Management of Maggots and Weed Control in Processing Onions

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Maggot Control in Processing Onions

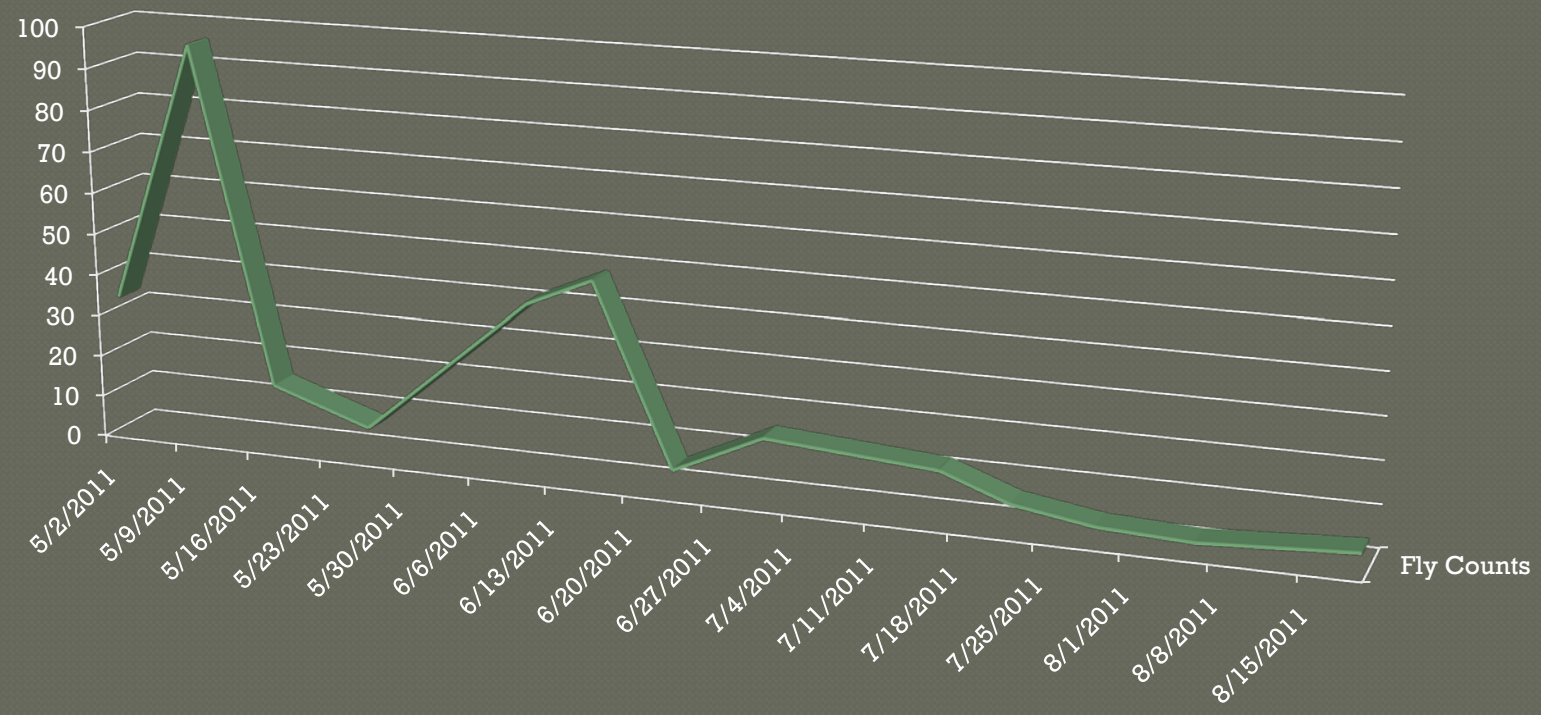
- In 2011, a maggot control study was established at IREC in Tulelake with funding support from the California Garlic and Onion Research Board
- Study objectives were to compare insecticides and insecticide application methods (in-furrow at planting versus seed treatment) to the current in-furrow standard (Lorsban)

