Soybean Weed Control for New Agents

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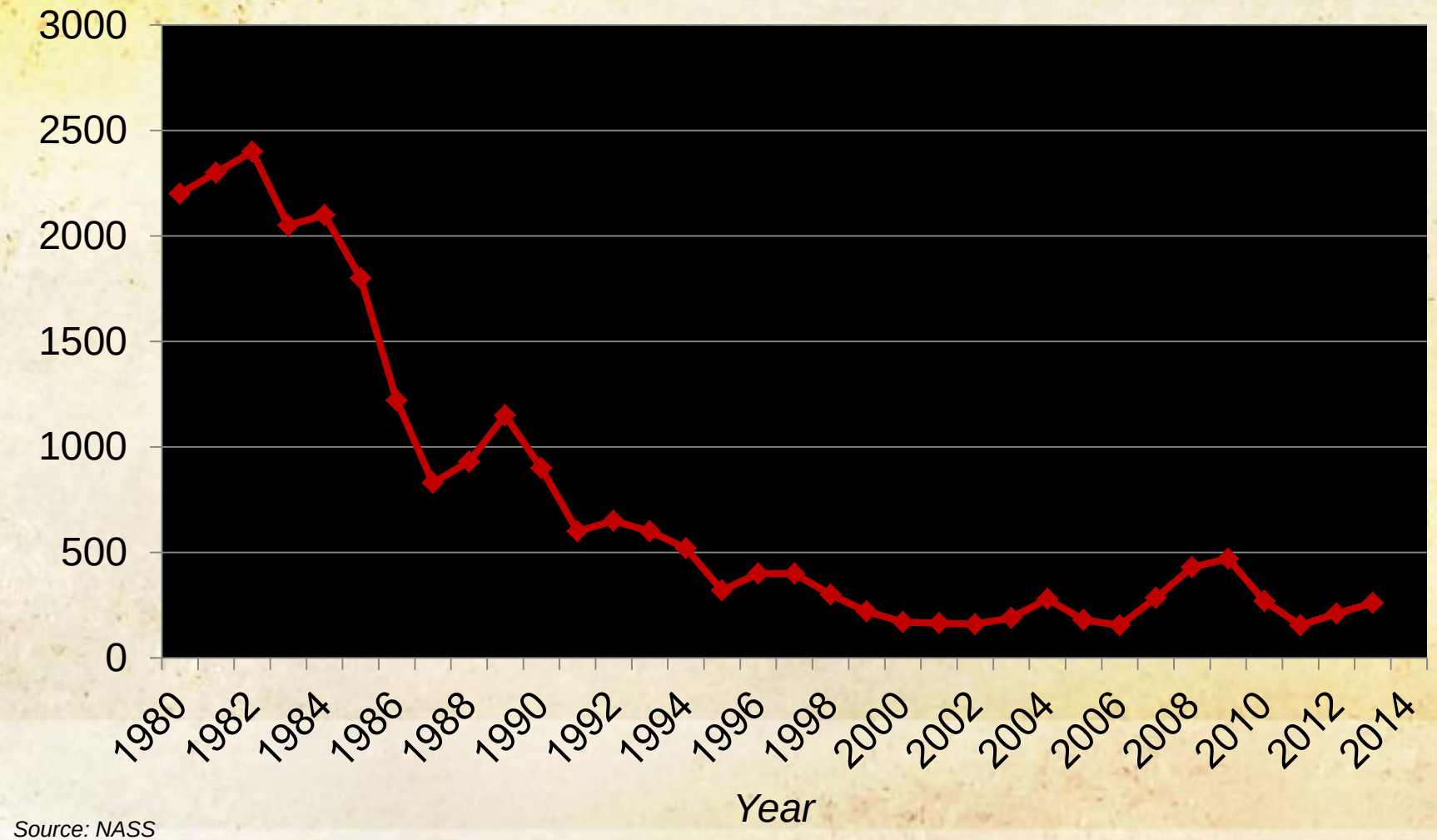
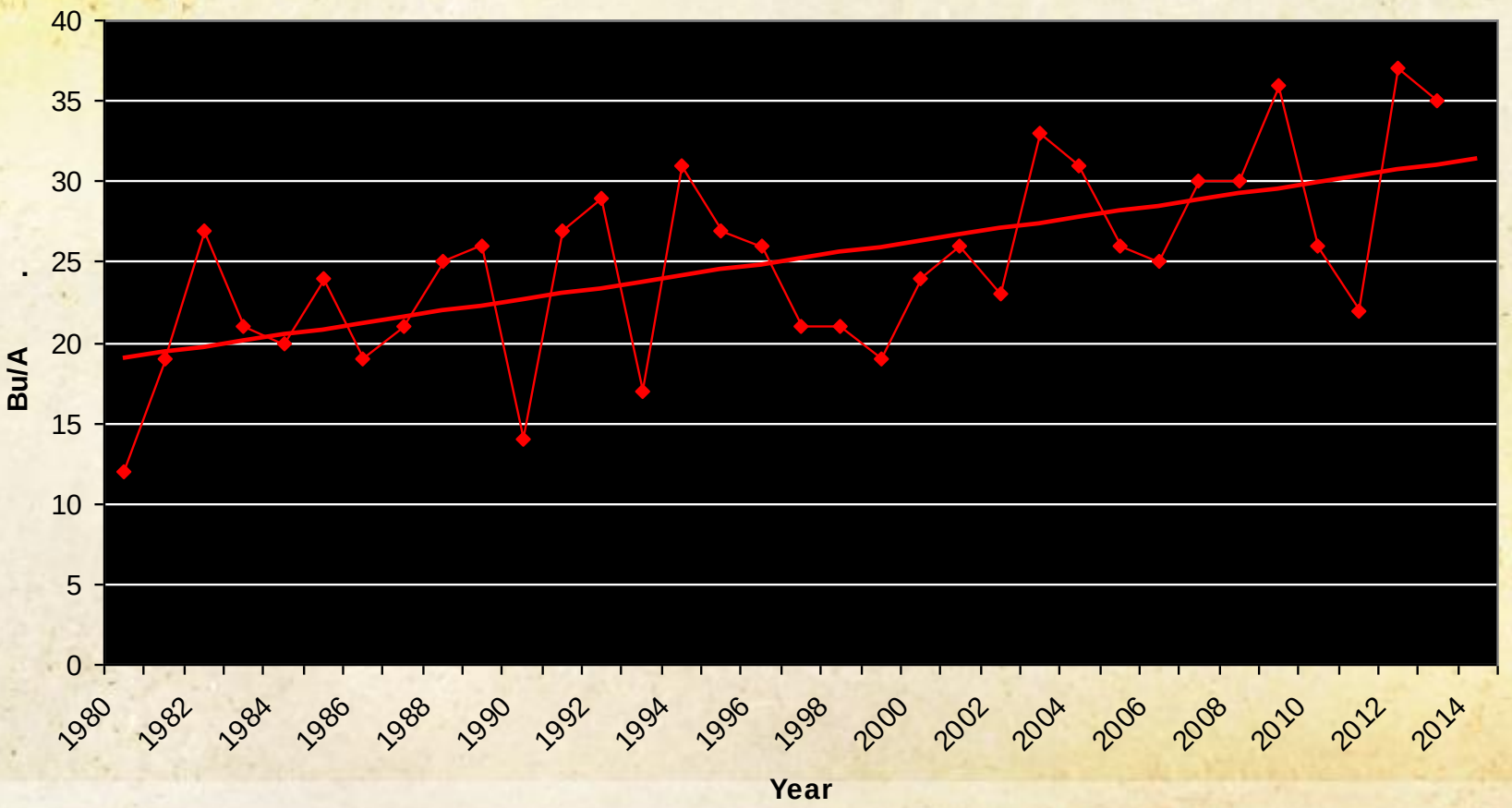
Georgia Soybean Acres
Planted (X 1000)



