

# Weed Control in Furrow-irrigated Dry Bean

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# Introduction

- Weed control challenges in furrow-irrigated dry bean
- Lack advantage of sprinkler incorporation
- Long season weed control, especially of hairy nightshade

# Hairy nightshade

- Emerges throughout growing season
- Prolific seed producer-up to 276,902 seeds
- Strong competitor for resources
- As little as 2 nightshade per meter of row can reduce dry bean yields by 13%
- Harvesting issues

# Application methods

- Granular application
- Banding
- Flat fan vs. Air induction nozzles
- Different volume/acre-10, 15, 20
- Drop down

# Granular Application

- Mounted on planter or cultivator for incorporation
- Usually banded on 7" or 10" over the row



[http://www.pricebroseq.com/media/640x480/09105D\\_1\\_Gandy\\_10\\_Row\\_Bander.jpg](http://www.pricebroseq.com/media/640x480/09105D_1_Gandy_10_Row_Bander.jpg)

# Granular Application



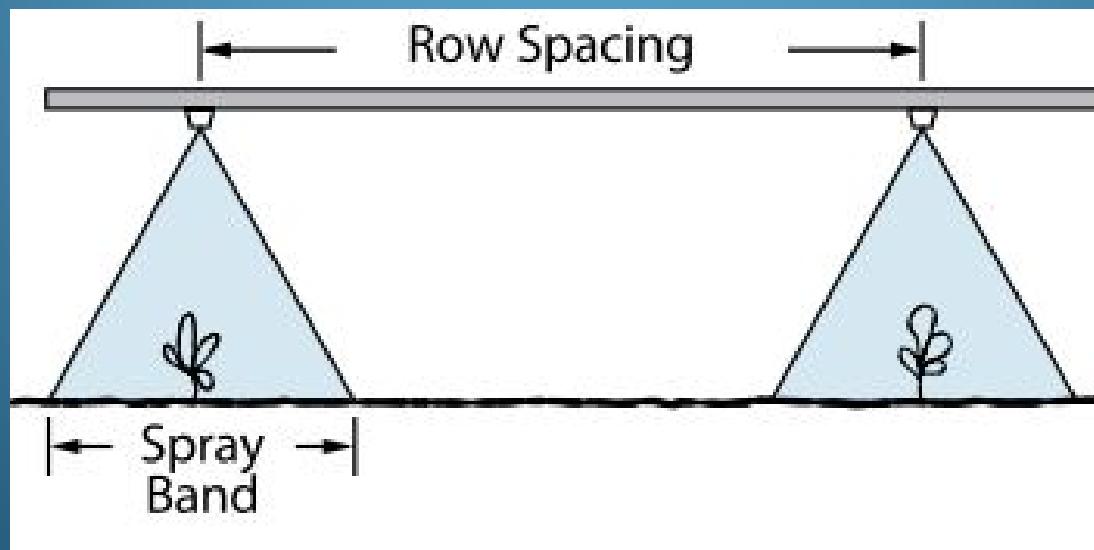
<http://www.cropsprayers.com/Horstine/products-new/chemical/microband/>