Insecticide Trt Details

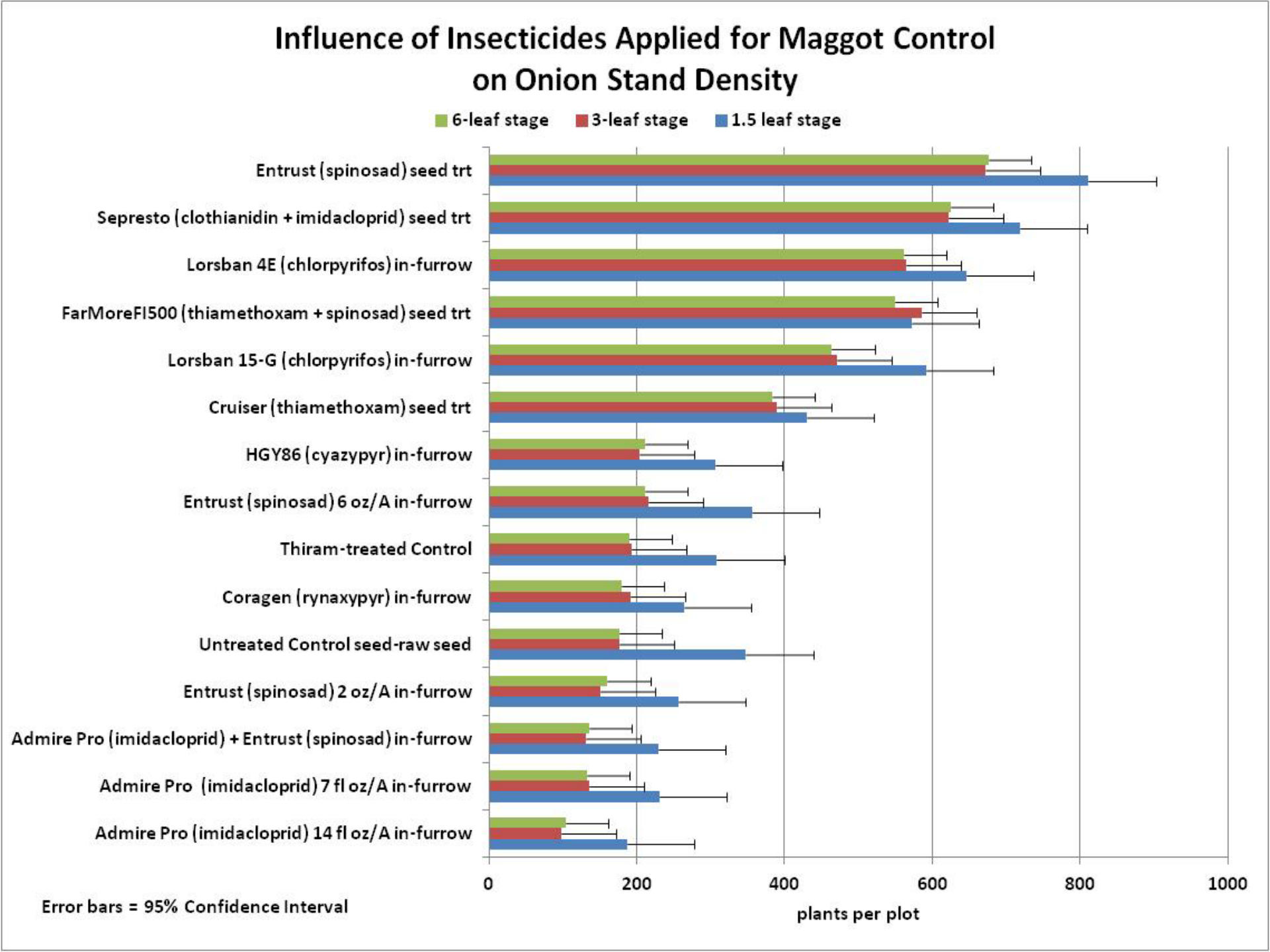
- Seed treatment
  - Sepresto, Entrust, and Cruiser applied via encrustment by Alan Taylor at Cornell University
  - FarMore applied as a pellet coating (BB size)
- In-furrow treatments
  - Teejet AI nozzles mounted on the onion planter applied a 4-inch band directly over the seed after seed placement but before furrow closure