Source: NASS

Soybean Production In Georgia

Yield (Bu/A)



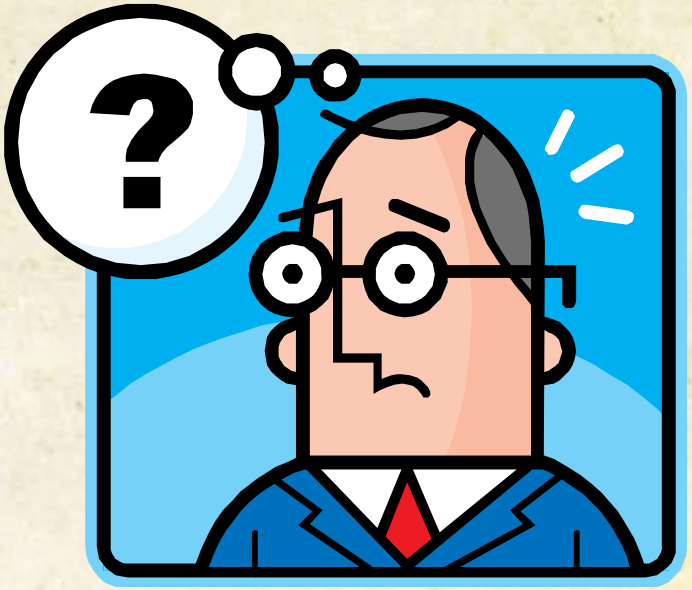
Source: NASS

Soybean Weed Control

Integrated Program Approach

Question?

- What is 1 practice that all GA soybean growers could do and immediately help improve weed control and increase yields?



