

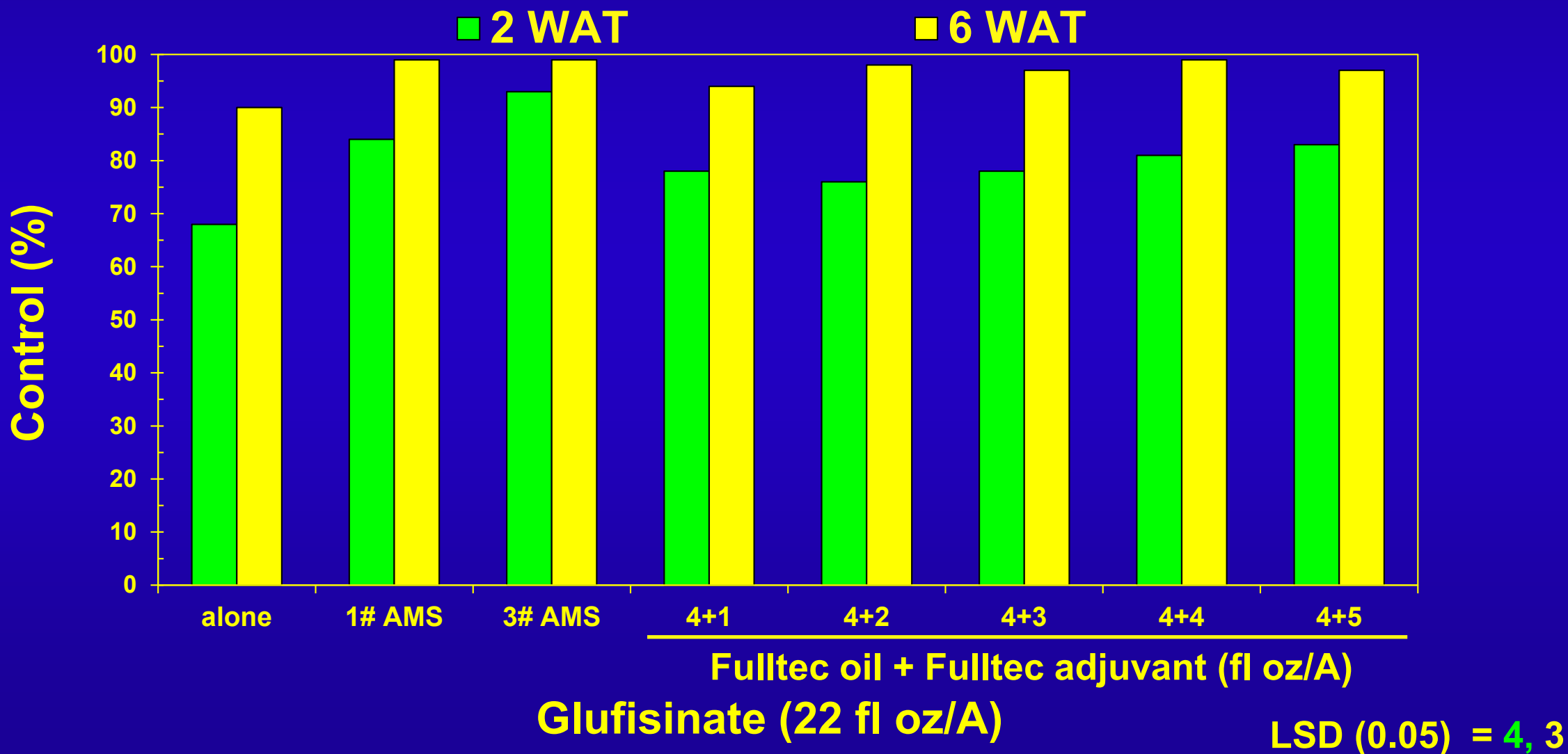
# Weed Control in Small Grains and Oilseed Crops

