



# Optimizing Row Cover Systems for Cucurbit Growers in Kentucky

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# Pests and Diseases of Cucurbits



Photo: Robby Brockman

Cucumber beetles



Photo: Robby Brockman

Squash bug



Photo: UK CSA

Squash vine borer



Photo: Iowa State University

Bacterial wilt



Photo: Jim Jasinski, Ohio State University Extension

Cucurbit yellow vine disease



Powdery mildew



Photo: Kenny Seebold, UK

Downy mildew

# Traditional Methods of Control: chemicals

Conventional Insecticide	Cucumber Beetles	Squash bug	Squash vine borer	Conventional Fungicide	powdery mildew	downy mildew	Organic Pesticides	Cucumber Beetles	Squash bug	Squash vine borer	powdery mildew	downy mildew
Asana XL	X		X	Actigard	X	X	Surround WP (kaolin clay)	X			X	
Assail 30 SG	X	X	X	Aftershock	X		Pyganic Crop Spray 5.0 EC (pyrethrins)	X	X			
Belay 2.13 SC	X	X		Ariston	X	X	Entrust (spinosad)	X	X			
Brigade 2 EC	X	X	X	Cabrio		X	Neem	X	X	X	X	
Danitold 2.4 EC	X			Chlorothalonil	X	X	Javelin WG (Bt)			X		
Harvanta 50 SL	X			Curzate 60 DF		X	Azera (azadirachtin)	X	X	X		
Mustang Maxx	X	X	X	Dexter Max	X		Nordox 75WG (copper)				X	X
Permethrin 3.2 EC	X	X	X	Dexter XCEL	X		Streptomyces lydicus				X	X
Sevin XLR	X			Elumin		X	Sulfur				X	X
Scorpion 35 SL	X			Fixed Coppers	X	X						
Venom 70 SG	X	X		Flint Extra	X	X						
Warrior II	X	X	X	Fluazinam		X						
Rimon 0.83 EC		X		Fluoxastrobin	X	X						
Sivanto 1.67 SL		X		Fontelis	X							
				Gavel 75 DF2		X						
				Luna Experience	X							
				Luna Sensation	X							
				Mancozeb		X						
				ManKocide		X						

[Resource Guide for Organic Insect and Disease Management](#)

UK's ID-36: Vegetable Production Guide for Commercial Growers



# Row Cover for Insect Exclusion



Photos: Dave Gonthier



# 4 Big Challenges to Using Row Covers

- Challenge 1: Cost
- Challenge 2: Non-insect vectored Disease Management
- Challenge 3: Weed Management
- Challenge 4: Pollination



Photo: Robby Brockman

# Row covers



Photo: Robby Brockman

Product	Price	Weight	Size	~ Duration	Pieces for 1 50'x300' field	Cost for 1 50'x300' field	Source
Agribon AG-19	\$592	0.55 oz. (lightweight)	30'x1000'	1-3 seasons	1	\$592	Arbico-Organics
ProtekNet	\$1,256.80	60 gram	26'x328'	5 years	2	\$2,512	Dubois Agrinovation
ExcludeNet	\$752 (2020 pricing)	60 gram	26'x328'	5 years	2	\$1,504	Berry Protection Solutions



# Other Supplies you will need:

- Hoops (10' EMT conduit pipe)



Photo: Robby Brockman



# Other Supplies you will need:

- Something to weigh the net down:
  - Pavers
  - Rock bags
  - Sand bags
  - Old layflat with gravel (Maggie Dungan's of Salad Days Farm "sand snakes")
  - Layflat with water
  - PVC pipe filled with water or gravel
  - etc



