Weed control, plantback, and crop phyto concerns with tomato herbicides

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University of California
Agriculture and Natural Resources

Making a Difference for California

Perennial weeds

Annual weeds

Wright groundcherry
Physalis acutifolia

Redroot pigweed & lambsquarters *Amaranthus* & *Chenopodium spp*

Barnyardgrass
Echinochloa spp

Notes on Perennial Weeds

- Present in any tillage system, but often more of a problem with no-till/min-till.
- Vegetative parts can be a source of reinfestation even when the tops are gone.
- Effective management needed over multiple years (rotation, cultivation, herbicides).

Extensive Root System

> 10 ft
underground horizontal stems
(rhizomes)

Notes on Annual Weeds

- Single largest category of agriculturally important weeds
- Normally reproduce only from seed; often heavy seed producers
- Summer annuals germ in the spring and grow through the summer
- Control. Cultivation and herbicides before flowering, prevention (certified seed, sanitation), rotation

Amaranthus spp.

> 100,000 seeds per plant.

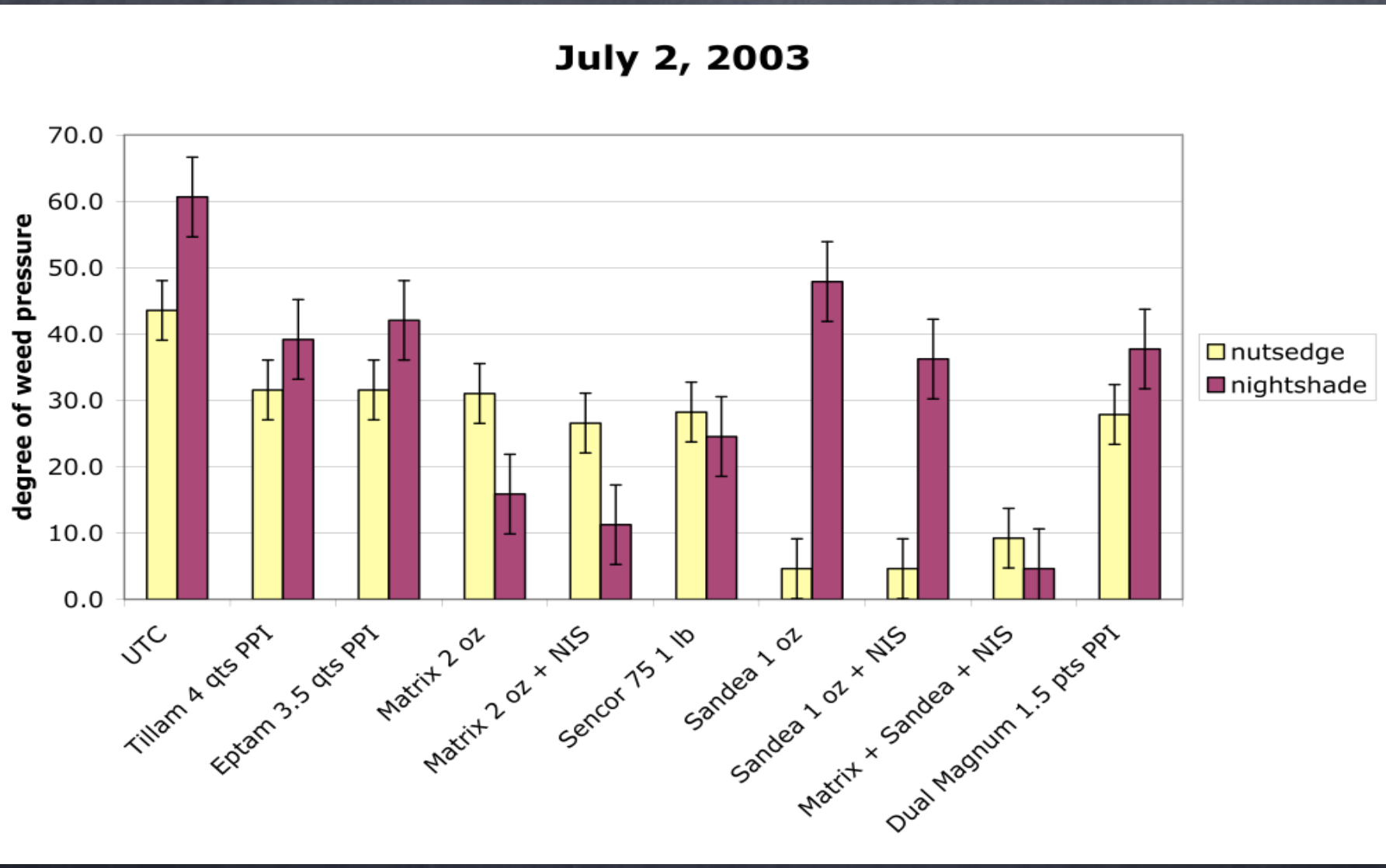
Herbicide Development in Tomatoes

- **Limited. Trickle down from other crops 15 yrs**
  - » Dual Magnum (metolachlor)
  - » Sandea (halosulfuron)
  - » Matrix (rimsulfuron)
  - » Select Max (clethodim)
  - » Shark (carfentrazone)
  - » Zeus (sulfentrazone)

- **Know the rotation and residual cautions**

Herbicide Trials

- Pre & post application of Sandea and Matrix
- PPI Sprinkle incorporated
- Fresh Market and processing tomatoes
- 2003, 2004, 2008


July 2, 2003
degree of weed pressure
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
UTC
Tillam 4 qts PPI
Eptam 3.5 qts PPI
Matrix 2 oz
Matrix 2 oz + NIS
Sencor 75 1 lb
Sandea 1 oz
Sandea 1 oz + NIS
Matrix + Sandea + NIS
Dual Magnum 1.5 pts PPI
nutsedge
nightshade

Conclusions

- Matrix + Dual Magnum provided good control for both spp.
- Matrix + Sandea:
  - Excellent weed control
  - Significant yield increase
  - Better with NIS
- Sandea did not cause crop phytotoxicity in this variety

