Starting a Biocontrol Program for Cut Gerbera

Graeme Murphy
IPM Specialist
bioLogical control solutions

Photos are courtesy OMAFRA unless otherwise stated
So ... how do we start a biocontrol program

- Most growers of cut gerbera are already using biocontrol
- But for those who are new to the crop or have managed without using biocontrol, here is the Biocontrol in Cut Gerbera 101
The hardest part is getting started

- Know your crop (varieties!) and your pests (incl diseases)
- Talk to people - biocontrol companies, extension specialists, other growers
- Involve all your staff
- Eliminate pesticide residues - check pesticide history, develop transition plan, compatible pesticides
- Work with your supplier, tech support
- Monitor - pests and biocontrols
- Patience
But when you’re program is already started?

- You’ve already done the hard stuff
- But new things always show up
- New pests, strange weather, susceptible new varieties
- Never let your guard down
Cut gerbera: the poster child for biocontrol in flowers?

What is it about cut gerbera?

• Perennial, long term
• Great environment
• Bridging canopy
• Greater tolerance for pests
• The closest thing in a flower crop to vegetables?
• So - if it’s that easy.....
The problem is.....

Pests love gerbera

Whitefly
Leafminer
Spider mites
Aphids
Thrips
Mealybugs
Caterpillars
Powdery mildew

Photo: BCS
• Almost always GWF
• Fairly long life cycle – approx. 1 month
• Plenty of time in a perennial crop to build up large populations
• Mainly a foliar pest, but can also be present on the flowers in heavy populations
• Can result in significant loss of production
• More serious pest in cuts than in potted gerbera
Whitefly control

- Resistance - chemical control is problematic
- Uptake in coir is often inhibited
- Excellent suite of natural enemies
  - Encarsia, Eretmocerus, Delphastus, A. swirskii, A. limonicus
  - Key is Delphastus (and A. limonicus?)
Whitefly control

- Biocontrol is often excellent through summer and fall
- Winter can be problematic - *Delphastus, Encarsia* and *Eretmocerus* slow down
- Spring comes and everyone is playing catch up
- Role for *A. limonicus*? Fresh *Encarsia*?
Leafminer

In a similar category to whiteflies

- Capable of massive population buildup
- Primarily leaf feeding, which can lead to reduction in photosynthesis
- Significant loss of production
- In large populations, there can also be mining on flowers
Leafminer control

- Resistant to all registered pesticides
- Excellent natural enemy in *Diglyphus*
- Some support from nematodes
- But... *Diglyphus* is very sensitive to pesticides
Spider mites

- Not in the same category as the first two
- But spider mites can be devastating on any crop if not controlled
Spider mite control

- Fortunately, some excellent control options including reasonably soft miticides
- Predatory mites: *P. persimilis, A. fallacis, A. californicus, A. andersoni*
- Lady beetle: *Stethorus*
- Predatory midge: *Feltiella*
Aphids

- On a par with spider mites
- Can be a problem on many different crops, including cut gerbera (flower stems and heads)
• Biocontrol options include: parasitic wasps *Aphidius* spp.), *Aphidoletes*, lacewings (green and brown)
• Perennial nature of the crop allows for long-term establishment of biocontrol
• Compatible pesticides: Beleaf
• Not one of the major pest problems - at least in Ontario
• Worse in potted gerbera, but there are still some cut growers with serious thrips issues
• Not just western flower thrips - *Echinothrips*
Thrips control

- Good biocontrol options for wft and great environment for them
  - *A. swirskii, N. cucumeris, Orius*
- Fewer options for *Echinothrips*
  - *A. limonicus? Orius?*
- Microbial products
- Pesticides?

Photo: R. Buitenhuis
Mealybugs

My worst nightmare

• Not common, but when it shows up...
• Can’t rogue it out as we can with potted crops
• In crown of plant, leaves, stems and flowers
Mealybug control

- Chemical control is ineffective
  - Affects rest of the biocontrol program
  - Oil? Beleaf?

- Biocontrol – few options
  - On the positive side, *Cryptolaemus* can work
  - Introduced as larvae
Caterpillars

- Not usually to this extent
- Compatible pesticides such as Dipel, Confirm usually do an excellent job
Powdery mildew can be a serious problem, especially during the shoulder seasons.

- Excessive use of fungicides can affect plant growth.
- Fairly compatible with biocontrol, but nothing is completely so; e.g. sulphur pots can be a problem for many BCAs.
- Environmental management is important but fungicides play a role.
Summary

Gerbera has many positives for successful biocontrol

• Production system, perennial, environment, pest tolerance

However, many pest issues

• Individually controllable,
• But control of each pest relies on successful control of others
• Breakdown in control can have a domino affect