

# Biological control agents of insect pests in potatoes

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# MAJOR PESTS ON POTATOES



Colorado potato beetle larvae



Aphids



European corn borer (ECB) damage

## PREDATORS: *Perillus bioculatus*

- Host specific
- Efficient predator of CPB
- Life cycle does not coincide with CPB in Canada
- Not commercially available

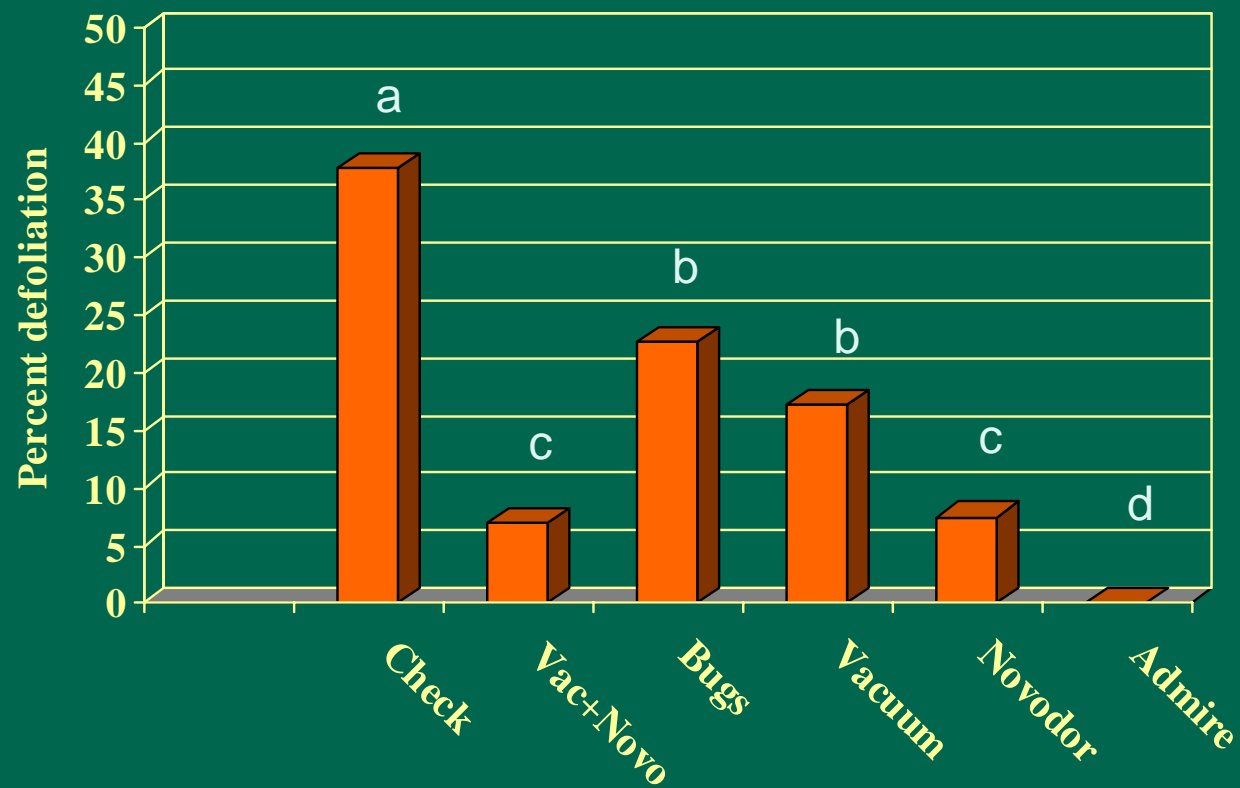


## *Podisus maculiventris*

- A generalist predator - feeds on CPB and possibly ECB
- Feeds on eggs, larvae, and adults
- Need more research on release rates
- Commercially available



## Seasonal average percentage of defoliation caused by the Colorado potato beetle



# Carabid beetles

- Aphids, CPB, and weed seeds
- Present in most agricultural fields
- Several different species
- Need more studies on habitat manipulation and field enhancement



**Pterostichus**



**Poecilus**

# Coccinellid beetles (Lady beetles)

- Good Aphid predators
- Natural populations can give some control
- Periodic augmentative releases may be necessary
- Commercially available



# *Aphidoletes aphidimyza*

- A predatory midge of aphids
- Very effective in greenhouses and fruit trees
- Few studies on potato aphids
- Commercially available



# PARASITOIDS: Tachinid Fly

- Controls fourth-instar CPB larvae
- Infestation is too late in the season
- May reduce overwintering population
- Not available commercially

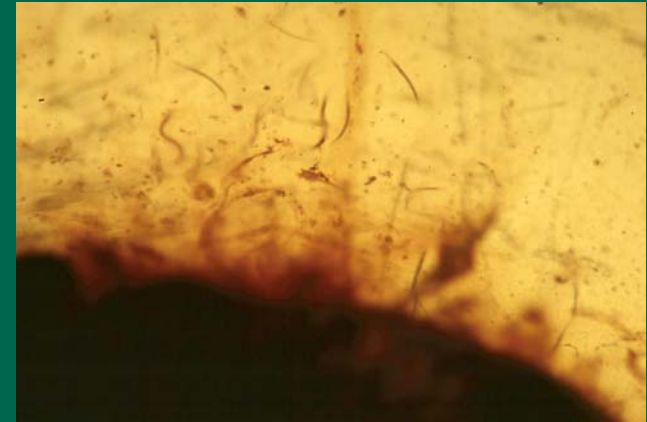


## *Trichogramma*

- A wasp that infects European corn borer eggs
- Is used in Corn for ECB control
- Available commercially
- Efficacy trials will be conducted in 2004 on Prince Edward Island

# PATHOGENS: Nematodes

- *Steinernema carpocapsae*
- CPB
- Needs moist environment
- Most effective against pupae and adults in the soil
- Need massive doses
- Commercially available



# *Beauveria bassiana*

- Fungus
- CPB
- Effective against larvae and adults
- Timing of application is critical
- Not registered in Canada



## *Bacillus thuringiensis* (Novodor® (BTt))

- Bacterium
- CPB
- Gives effective control
- Timing of applications is important
- Works best on early instars
- Registered in Canada
- Debate on its use in organic potato production

## SPINOSAD (Success®)

- Bacterial fermentation product
- CPB and ECB
- Application timing is critical
- Not presently registered for organic potato production in Canada
- Registration under the brand name “Entrust” is being sought