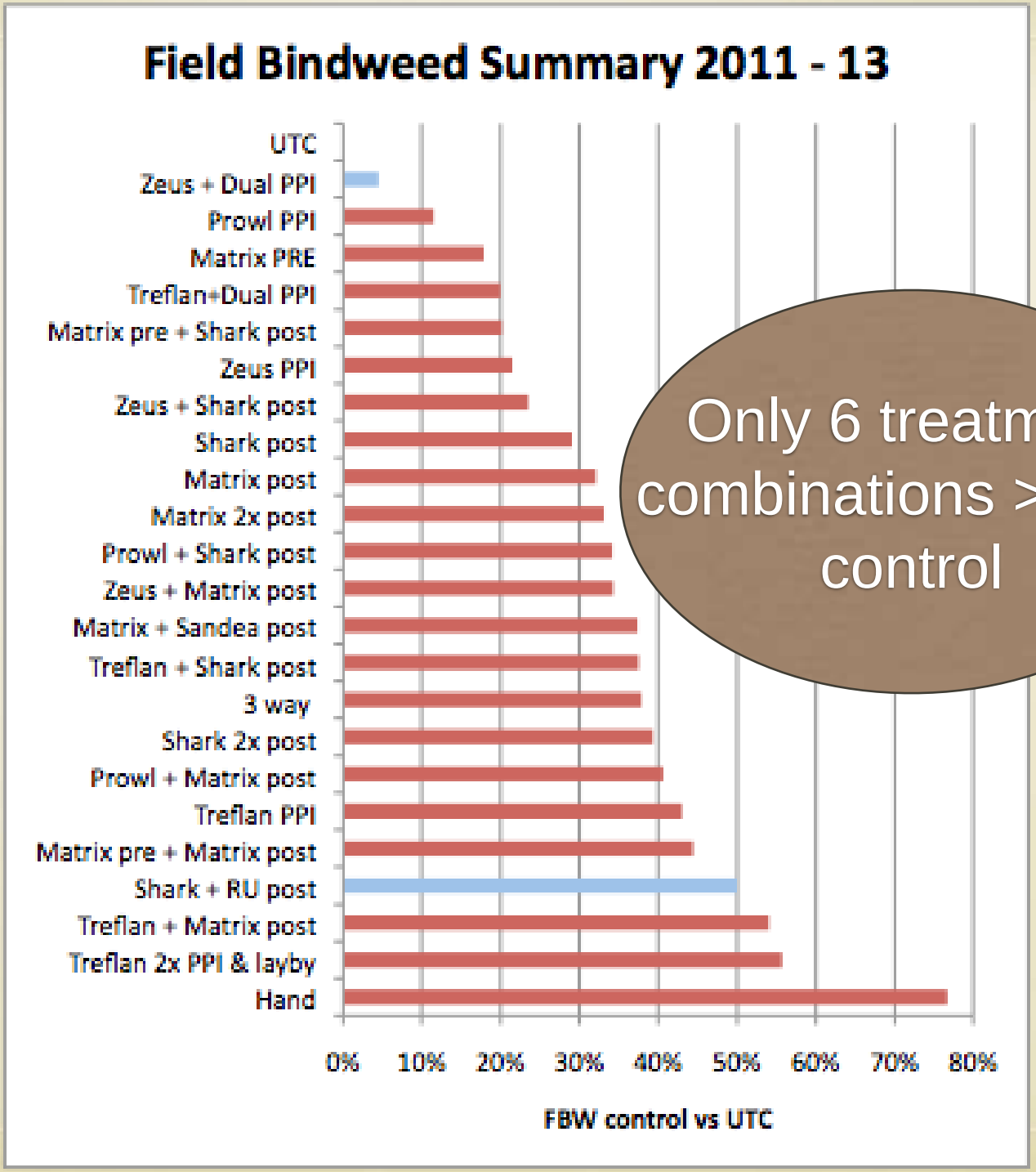

Sandea phyto.
a

Field Bindweed Management for Processing Tomatoes