Photo: Dave Gonthier



# Other Supplies you will need:

- Field sewing machine
- Needle, UV resistant thread





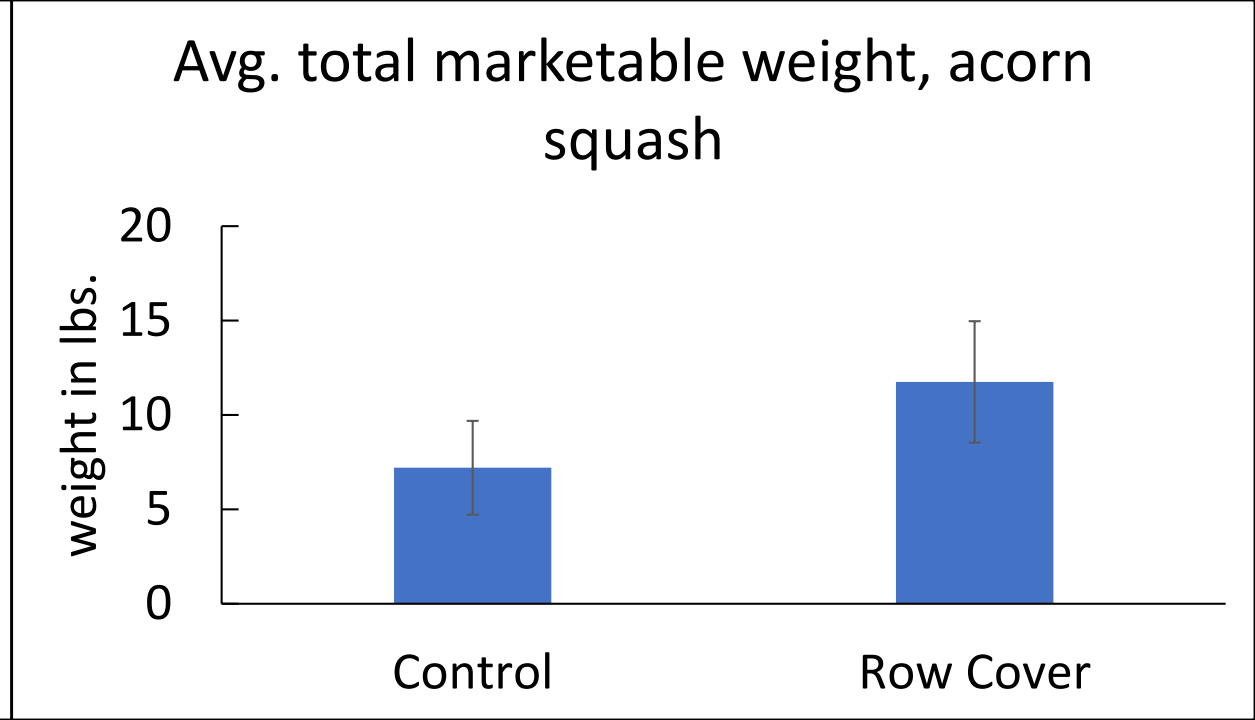
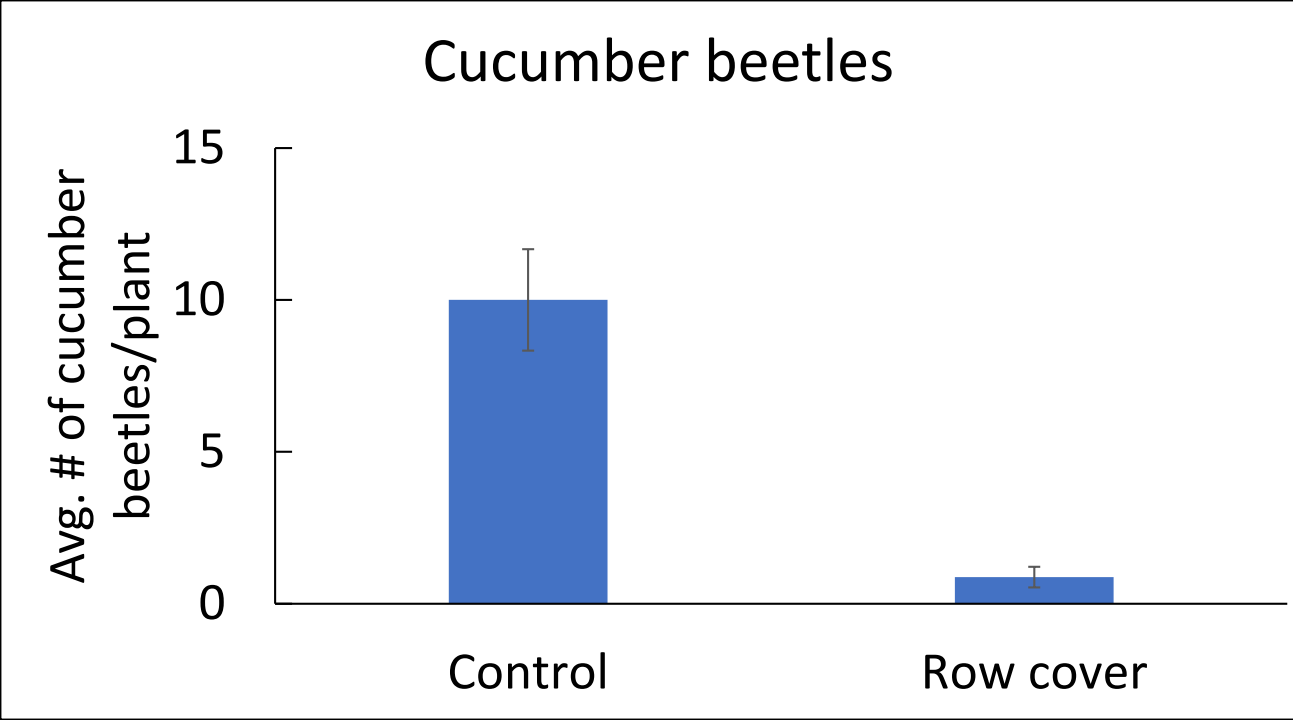
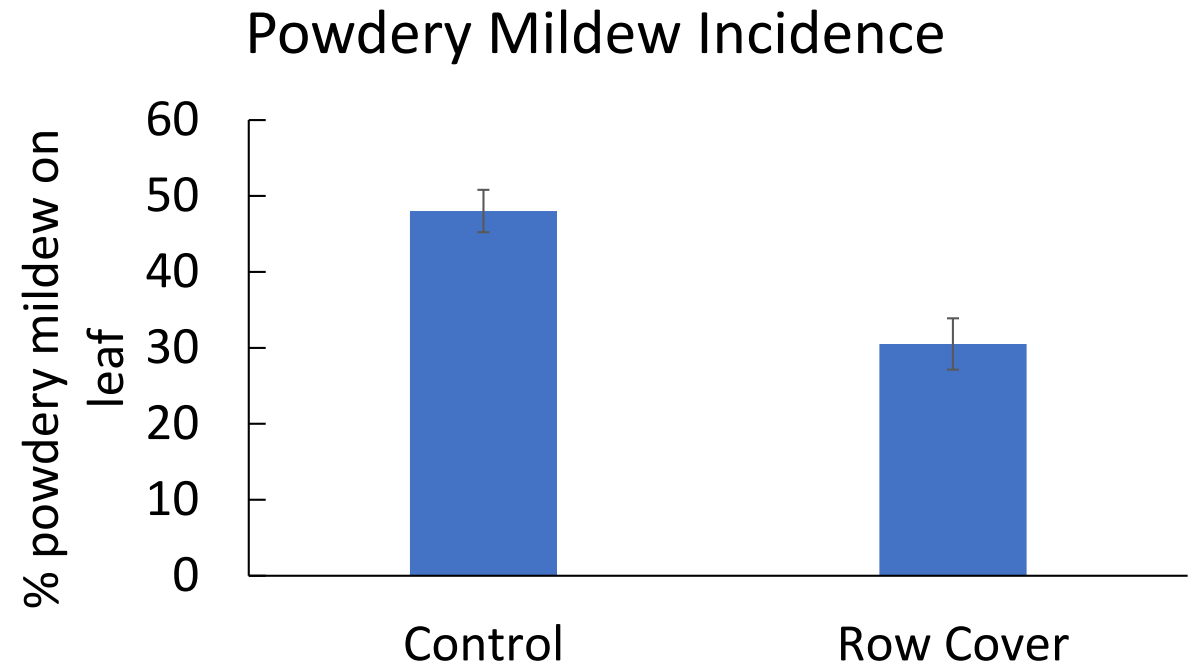


