























































Colony Collapse Disorder

Colony Collapse Disorder

What is it?
Is it important?

Colony Collapse Disorder

- North America**
- England-Poland**
- Spain-Portugal**
- France-Belgium**
- Switzerland-Germany**
- India**
- Brazil**
- Asia**

Example of insect pollinated
crops (>80%) in the USA (2000)

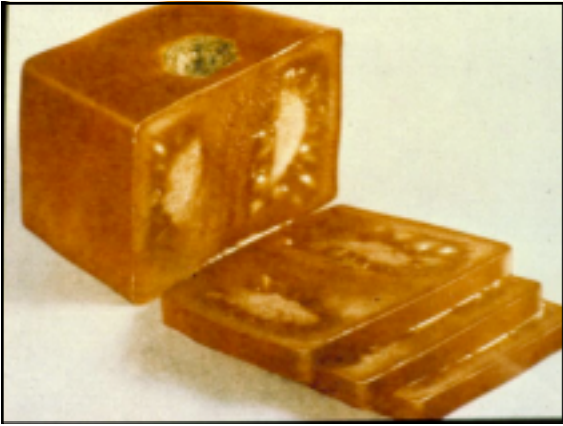
	% by honeybee	\$ Value (millions)
Alfalfa	60	4,654
Apples	90	1,352
Almonds	100	959
Onions	90	662
Carrots	90	420
Sunflower	90	409
Cantaloupe	90	350

Example of insect pollinated
crops (<20%) in the USA (2000)

	% by honeybee	\$ Value (millions)
Cotton	80	858
Soy beans	50	825

Colony Collapse Disorder

**What possible causes have been
proposed?**











Nosema (microsporidian)