Scott Stoddard, UCCE Merced and Madera Counties

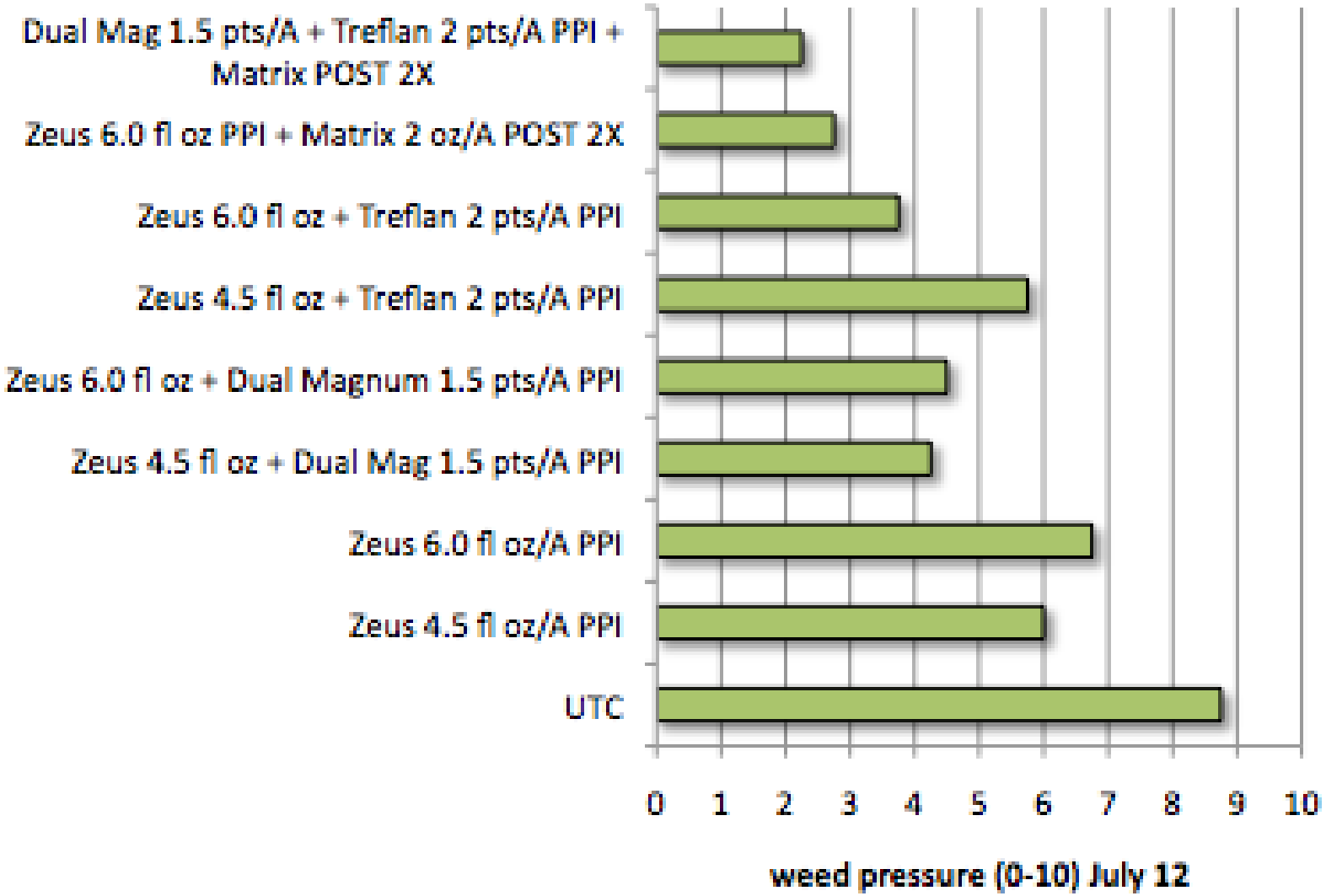
Tom Lanini, UC Davis, Emeritus
Lynn Sosnoskie, UCD

