be applied to keep the pest numbers from reaching the injury level. It may be reached when the pest population has reached unacceptable numbers, or at a particular time in the pest's life cycle, rather than at a particular population level.
 - If chemicals are determined to be required then they should only be applied when the appropriate action level is reached in order to eliminate unnecessary pesticide use.

Treatments

Treatments generally fall into two main categories:

- Prevention measures
 - barriers
 - sanitation
 - environmental modifications
- Control measures
 - physical
 - mechanical
 - biological
 - chemical controls

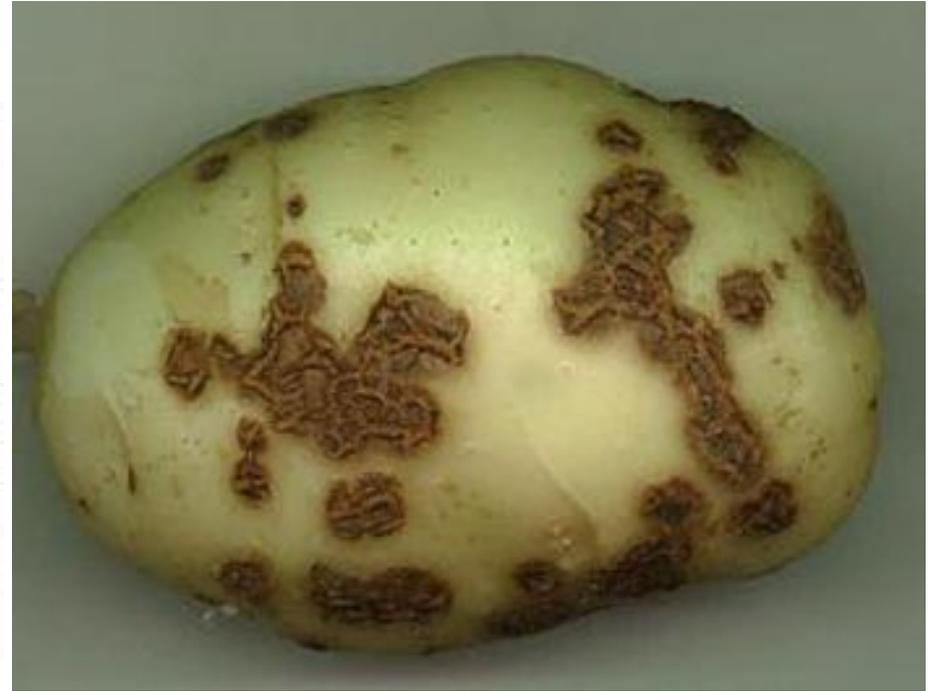
Evaluation

- Evaluation helps to:
 - decide what worked and what didn't,
 - identify possible improvements, and
 - assess the long-term costs of the program.
- To evaluate your success, you need accurate records of treatments and their outcomes.
 - Notes should be kept of monitoring records of pest numbers and locations before treatment, any treatment specifics (including date and time) and monitoring records of pest levels after treatment.

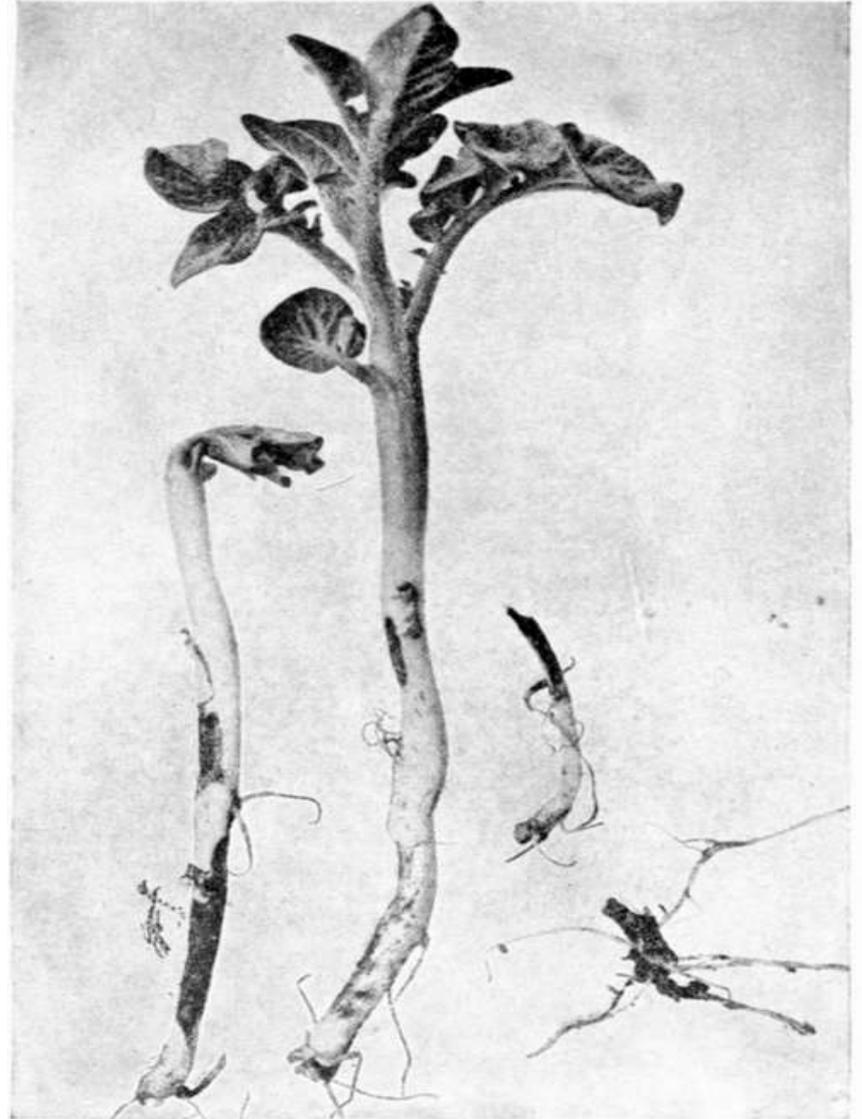
Common Scab (bacterial)



(Howard, Garland and Seaman, 1994)



Black Scurf (fungal)



Sawfly Larvae (host specific)