# Banding

- Less chemical
- Lower costs
- Spray direct to target area
- Hooded sprayer

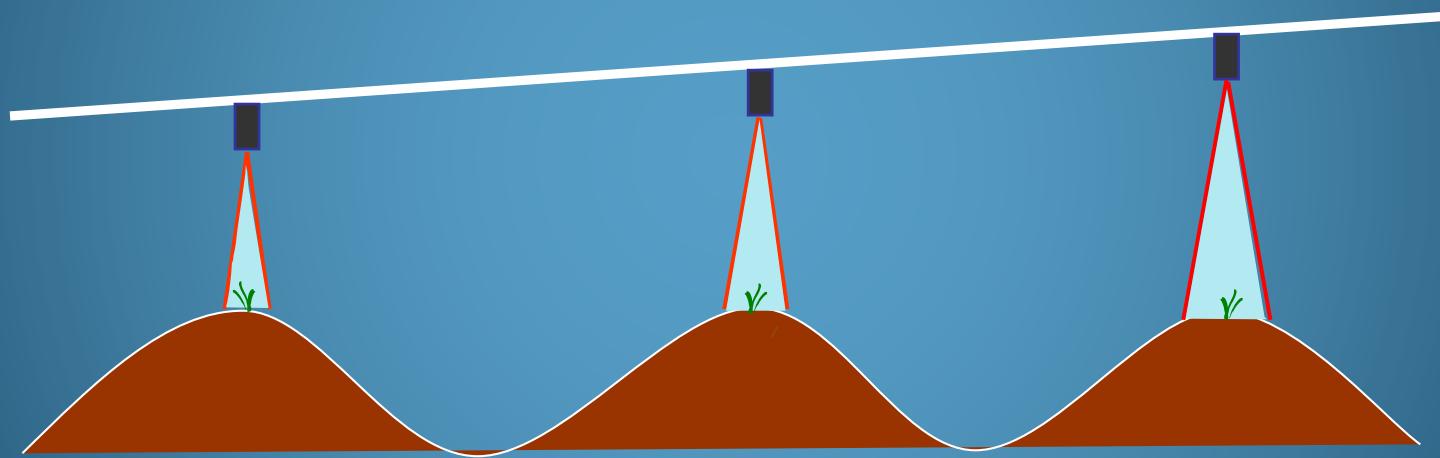


<http://www.willmarfab.com/915.php>



<http://flsprayers.com/wp-content/uploads/2012/12/TeeJetEvenFlatHeight.jpg>

# Effect of Band Width on Application Accuracy



**7" band  
desired  
band  
width**

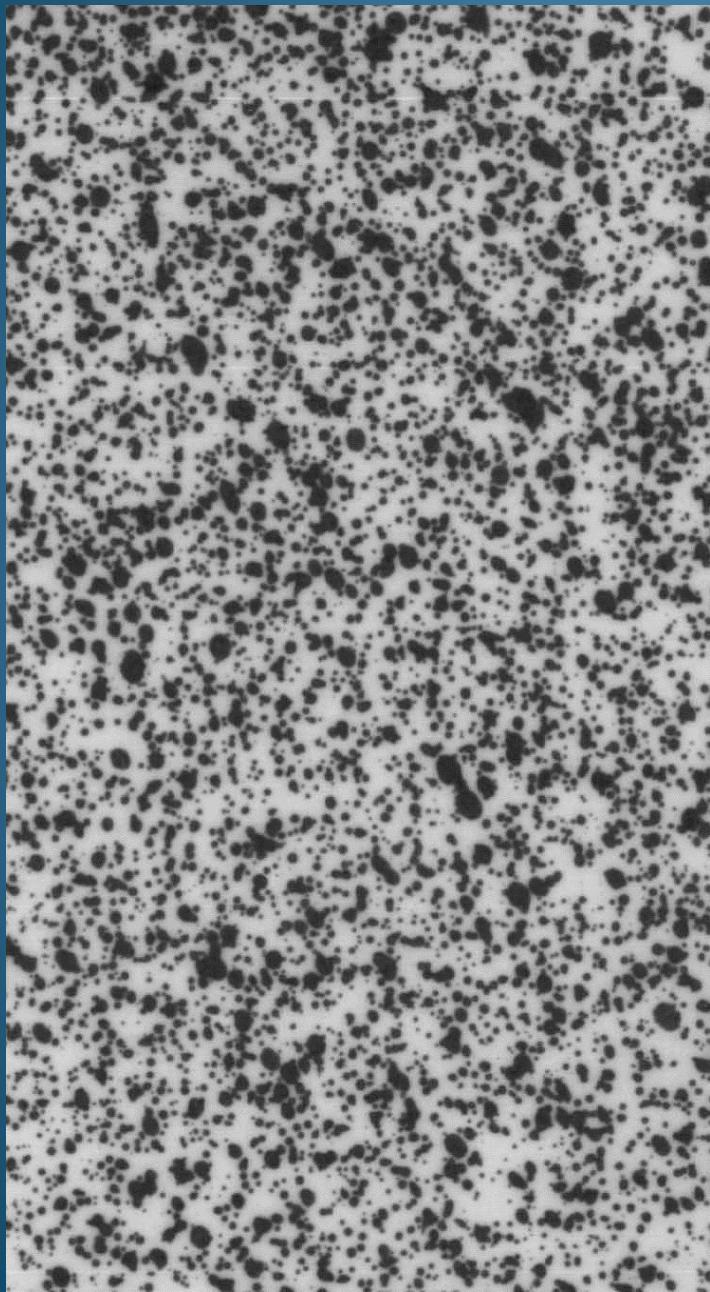
**8" band  
14% less  
applied**

**9" band  
27% less  
applied**

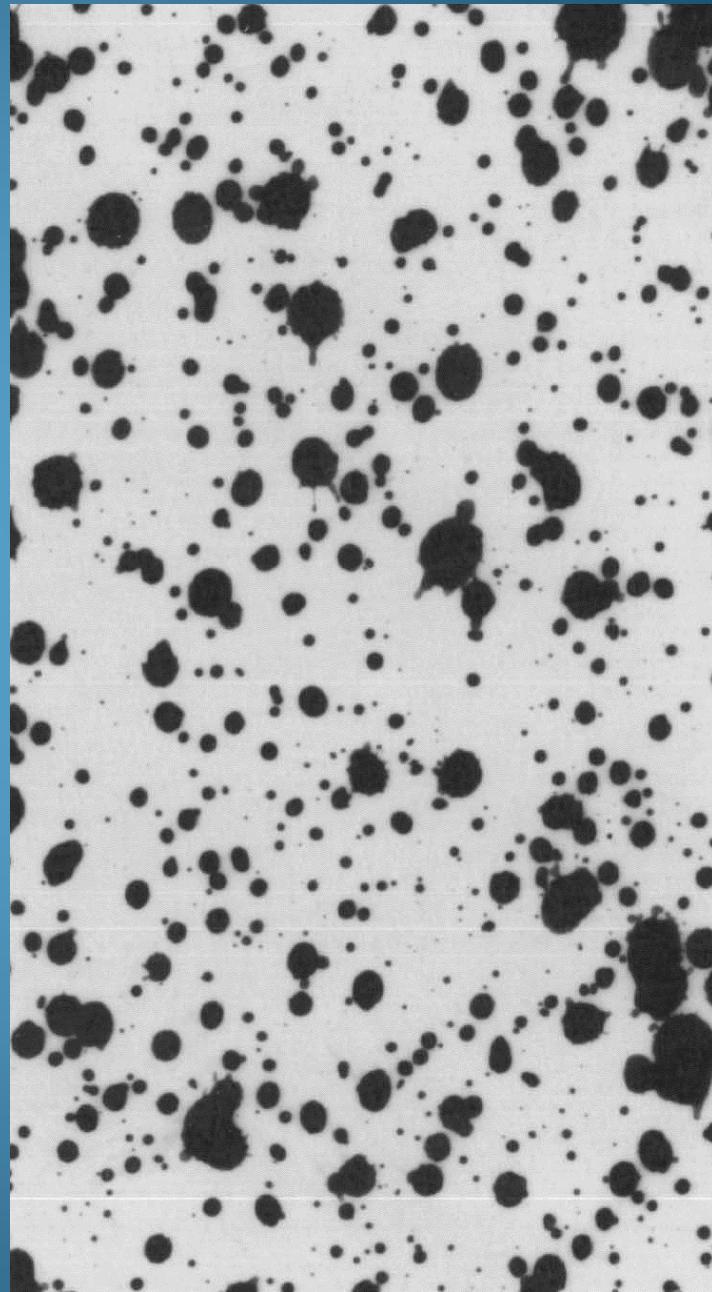
# Flat fan vs. Air induction

- Flat fan
  - Smaller droplets
  - More coverage area
  - More drift potential
- Air induction
  - Larger droplets
  - Less coverage area
  - Less drift potential