Kirk Howatt  
Joe Mettler  
Jace Heiman  
Ethan Mewes

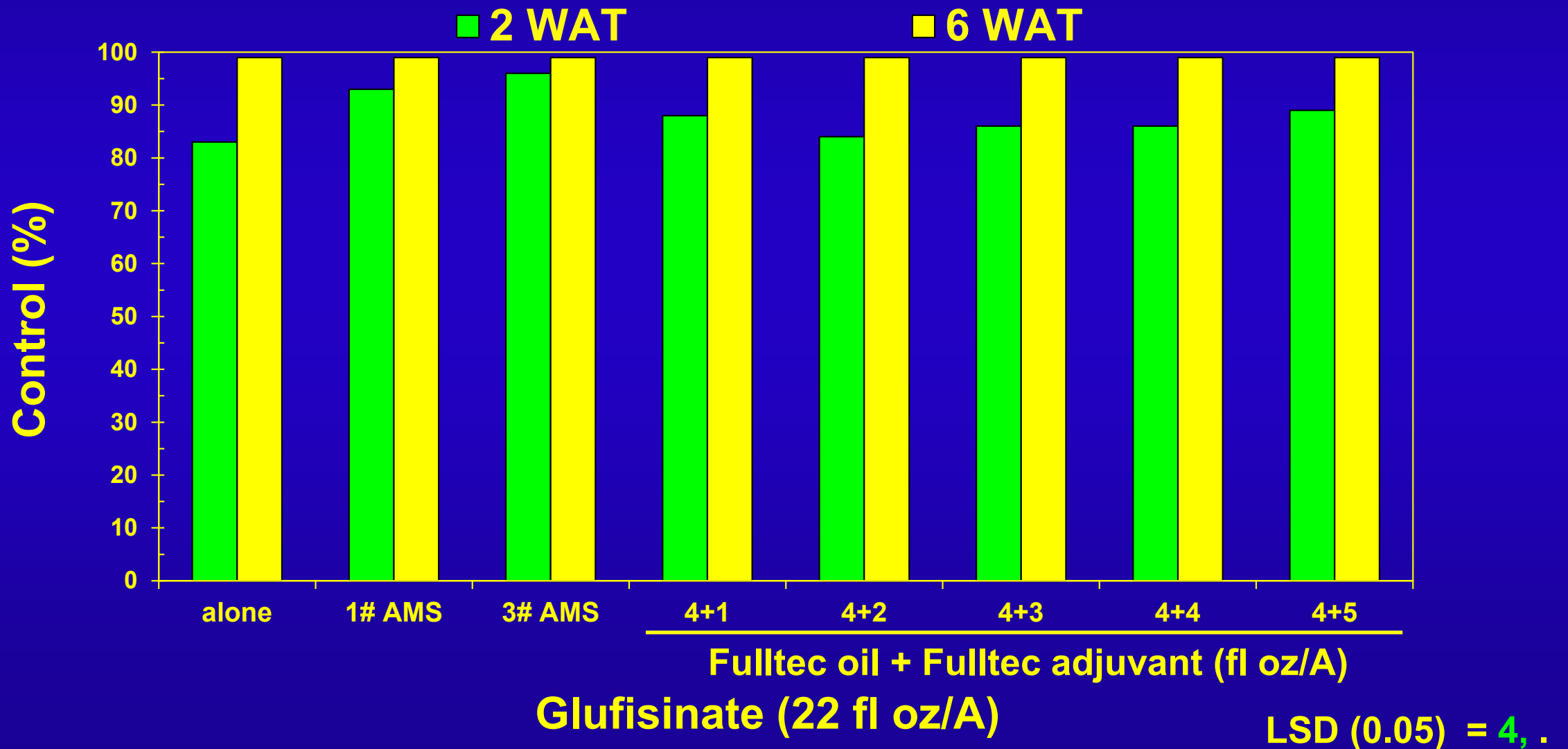


Photo by Dr. Quincy Law

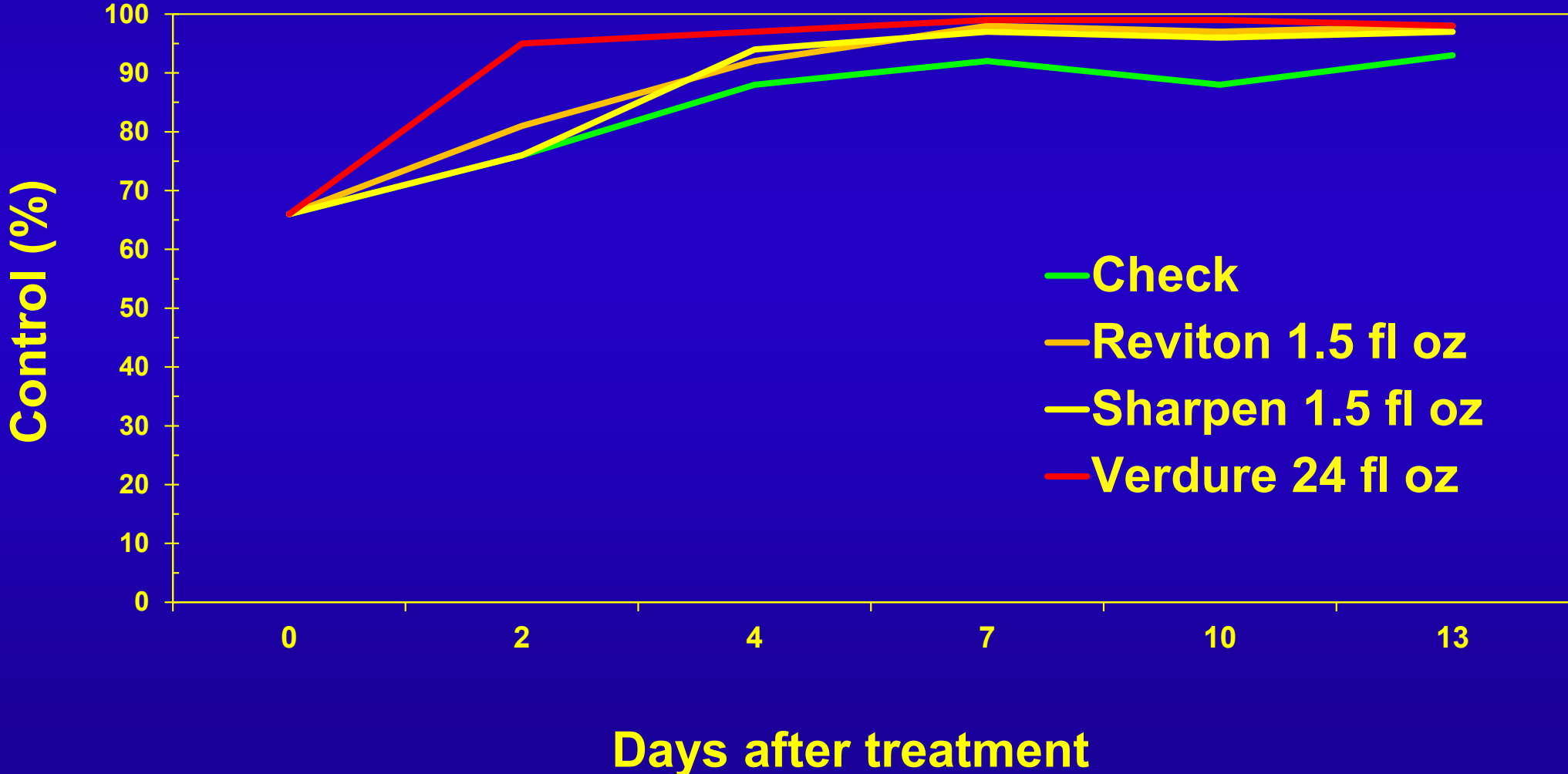
# Glufosinate Control of Lambsquarters in Canola



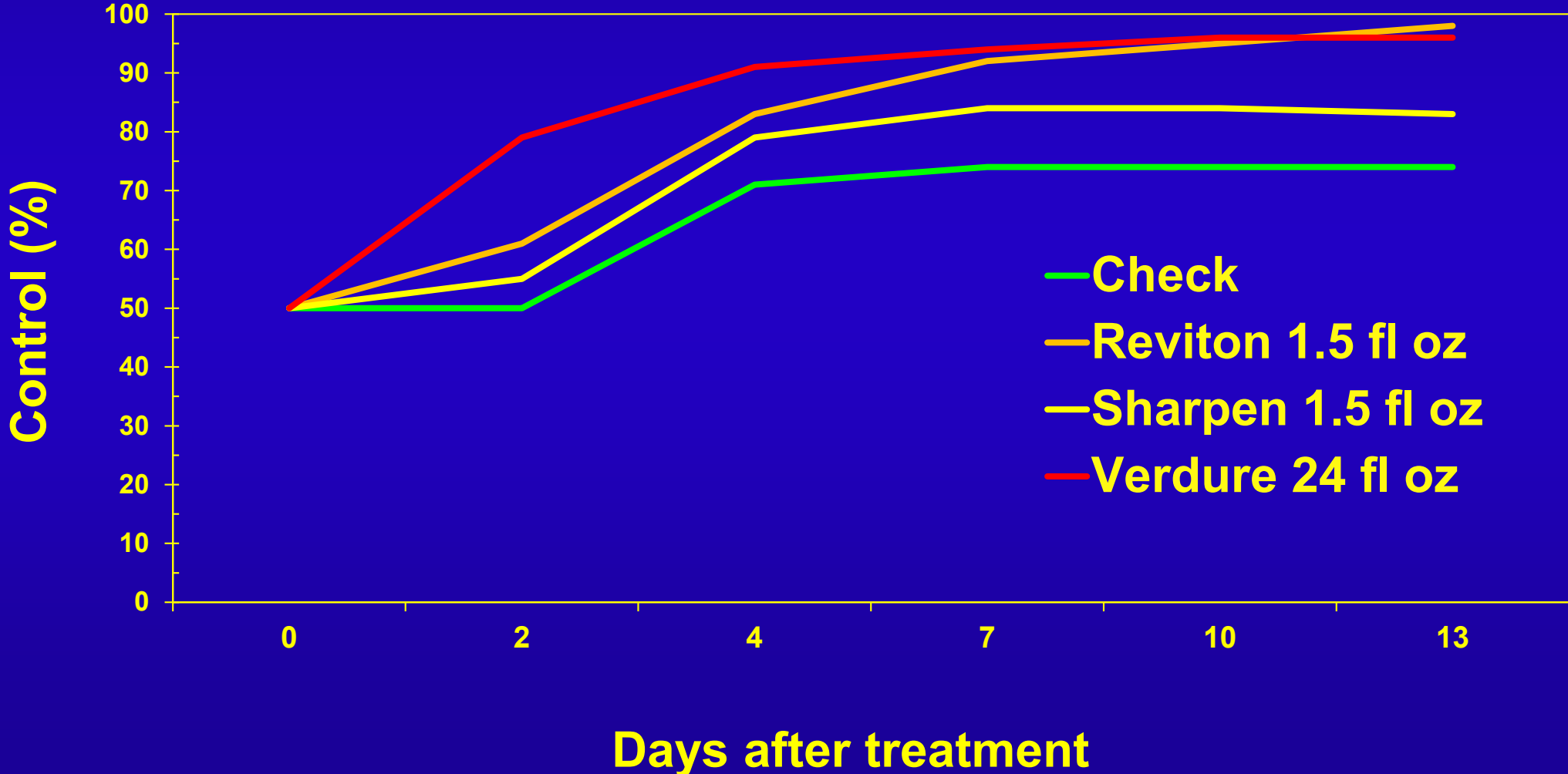
# Glufosinate Control of Common Mallow in Canola



