

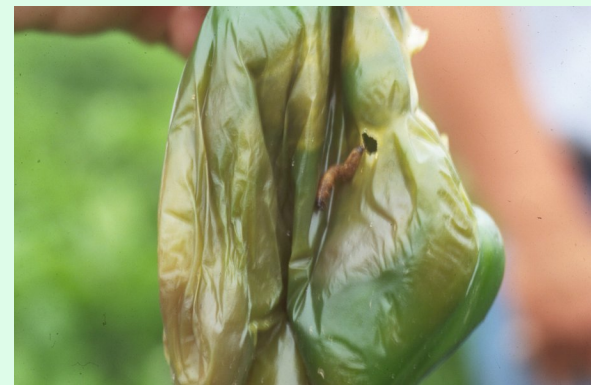
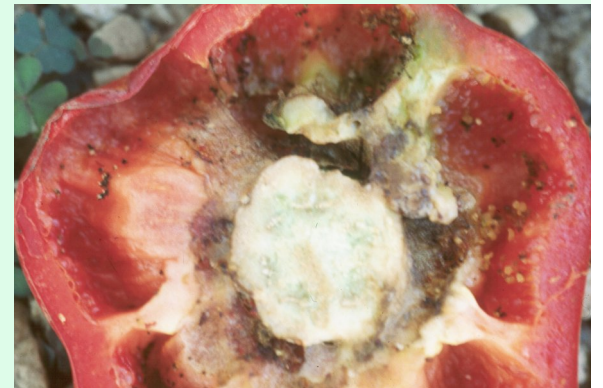
European Corn Borer Management in Peppers



**Celeste Welty
Extension Entomologist
February 2005**

European Corn Borer

- **Key pest of bell peppers**
 - Bore into fruit
 - Quality loss
 - Yield loss

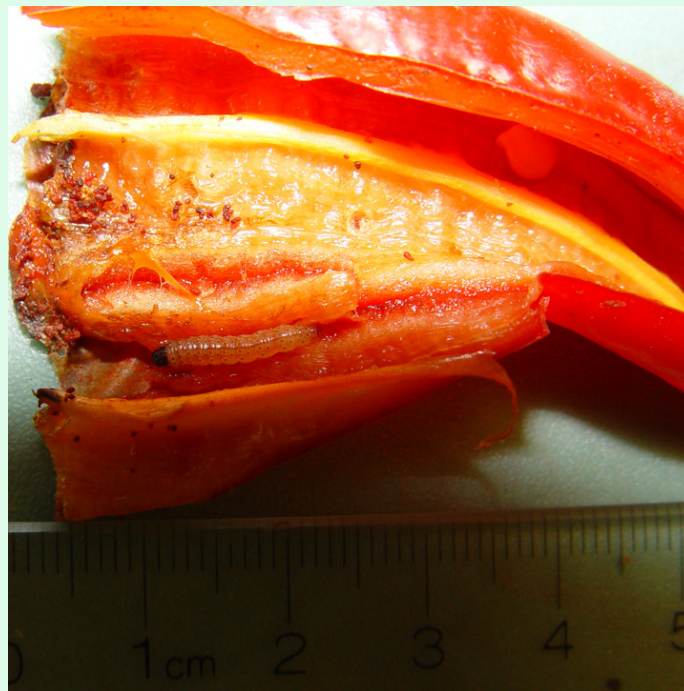


European Corn Borer

- Also infests non-bell peppers



jalapeño



cayenne



cherry

Controlling borers in peppers

- **Target of insecticide:**
 - young larvae
 - cap end of fruit
- **Insecticide efficacy affected by:**
 - timing
 - coverage
 - choice of material