Maggot Fly Counts in 2011

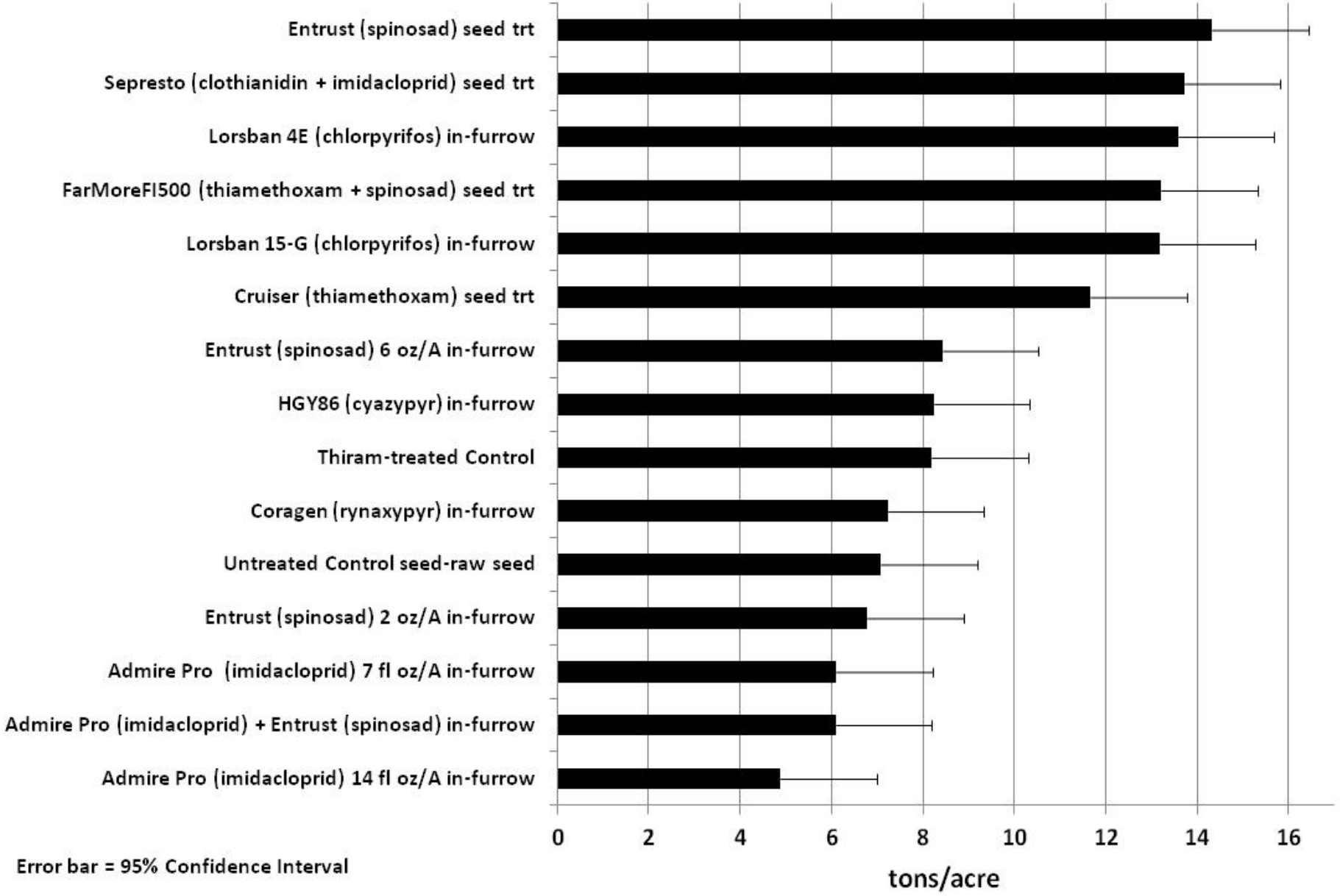
Both Seed Corn Maggot and Onion Maggot were ID




Larvae often found feeding on hypocotyl and roots up to 2 leaf stage


Influence of Insecticides Applied for Maggot Control on Onion Stand Density
6-leaf stage
3-leaf stage
1.5 leaf stage
Entrust (spinosad) seed trt
Sepresto (clothianidin + imidacloprid) seed trt
Lorsban 4E (chlorpyrifos) in-furrow
FarMoreFI500 (thiamethoxam + spinosad) seed trt
Lorsban 15-G (chlorpyrifos) in-furrow
Cruiser (thiamethoxam) seed trt
HGY86 (cyazypyr) in-furrow
Entrust (spinosad) 6 oz/A in-furrow
Thiram-treated Control
Coragen (rynaxypyr) in-furrow
Untreated Control seed-raw seed
Entrust (spinosad) 2 oz/A in-furrow
Admire Pro (imidacloprid) + Entrust (spinosad) in-furrow
Admire Pro (imidacloprid) 7 fl oz/A in-furrow
Admire Pro (imidacloprid) 14 fl oz/A in-furrow
0
200
400
600
800
1000
plants per plot
Error bars = 95% Confidence Interval

Influence of Insecticides Applied for Maggot Control on Onion Yield



Error bar = 95% Confidence Interval

Maggot Trial Summary

- Sepresto, Entrust, and FarMore FI500 applied as a seed treatment provided similar or superior protection from maggot damage compared to the current standard Lorsban
- Applying neonicotinoid and spinosyn insecticides as a seed treatment was far more effective than applying them in-furrow at planting