# Desiccation of Canola Pods Preharvest



# Desiccation of Canola Stems Preharvest



# Kochia Control with Combinations of Pre- Emergence Herbicides

Kirk Howatt      Fargo  
Joseph Mettler Fargo  
Brian Jenks      Minot  
Caleb Dalley     Hettinger



# PPO-Resistant Kochia

- 2020-2022 revealed several lack of control sites
- Genetic testing has confirmed broad geographic spread

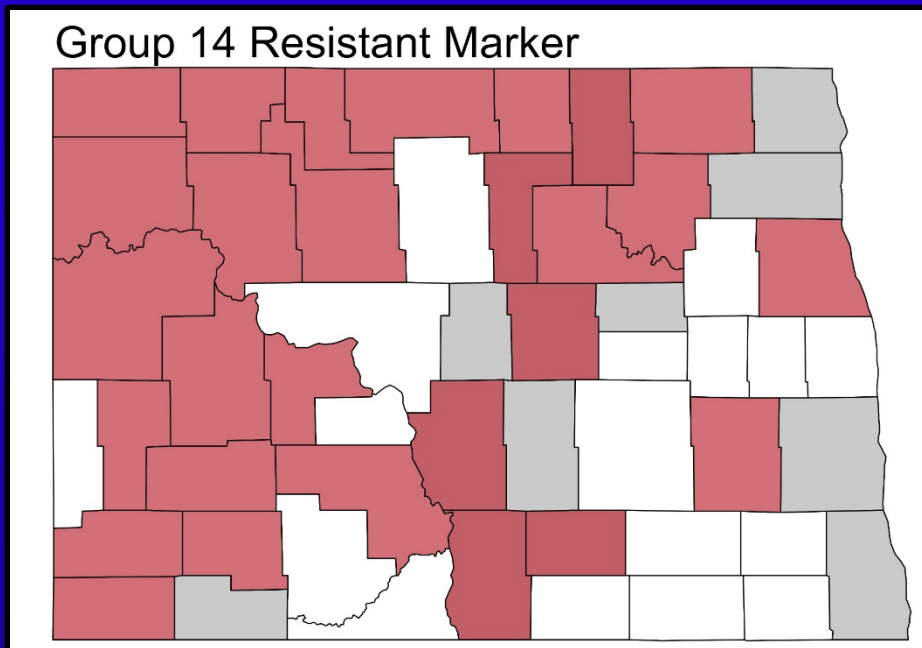


Image from Zack Bateson, National Genotyping Center, Fargo



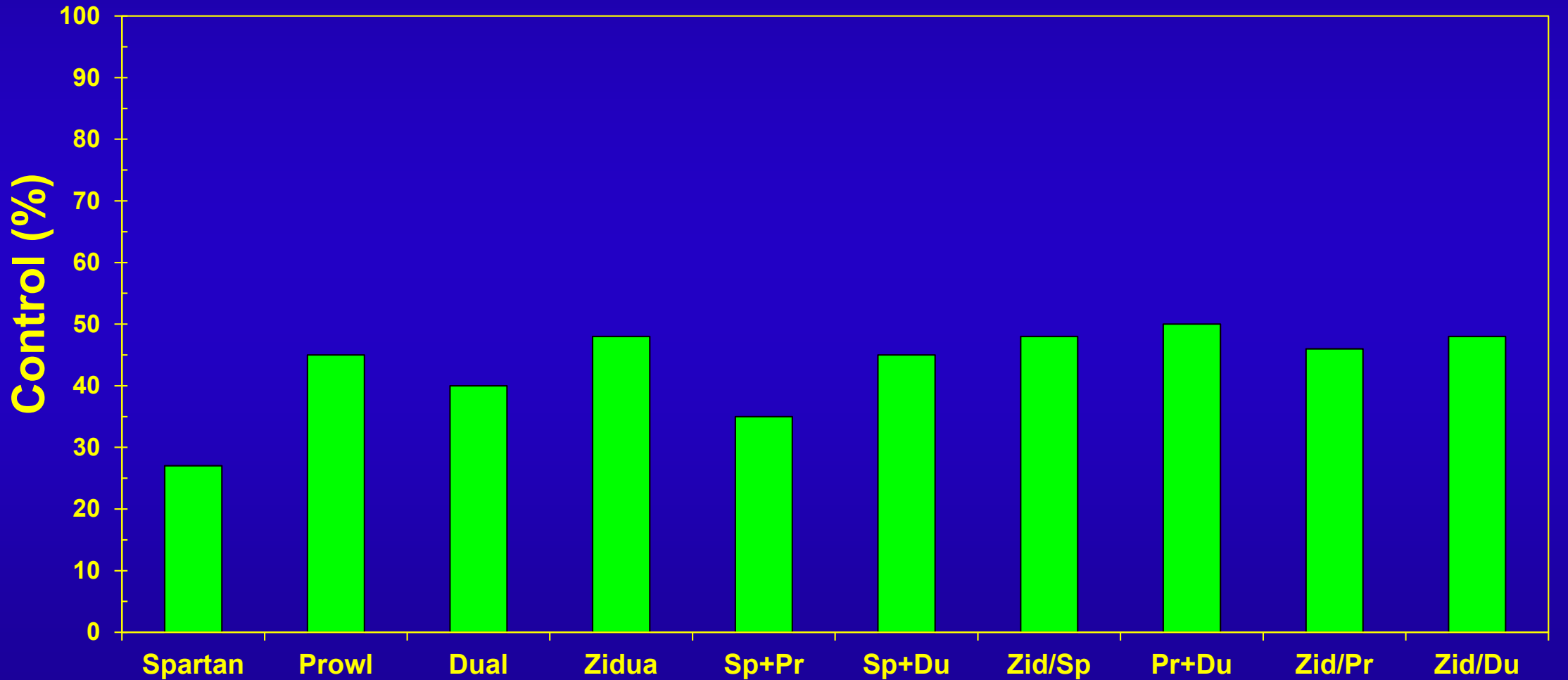
# Application

- **Locations: Ardoch, Hettinger, and Minot**
- **15-20 gpa spray volume**
- **Pre-emergence**
  - **Except for Zidua applied 2 weeks before seeding**
- **Herbicides-single products and pairwise**

|                      |                    |                   |
|----------------------|--------------------|-------------------|
| – <b>Spartan 4F</b>  | <b>6 fl oz/A</b>   | <b>3 oz ai/A</b>  |
| – <b>Prowl H2O</b>   | <b>3 pt/A</b>      | <b>24 oz ai/A</b> |
| – <b>Dual Magnum</b> | <b>2 pt/A</b>      | <b>30 oz ai/A</b> |
| – <b>Zidua SC</b>    | <b>3.8 fl oz/A</b> | <b>2 oz ai/A</b>  |