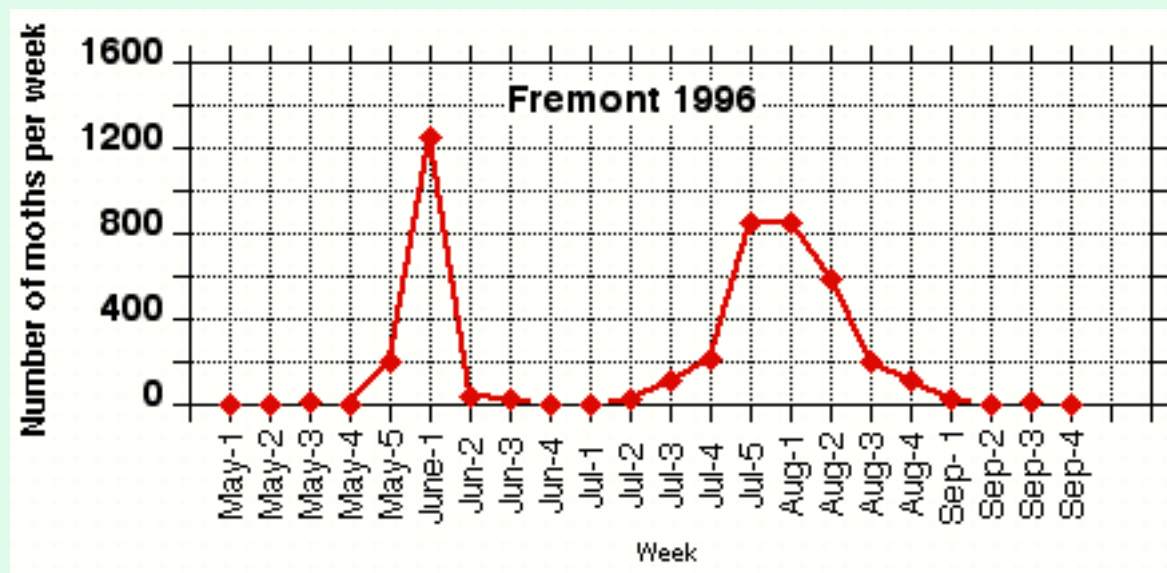
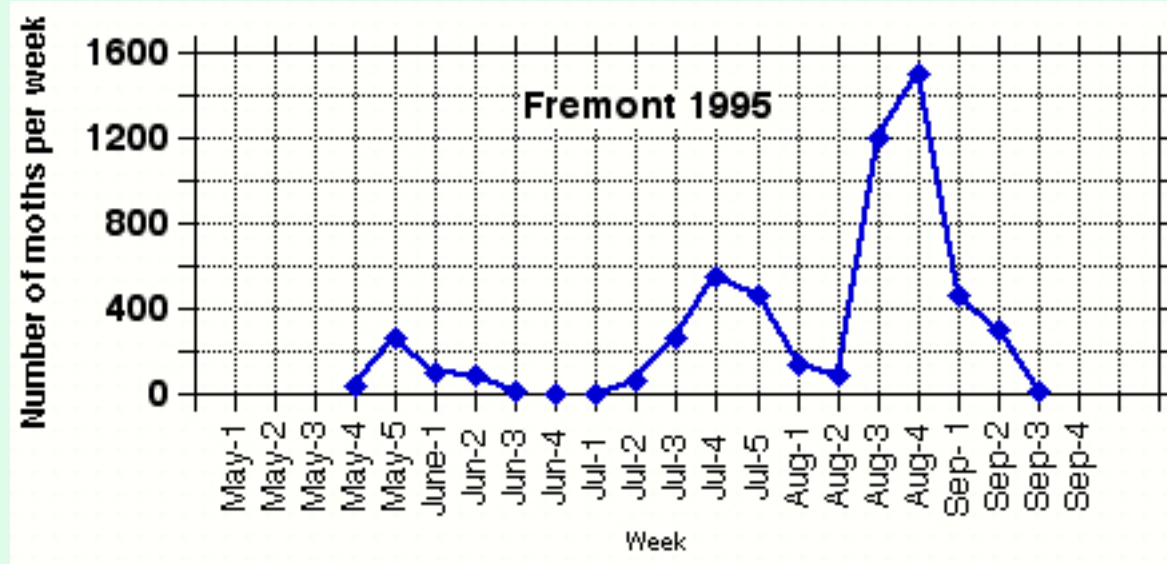
When does European corn borer damage peppers?

<u>Month</u>	<u>Fruit present?</u>	<u>Moths present?</u>
May	no	no
June	no	yes (1 st gen.)
July	yes	no
August	yes	yes (2 nd gen.)
September	yes	no/yes (if 3 rd gen.)

