Corn earworm control: sweet corn field trials 2007-2014

Jim Jasinski & Celeste Welty

- Concern about pyrethroid resistance
- Start spray program at 1st silk
- 6 sprays at 3- to 4-day intervals

Target pests

- **Primary:**
  - **Corn earworm**
- **Other caterpillars:**
  - **European corn borer**
  - **Fall armyworm**
- **Other pests**
  - **Silk-clipping beetles**
  - **Corn leaf aphid (in husks)**

Treatments

- Older a.i.s:
  - Pyrethroids: Brigade (= Capture), Warrior, Hero, Asana, MustangMax
  - Carbamates: Lannate, Larvin
- Newer a.i.s:
  - Radiant
  - Coragen
  - Belt
  - Blackhawk
  - virus: Gemstar
- Pre-mix:
  - Voliam Xpress
- Hybrids
  - BT corn 'Attribute BC 0805'
  - 'Providence' isoline

Evaluation

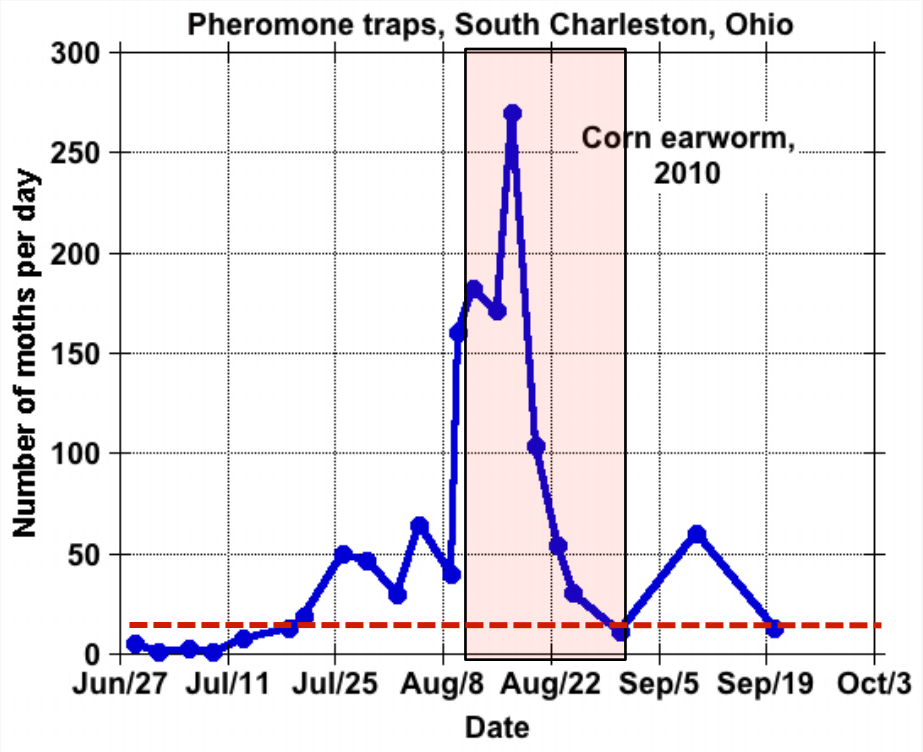
- 20 ears/plot
- Damage quantified
- Species determined

