Onion Thrips Management Update

Diane Alston
Utah State University
Utah Onion Association Meeting
February 21, 2006

EXTENSION
UtahState UNIVERSITY
Lending a helping hand to Utahns since 1914.

Insecticides Registered in Utah for Onion Thrips

- Conventional Insecticides
  - Pyrethroids
    - Warrior, Mustang, Pounce, Ambush, Ammo
  - Carbamates
    - Lannate, Vydate
  - Organophosphates
    - Methyl-parathion, Diazinon, Malathion

* Important to rotate classes (modes of action) to reduce insecticide resistance

Insecticides Registered in Utah for Onion Thrips

- Alternative Insecticides
  - Neonicotinoids (systemic; none registered)
  - Insect growth regulators (none registered)
  - Particle film barrier
    - Surround
  - Biologicals
    - *Beauveria bassiana* (fungus)
  - Botanicals
    - Azadirachtin (neem oil)
    - Diatect (pyrethrins + diatomaceous earth)
  - Petroleum and plant oils
    - Horticultural oils, garlic oil, mint oil

New Registration Efforts

- Success (spinosad) – bacterial toxin
  - Section-18 (Emergency Exemption)
    - Submitted in 2005; Resubmit in 2006
- Carzol (formetanate hydrochloride) – carbamate
  - IR-4 (Develop tolerances)
    - Initiated in 2005; Pave the way for Section-18 requests and Section-3 registration (federal label)

2005 Colorado IR-4 Trial Results – Field Plots

Lannate
Carzol
Agri-Mek

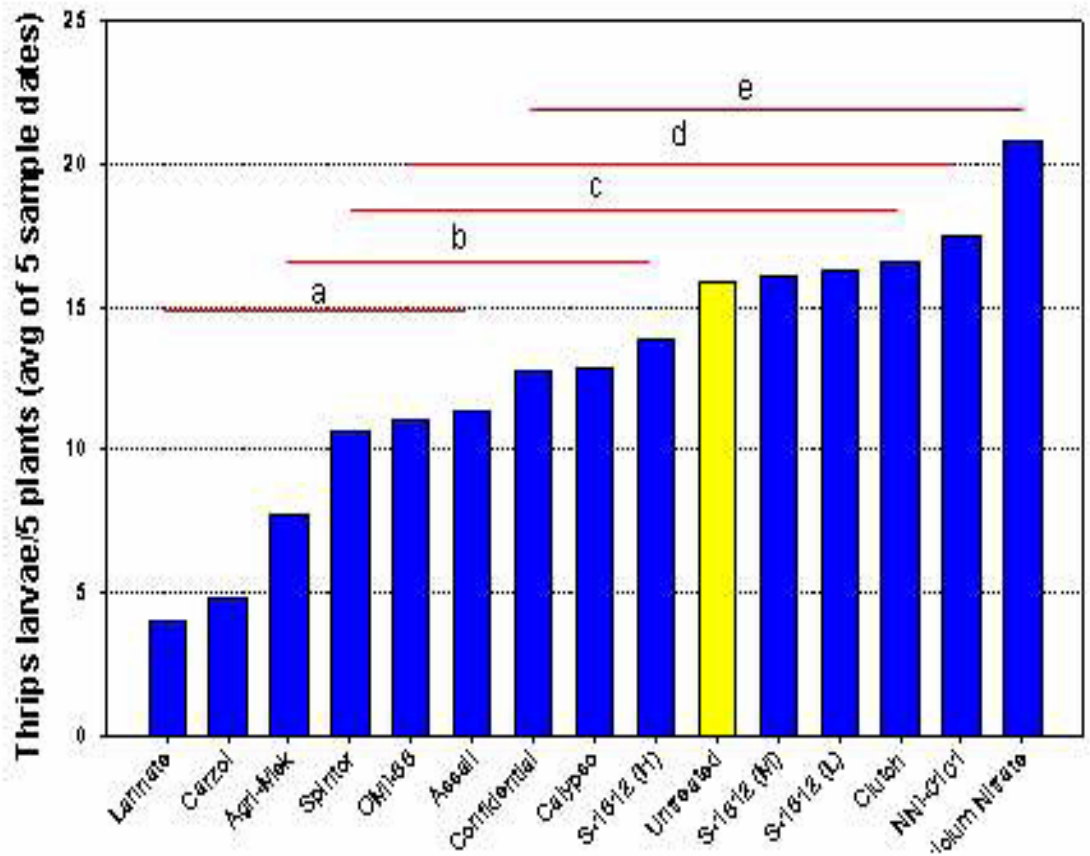


Figure 1. Immature thrips counts (per 5 plants), averaged over all five sample dates. Mean within a red bar grouping are not significantly different (LSD; P=0.05)