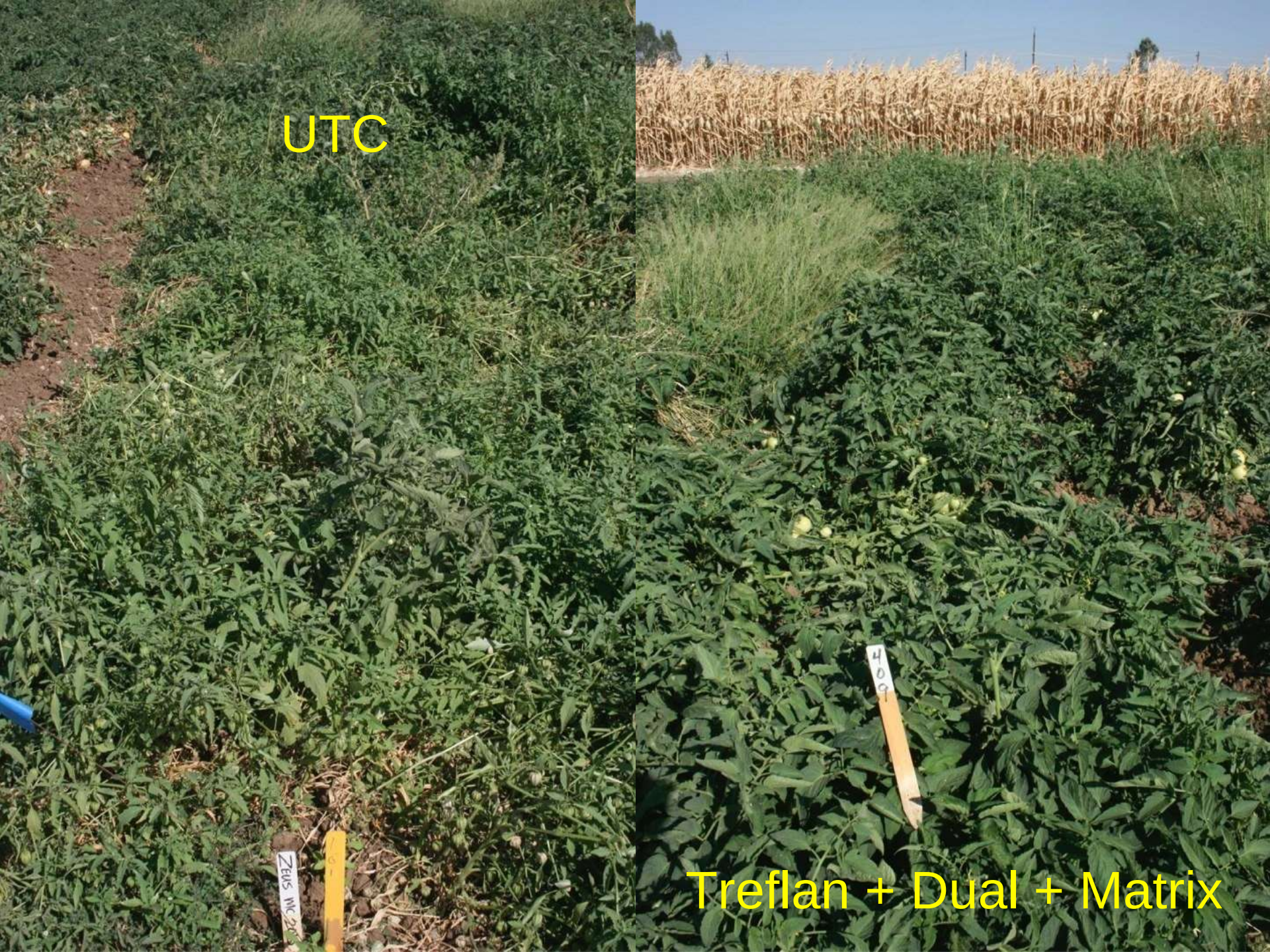
Putting it all together




trifluralin (Treflan)