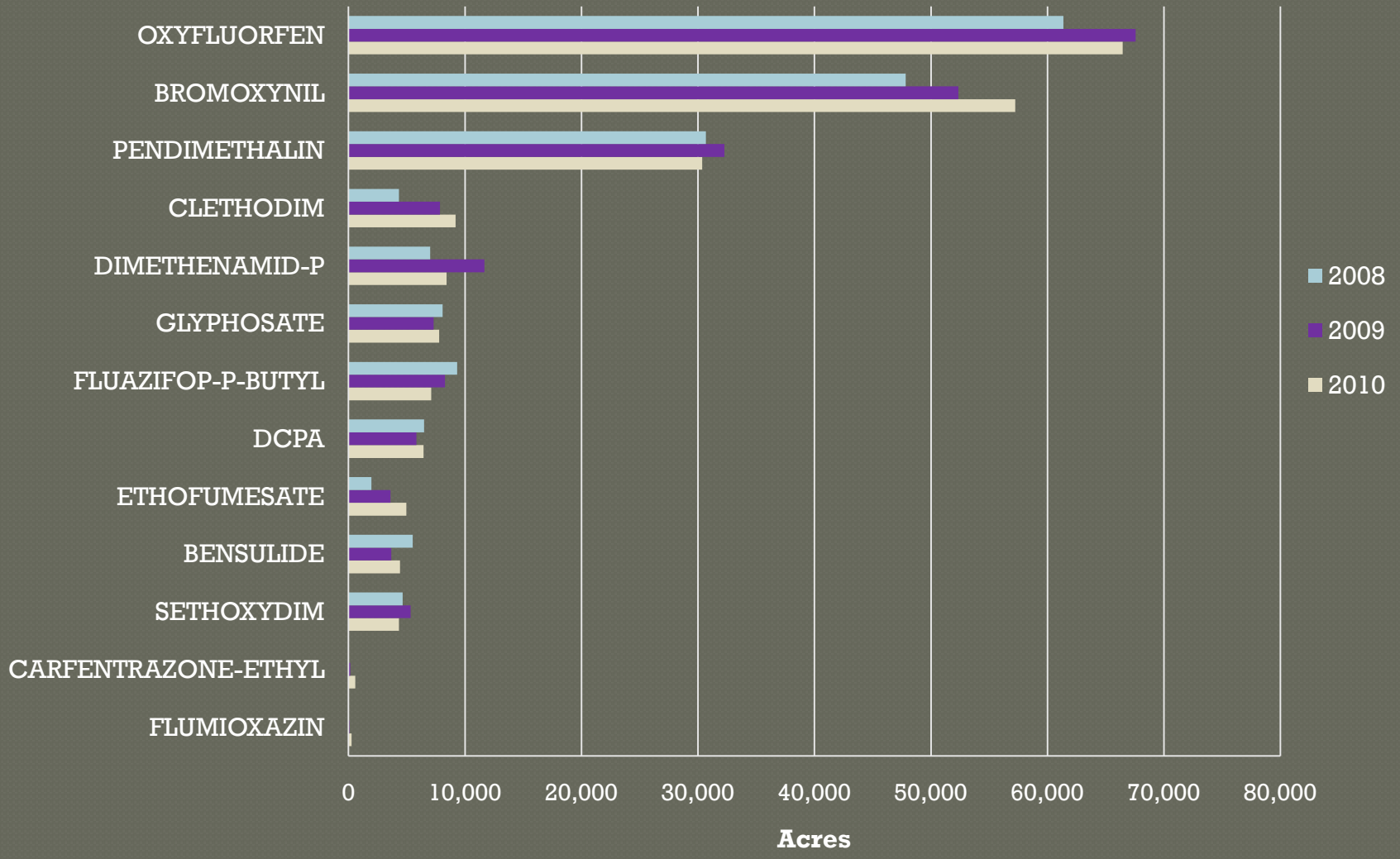
2011 Weed Control Trials

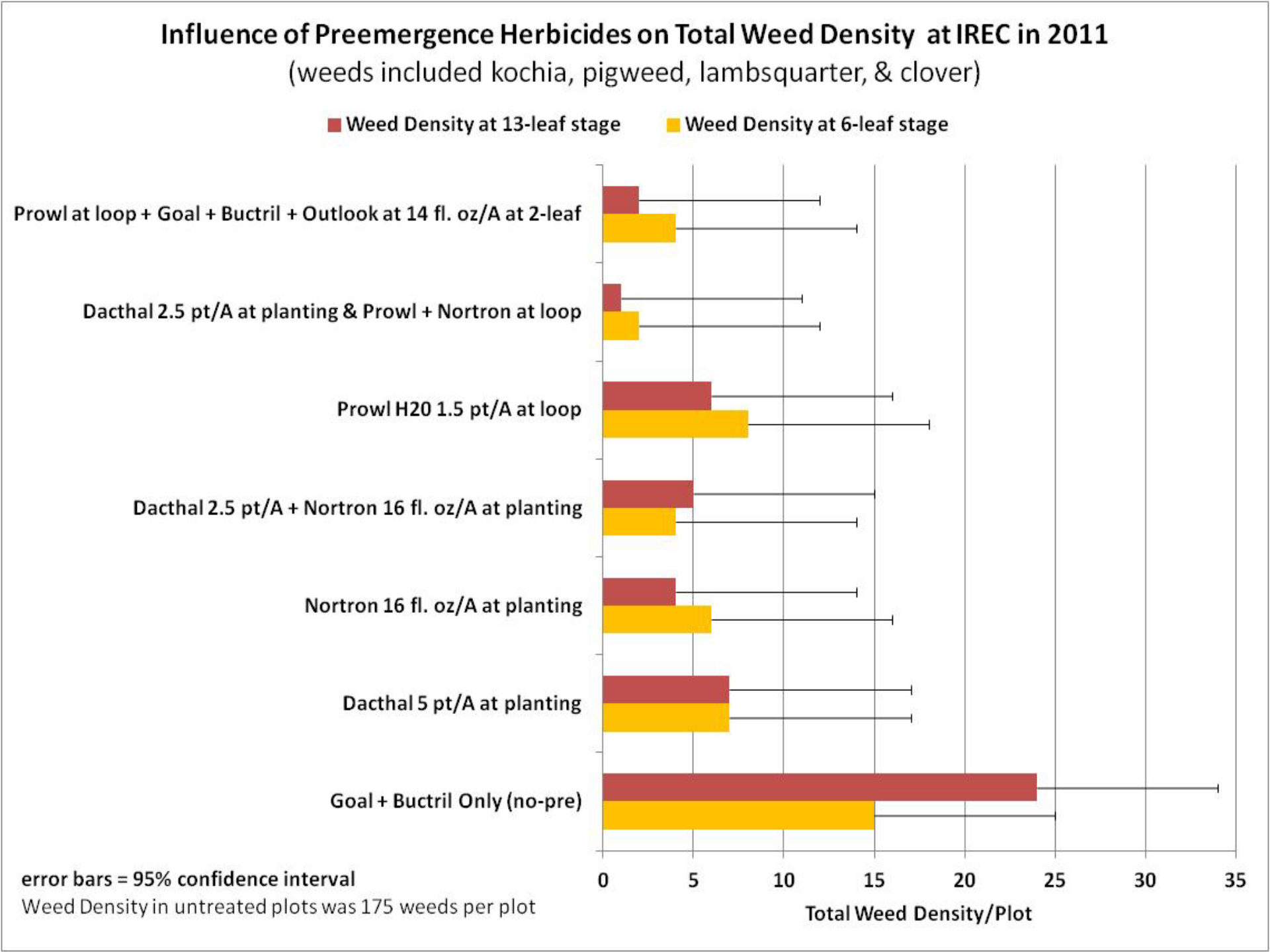
- Study objective was to evaluate the efficacy and crop safety of preemergence herbicide tank-mix combinations applied at planting and the loop onion growth stage
- 2011 treatments were broadcast applied on small plots in order to evaluate a larger number of preemergence herbicide tank-mix combinations than we were capable of evaluating in chemigation trials
  - Most preemergence treatments also included GoalTender applied at the 1.5 leaf stage followed by Goal + Buctril applied at the 2.5 leaf stage
- Treatments were applied at two sites to compare herbicide efficacy and crop safety on different soil types

New Herbicides for Onion Weed Control?

- Unfortunately, No.
- CA onion producers are still currently relying on a handful of herbicides for weed control in onions.