From Hammon and Foley, Colorado State University, "2005 IR-4 Onion Insecticide Trials, Grand Junction, CO"

2005 Colorado IR-4 Trial Results – Seed Treatments

Regent (fipronil)

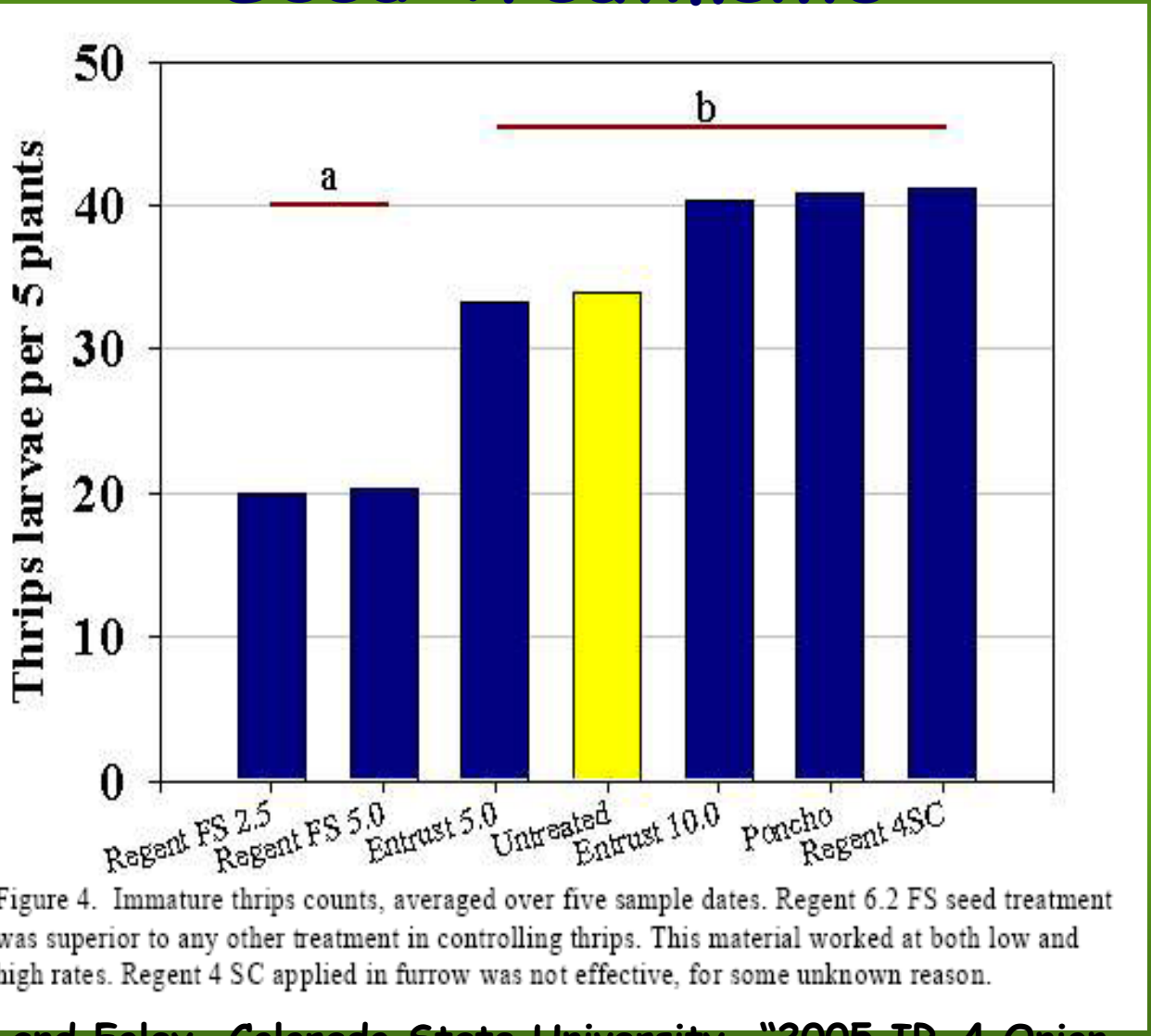
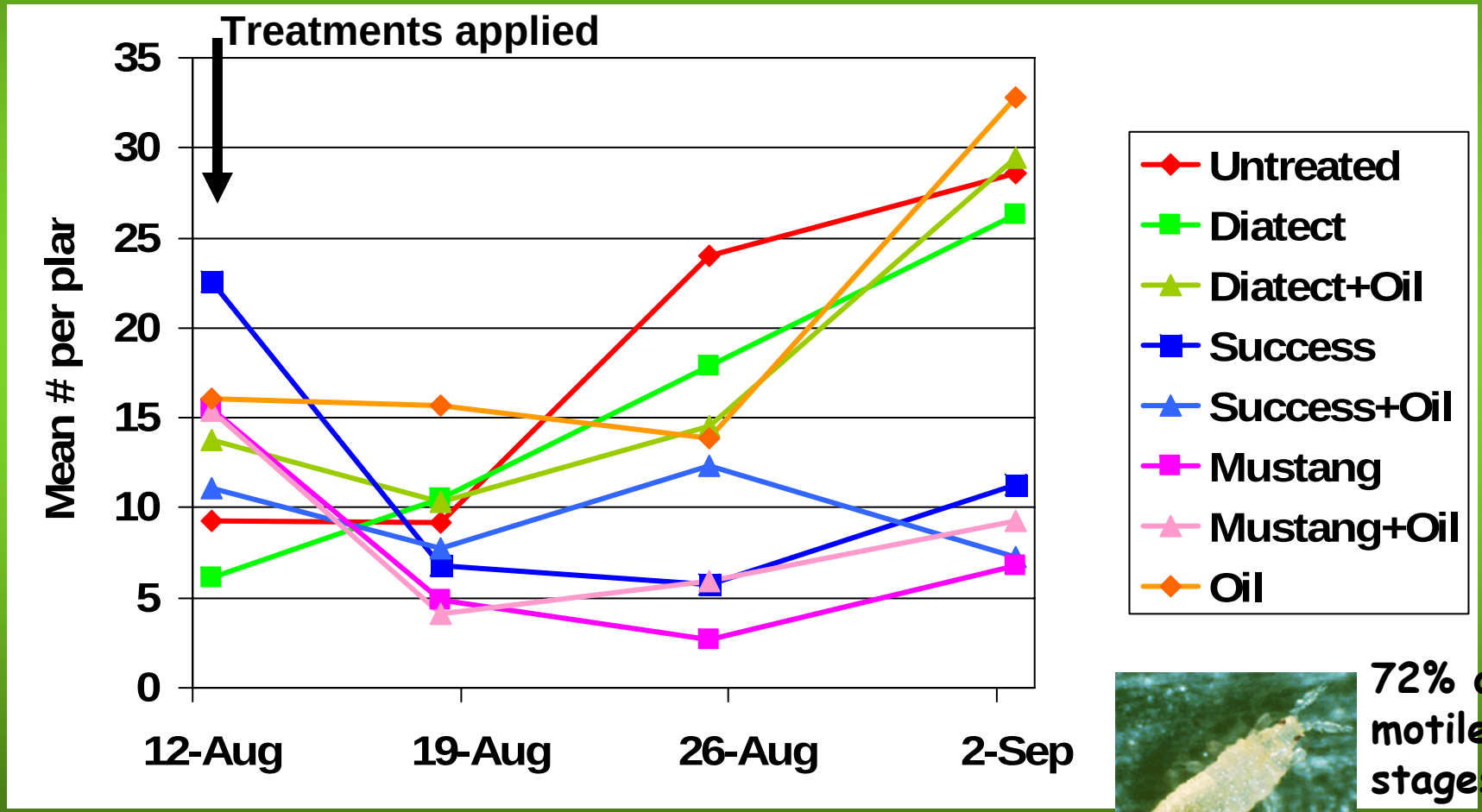


Figure 4. Immature thrips counts, averaged over five sample dates. Regent 6.2 FS seed treatment was superior to any other treatment in controlling thrips. This material worked at both low and high rates. Regent 4 SC applied in furrow was not effective, for some unknown reason.