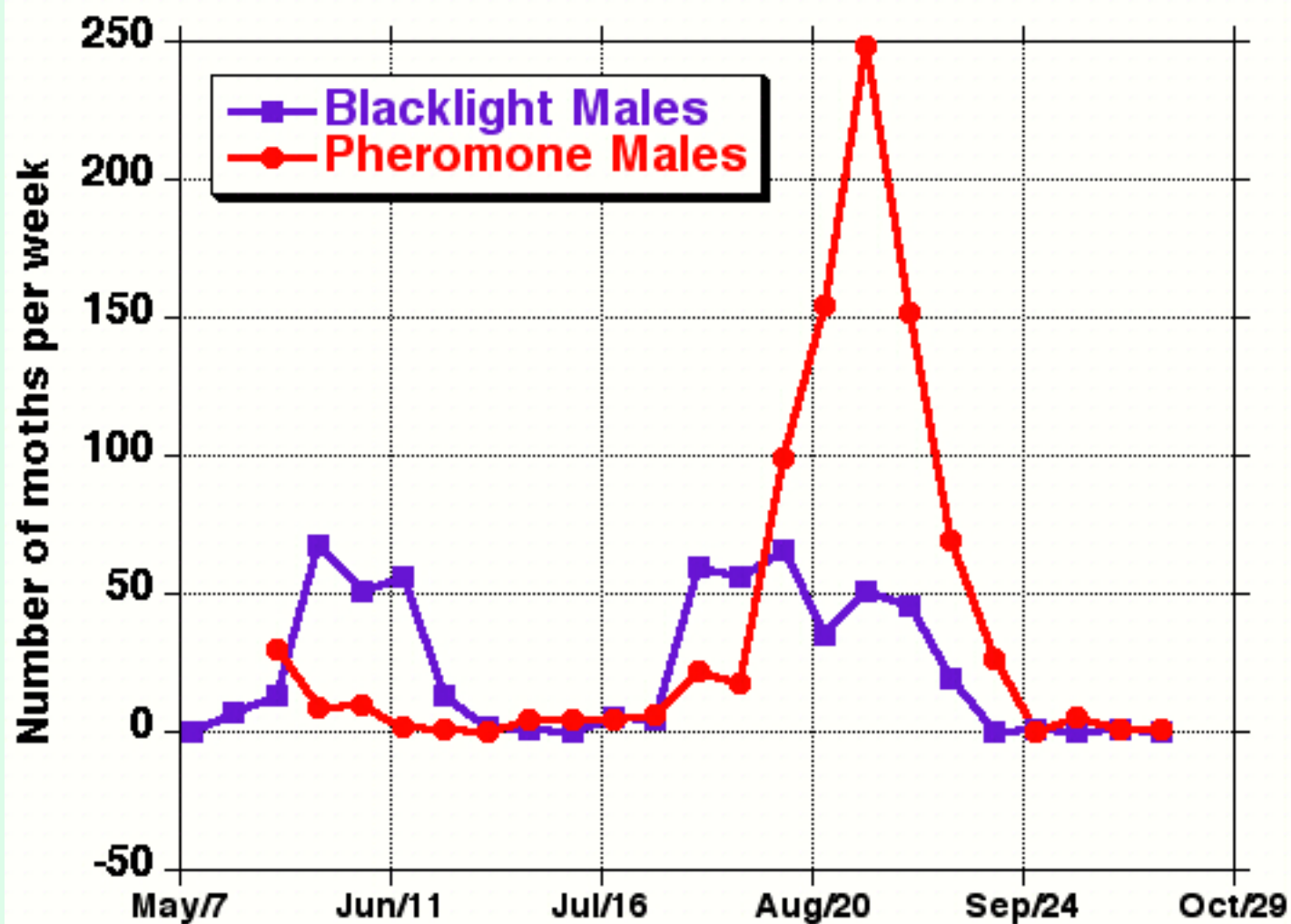
European corn borer: generations per year

- **Blacklight trap for moths**
- **Fremont, northwest Ohio**
- **15 year period, 1990 - 2004**
 - **9 years (60%) with 2 generations**
 - **6 years (40%) with 3 generations**