Worm species in field trial

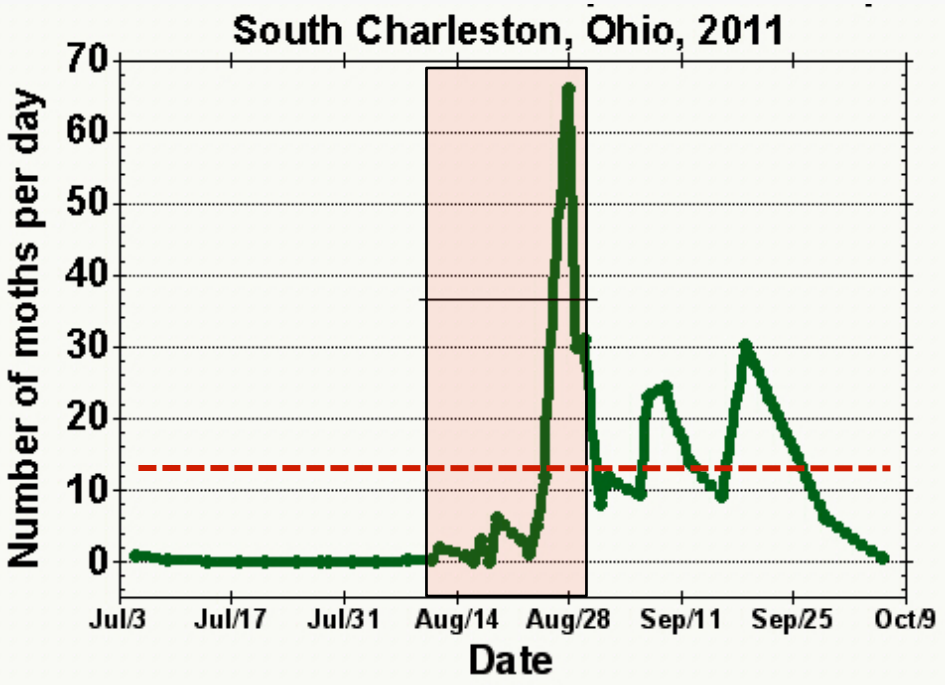
Year	# larvae per ear in untreated plots		
	Corn earworm	Eur. corn borer	Fall army-worm
2007	2.7	0.9	0.01
2008	0.1	0.6	0.01
2009	1.3	0.1	0.10
2010	0.8	0.9	0.1
2011	0.1	0.04	0.01
2012	0.2	0.1	0
2013	0.1	1.1	0.05
2014	1.8	0.9	0

Corn earworm seasonal activity

- red shading = silking = spray period