Tomato Herbicide Trial 2013




UTC
Treflan + Dual + Matrix

Treflan PPI fb Matrix POST 2 apps fb clethodim POST + COC

NOTE: plantback > 10 months for many crops after Matrix

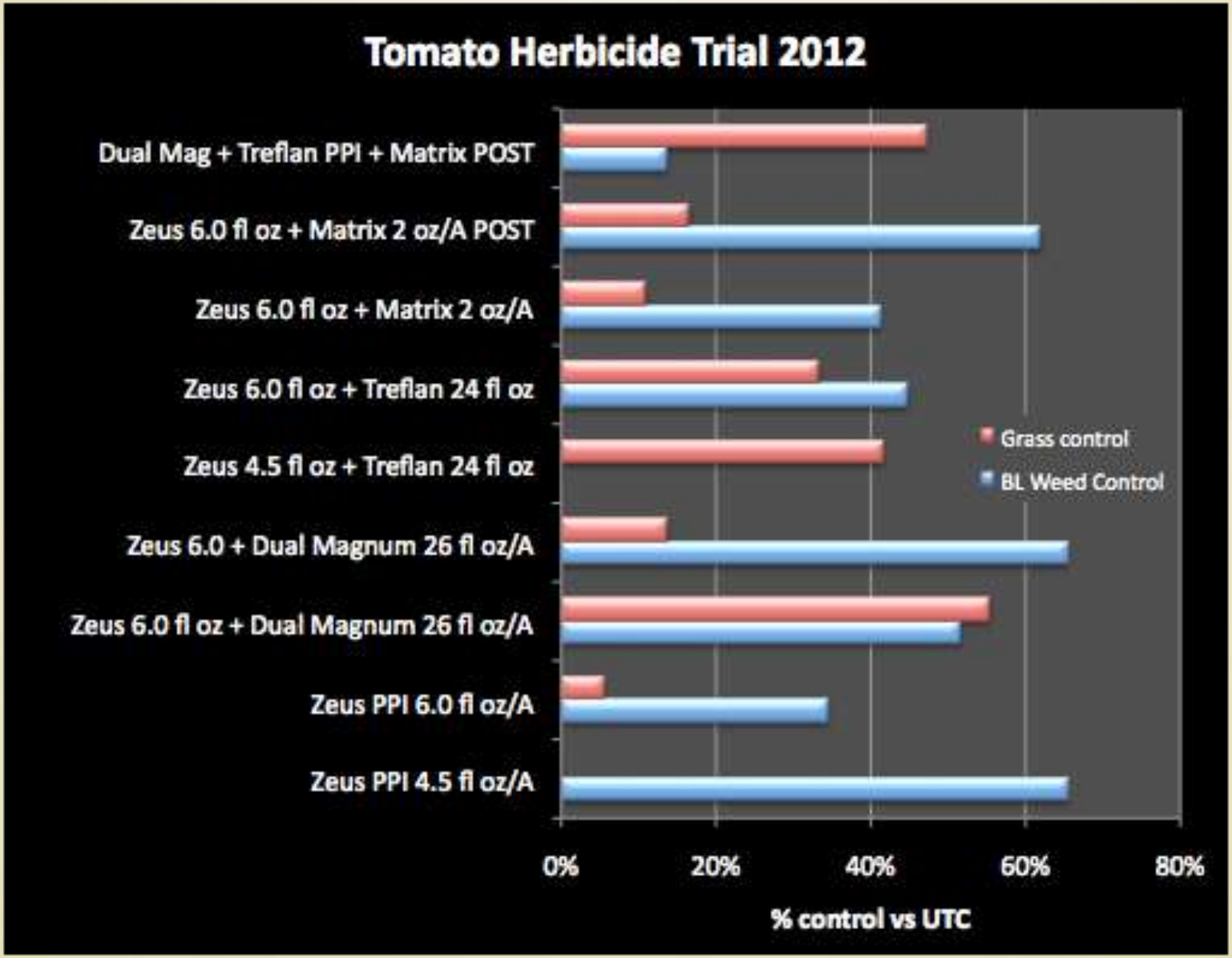
Rotation Crop	Interval (months)
Beans	10
Field corn	anytime
Cotton	10
Wheat	4
Garlic	6
Tomatoes	anytime
melons	12

Where drip irrigated tomatoes are grown, rotate only to tomatoes, potatoes, or corn as crop injury may result.

