Implementing Farm-Level IPM in Strawberry

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Update on new spray materials

Material	Active Ingredient	Mode of Action	IRAC	Update
Beleaf	Flonicamid	Feeding blocker	9C	Was available for Oct 2012; will be available this season with MRL established
Belay	Chlothianadin	Neonicotinoid	4A	(none)
Bexar*	Tolfenpyrad	METI	21A	Reg expected 2015
Closer*	Sulfoxaflor	Sulfoxaflor	4C	Reg expected 2014

Lygus Bug Management Program

- 2010-11 program showed:
  - In-field detection was late; poor monitoring
  - Evidence for resistance
- 2011-12 season:
  - Implemented a monitoring training program on 20+ farms to address key questions
  - Large number of bioassays for area-wide picture of resistance

2012 Program

Monitoring Program

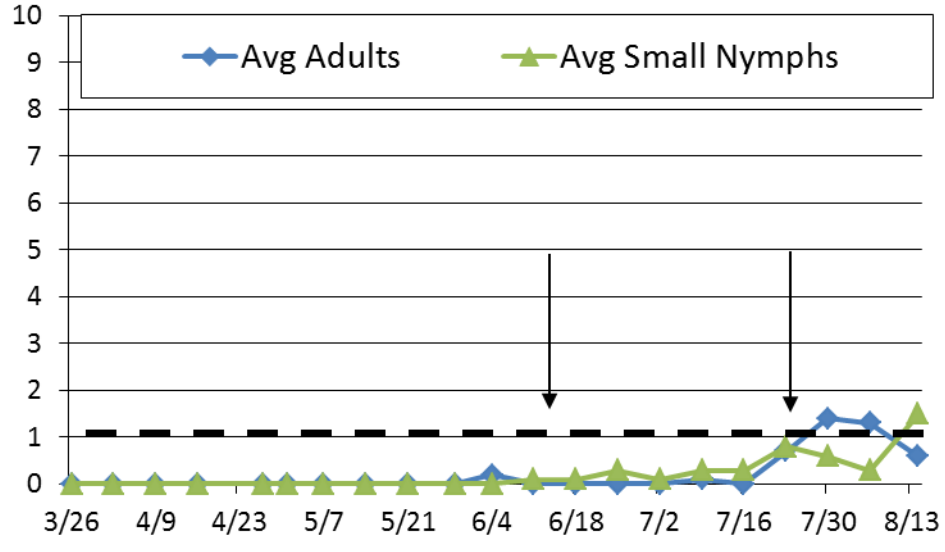
- 28 Scouts trained early season (March-April)
  - Santa Maria
  - Salinas/Watsonville
- 72% of participants continued through season

Bioassays

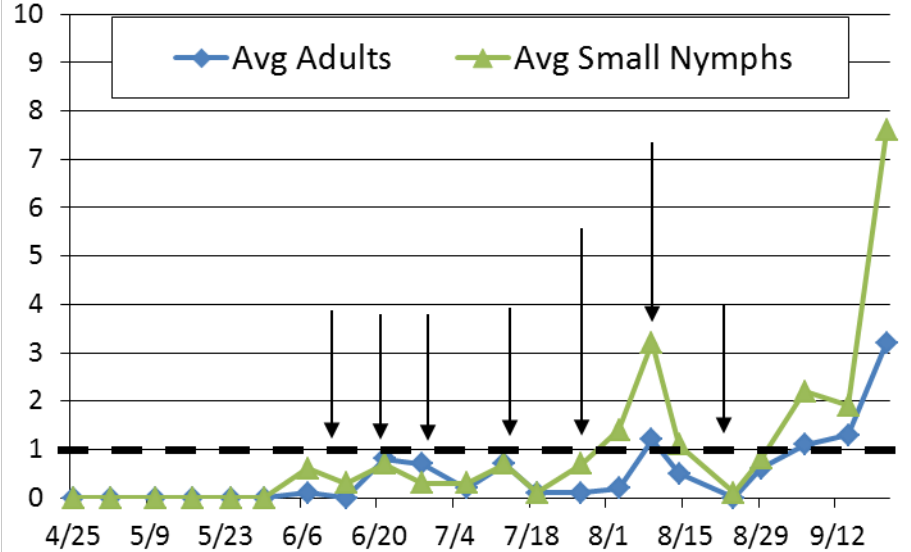
- Tested 26 fields (1st and 2nd year fields)
- Watsonville-Salinas and Santa Maria-Guadalupe