Row Spacing Effects on Soybean Yield In Georgia

- Carter and Boerma, 1979 (Athens, GA)
  - 38” to 19” = **11% yield increase**
- Parker et al., 1981 (Tifton, GA)
  - 36” to 18” = **4% increase**
- Boerma and Ashley, 1982 (Plains, GA)
  - 36” to 20” = **17% yield increase**
- Ethredge et al., 1989 (Plains, GA)
  - 30” to 20” = **8% yield increase**
  - 30” to 10” = **11% yield increase**
  - 20” to 10” = **3% yield increase**
- Woodruff, 2007-2008 (Camilla, GA)
  - 36” to 24” = **8% yield increase**

“A review of row spacing experiments in which an initial weed management practice had been accomplished revealed that in 64% of the cases (72 of 113 site-years), less late-season weed density and/or biomass, or greater late-season weed control, was achieved in narrow- compared to wide-row soybean production systems.”

Bradley, K. W. 2006. A review of the effects of row spacing on weed management in corn and soybean. Online. Crop Management doi:10.1094/CM-2006-0227-02-RV.

What did we do before RR soybeans?

- Prowl, Treflan, Canopy, Sencor/Lexone, Lorox, Pursuit, Scepter, Gemini, Cobra, Blazer
- Sicklepod was a major problem
- 2,4-DB @ 2 oz/A with POST treatments

Metribuzin on soybean
Sencor/Lexone

- Not a PPO (Valor or Reflex)
- triazine
- Good on pigweed and sicklepod
- Can be applied PPI
  - Dryland fields?
- Issues
  - *soil texture, OM, pH*
  - *Varieties*
  - *Rotations*
  - *Company support*
  - *Lack of incentive at dealer level*