# Visible Kochia Control 2 WAT

## Ardoch, 35-60 plants per m<sup>2</sup>



LSD (0.05) = ns

# Spartan



# Prowl H2O



# Kochia vigor inhibited by Groups 3 and 15





**Hettinger**



**Spartan**

**Prowl H2O**



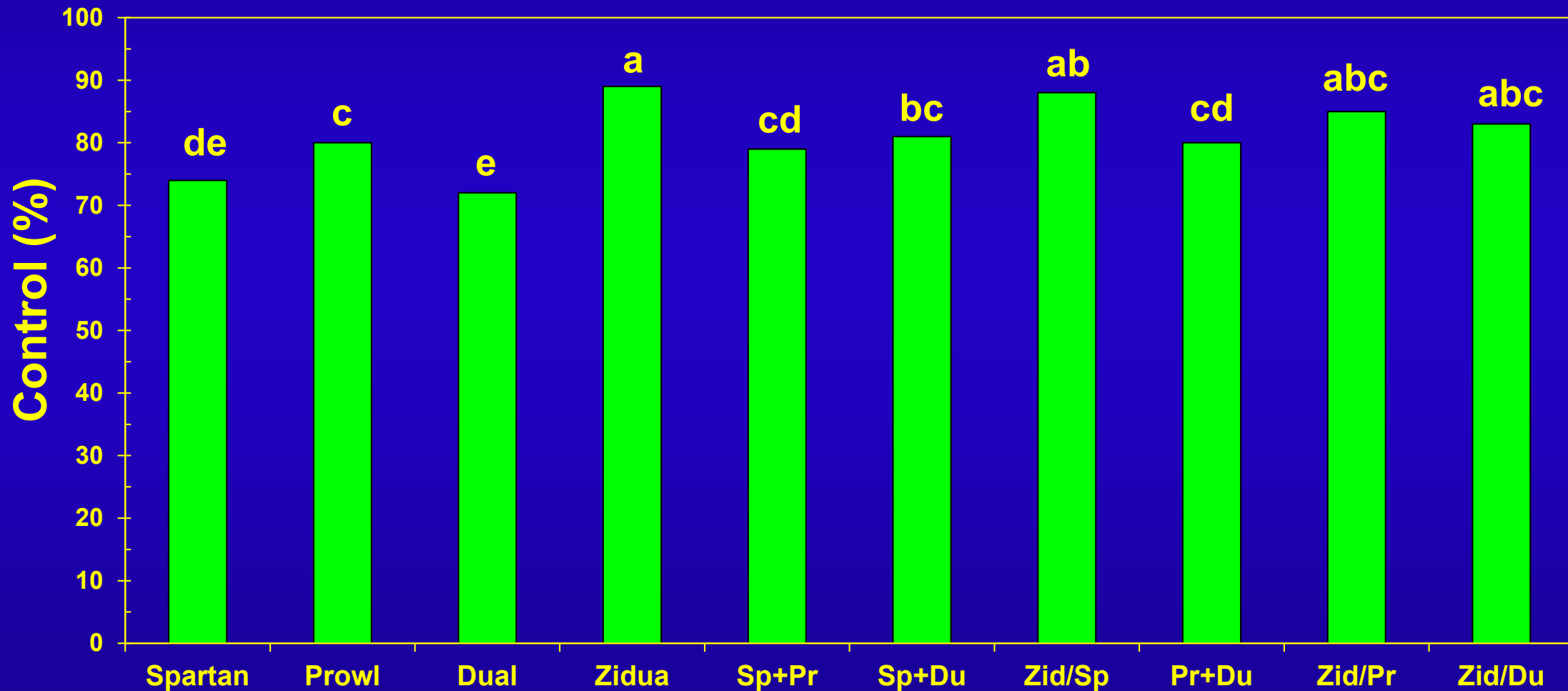
**Zidua SC**



**Dual Magnum**



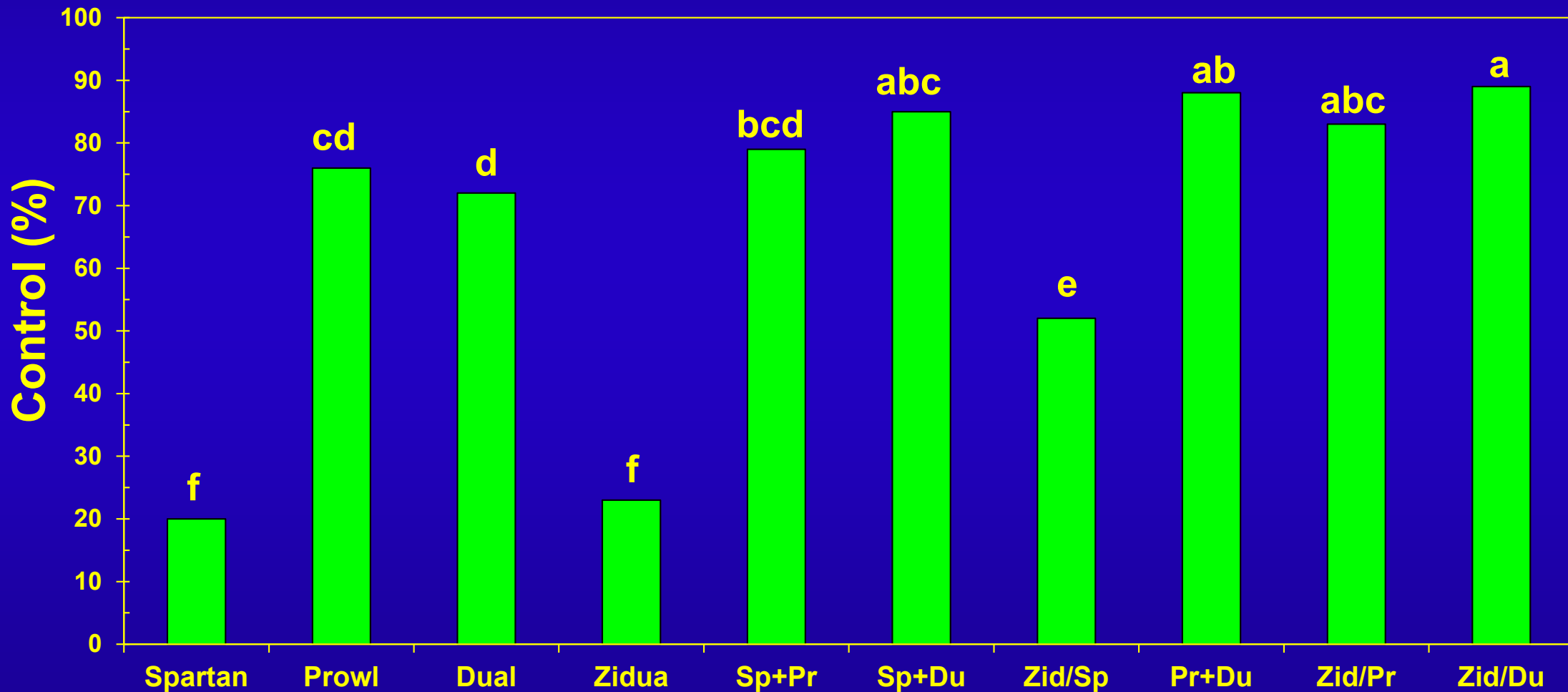
# Visible Kochia Control 6 WAT Hettinger