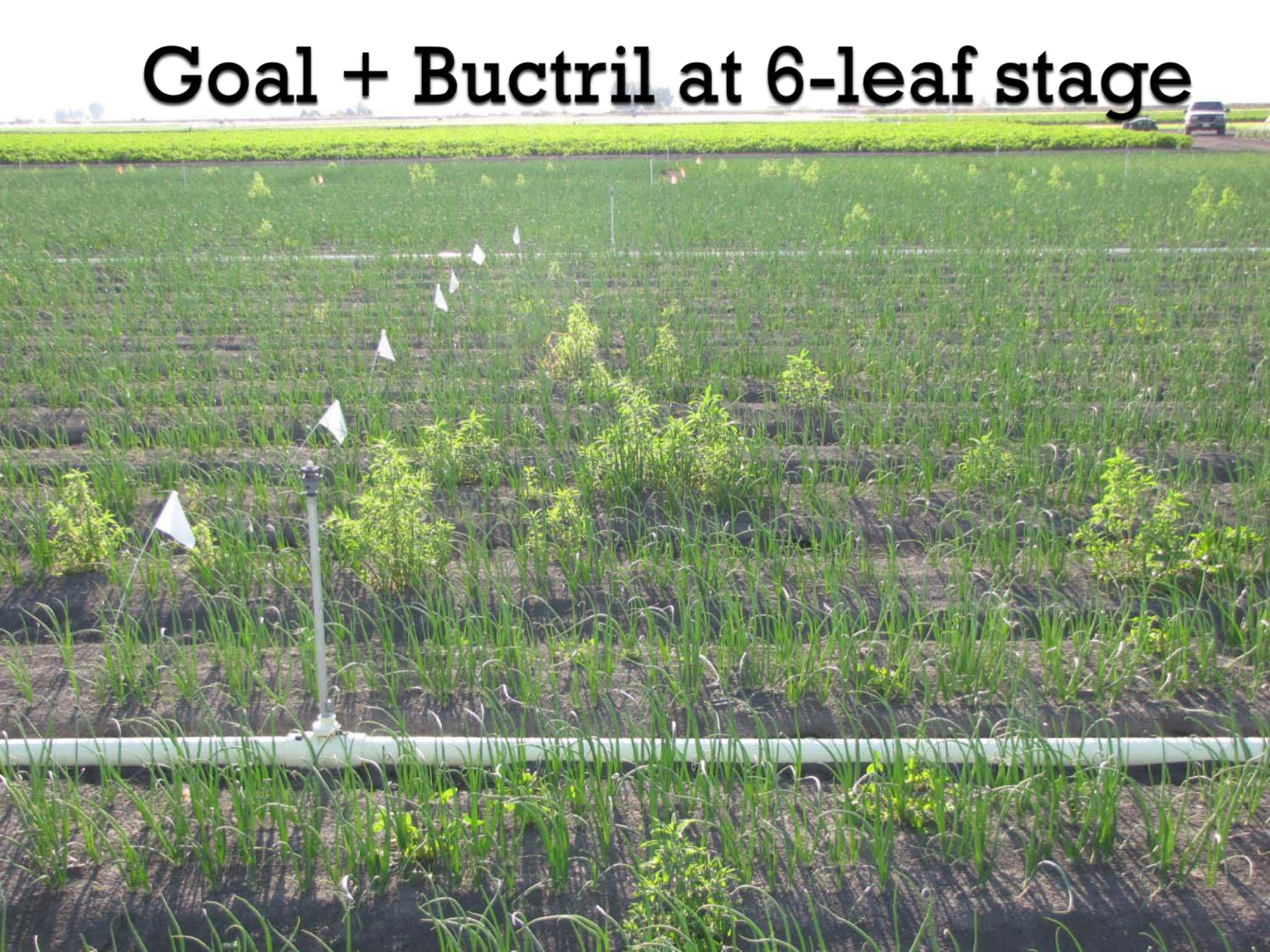
CA DPR Herbicide Use Report for Dry Processing Onions




Influence of Preemergence Herbicides on Total Weed Density at IREC in 2011
(weeds included kochia, pigweed, lambsquarter, & clover)
Weed Density at 13-leaf stage
Weed Density at 6-leaf stage
Prowl at loop + Goal + Buctril + Outlook at 14 fl. oz/A at 2-leaf
Dacthal 2.5 pt/A at planting & Prowl + Nortron at loop
Prowl H20 1.5 pt/A at loop
Dacthal 2.5 pt/A + Nortron 16 fl. oz/A at planting
Nortron 16 fl. oz/A at planting
Dacthal 5 pt/A at planting
Goal + Buctril Only (no-pre)
0
5
10
15
20
25
30
35
Total Weed Density/Plot
error bars = 95% confidence interval
Weed Density in untreated plots was 175 weeds per plot