Syngenta Boundary 6.5 EC

AUTHORITY MTZ

DuPont™ Canopy® herbicide

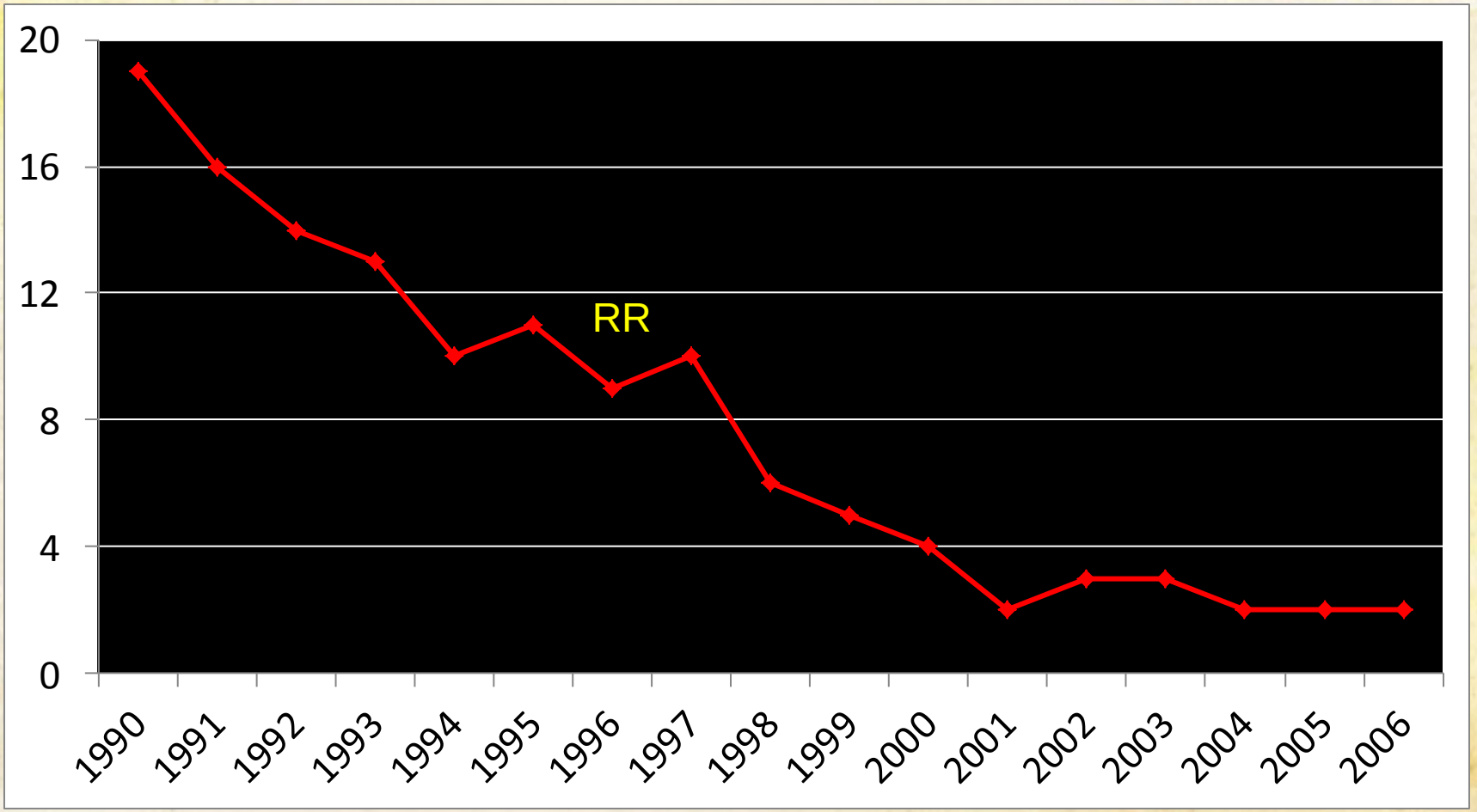
TriCor 75DF

Metribuzin 75DF

Loveland Products INTIMIDATOR™

Metribuzin Use (%) – US Soybeans (NASS)

Commercial Sale of Sencor began in 1973

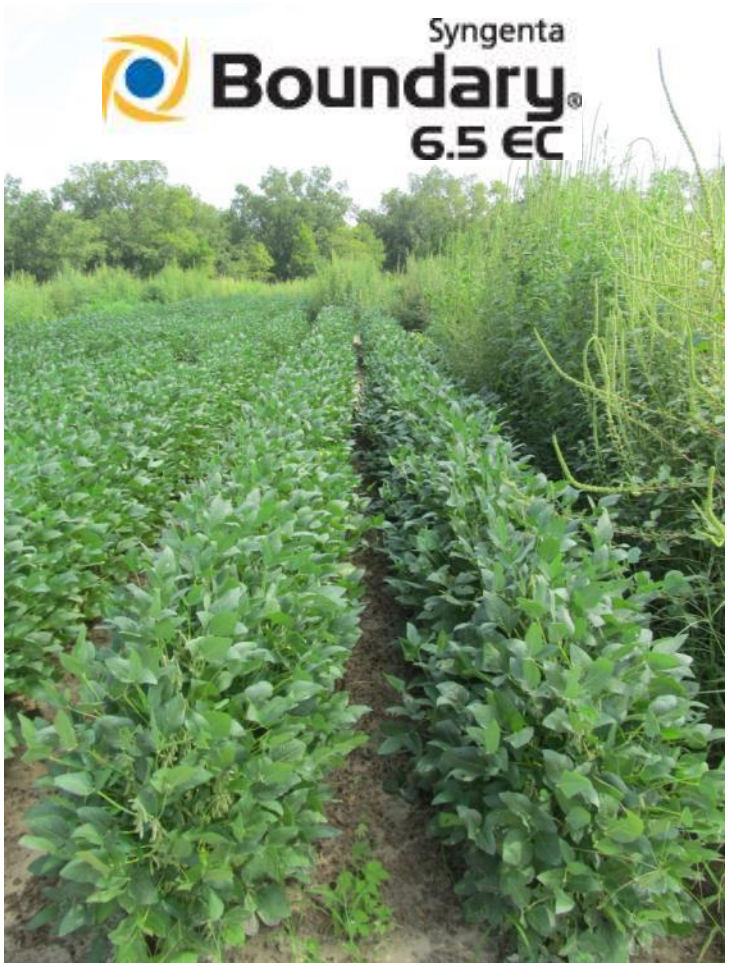


Command – 1985, Scepter - 1986, Pursuit - 1989

Metribuzin Injury

Palmer Amaranth Control in Soybeans with Metribuzin -2012

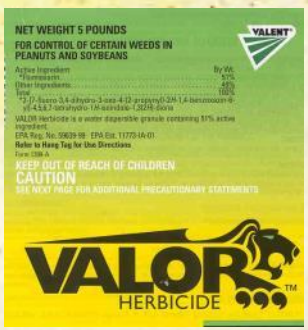
NTC



Boundary 6.5EC @ 1.5 pt/A - PRE
Roundup WM 5.5SL @ 22 oz/A – POST (June 20)

SB-10-12
August 9
78 DAP

Residuals, Residuals, Residuals
Keep Using Them!!!!!!!!