LSD (0.05) = 7

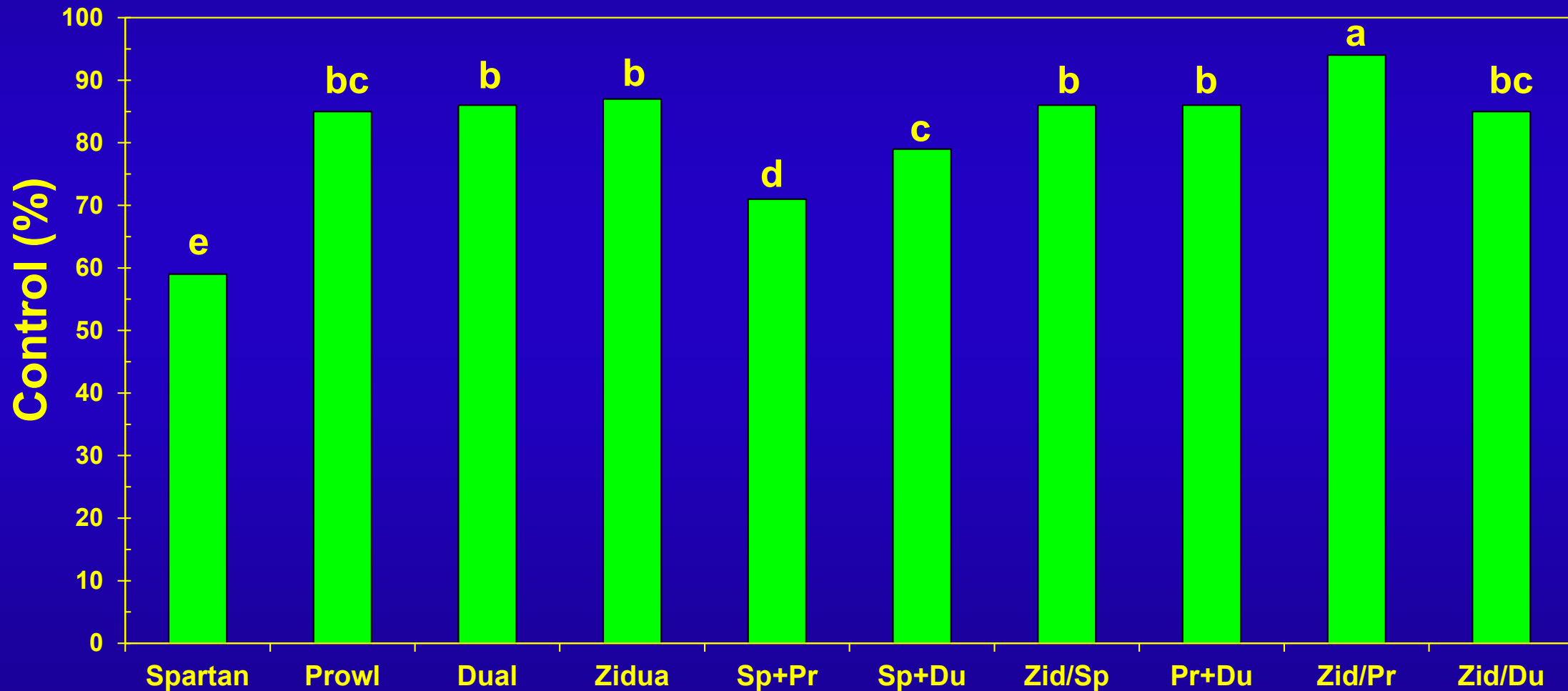
# Visible Green Foxtail Control 6 WAT

## Minot



LSD (0.05) = 9

# Visible Green Foxtail Control 6 WAT Hettinger



Herbicide

LSD (0.10) = 6

# Best Options ≠ 100% Control

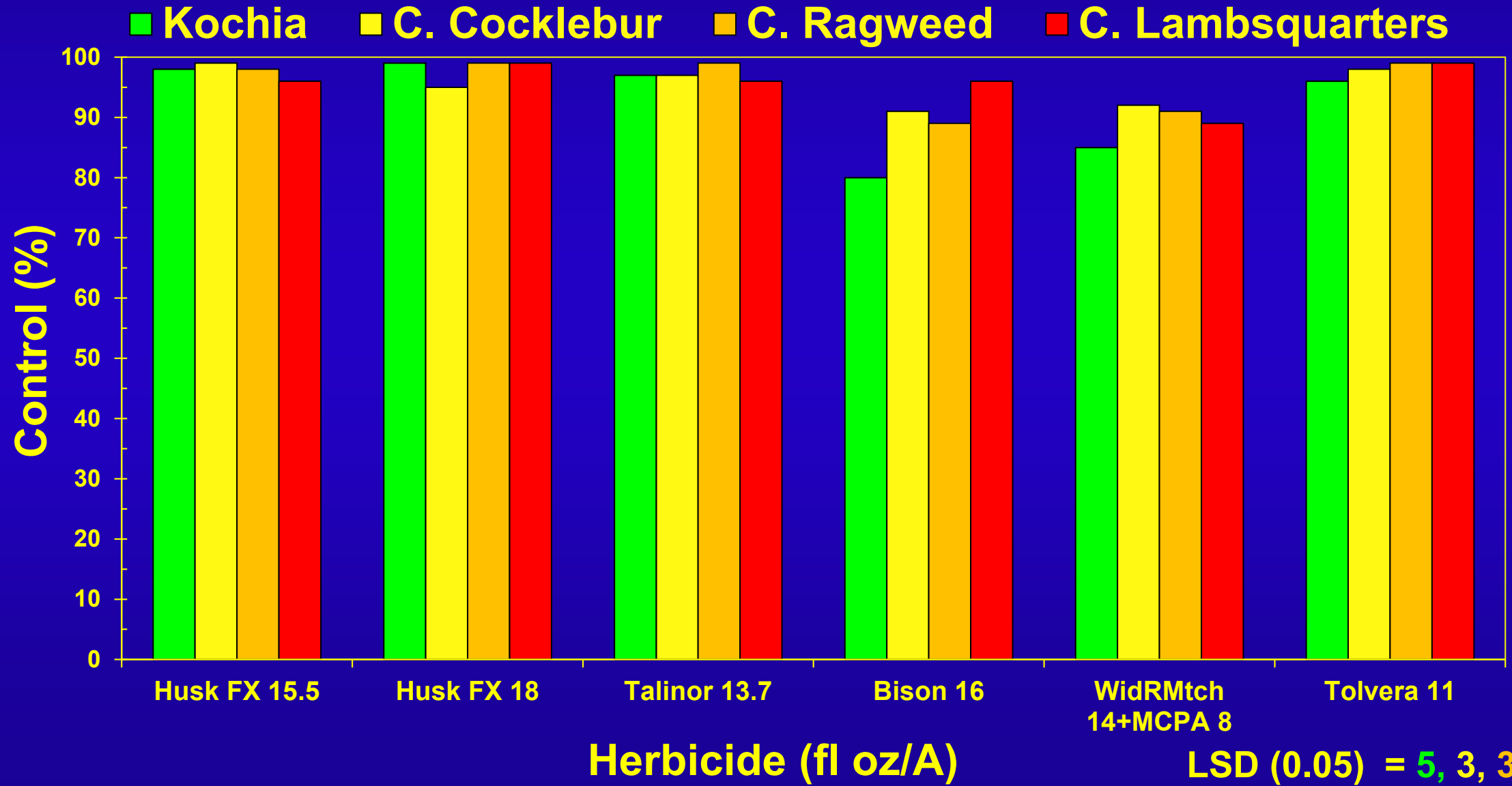
|             | Koch | GFxtl | WiOa | CoLq |
|-------------|------|-------|------|------|
| Spartan     | ?    | ✓     | ✓    | ✓    |
| Prowl H2O   | ✓    | ✓     | ✓    | ✓    |
| Dual Magnum | ✓    | ✓     | ✓    | ✓    |
| Zidua SC    | ✓    | ✓     | ✓    | ✓    |

Tank mix control was often similar to best individual product.