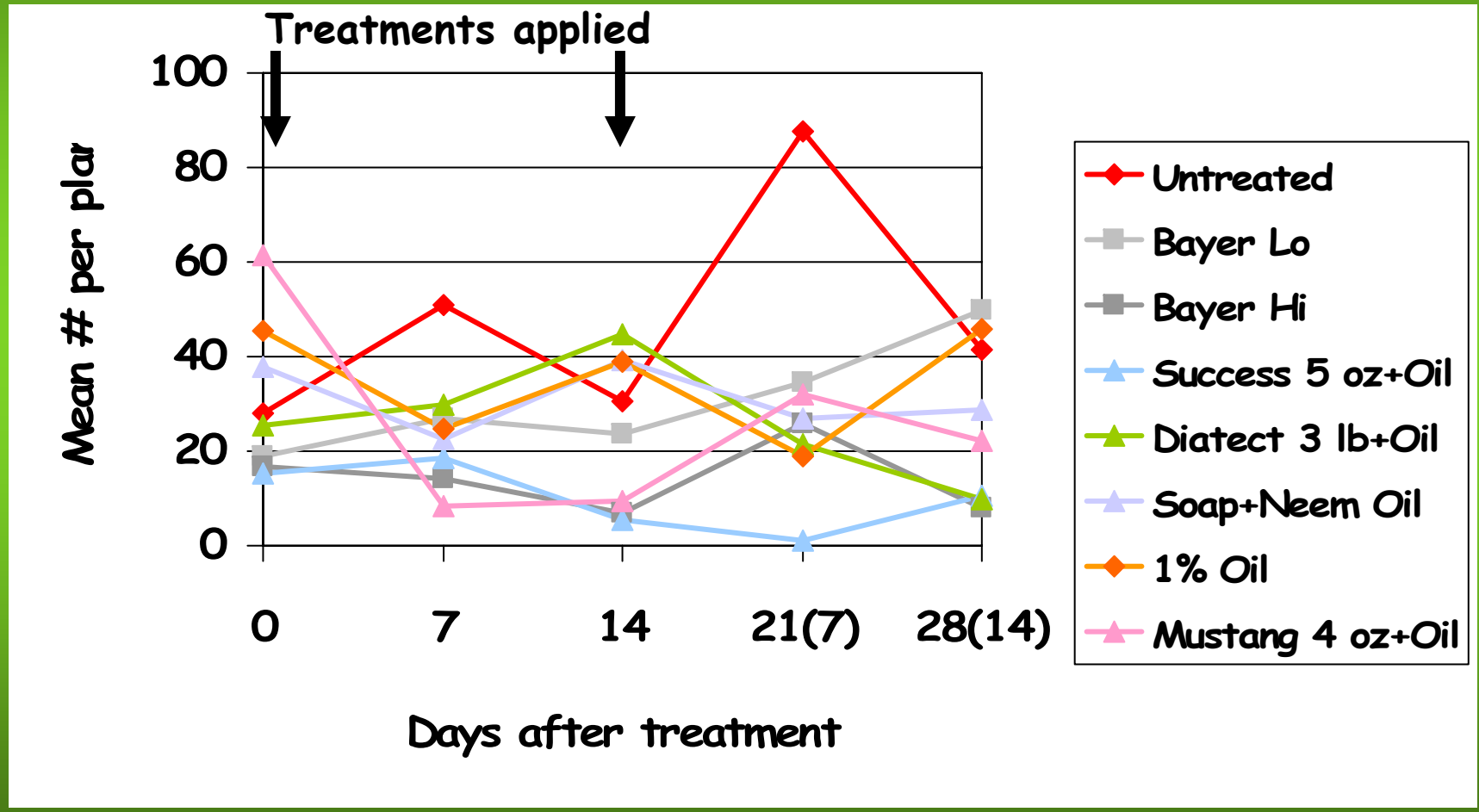
From Hammon and Foley, Colorado State University, "2005 IR-4 Onion Insecticide Trials, Grand Junction, CO"