Syngenta Reflex®

Syngenta Boundary® 6.5 EC

Envive®

DuPont™ Canopy® herbicide

TriCor 75DF

FIERCE HERBICIDE

AUTHORITY MTZ HERBICIDE

DualMagnum®

VALOR XLT SOYBEAN HERBICIDE

Zidua® HERBICIDE

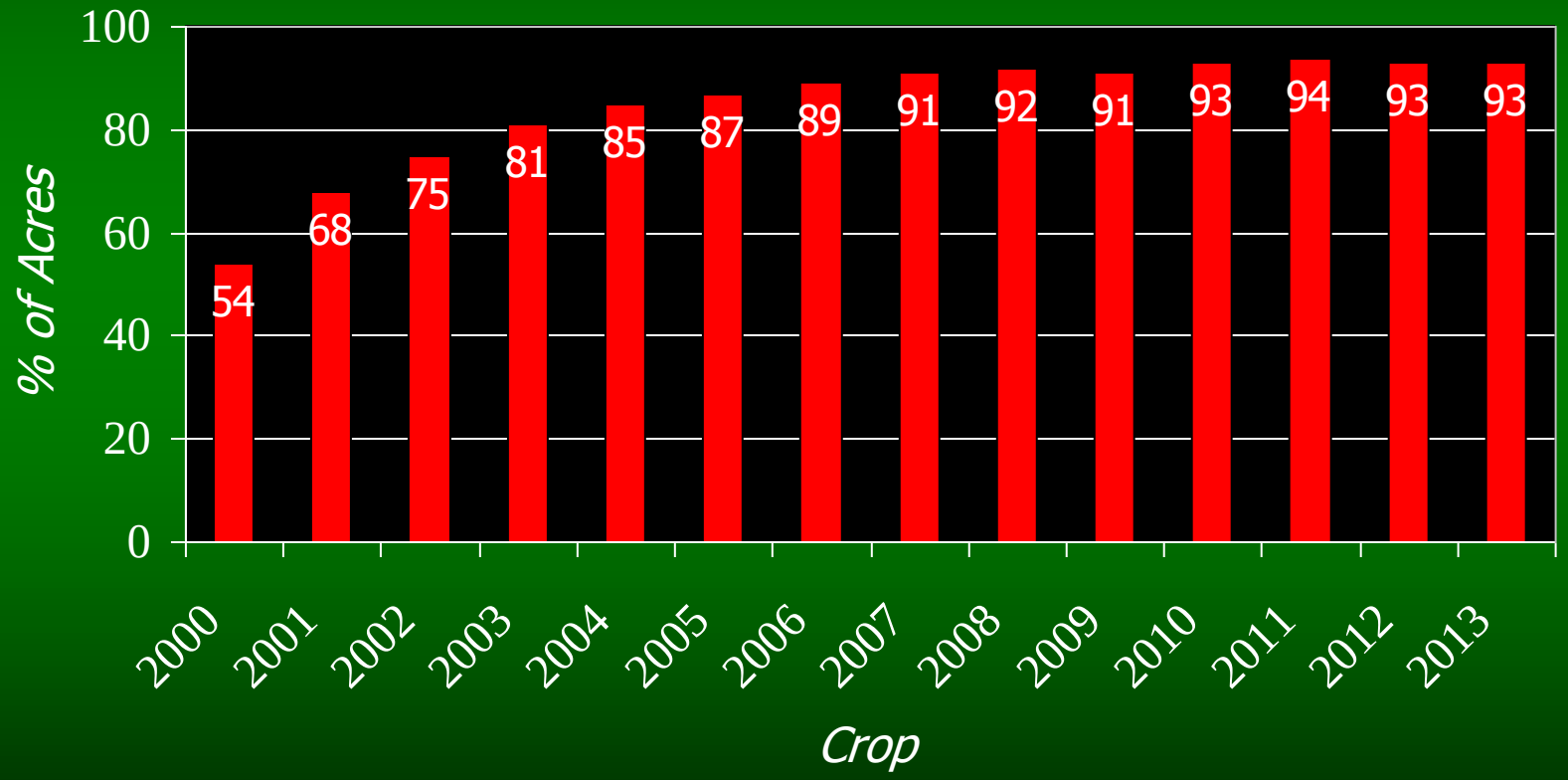
WARRANT™ HERBICIDE

PROWL® H2O herbicide

Syngenta Prefix™

Outlook® Herbicide

U.S. Soybean Acres Planted to Herbicide Resistant Varieties



Source: NASS

Herbicide Use in U.S. Soybeans - 2012

Table 2. Top Herbicides Applied to Soybean Planted Acres, 2012

Active Ingredient	% of Planted Acres	Crop Year* Average Rate (lbs/acre)	Total Applied (lbs)
Glyphosate potassium salt	59	1.628	70,826,000
Glyphosate isopropylamine salt	30	1.330	29,550,000
Chlorimuron-ethyl	11	0.023	187,000
2,4-D, 2-EHE	11	0.519	4,098,000
Flumioxazin	11	0.076	602,000

** The period starting immediately after harvest of the previous year's crop and ending at harvest of the current year's crop.*