2 vs 3 generations

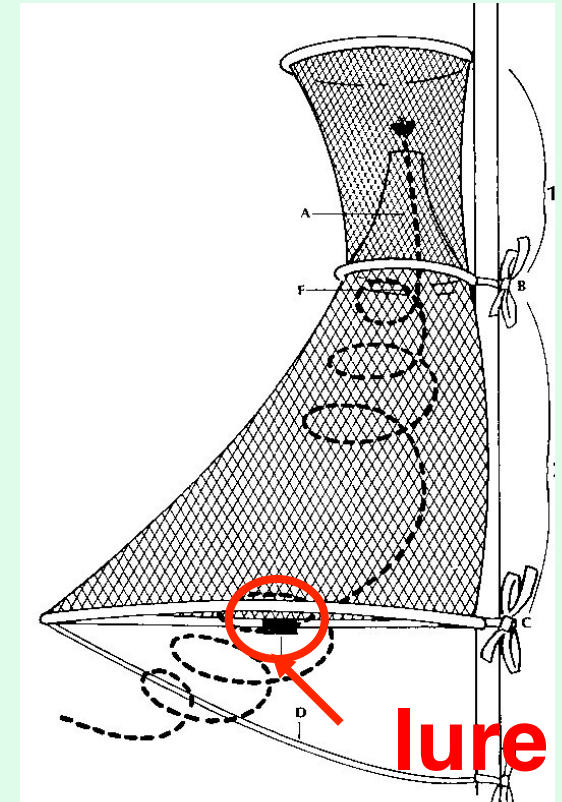


European corn borer at Fremont, Ohio - 2000



Trap to Monitor European Corn Borer

- Pheromone lure
- Attracts male moths



Insecticide timing for borer control in pepper

- **First spray:**
 - within 1 week of surge in trap catch
 - when >1 moth/night in trap
 - usually late July
- **Spray schedule:**
 - spray every 7 days (range 5 - 14 days)
 - during time moths active, 4 - 6 weeks
- **Stop spraying:**
 - once trap catch falls (usually early Sept.)
 - or until harvest if other pests active

Insecticides for borer on peppers

<u><i>Insecticide</i></u>	<u><i>PHI</i></u>	<u><i>efficacy</i></u>
Orthene	7	E
Mustang	1	G
Pounce/Ambush	3	G
Warrior	5	G
Baythroid	7	G
Capture	7	G
SpinTor	1	G
Intrepid	1	G
Confirm	7	G
Asana	7	F
Sevin	3	F
Lannate	3	F
B.t.	0	F

European Corn Borer on Peppers

- In summers with average temperature:
 - Only 2 generations likely
 - Need 4 to 6 sprays total
- In summers with very hot weather
 - 3 generations likely
 - Need 8 to 10 sprays total
- In late July, grower needs to decide whether 2 or 3 generations most likely

European Corn Borer on Peppers

In summers with average temperatures:

- Only 2 generations likely
- Spray late July - early Sept.
- Need 4 to 6 sprays total
- Spray 1: non-Orthene
- Sprays 2 & 3: Orthene (7-day interval)
- Sprays 4, 5, 6: non-Orthene
- Non-Orthene alternatives:
 - Mustang (1-day PHI)
 - SpinTor (1-day PHI)
 - Intrepid (1-day PHI)
 - Pounce/Ambush (3-day PHI)

European Corn Borer on Peppers

In summers with very hot weather

—3 generations likely

—Need 8 to 10 sprays total

—Option 1:

- Treat 2nd generation as on previous slide including 2 sprays of Orthene
- For 3rd generation, use only non-Orthene products

