Landscape Perspectives on Biological Control

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Biological Control

Use of natural enemies to keep unwanted pest populations low
Types of Biological Control

• **Classical**: introduction of non-native natural enemy to control a pest population.

• **Augmentative**: periodically increase natural enemy population with an artificially reared release.

• **Conservation**: maintain or enhance existing natural enemy populations.
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Natural Enemy Needs

Alternate host/prey

Shelter
- Moderated microclimates
- In-season refuges
- Overwintering sites

Food
- Nectar
- Pollen
- Sap, honeydew
Michigan Landscapes - Complex
Michigan Landscapes - Simplified
Landscape Effects Study

Gardiner et al. in review
Landscape Effects Biocontrol

Aphids per plant

Day 0     Day 7

Caged

Bicontrol

Diversity and Non-Crop Habitat
How to Increase Biocontrol?

Increase diversity and non-crop habitat with floral resources

Native MI perennials are more attractive than commonly recommended plants

Fiedler & Landis 2007
Plants to Use to Attract Beneficials

http://nativeplants.msu.edu
How Effective Will Floral Strips Be?
Site Design

Soybean field with floral strip
Conclusions

Diversity and non-crop habitat are important

Increase both by planting floral habitat

Several native plants are highly attractive

New study will test effects on biocontrol
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