Source: NASS

Weed Control in RR Soybeans

Prostko's Picks

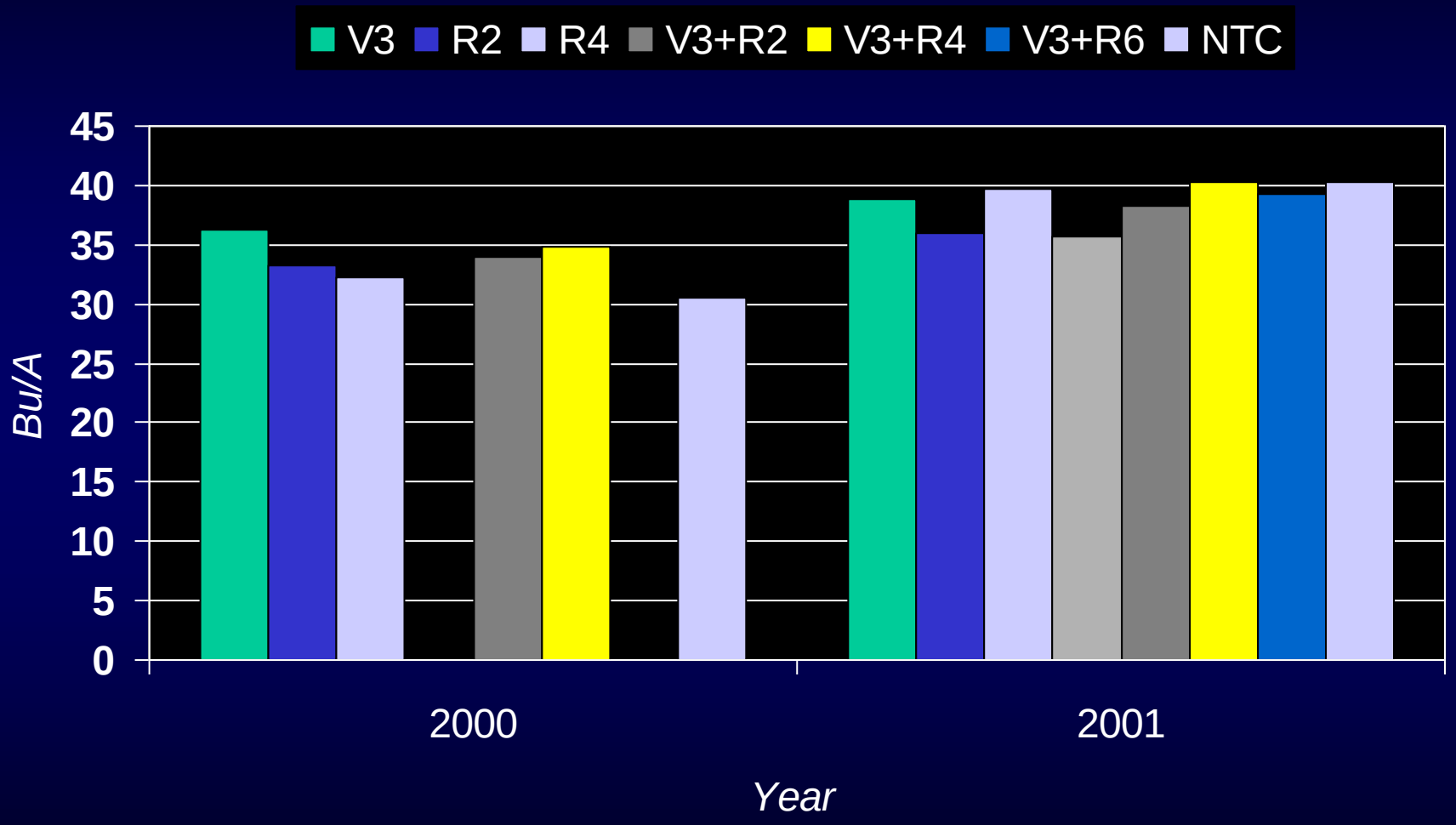
- Tricor, or Boundary (Tricor + Dual), or Warrant, or Dual (PRE) fb glyphosate + Reflex (POST)
  - *Avoid Reflex mixtures with K-salt glyphosate formulations if possible*
- Annual morningglory problems
  - *Glyphosate + Classic or FirstRate*

What about delayed applications of glyphosate on RR soybeans?

- Current labels only allow application thru flowering stage of growth (R2 – full bloom – open flower at two uppermost nodes).

- What happens if applied later?