Flat fan-33%



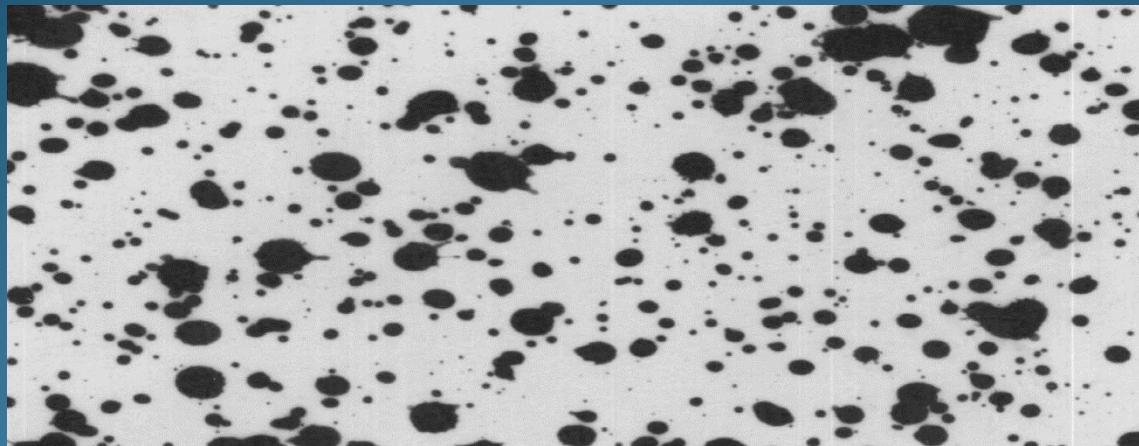
Air induction-21%



# Volume/Acre

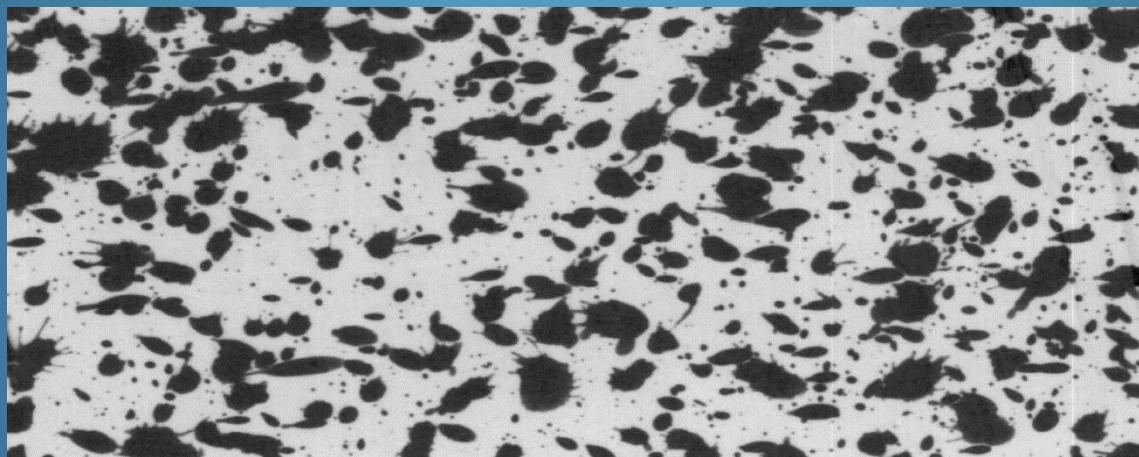
- Possible better herbicide coverage
- Possible larger droplet size in Flat Fan nozzles