Israel acute paralysis virus















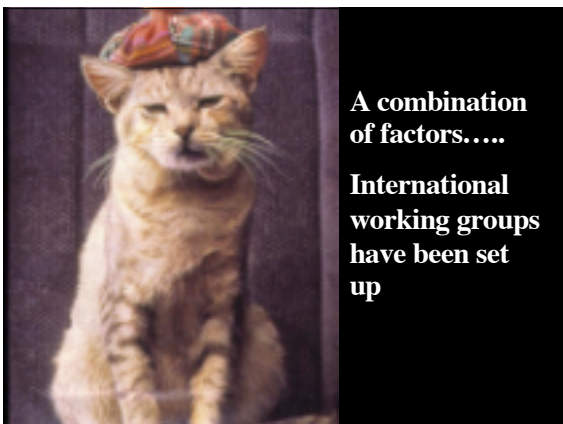








Apiculture practices



**A combination
of factors.....
International
working groups
have been set
up**









CAMPOLIN

**A network of reserachers across
Canada...\$1 million a year**





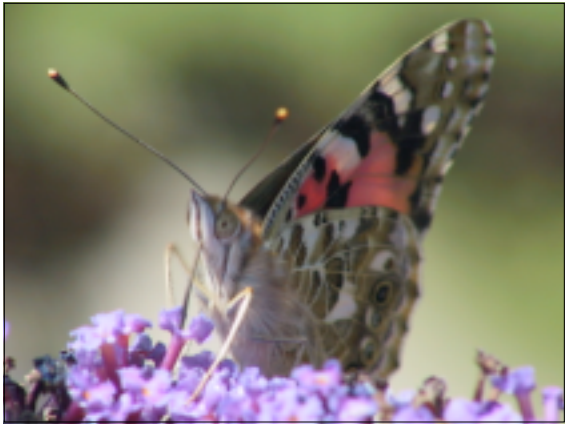










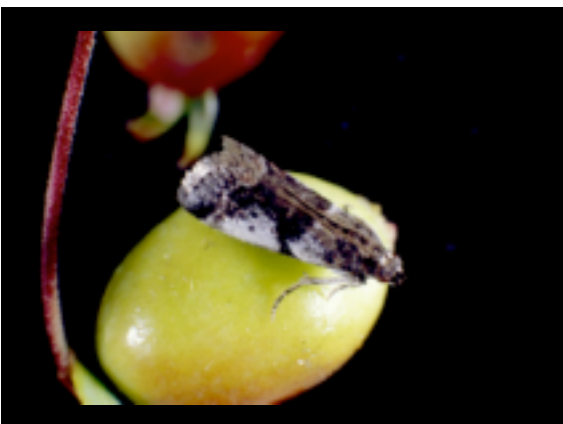














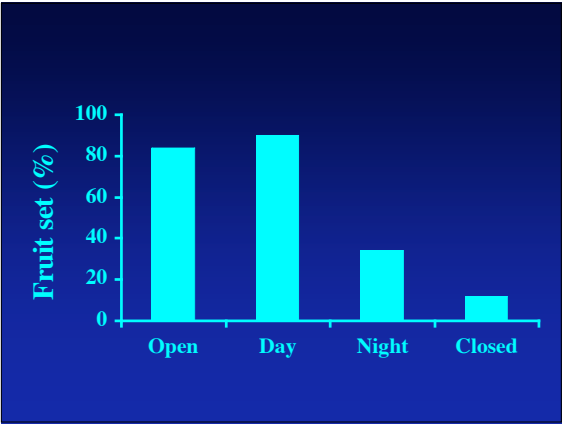


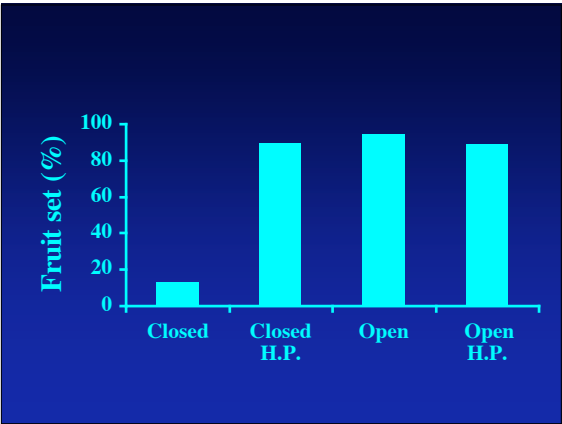










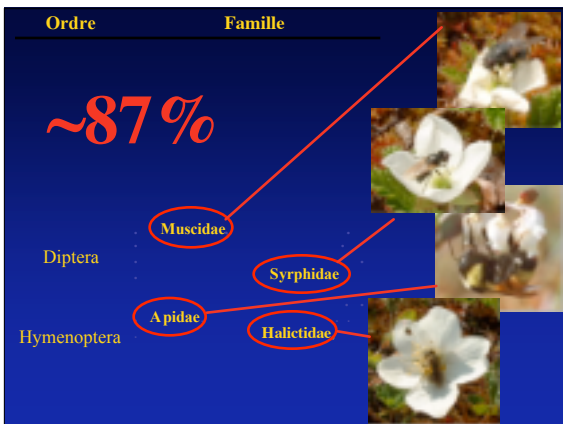


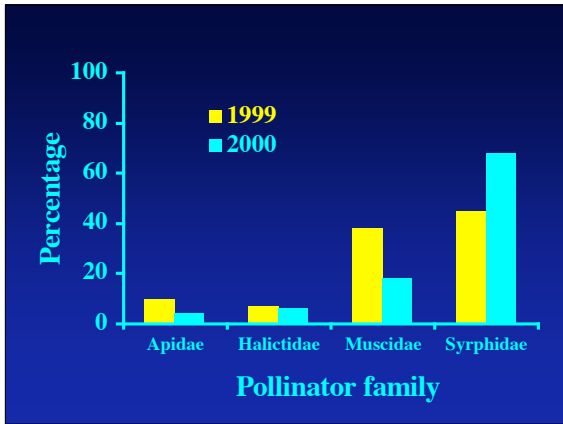




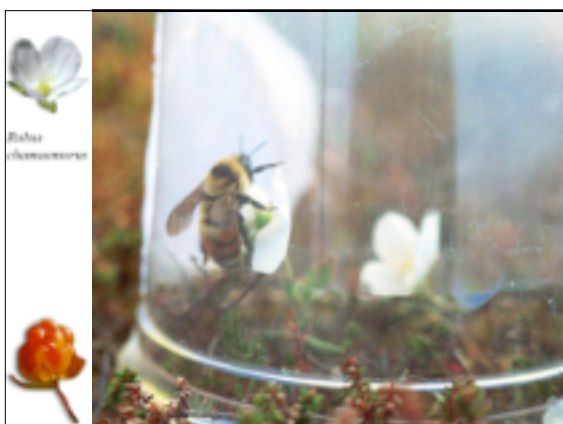
Ordre	Famille
Hemiptera	Mesovellidae, Miridae
Homoptera	Cicadellidae
Orthoptera	Acrididae, Tetrigidae
Coleoptera	Byrrhidae, Cantharidae, Carabidae, Chrysomelidae, Cucujidae, Curculionidae, Elateridae, Eucnemidae, Helodidae, Lampyridae, Nitidulidae, Scarabaeidae, Tenebrionidae
	Anthomyidae, Asilidae, Bombyliidae, Muscidae , Ceratopogonidae, Chironomidae, Dolichopidae, Empididae, Calliphoridae, Sarcophagidae, Syrphidae , Tachinidae, Therevidae
	Apidae , Braconidae, Eumenidae, Formicidae, Halictidae , Ichneumonidae, Perilampididae, Siricidae, Tenthredinidae, Vespidae
Diptera	
Hymenoptera	
Lepidoptera	Geometridae
Thysanoptera	Thripidae









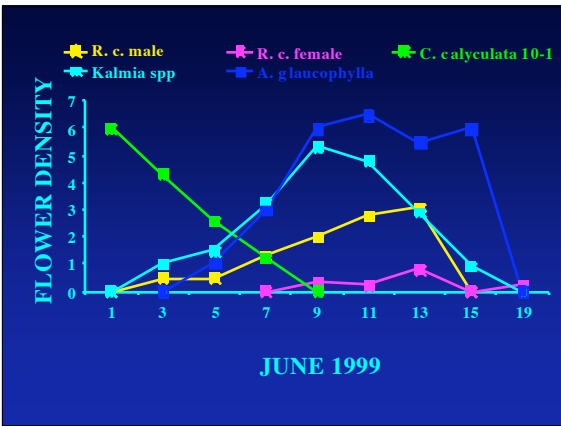






		Relative efficacy				
		Apidae	Halictidae	Muscidae	Syrphidae	P
	Fruit set (%)	33.3 a	84.6 b	76.2 ab	92.3 b	0.0007
	Fresh mass (g)	0.42	0.31	0.33	0.28	0.7666
	Seed set (%)	25.0	54.8	40	41.6	0.3270





Relative importance

R. I.= Relative efficacy x relative abundance

Apidae	0.33 x 0.07	0.02
Halictidae	0.85 x 0.07	0.06
Muscidae	0.30 x 0.76	0.23
Syrphidae	0.60 x 0.92	0.55