Factors affecting herbicide efficacy

- Application timing relative to growth of weeds/crop.
- Soil type.
- Moisture stress and overall vigor.
- Air and soil temp.
- Herbicide rate, adjuvants, and calibration.

An excellent method to incorporate herbicides
…. that's going away.


Tomato Herbicide Trial 2012
Dual Mag + Treflan PPI + Matrix POST
Zeus 6.0 fl oz + Matrix 2 oz/A POST
Zeus 6.0 fl oz + Matrix 2 oz/A
Zeus 6.0 fl oz + Treflan 24 fl oz
Zeus 4.5 fl oz + Treflan 24 fl oz
Zeus 6.0 + Dual Magnum 26 fl oz/A
Zeus 6.0 fl oz + Dual Magnum 26 fl oz/A
Zeus PPI 6.0 fl oz/A
Zeus PPI 4.5 fl oz/A
Grass control
BL Weed Control
0%
20%
40%
60%
80%
% control vs UTC

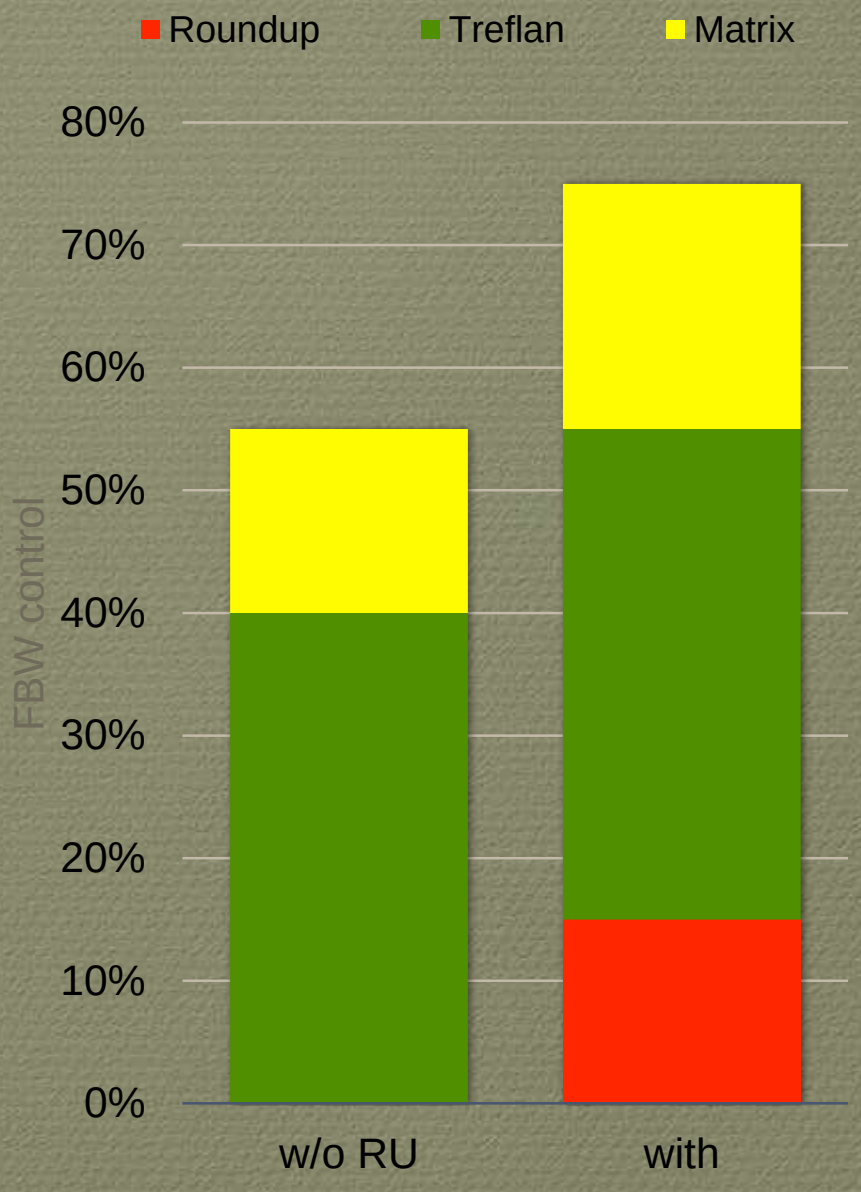
2012. No incorporation for 5 days after application.