AI 10  
gal/A



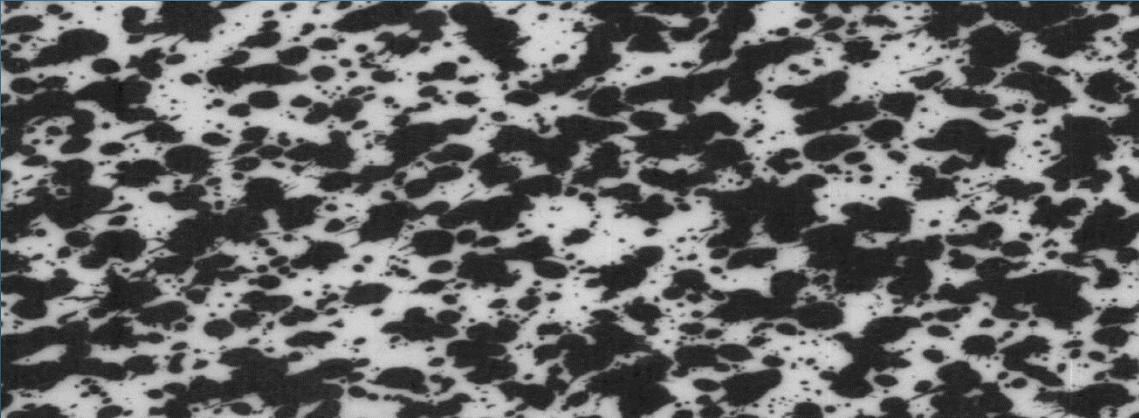
21%

AI 15  
gal/A



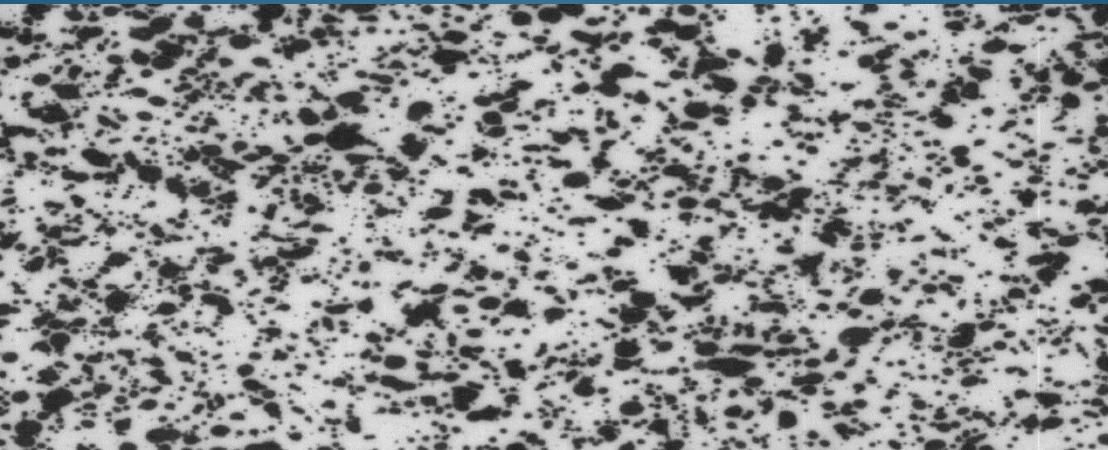
37%

AI 20  
gal/A



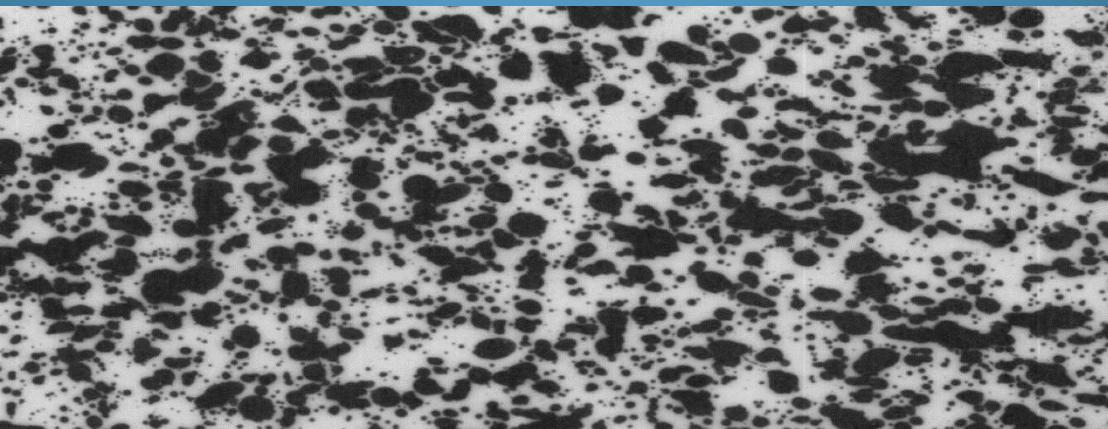
55%

FF 10  
gal/A



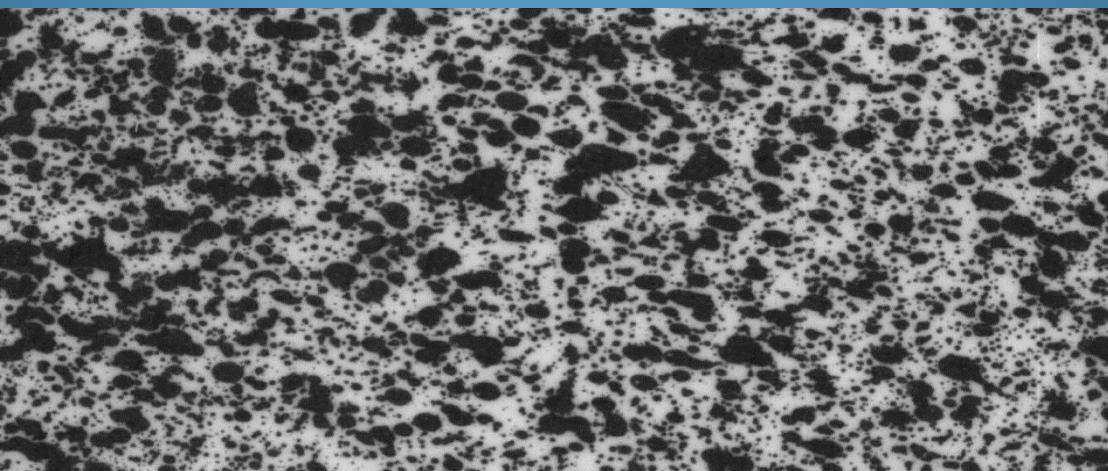
33%

FF 15  
gal/A



45%

FF 20  
gal/A



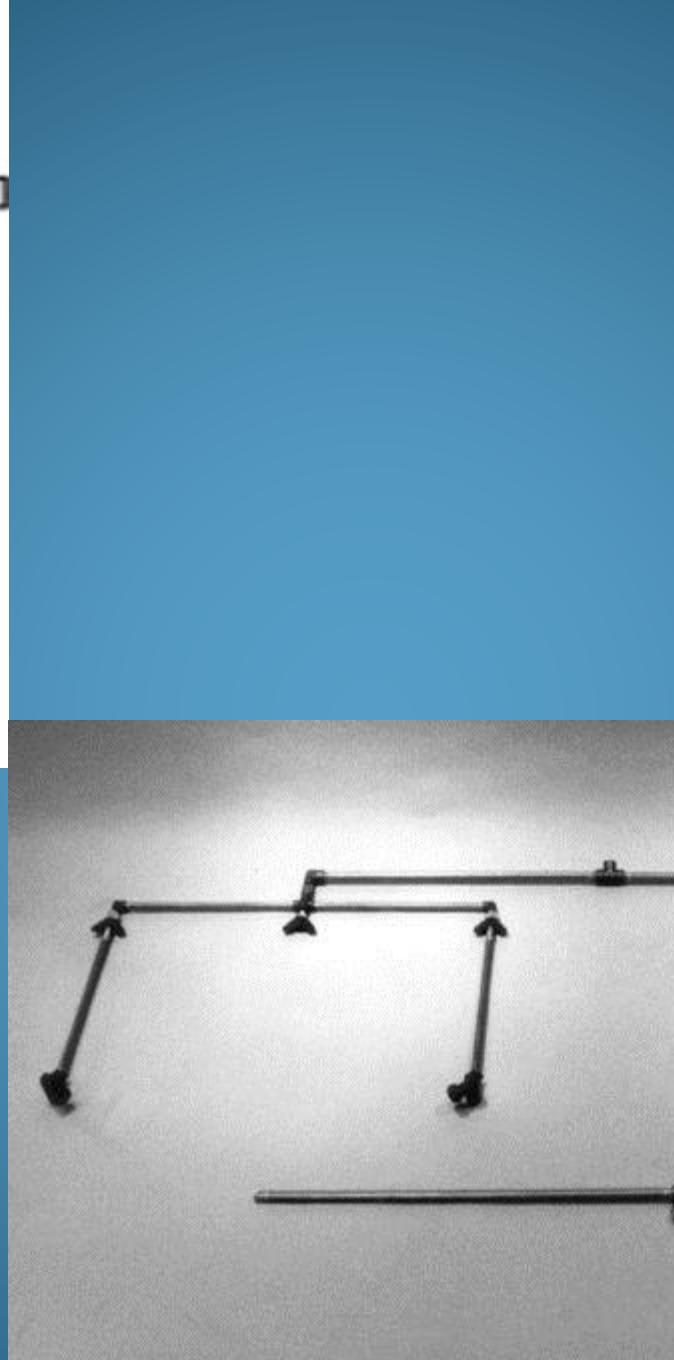
48%

# Drop down nozzles

- Possibility for future study
- Allows for more direct herbicide to target organism
- Between row spraying
- Possible reduction in crop injury