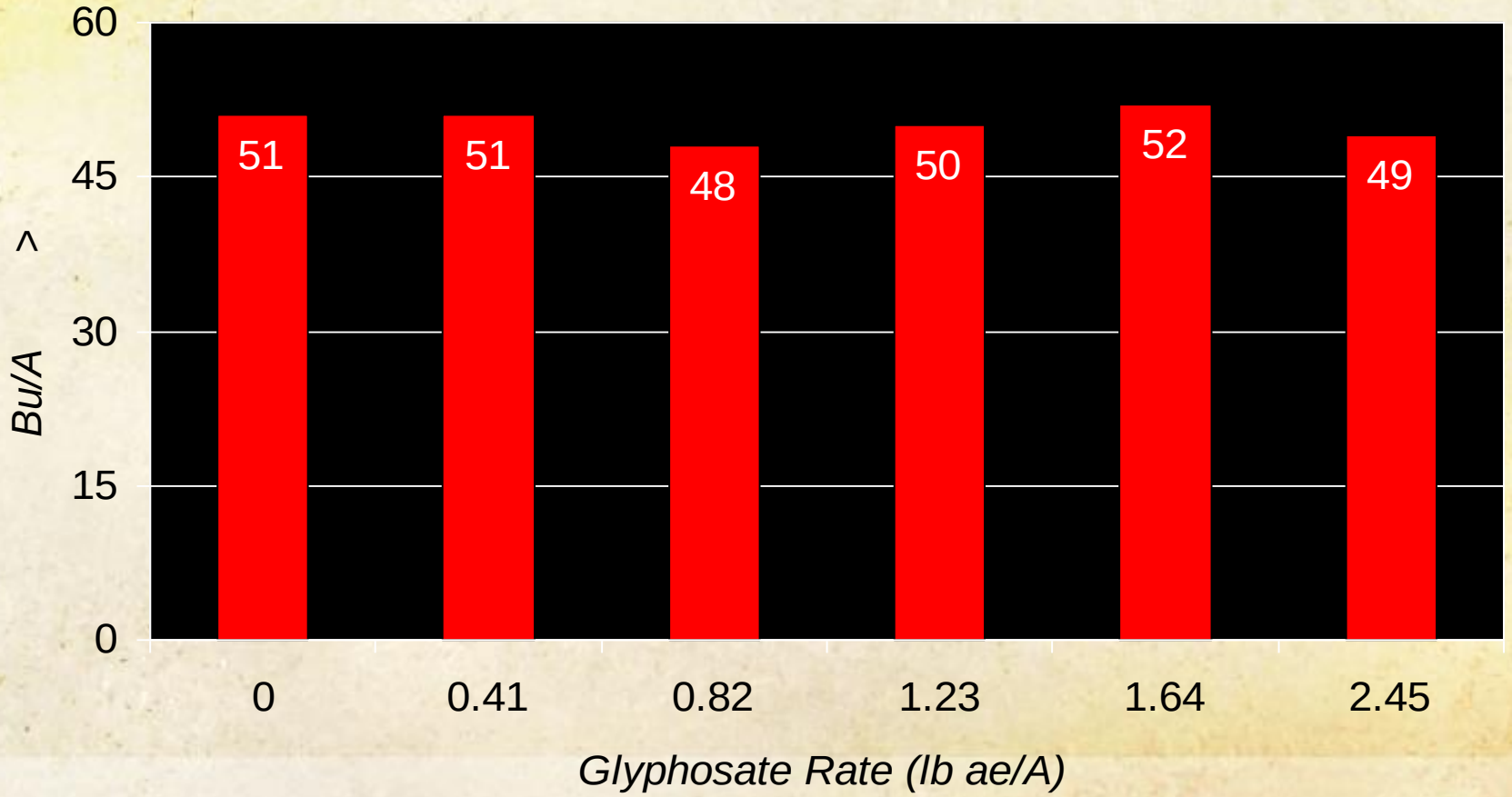
Tolerance of GR-Soybean to Late-Season Glyphosate Applications (1.5 lb ai/A)



J.K. Norsworthy. 2004. Weed Technology 18:454-457

LSD 0.05 = NS

Soybean Yield As Influenced by Glyphosate Applied at R4 (Full Pod) + R6 (Full Seed) Stages



Source: Miller et al., 2008. Weed Technology 22:359-362

THSD 0.05 = NS

Glyphosate Yellow Flash

Likely Cause of Glyphosate Yellow Flash

- Degradation of glyphosate to AMPA
- AMPA reduces chlorophyll content in soybean

AMPA = aminomethylphosphonic Acid

Recent Research on Glyphosate and Mineral Accumulation

- "Glyphosate is **unlikely** to cause macro and micronutrient deficiencies in soybean if soil nutrient levels are properly maintained."
  - Henry, R.S, K.A. Wise, and W.G. Johnson. 2011. Glyphosate's effect upon mineral accumulation in soybean. Online. Crop Management doi:10.1094/CM-2011-1024-01-RS.

- "Considering the available data, growers are unlikely to need Mn fertilizers just because they use glyphosate on GR soybeans."
  - Duke, S.O., J. Lydon, W.C. Koskinen, T.B., Moorman, R.L. Chaney, and R. Hammerschmid. 2012. Glyphosate Effects on Plant Mineral Nutrition, Crop Rhizosphere, Microbiota, and Plant Disease in Glyphosate-Resistant Crops. J. Agric. Food Chem. 60:10375−10397

Liberty-Link® Soybeans

LIBERTYLINK®

- Liberty 2.34SL @ 22-36 oz/A
- VE-R1
- 2 applications (65 oz/A/year total)
- Tank-mixes with POST grass herbicides may reduce grass control
  - *Assure (10-21%); Fusilade (8-12%); Poast (25-41%); Select (4-22%)*
- Residuals still needed
- Variety performance?
  - Getting better
- **<u>**Best Results</u>**
  - ***<u>15 GPA, medium droplet size, small weeds, 9 am - 6 pm</u>***