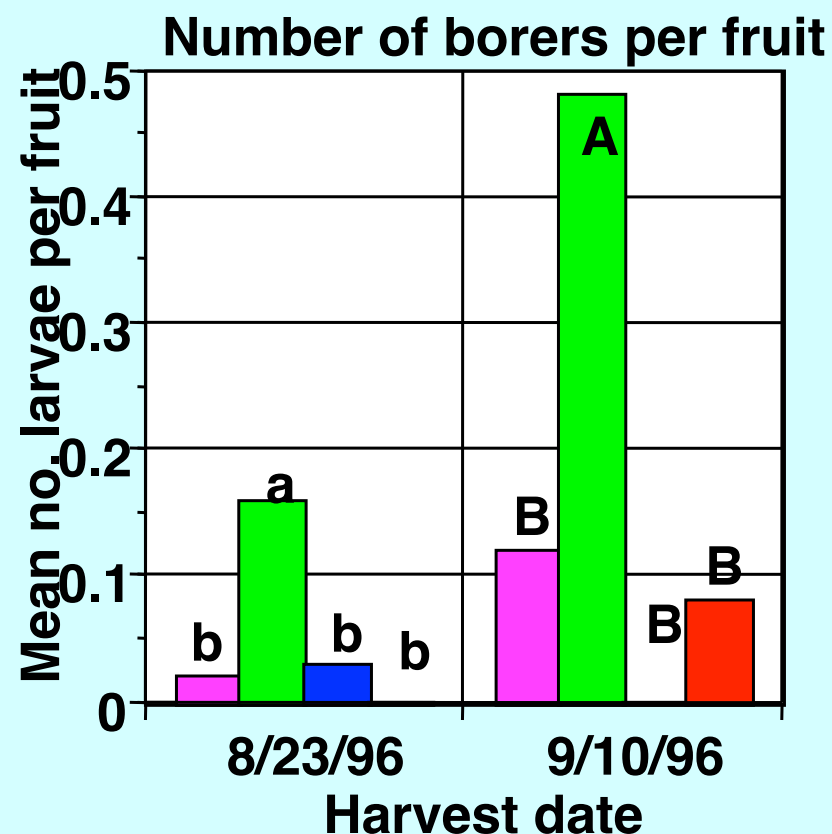
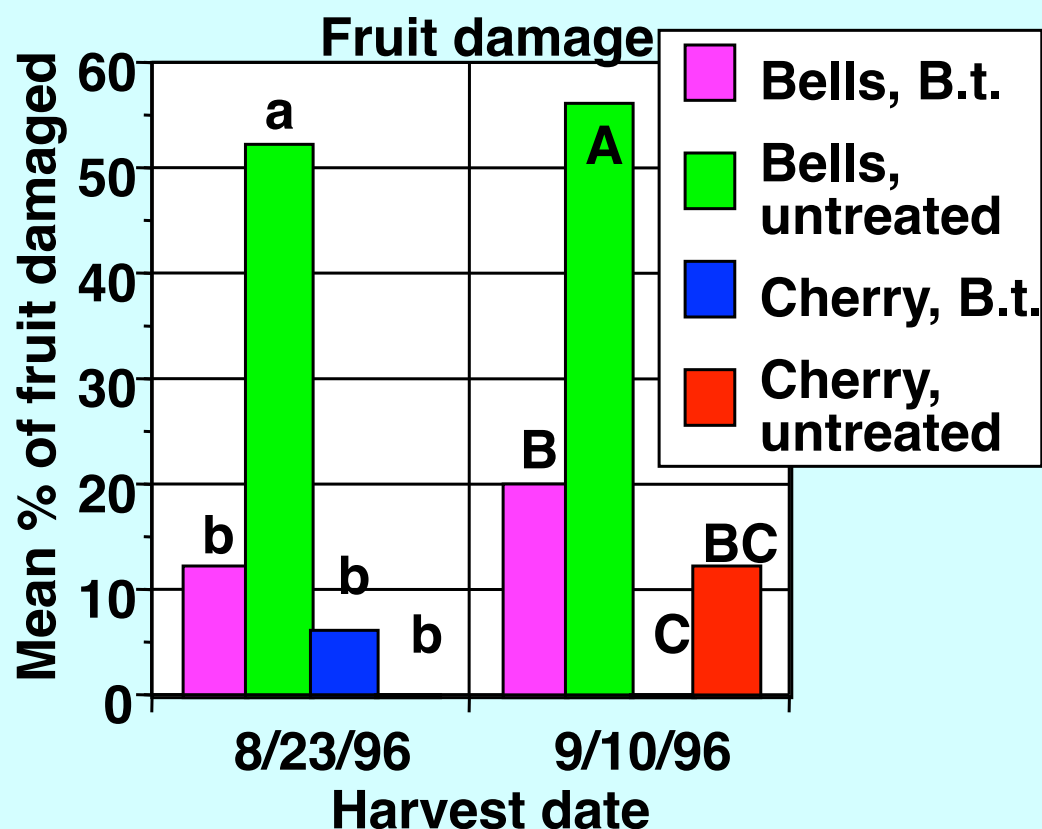
—Option 2:

- use Orthene once for 2nd generation & once for 3rd generation, followed by other products

B.t. on peppers

- ***Bacillus thuringiensis* products:**
 - Javelin, CryMax, Agree, Deliver, (Certis)
 - DiPel, XenTari, Biobit (Valent)
- **Controls caterpillars:**
 - European corn borer
 - hornworms
- **Apply twice per week**

B.t. for borer control on peppers Massachusetts, 1996



B.t. = MVP 3 qt/A + Surfix 1.5 pt/A

European Corn Borer

- **100% control rare**
- **Due to canopy:**
 - Dense
 - Hard to cover thoroughly
- **Due to borer location:**
 - Entry on stem often oriented down
 - Protected inside fruit
- **Processors demand $\leq 3\%$ damage**