<http://flsprayers.com/wp-content/uploads/2012/12/TeeJetAIUB-Applications.jpg>



<http://co2sprayers.com/products/6013-2-row-3-nozzle-boom-with-drop-nozzles>



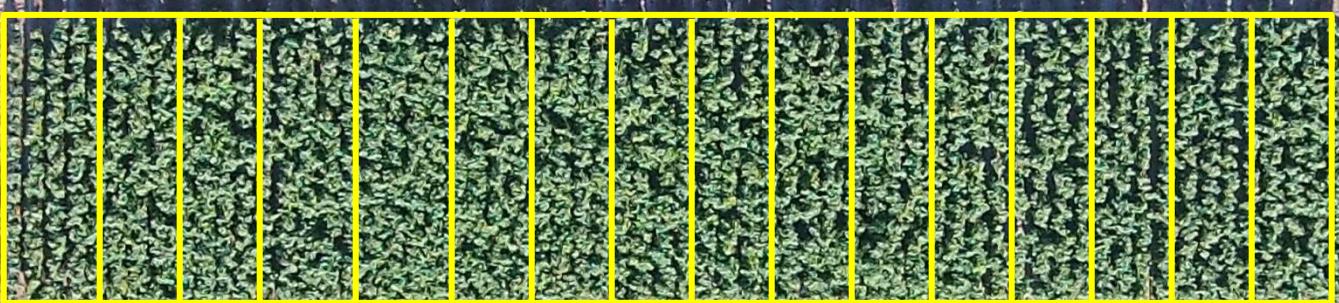
<http://www.sloanex.com/bnxy77uwsb-teejet15quickietthreadhosedrop.html>

# Objectives

- Determine effectiveness of sequential herbicide applications
- Obtain season long weed control
- Determine effectiveness of Eptam 20G as opposed to other herbicides

# Materials and Methods

- ‘Sequoia’ pinto bean
- Planted June 2, 2014
- 22-inch rows
- Seeded in four common weed species
- Harvested September 25, 2014
- Center two rows
- Direct harvest



# Materials and Methods

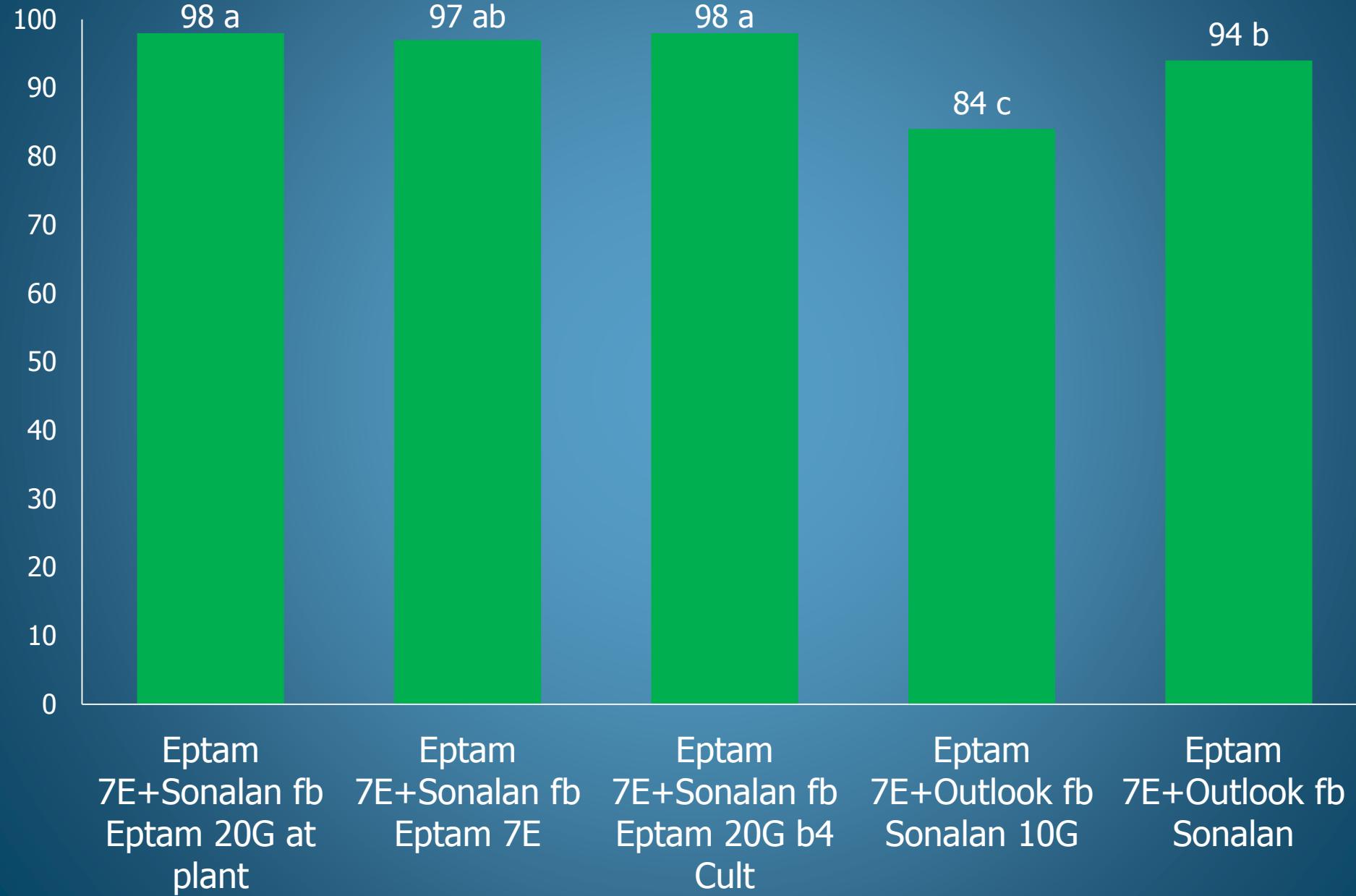
- PPI applied May 20, 2014
- At planting June 4, 2014
- Before cultivation June 27, 2014
- Weed control visual evaluation 13 days after last application (DALA)