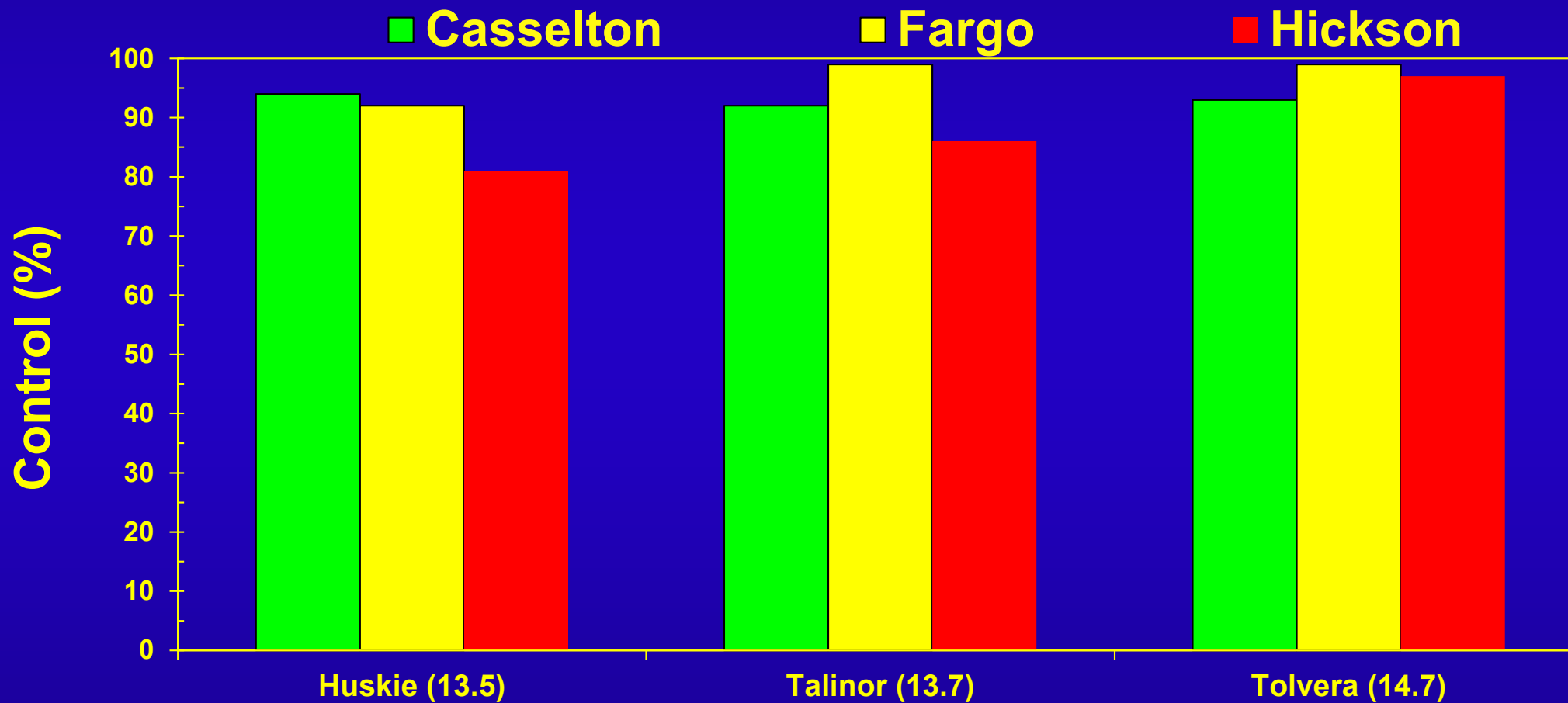
Some combinations were additive for duration of control.



# Broadleaf Control in Wheat 3 WAT



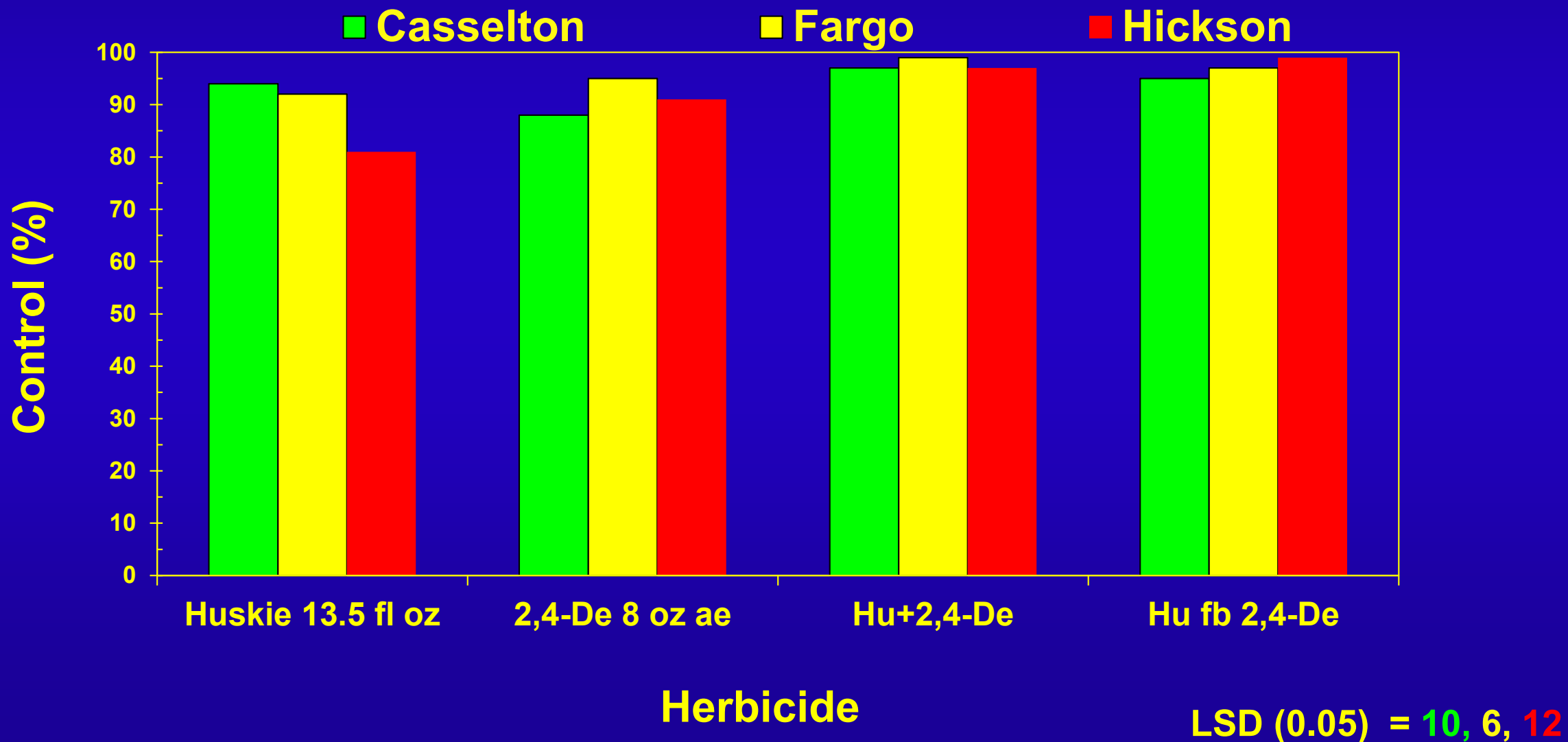
# Control of Waterhemp in Wheat (Mewes MS thesis)