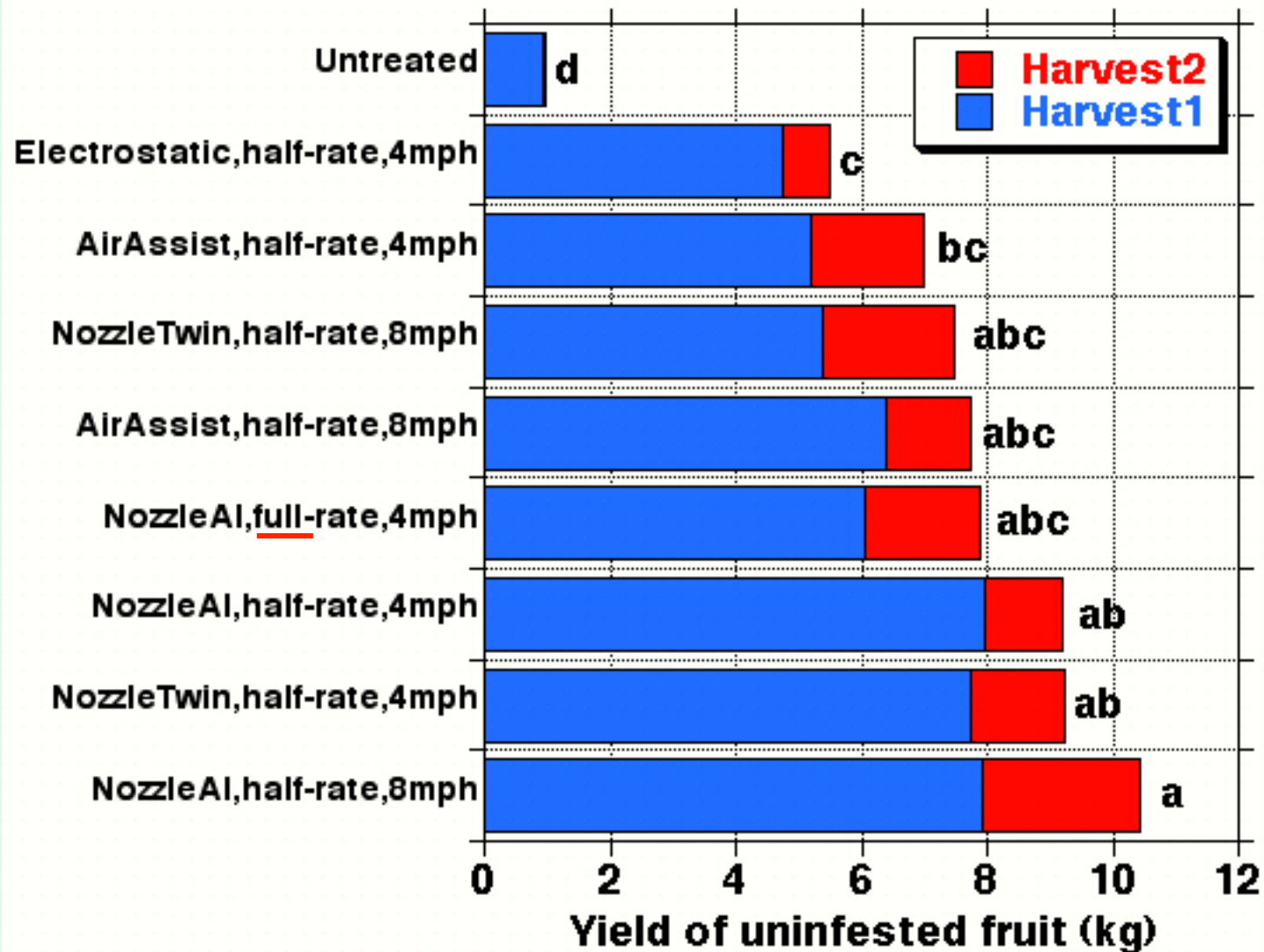
European Corn Borer

- **Spray coverage**
 - Less critical for pesticides with **systemic** activity
 - More critical for pesticides with **contact or residual** activity
- **Application technology becoming more important as most new pesticides are not systemic**

Spray Technology Trial

- **Sprayer type**
 - Standard hydraulic boom
 - Air Assist
 - Electrostatic
- **Nozzle type**
 - TwinJet
 - Air induction
- **Speed**
 - 4 mph
 - 8 mph
- **Pesticide rate**
 - Full
 - Half