# Weed Control

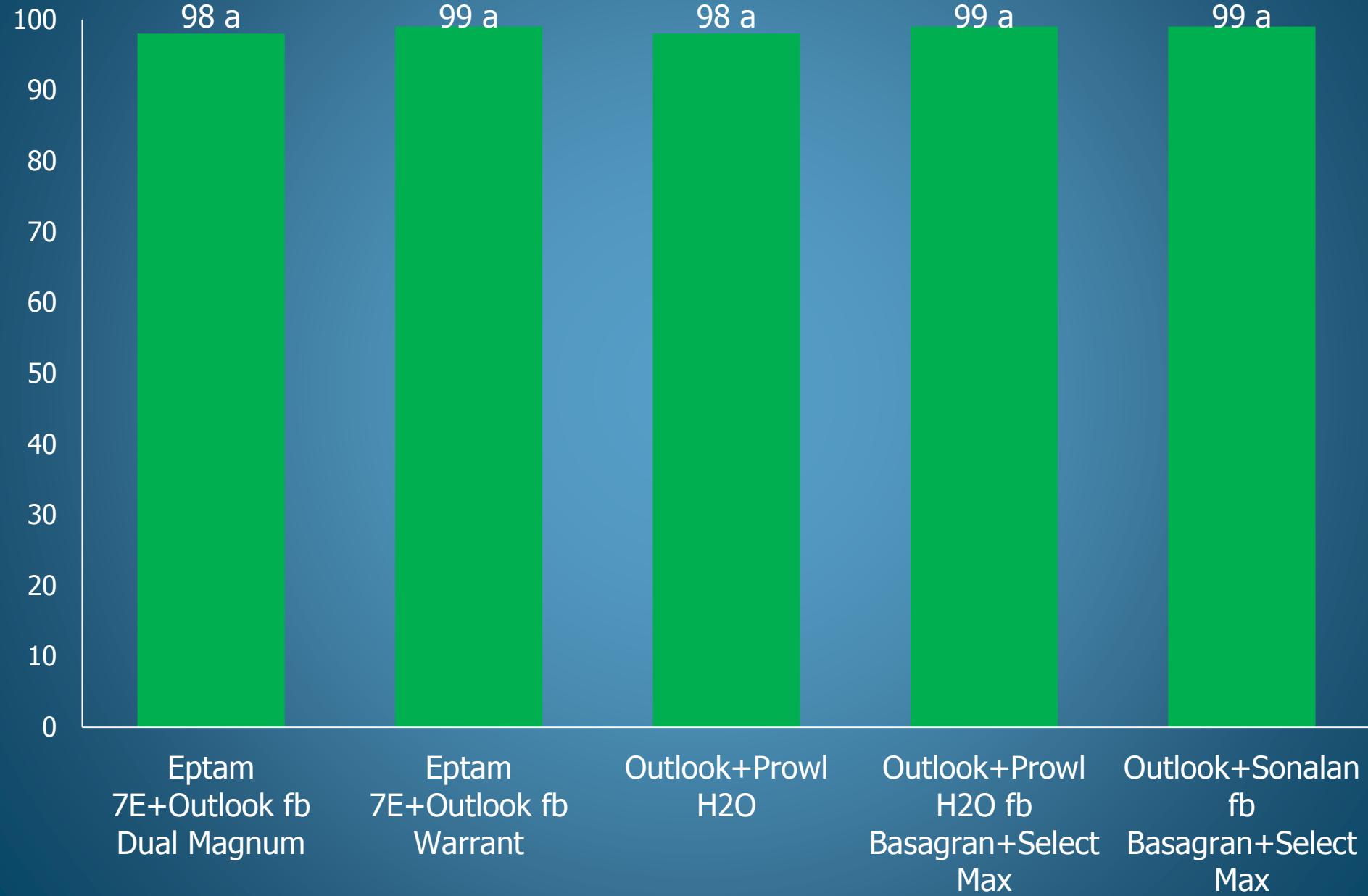
- PPI incorporated with roller harrow
- Eptam 20G at planting
- All POST sequential applications before 1<sup>st</sup> cultivation
- Two cultivations
- Basagran and Select Max added