Further  
considerations:

- Table Ace acorn squash
- Athena muskmelon
- White raised plastic beds on 7' centers
- 3 beds per plot



# Challenge 2: non-insect vectored disease management



# Challenge 3: weed management

Use living mulch as a cover crop in between beds

Options:

- Teff
- Buckwheat
- Annual rye and clover?



Photo: Robby Brockman



# Challenge 3: weed management

Early season teff



At muskmelon flowering - teff





# Challenge 3: weed management

End of season teff



End of season buckwheat





# Challenge 3: weed management

Some things to consider:

- Could mow the cover crop
- Use landscape fabric



Photo: Iowa State, Jose Gonzalez-Acuna

John Bell of Elmwood Stock Farm's hoop system





# Challenge 4: Pollination




- Most squash are pollinator dependent
- Nets will exclude both pests and pollinators
- Need to make sure bees have access to flowers at the flowering stage



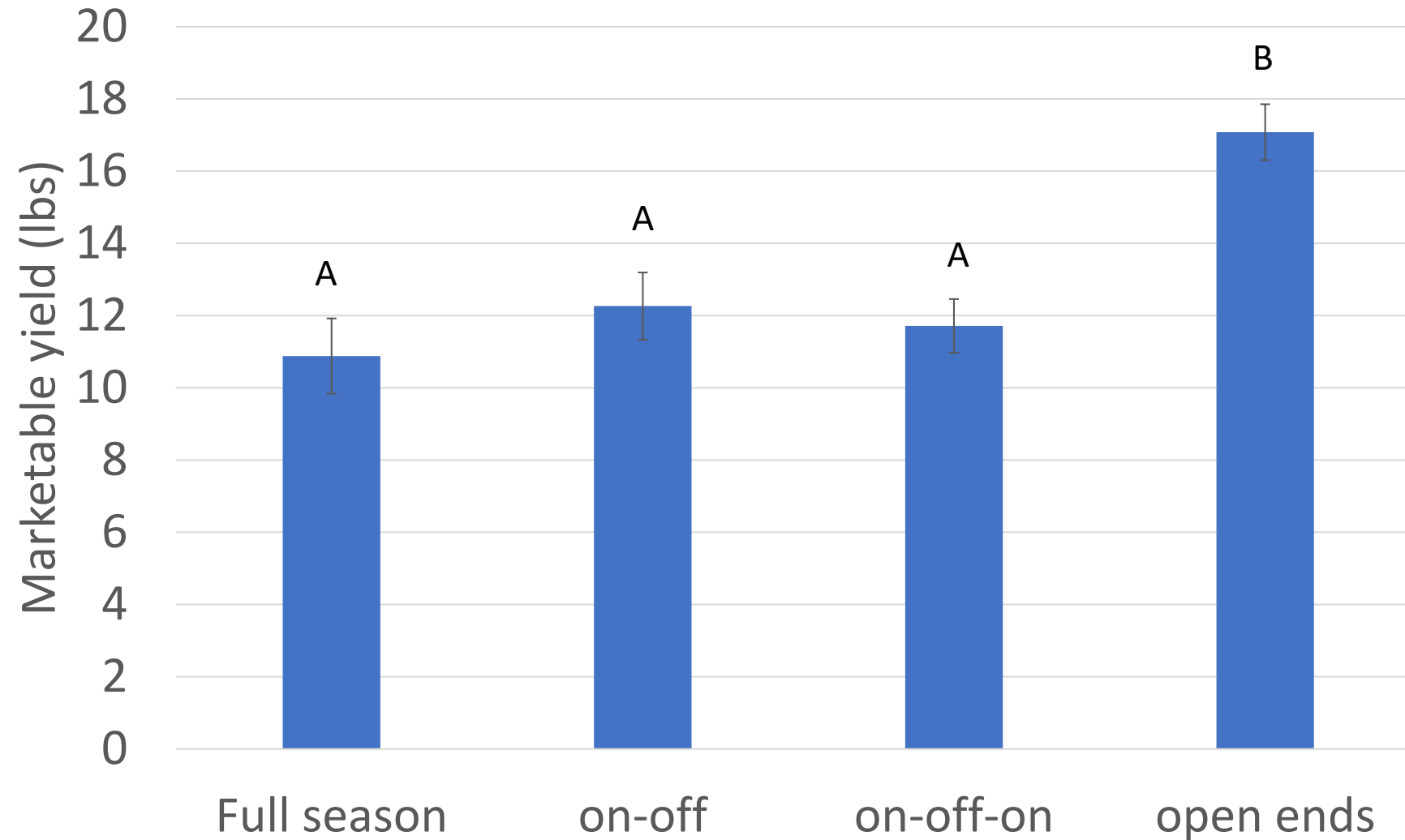
Photos: Robby Brockman



# Challenge 4: Pollination

On off	Nets on	Nets off	
On off on	Nets on	Nets off	Nets on
Open ends	Nets on, ends closed	Nets on, ends open	Nets on, ends closed
Full season	Nets on, stocked bumble bees		
			
	Early transplant	Flowering	Fruit development

# Yr 1 – Acorn Squash- yield (120 ft plots)





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# Questions?

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