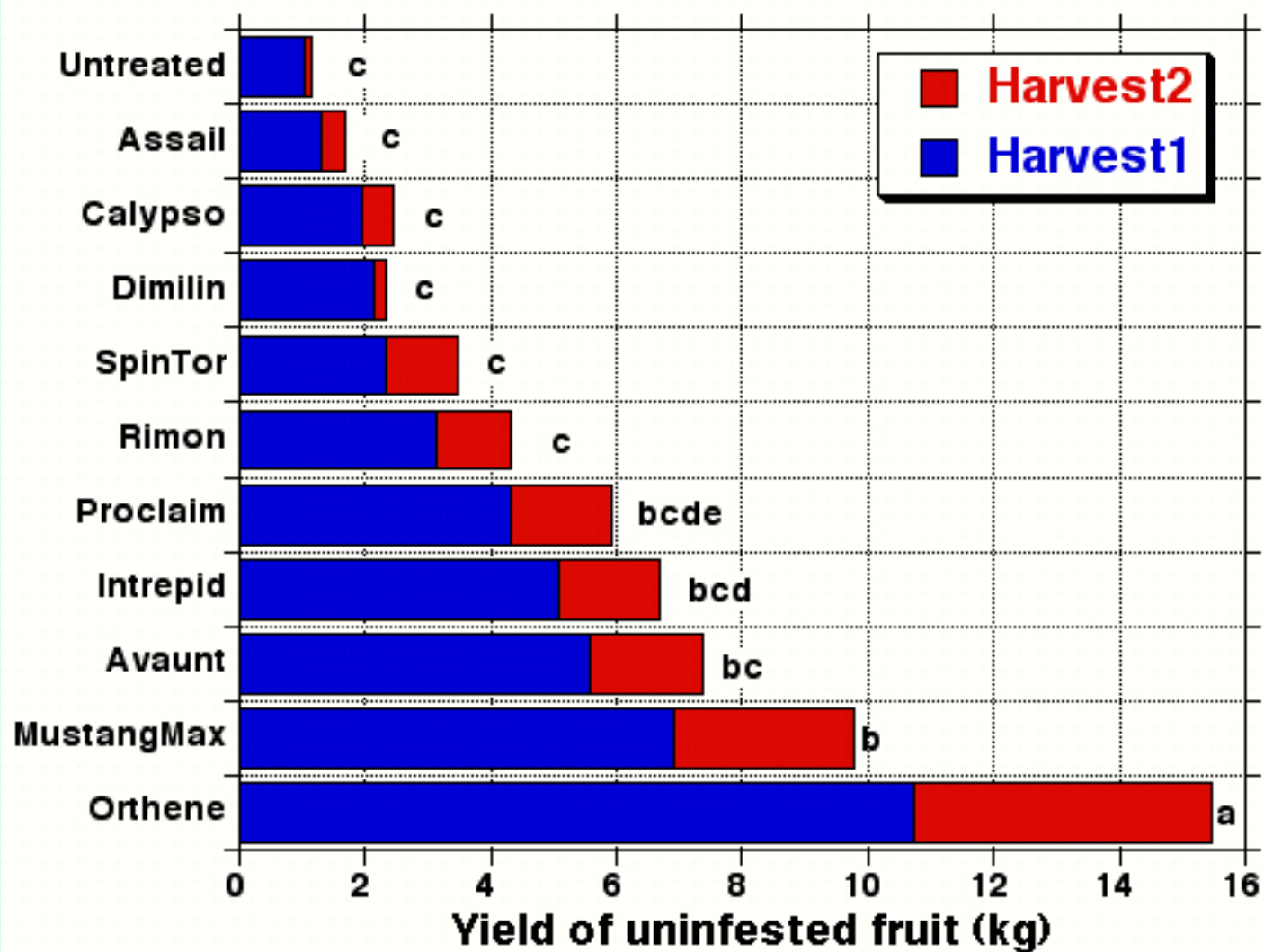
Bell Pepper Insecticide Application Trial, 2004



Insecticide Efficacy Trial: European Corn Borer Control in Red Bell Peppers, 2004

- **Fremont, Ohio**
- **10 insecticides plus check**
- **8 weekly applications, late July to early September**
- **2 harvest evaluations**

Insecticide Efficacy Trial - Fremont, Ohio - 2004



Insecticide Spray Interval Trial on Bell versus Non-bell Peppers, 2004