2012 Lygus Monitoring Data

Field 4



Field 27

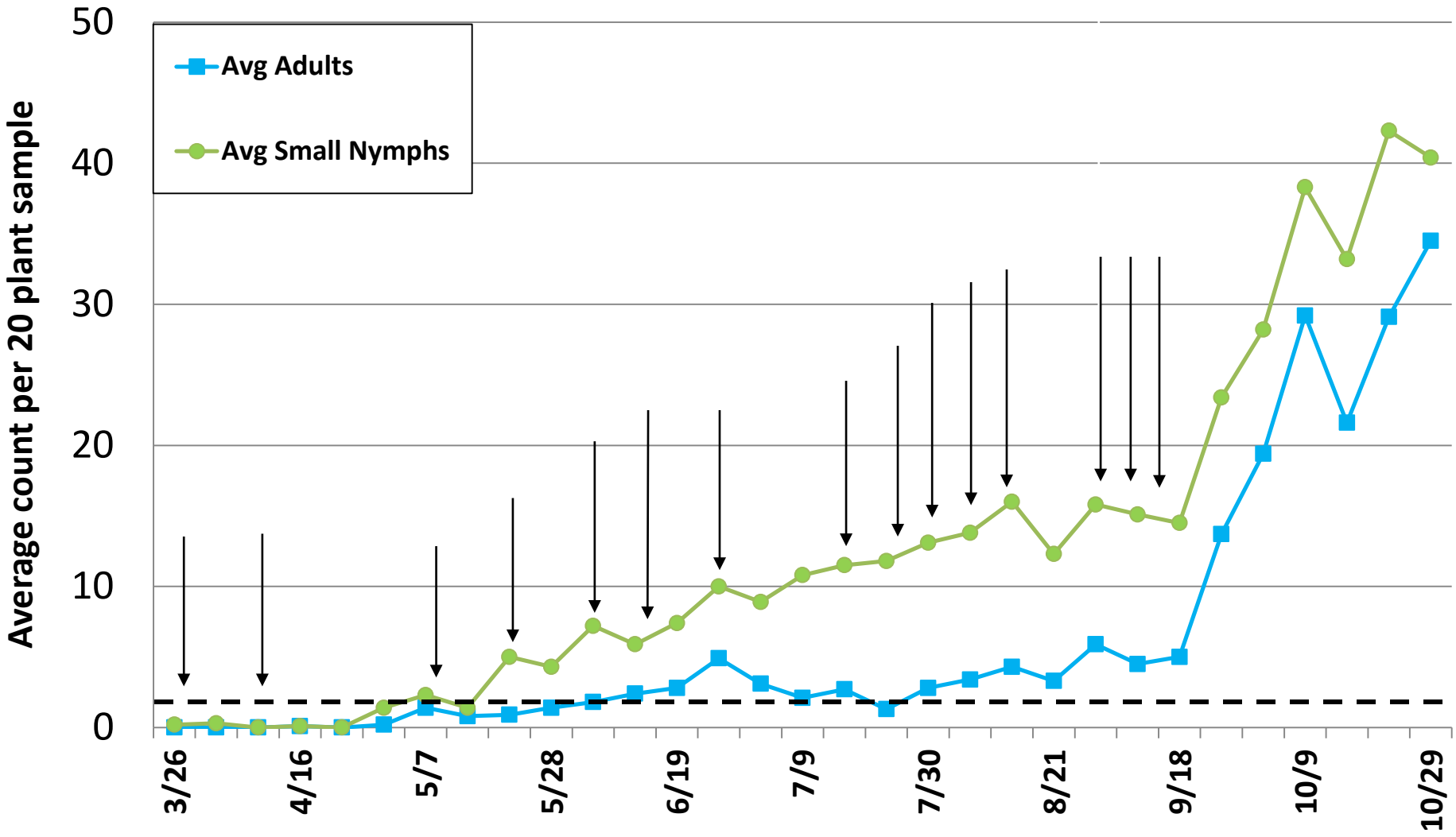


Average count per 20 plant sample

Arrows indicate spray dates

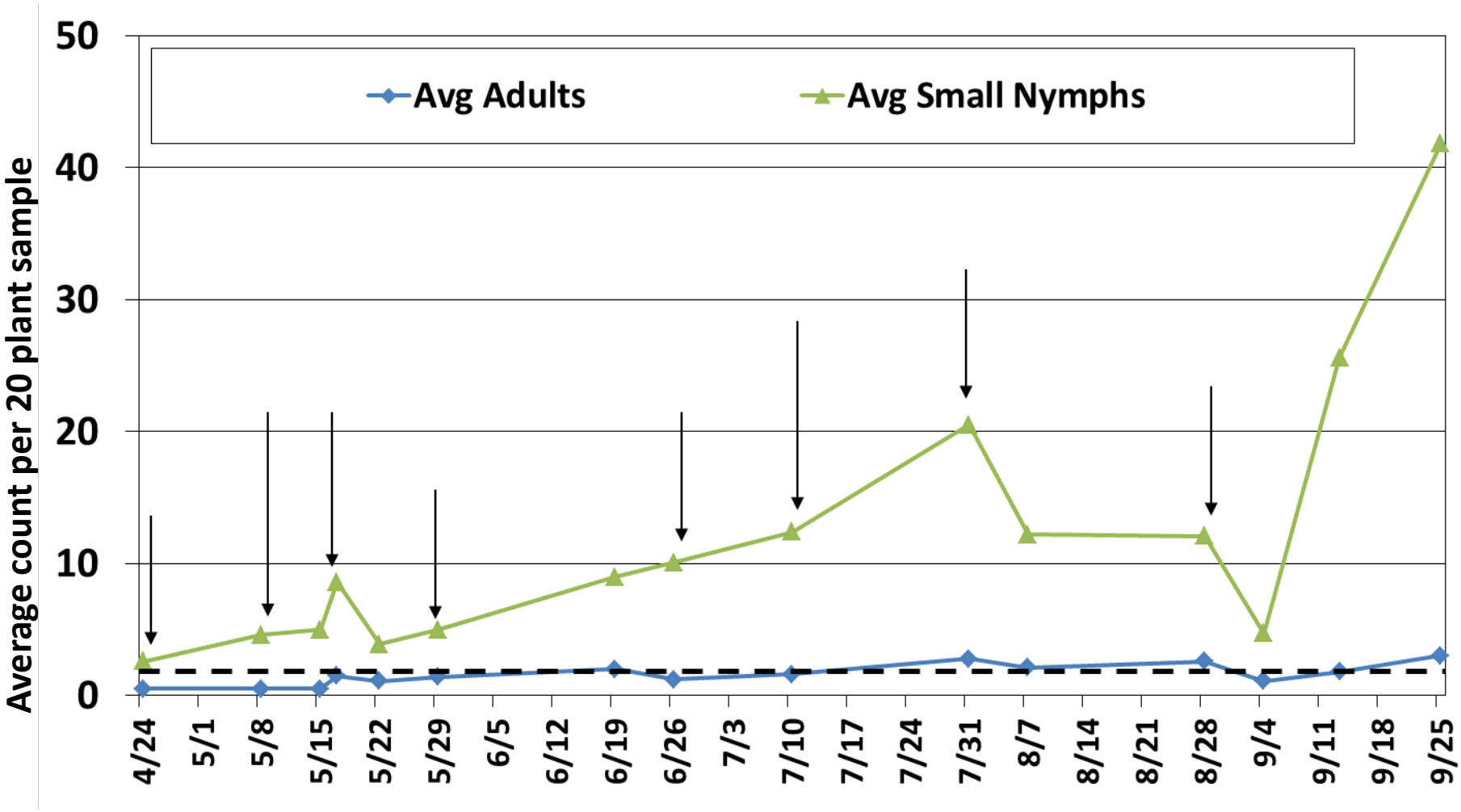
Dotted line indicates threshold

2nd year field adjacent, no vacuum use



Site 3

2nd year field adjacent, used bug vacuum

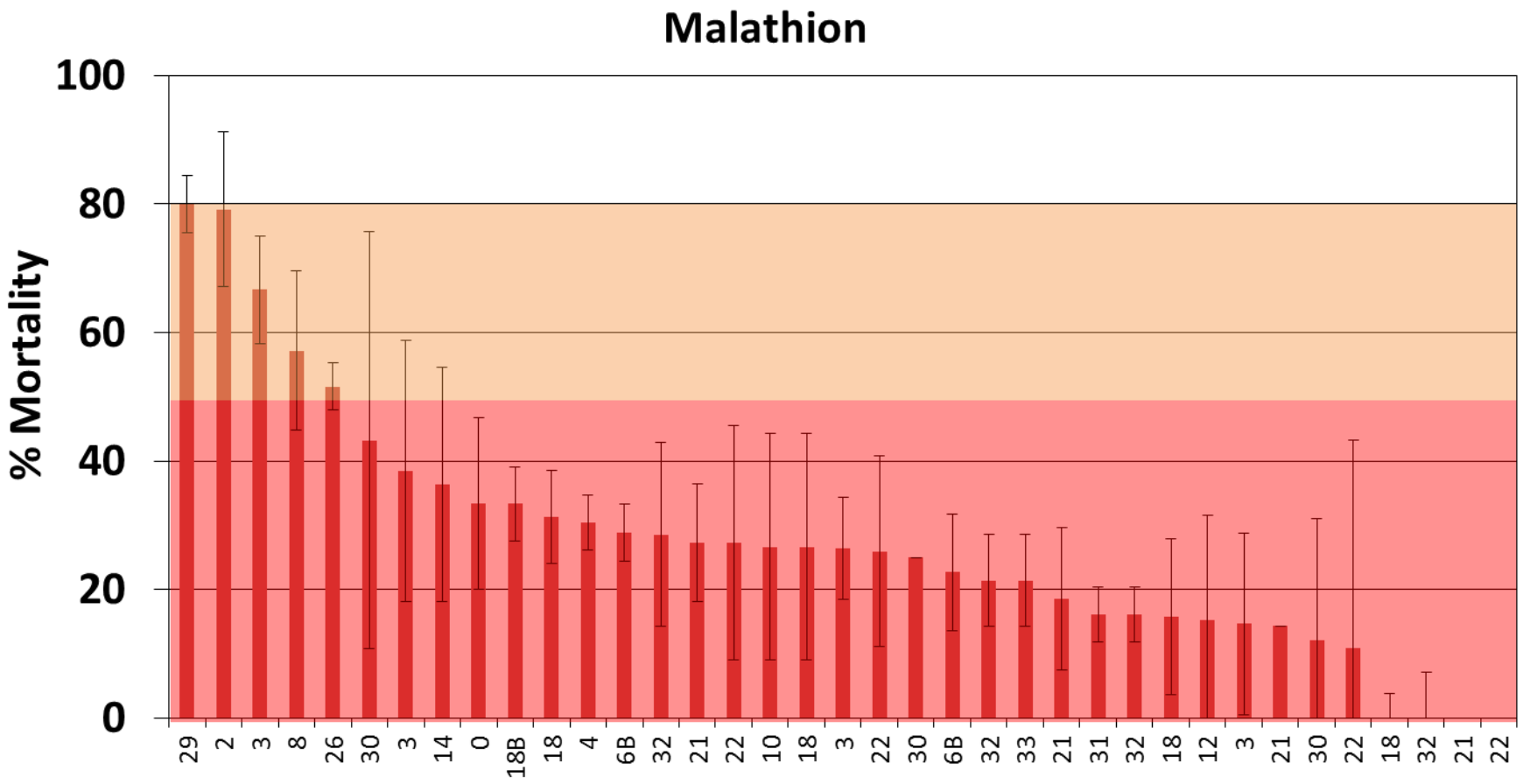


Site 22

Effect of vacuuming and second year strawberries on adult Lygus populations

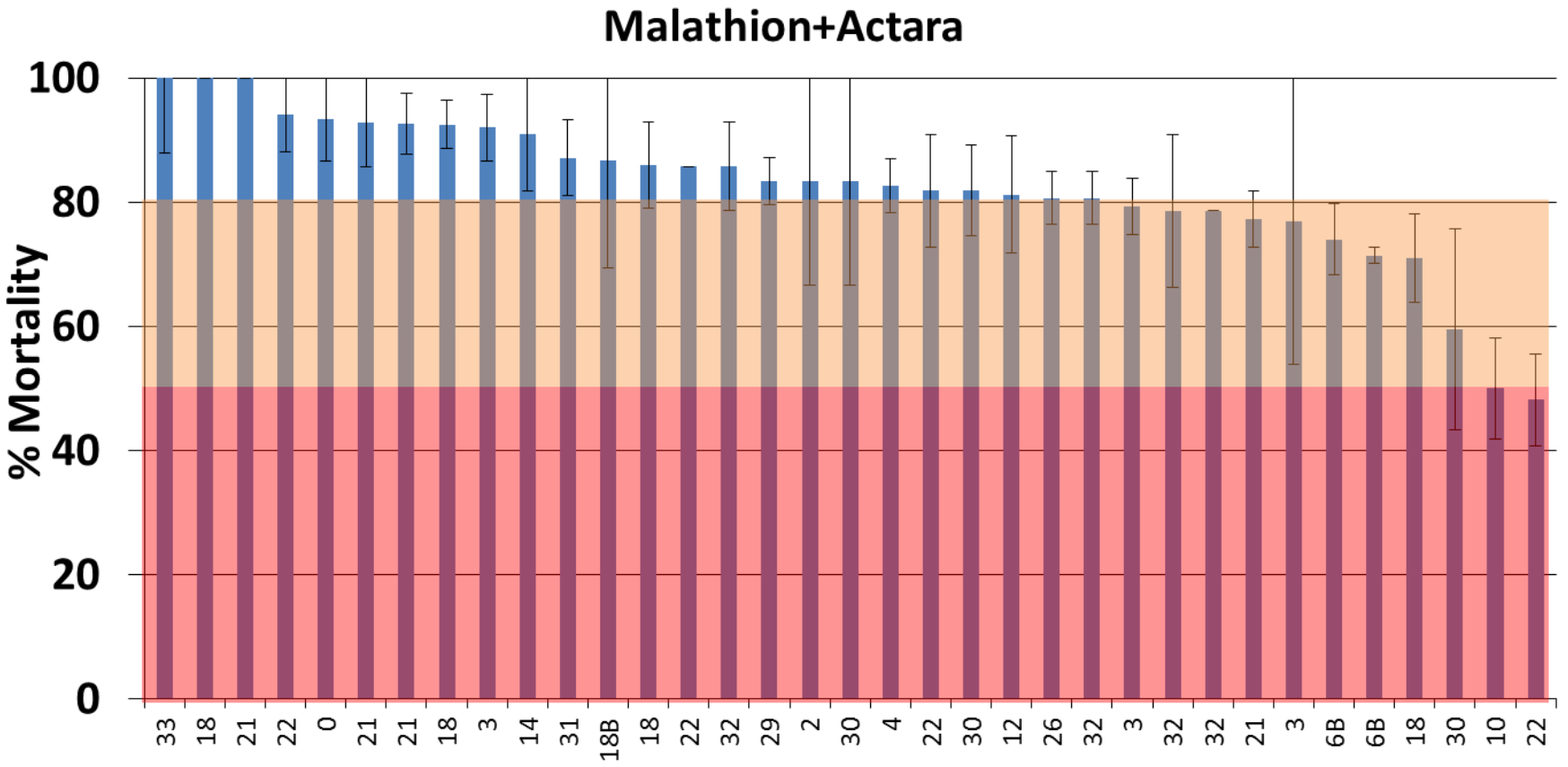
Field Characteristics	% of fields with > 5 Lygus adults per sample during season