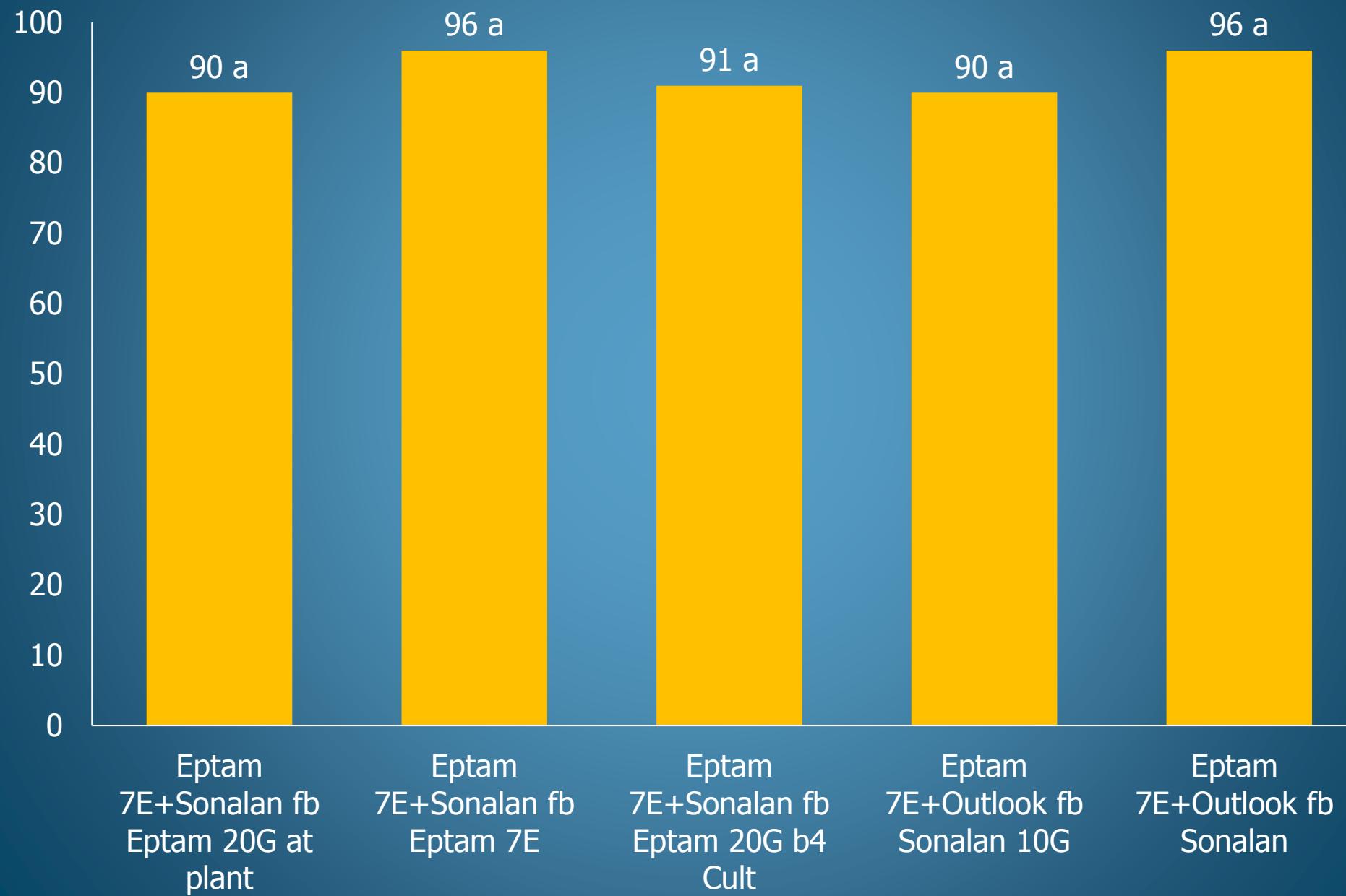
# Common lambsquarters



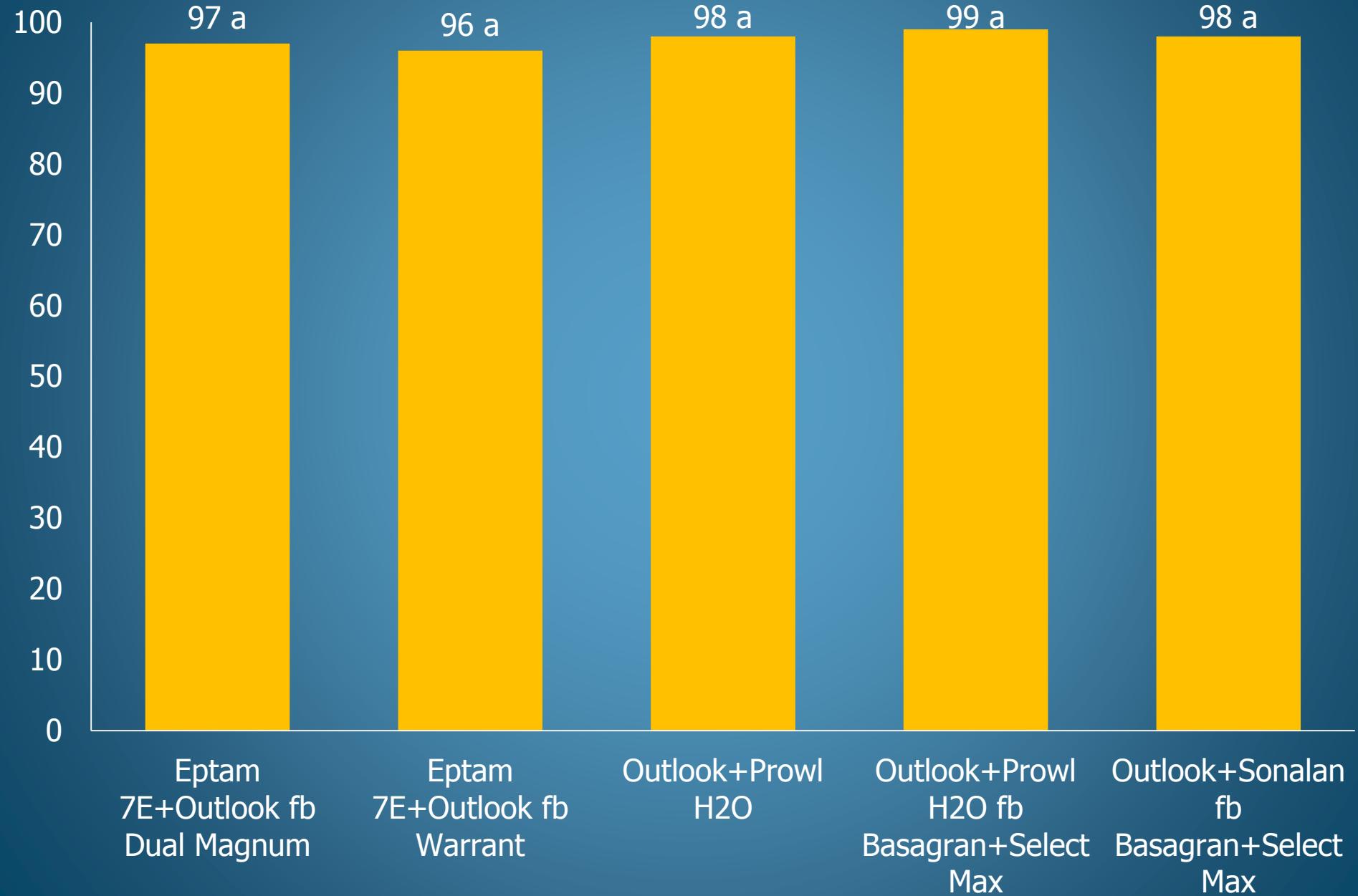