Untreated at 6-leaf stage

Goal + Buctril at 6-leaf stage



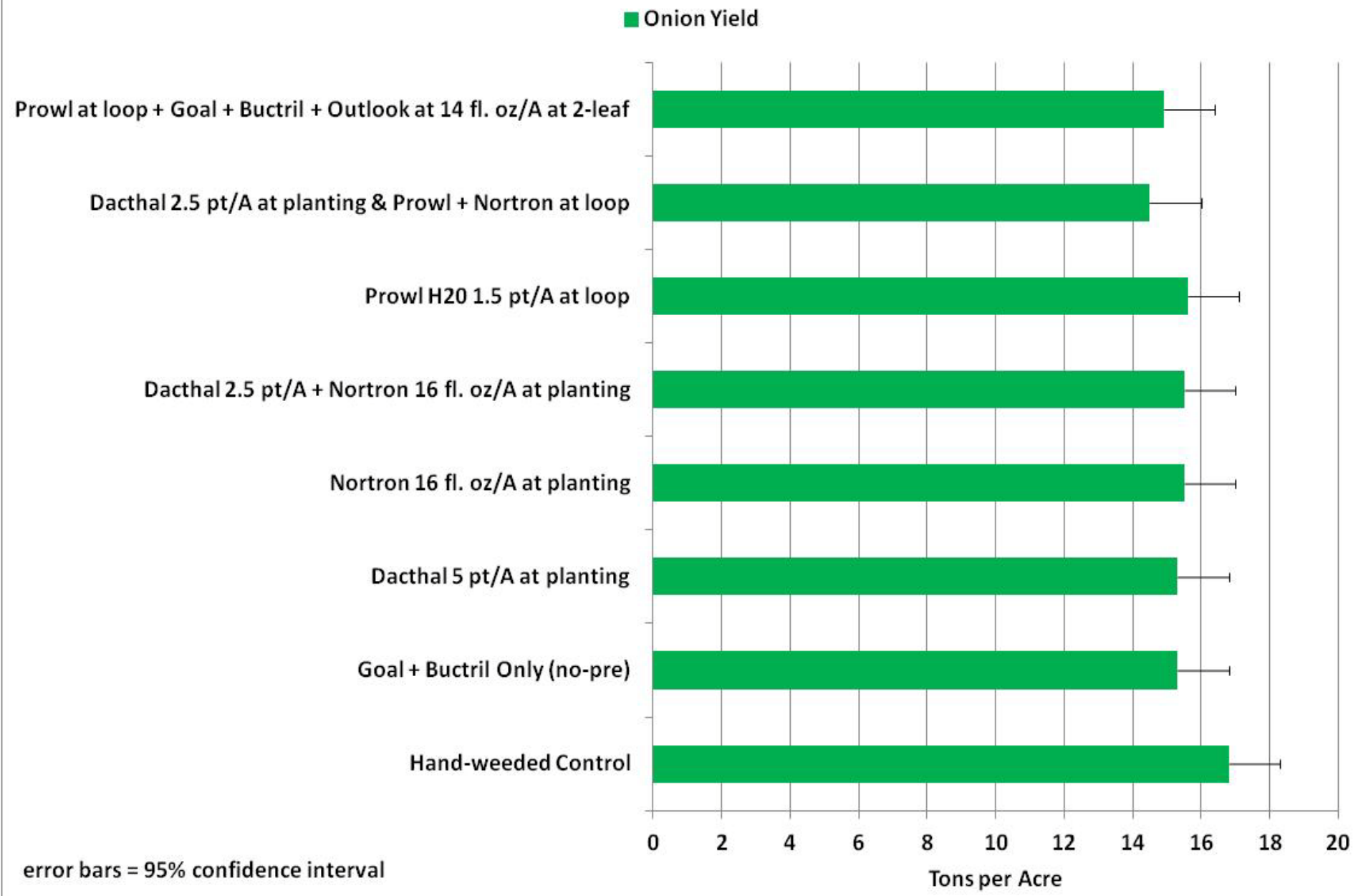

Dacthal + Prowl H20 + Nortron

Summer Weed Escapes in Goal + Buctril Treatment

Yield Results

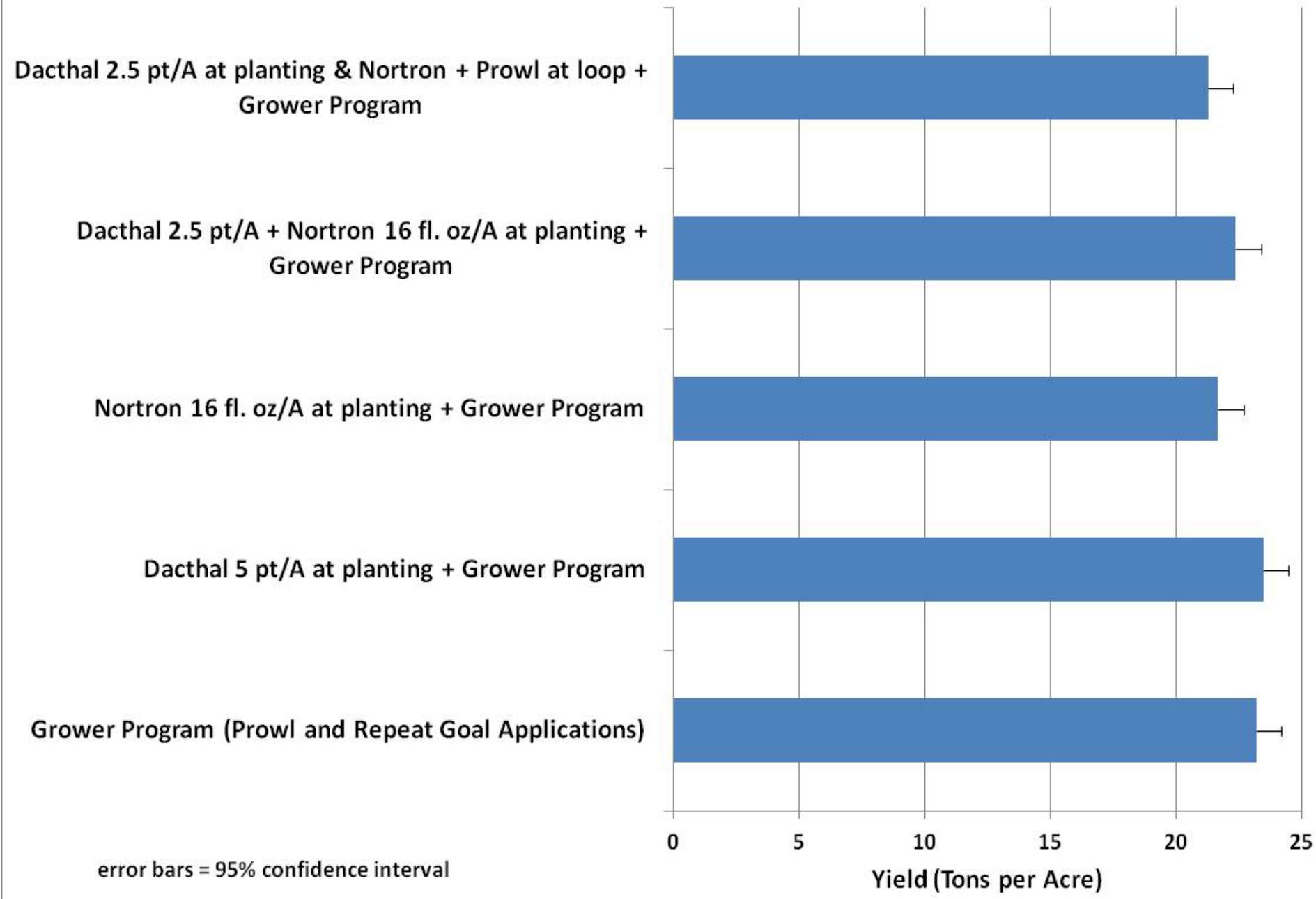
Influence of Preemergence Herbicides on Onion Yield at IREC in 2011

(onion yields across treatments were 40% below normal due to stand loss and late planting date)



error bars = 95% confidence interval

Onion Yields at Grower Site in 2011 (Sandy Loam Soil)



error bars = 95% confidence interval

Weed Control Summary

- Preemergence herbicide trts that increased weed control that did not reduce yield at both sites included:
  - Dacthal at 2.5 and 5.0 pt/A applied at planting
  - Dacthal at 2.5 pt/A + Nortron at 16 fl. oz/A applied at planting
  - Prowl H20 at 1.5 pt/A applied at the loop stage

Weed Control Summary

- Treatments that caused a significant reduction in onion stand and onion yield included:
  - Dacthal at 10 pt/A applied at planting
  - Nortron at 32 fl. oz/A + Prowl H20 at 1.5 pt/A applied at loop stage
  - Goal + Buctril + Outlook applied at the 2.5 leaf stage (if you want to use Outlook keep Buctril out of the mix)

Thank You

- IREC Staff
- California Garlic and Onion Research Advisory Board
- Sensient and Olam International
- DuPont, Dow AgroScience, Syngenta, Bayer CropScience, Amvac, BASF
- McKoen Farms, Macy's Flying Service, and Basin Fertilizer
- Alan Taylor, Cornell University