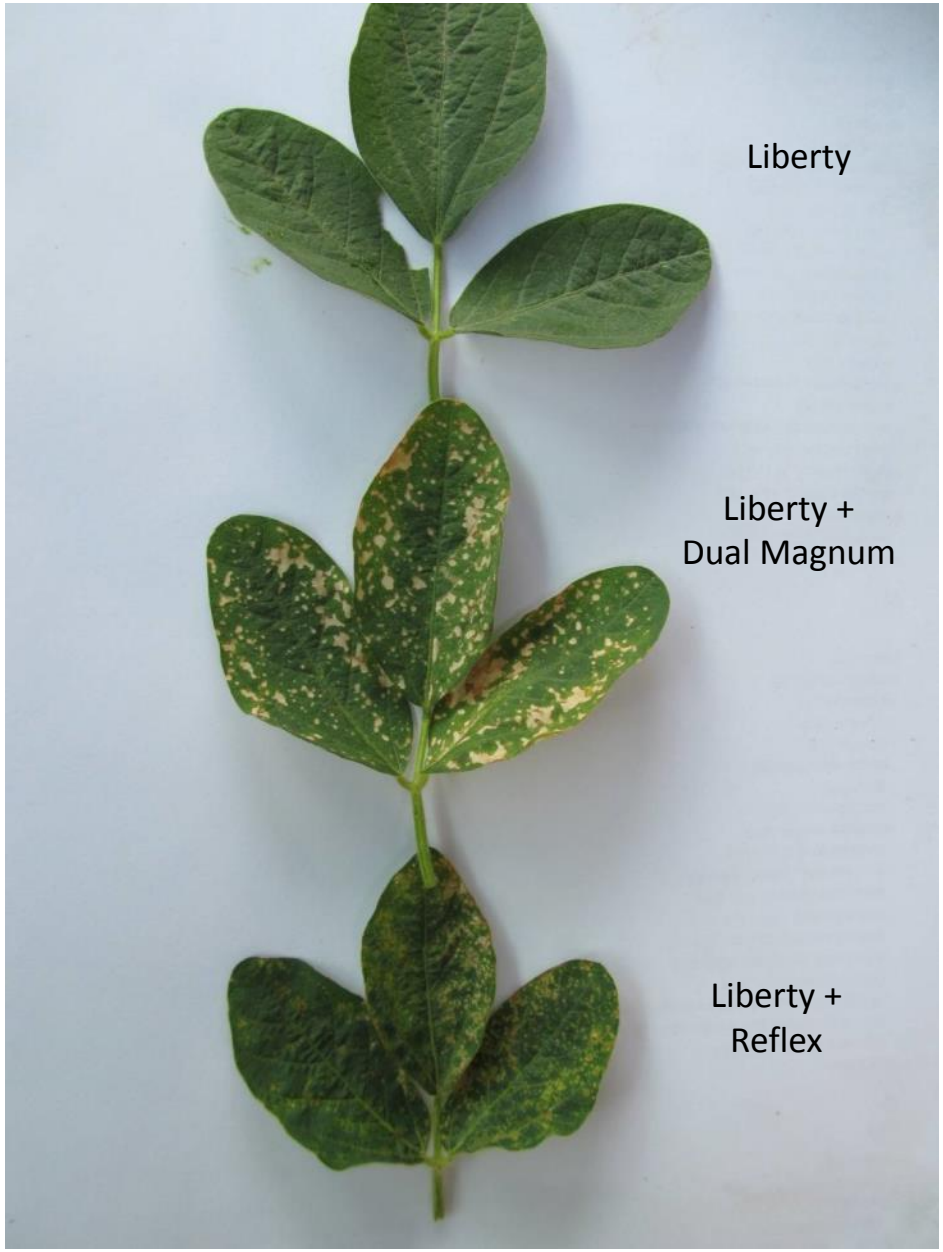
Weed Control in LL Soybeans - 2013

NTC

Dual Magnum @ 16 oz/A (PRE)
Liberty @ 29 oz/A (MPOST)
Reflex @ 16 oz/A (MPOST)

SB-23-13
July 17

Liberty-Link
Soybeans



SB-04-11
6 dat

Older PPO Herbicides Will Burn Soybeans (Reflex, Cobra, Blazer)

Future Technologies

- 2,4-D resistance
- Dicamba resistance

Growth Regulator Injury

2,4-D Tolerance Gene

- DowAgrosciences
- aad-1 gene
- Soil bacteria
  - *Sphingobium herbicidovorans*

Dicamba Tolerance Gene

- Identified at University of Nebraska-Lincoln in 2007
- Soil bacteria capable of utilizing dicamba as a carbon source (i.e. food)
  - *Pseudomonas maltophilia*

QUESTIONS?