2004 Utah Thrips Control - Kaysville Motile Stages



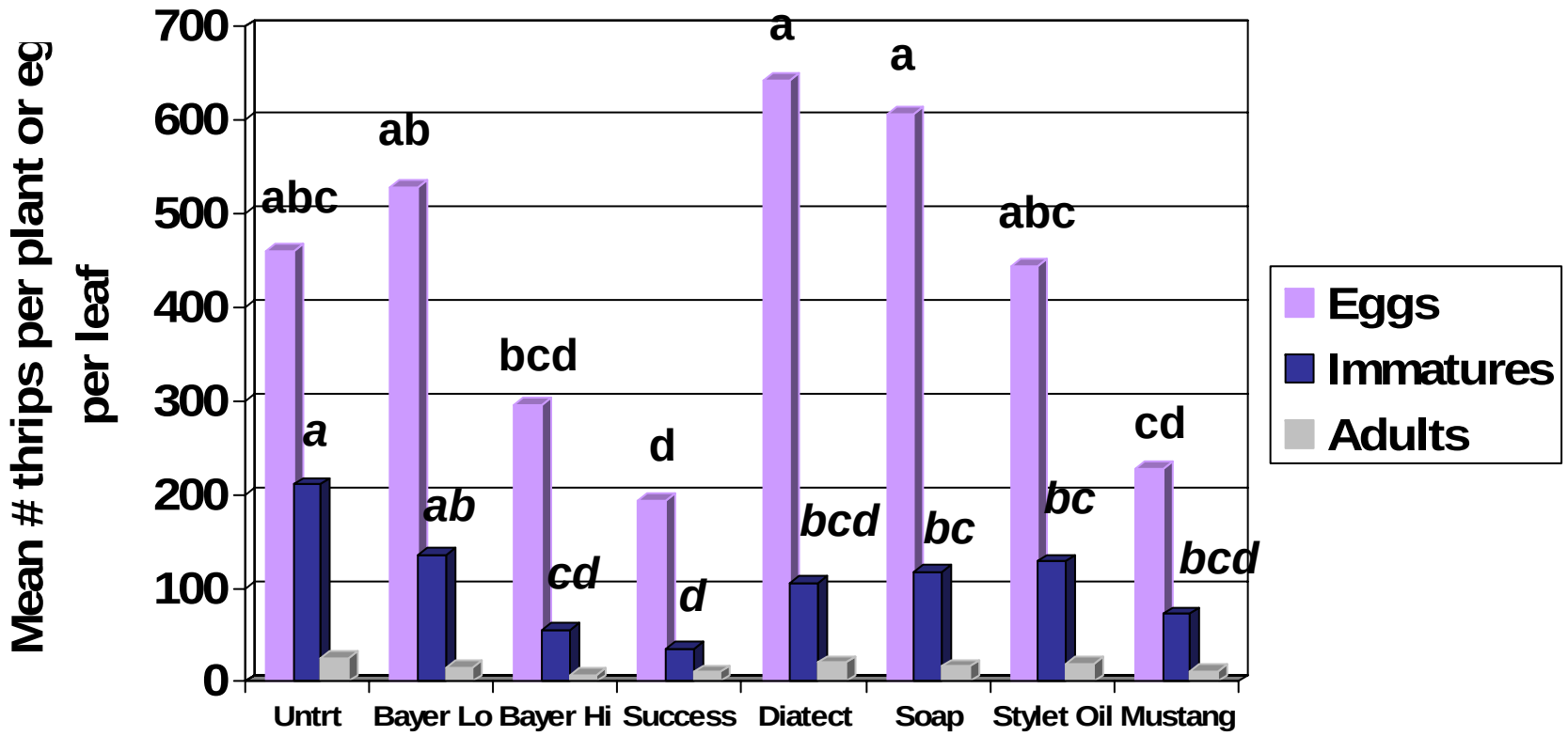
72% of motile stages were immature

2005 Utah Thrips Control - Kaysville Immature thrips



2005 Utah Thrips Control – Kaysville

Cumulative number of thrips following insecticide treatments (7 to 28 DAT).