No 2nd year adjacent + No vacuum use	9%
2nd year adjacent + Vacuum use	20%
2nd year adjacent + No vacuum use	75%

Resistance assay - Malathion



89% of tests showed <50% mortality, overall avg 27% mortality

Resistance – Malathion + Actara



3% tested had <50% mortality, 69% had >80% mortality, overall avg 82%

Grower Survey

- Second year fields are the most important local source of Lygus pressure (rated 4.8/5, #1 source)

- 88% of growers surveyed said they would support restrictions on second year strawberries

Grower Survey

- Monitoring data suggests field vacuums work
- None of the program participants in Santa Maria vacuumed and 20% use vacuums elsewhere
- 50% vacuumed participating sites in Wats/Salinas, 70% use vacuums elsewhere

Grower Survey

- 82% of growers surveyed say they use IPM
- Bioassay data shows widespread resistance
- Pesticide use patterns show little resistance management, few IPM approaches
- Poor monitoring
- Low vacuum use, no evidence of biological controls in conventional fields

Plan for Next Season (2013)

- Continue work on Lygus with focus on evaluating different IPM strategies & developing an effective IPM program
  - Resistance management, including new chemistries
  - Test vacuum use and cost efficacy in first year and second year fields
  - Management in second year fields
- Start working on mites
  - Resistance testing
  - Learn about current grower practices
- Whiteflies, Drosophila, other pests…

Whitefly Management Focus Group

- Facilitate neighborly coordination of area-wide management in delineated hotspot district

- Changes in labor and duration/overlap of production season could exacerbate other pest problems…Drosophila, corn earworm….