Herbicide (fl oz/A)

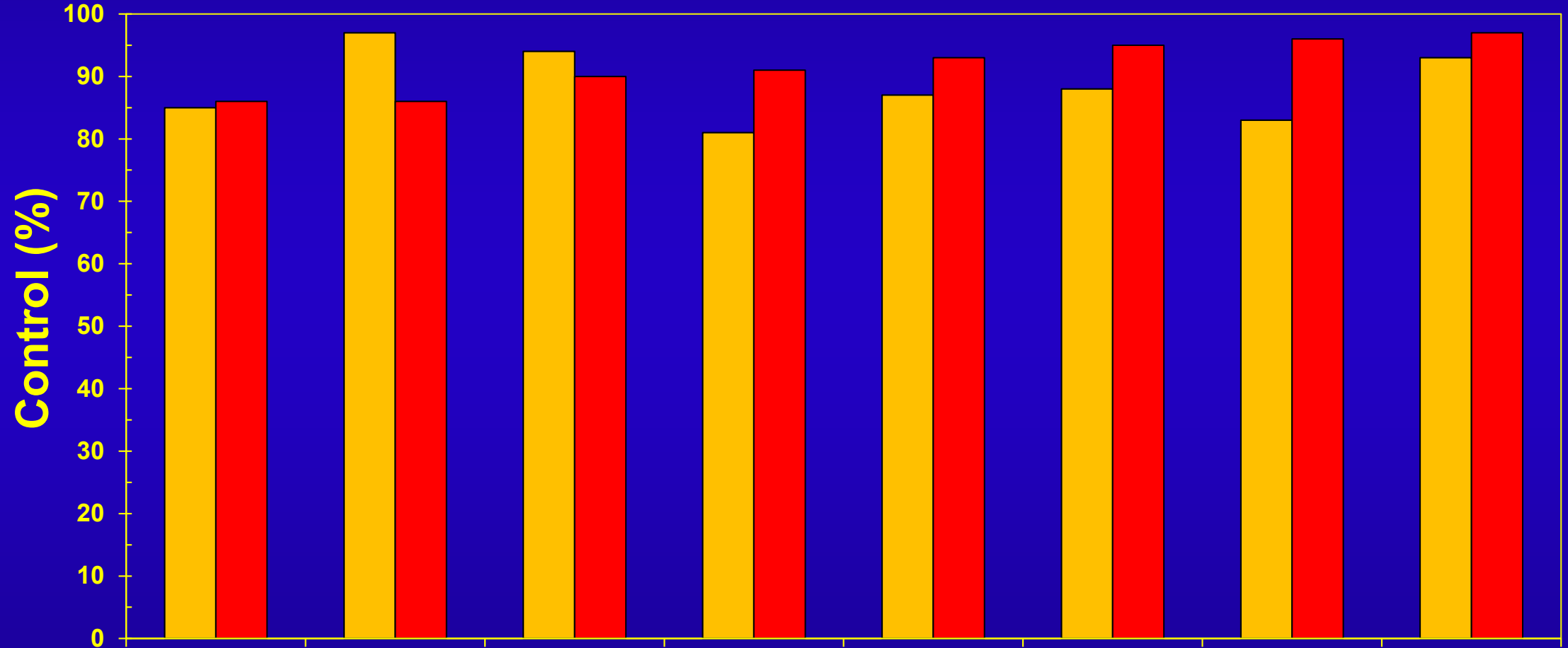
LSD (0.05) = 10, 6, 12

# Tankmix vs Sequential Treatment for Waterhemp (Mewes MS thesis)



# Kochia Control with Tankmixes

■ Kochia ■ Foxtails



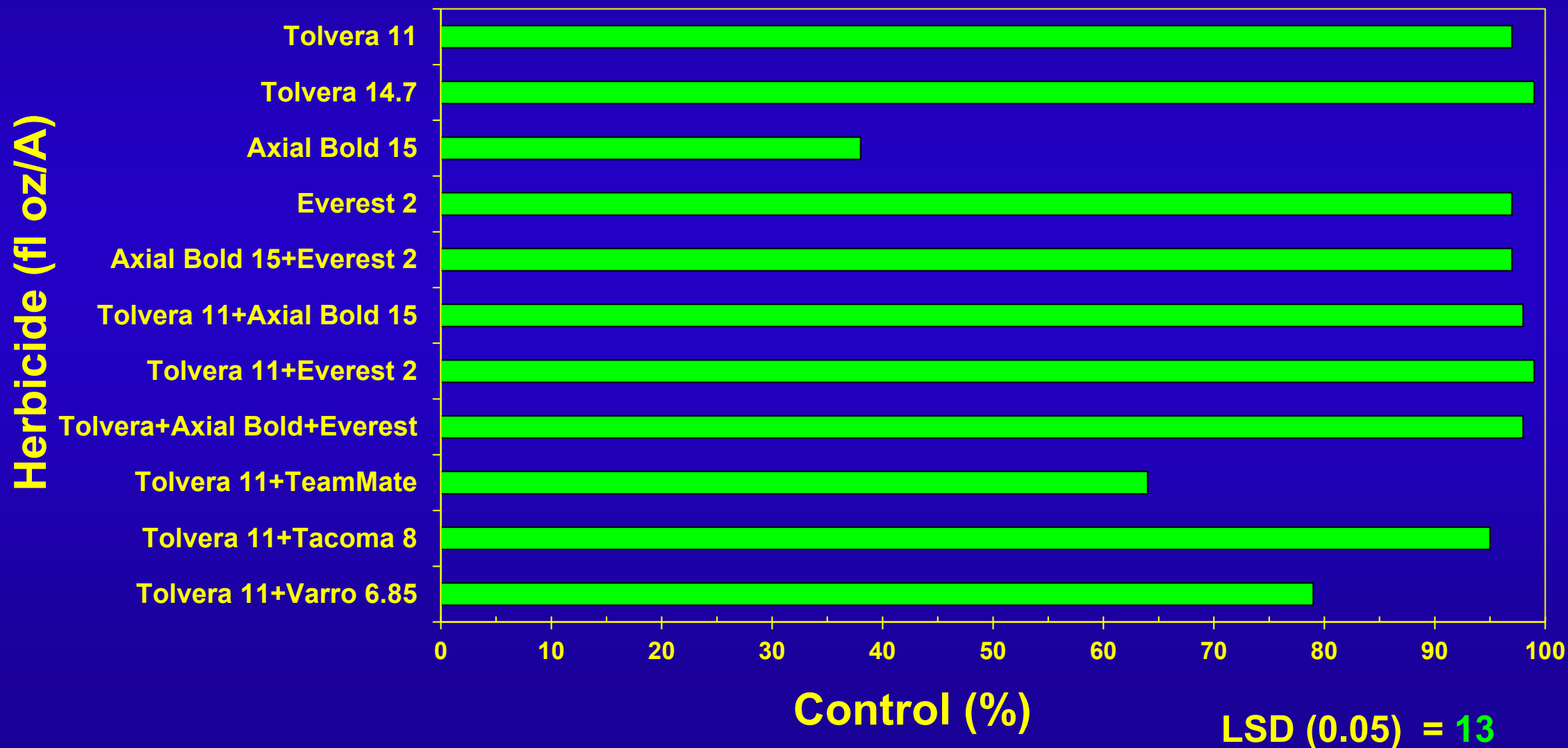
\*Only Tolvera

13.7 fl oz Vios FX + (fl oz/A)