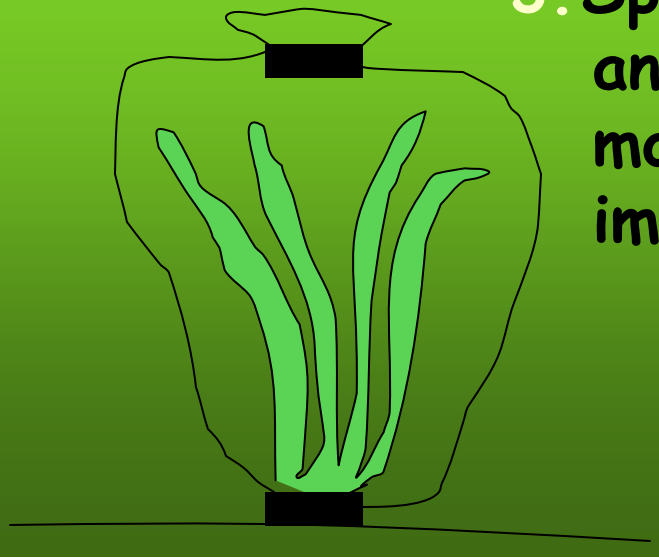


Thrips Survival vs. Immigration

Immediately after insecticides were applied

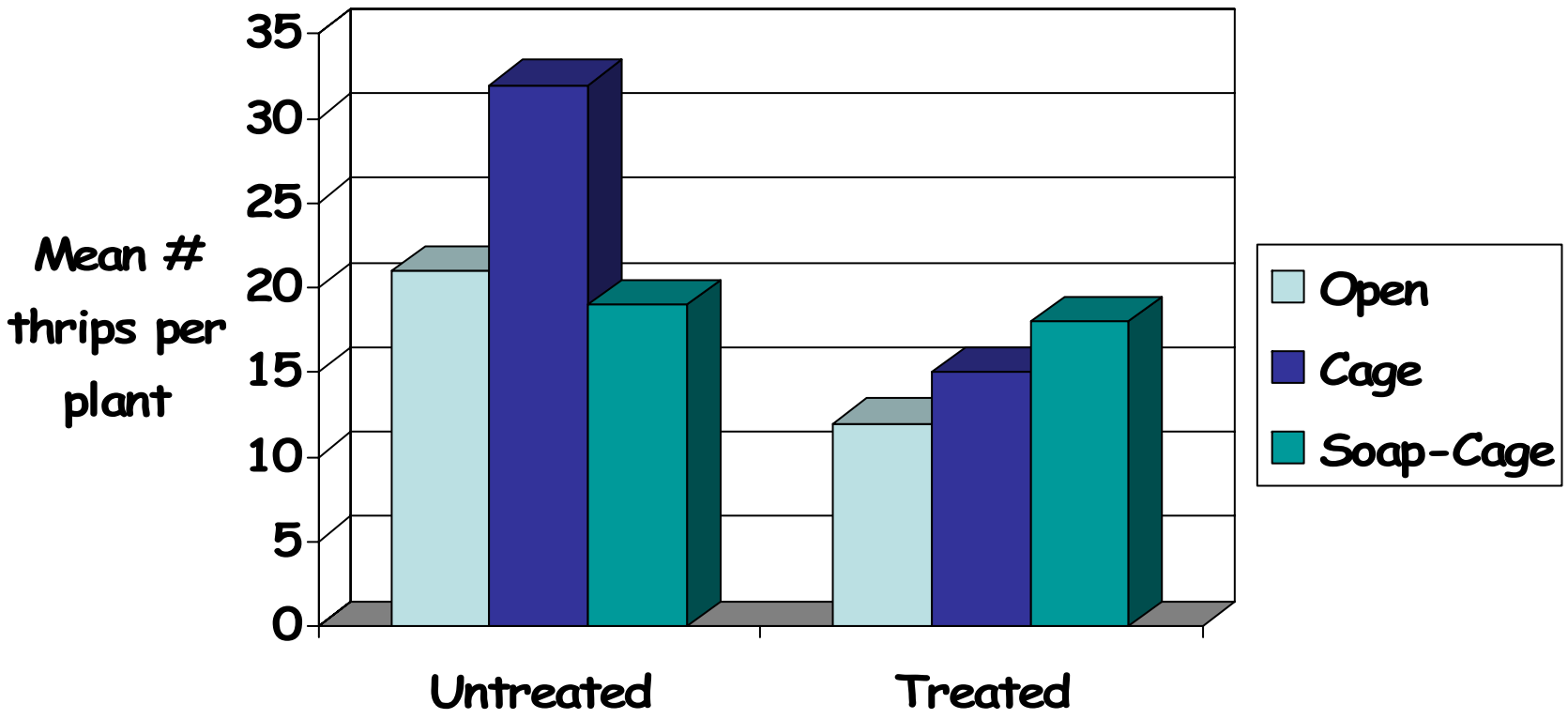
3 treatments:

1. Open plants (immigration)
2. Cage plants (exclude new immigrants)
3. Spray with soapy water and cage plants (remove motile stages & exclude new immigrants)



Thrips Survival vs. Immigration

Importance of Egg Survival to Populations on Plants



IPM Framework

- Insecticides are only one strategy
- Host plant resistance
- Healthy plants resist/tolerate injury
- Good cultural practices
- Natural enemies