out-of-crop herbicides

- Pre-plant applications of glyphosate, paraquat, carfentrazone, 2,4-D, etc., to burn down emerged weeds.
- Post crop glyphosate to weeds when at flowering stage in the fall.
- Rotation with other crops, especially Roundup Ready.
- Cultivation.

moving past 40%

Lynn Sosnoskie, UCD

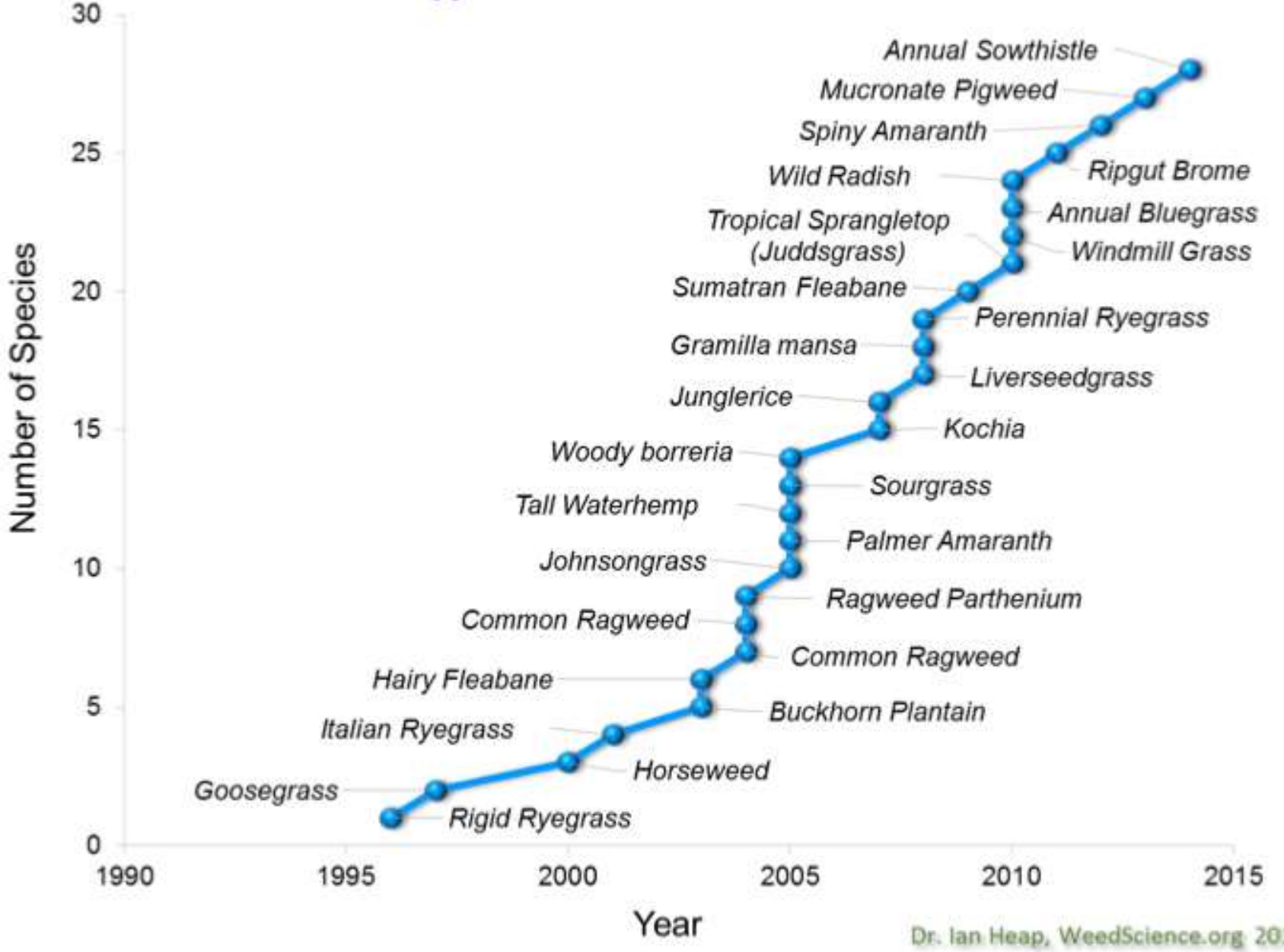



glyphosate - Roundup

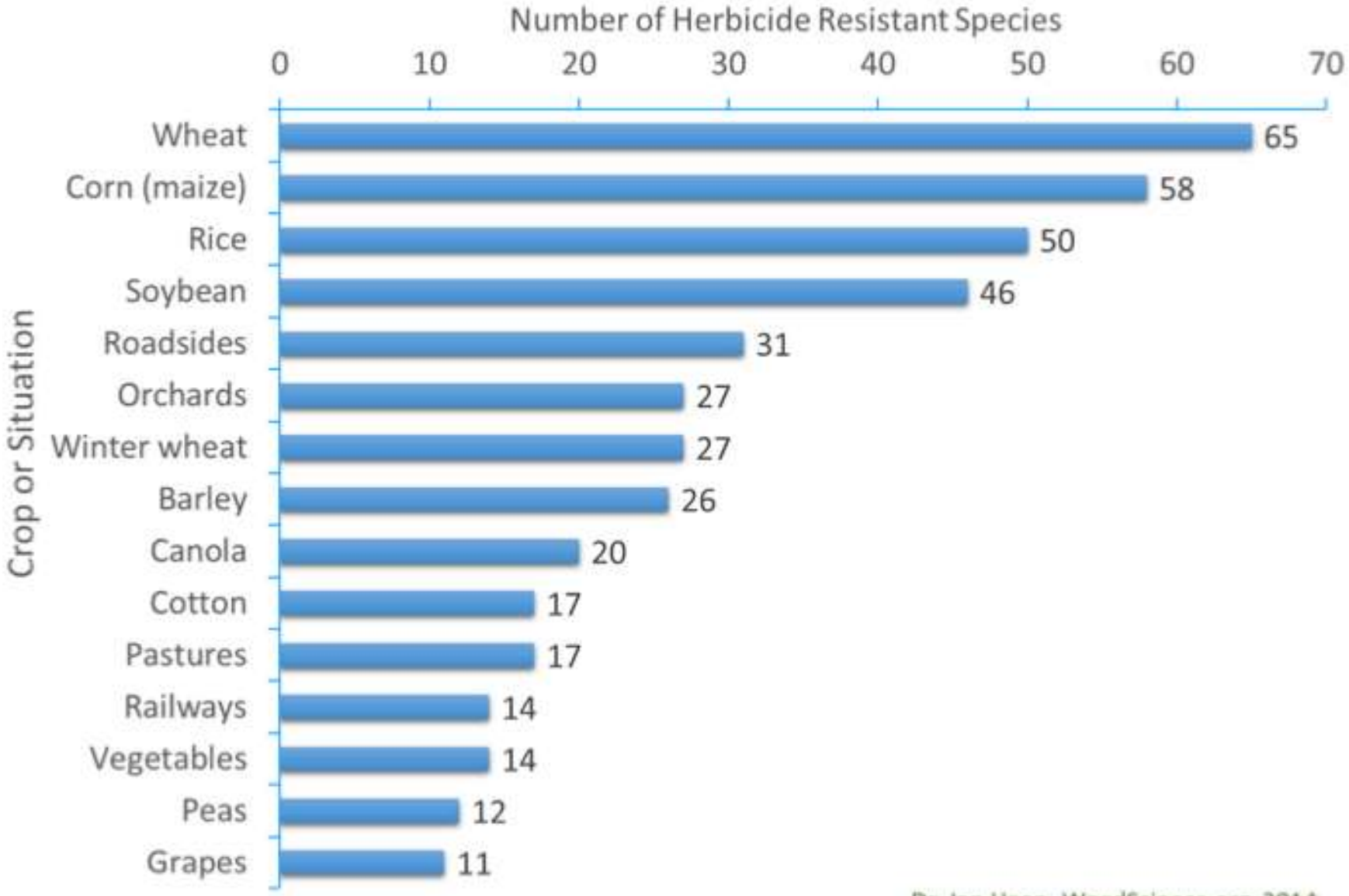
Herbicide-Resistant Weeds

- Serious problem of rice for ~20 yrs (11 spp)
- Becoming an important concern in other cropping systems (roadsides, ditch banks, trees & vines)
- Glyphosate resistance (5 species confirmed, others under investigation)
- Concerns about multiple-resistance and non-target site resistance
  - *Tolerance to other non-herbicidal stresses?*

Increase in Glyphosate-Resistant Weeds Worldwide



Number of Herbicide-Resistant Weed Species by Crop



Dr. Ian Heap, WeedScience.org 2014

Summary

New a.i.s for tomatoes move slowly. Mixed herbicide programs combined with good cultural management can be an effective method of weed control.

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