Bringing in the Bugs

How can local biodiversity be harnessed in our greenhouses?

Peter Dollimore – Hankham Organics
Tetrastichus Asparagi
Parasitoid wasp of asparagus beetle, Crioceris asparagi.

Photo: ©Nigel Cattlin, Holt Studios International Ltd
Mature Asparagus Jungle
**Tetrastichus Asparagi**

Parasitoid wasp of asparagus beetle, *Crioceris asparagi*.

*Photo: ©Nigel Cattlin, Holt Studios International Ltd*
Cotesia glomerata

Parasitoid wasp of large white (butterfly) larvae *Pieris brassicae*

*Photo: © Nigel Cattlin, Holt Studios International Ltd*
Cotesia glomerata

Photo: © Nigel Cattlin, Holt Studios International Ltd
Cotesia glomerata

Photo: © Nigel Cattlin, Holt Studios International Ltd
**Cotesia glomerata**

*Photo: © Nigel Cattlin, Holt Studios International Ltd*
Felix L. Wäckers

• Optimizing field margins for biocontrol services
• Assessing the suitability of flowering herbs as parasitoid food sources
• Nectarivory by the plant-tissue feeding predator Macrolophus pygmaeus Rambur
• A comparison of nectar- and honeydew sugars with respect to their utilization by the hymenopteran parasitoid Cotesia glomerata
• Effects of flower attractiveness and nectar availability in field margins on biological control by parasitoids
Flowering coriander next to red russian kale
Flowering coriander next to red russian kale
Flowering rocket next to tomatoes and onions
May 2014
Flowering rocket next to perpetual spinach (leaf beet) – May 2013
Hoverfly - *Syrphidae spp*

*Photo: © Nigel Cattlin, Holt Studios International Ltd*
Hoverfly larvae amongst aphid

Photo: © Nigel Cattlin, Holt Studios International Ltd
Hoverfly larvae amongst aphid

Photo: © Nigel Cattlin, Holt Studios International Ltd
Hoverfly pupae

Photo: © Nigel Cattlin, Holt Studios International Ltd
Spring greens with poached egg plant

*Limnanthes douglasii*
Spring greens with poached egg plant

*Limnanthes douglasii*
Predator / Nectar strip

Golden Rod (Solidago), Milfoil (Achillia),
Marigold (Calendula), Borage, Nasturtium,
Oregano, Thyme, Marjoram
Ladybird (Coccinella 7-punctata) larvae feeding on Yarrow Aphid (Macrosiphoniella millefolii)
Ladybird larvae feeding on Yarrow Aphid
Collecting ladybird larvae from perpetual spinach in late April
Ready for relocation
BioGreenhouse - WG3: Crop Health

• functional diversity of natural enemies,
• food sprays,
• banker plants,
• habitat and climate management, and
• induced plant resistance
**Aphidius colemani – parasitoid wasp**

Lays young into *Aphis gossypii* and *Myzus persicae*

*Photo: © Nigel Cattlin, Holt Studios International Ltd*
A. Colemani ovipositing into Aphid

Photo: © Nigel Cattlin, Holt Studios International Ltd
Parasitized Aphid

Photo: © Nigel Cattlin, Holt Studios International Ltd
Flowering coriander....again!
Nectar = Energy
Macrolophus caliginosus

Photo: © Nigel Cattlin, Holt Studios International Ltd
Macrolophus - Adult

Photo: © Nigel Cattlin, Holt Studios International Ltd
Macrolophus - nymph

Photo: © Nigel Cattlin, Holt Studios International Ltd
Calendula officinalis
Self seeded, Winter 2014-15
Outside – hedges and fields are more opportunities to improve biodiversity!
Cornfield annuals sown with clover/grass fertility building phase.
Corncockle, corn marigold, cornflower, poppy, corn chamomile
Phased cutting in strips
It’s not just about the invertebrates y’know!