- red dashed line = “high” moth density, 13 moths/trap/day



2010



2011

Corn earworm in field trials

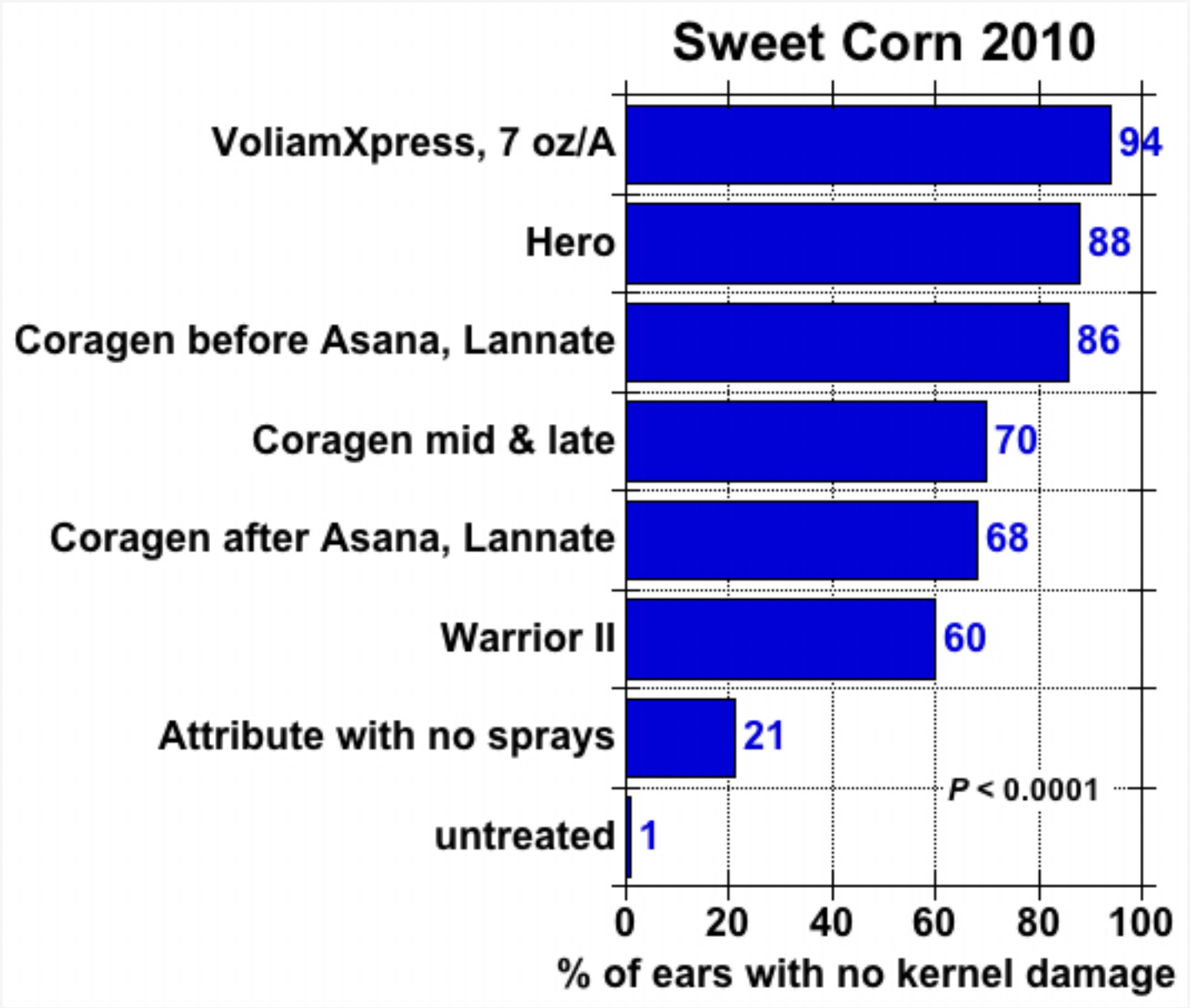
Year	Corn earworm pressure	Number of moths/day in trap at peak
2007	Very high, prolonged	388
2008	Low/Moderate	5
2009	High but quick	63
2010	Very high	270
2011	High but late	66
2012	Moderate	37
2013	Low/Moderate	5
2014	Moderate but late	15