LSD (0.05) = 7, 4

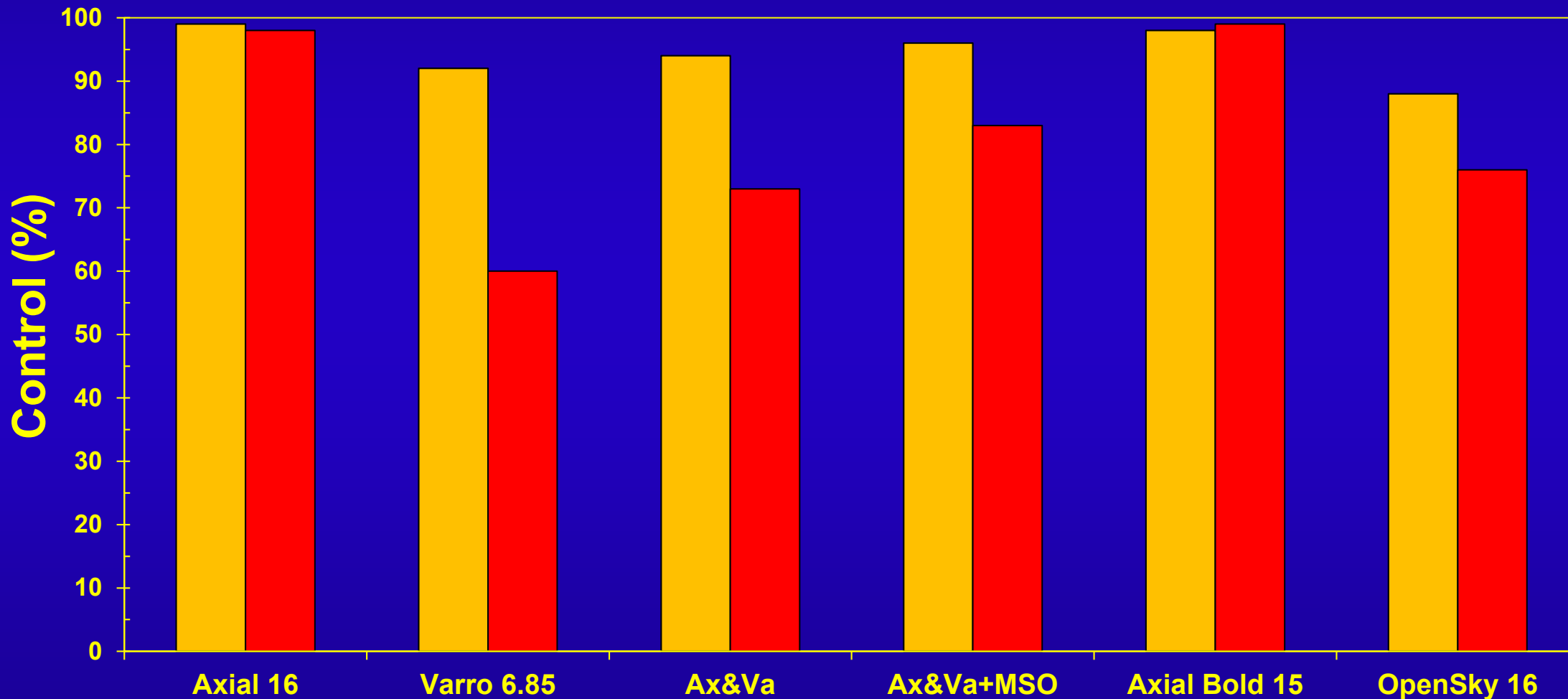
# Field Site of Questionable Greenhouse Screen

■ Green foxtail



# Antagonism Between Grass Herbicide Groups

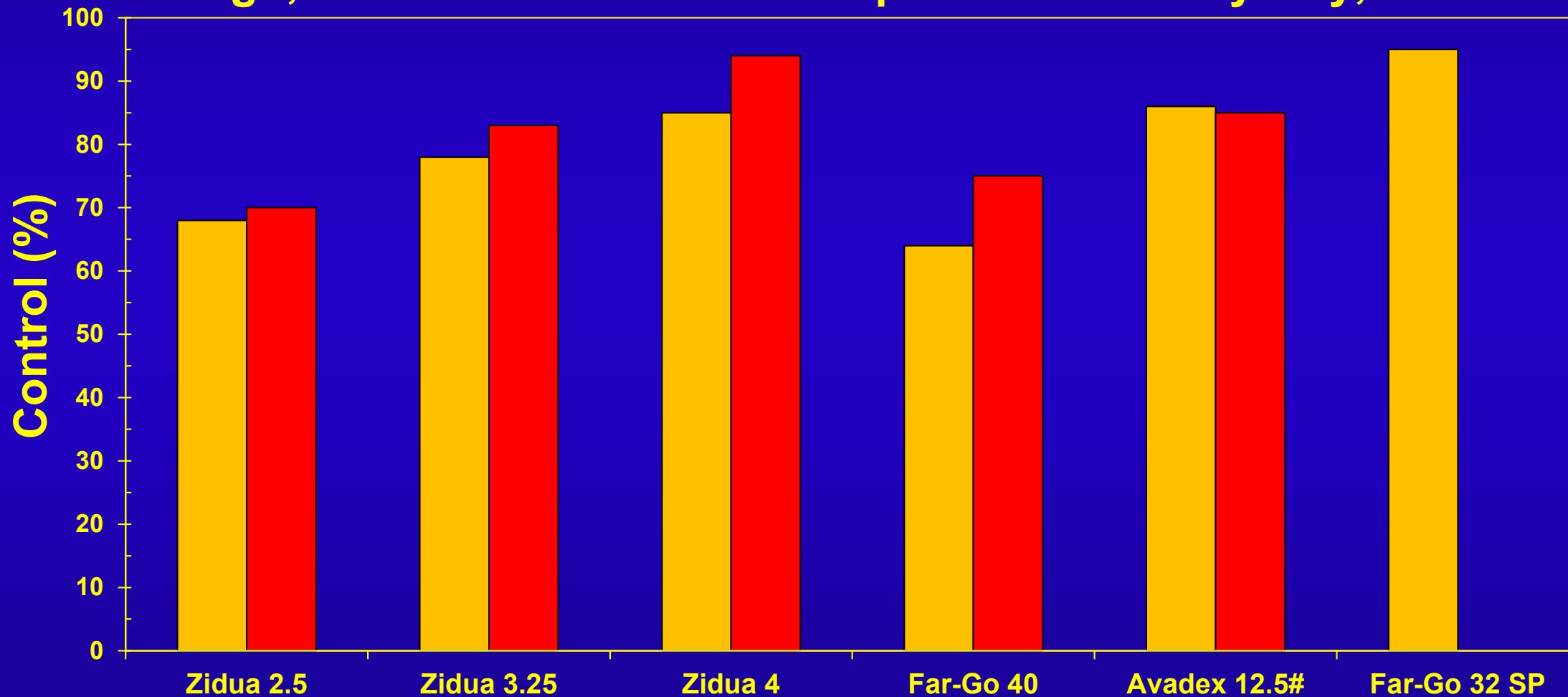
■ Foxtails ■ Wild oat



Herbicide (fl oz/A) + 2.5% ClassAct NG LSD (0.05) = 3, 8

# Fall Residual Control of Wild Oat

■ Fargo, cultivated w/ Far-Go incorporated   ■ Valley City, min-till



Herbicide (fl oz/A)

LSD (0.05) = 6, 5