Year-to-year differences in damage

Year	CEW pressure	% of ears with no kernel damage	
		Untreated	
2007	Very high	3%	
2008	Low/mod	59%	
2009	High	9%	
2010	Very high	1%	
2011	High, late	82%	
2012	Moderate	61%	
2013	Low/mod	51%	
2014	Mod., late	0%	

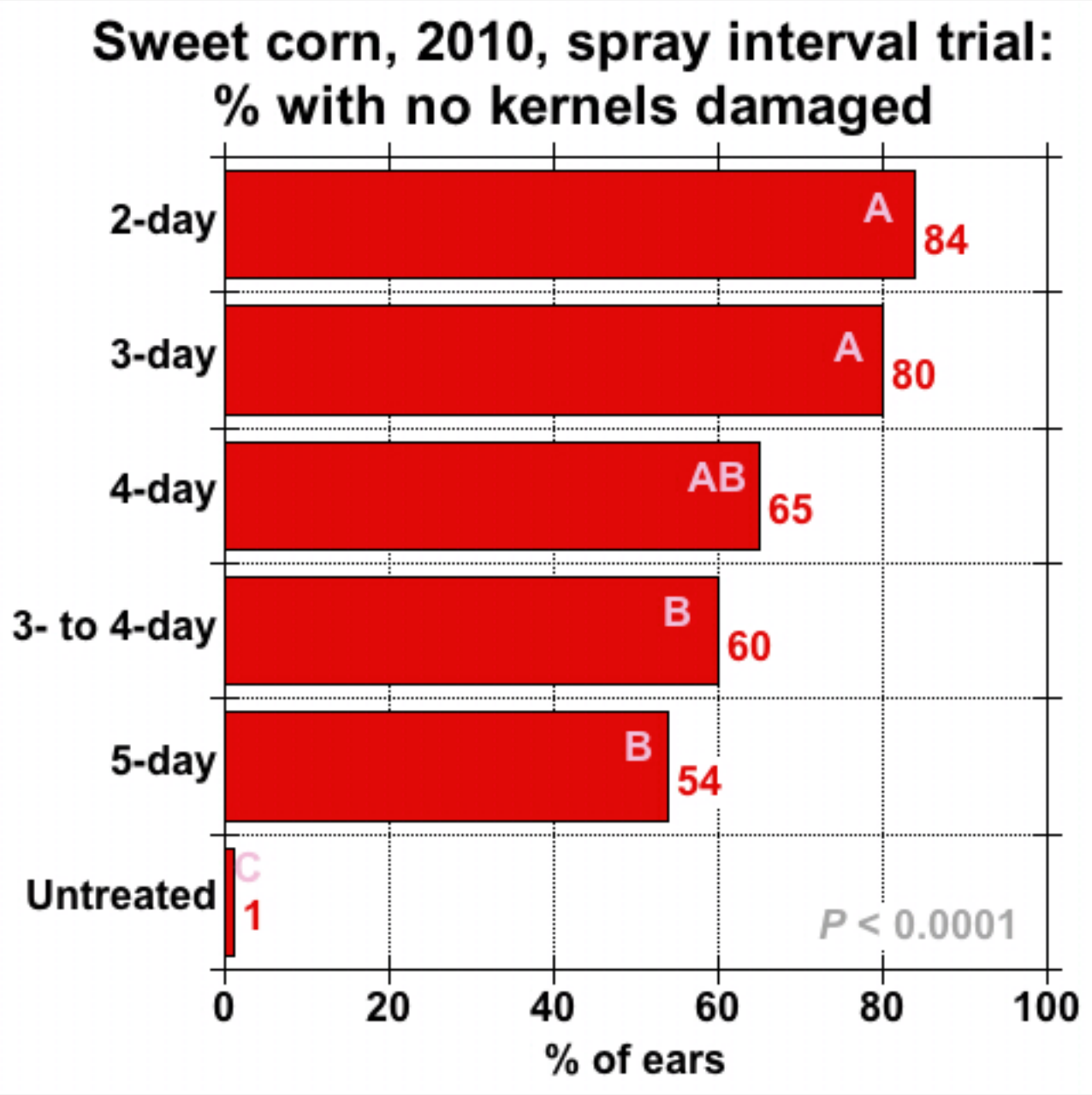
Year-to-year differences in damage

Year	CEW pressure	% of ears with no kernel damage	
		Untreated	Warrior (max rate)
2007	Very high	3%	49%
2008	Low/mod	59%	96%
2009	High	9%	94%
2010	Very high	1%	60%
2011	High, late	82%	99%
2012	Moderate	61%	96%
2013	Low/mod	51%	99%
2014	Mod., late	0%	18%


Sweet Corn 2010
VoliamXpress, 7 oz/A
94
Hero
88
Coragen before Asana, Lannate
86
Coragen mid & late
70
Coragen after Asana, Lannate
68
Warrior II
60
Attribute with no sprays
21
P < 0.0001
untreated
1
0
20
40
60
80
100
% of ears with no kernel damage

Comparison of spray schedule intensity, 2010

- One product: Warrior, at max rate
- Treatments (during silking):
  - Spray every 2 days (11 times)
  - Spray every 3 days (7 times)
  - Spray every 4 days (6 times)
  - Spray every 5 days (5 times)
  - Usual: start 3-day, then 4-day (6 times)


Sweet corn, 2010, spray interval trial:
% with no kernels damaged
2-day
A
84
3-day
A
80
4-day
AB
65
3- to 4-day
B
60
5-day
B
54
Untreated
C
1
P < 0.0001
0
20
40
60
80
100
% of ears

Conclusions from 8 years of field trial data

- Relief that pyrethoids still ok
  - but max rates needed
- Relief that new a.i.s now available

Conclusions from 8 years of field trial data

- Relief that pyrethoids still ok
  - but max rates needed
- Relief that new a.i.s now available
- Concern about variability in performance of new a.i.s
  - but whole-field better than small plot
- Worry about whether efficacy of pyrethroids will suddenly drop

The end