# Common lambsquarters



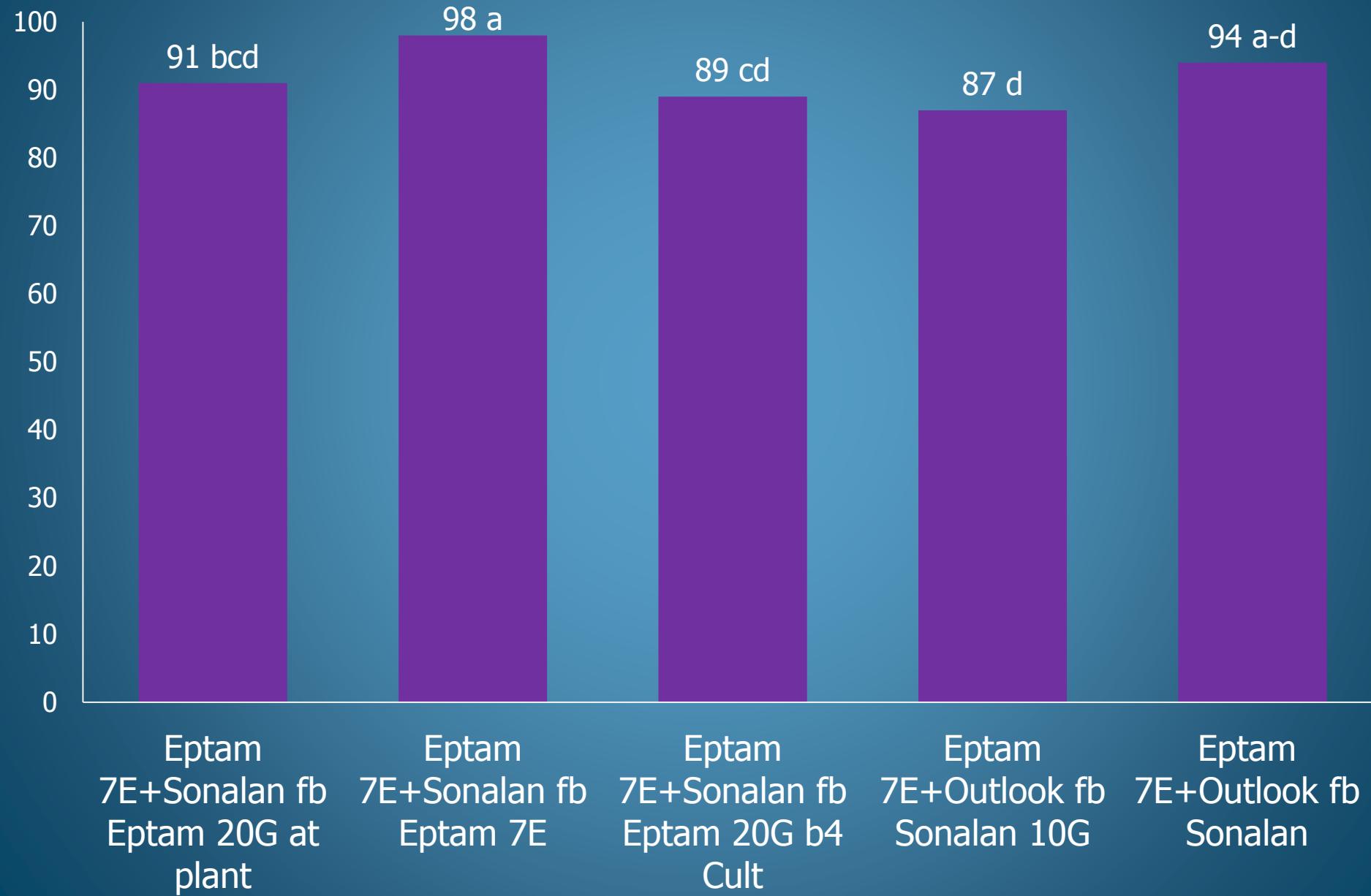
# Green foxtail



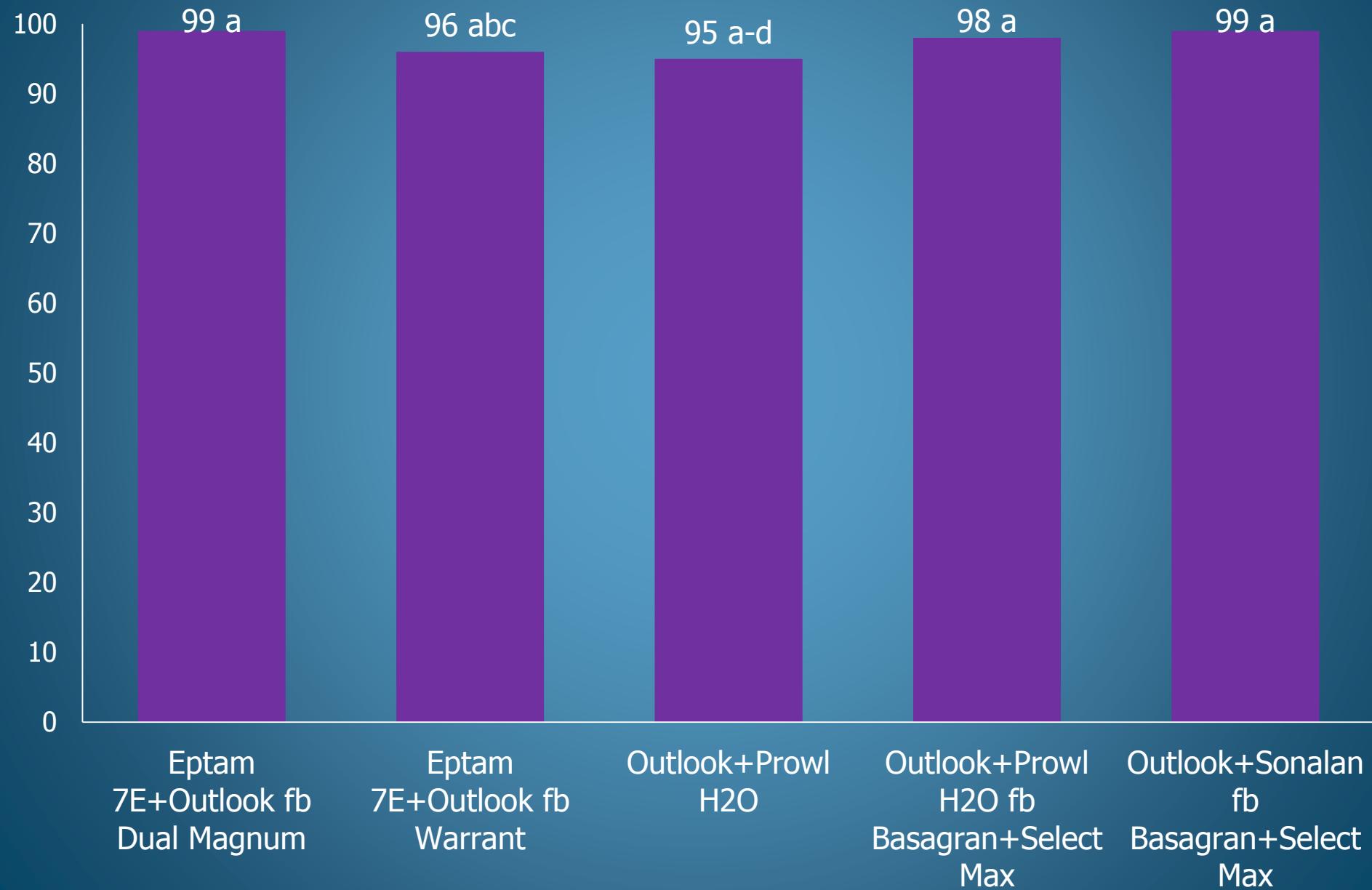
# Green foxtail



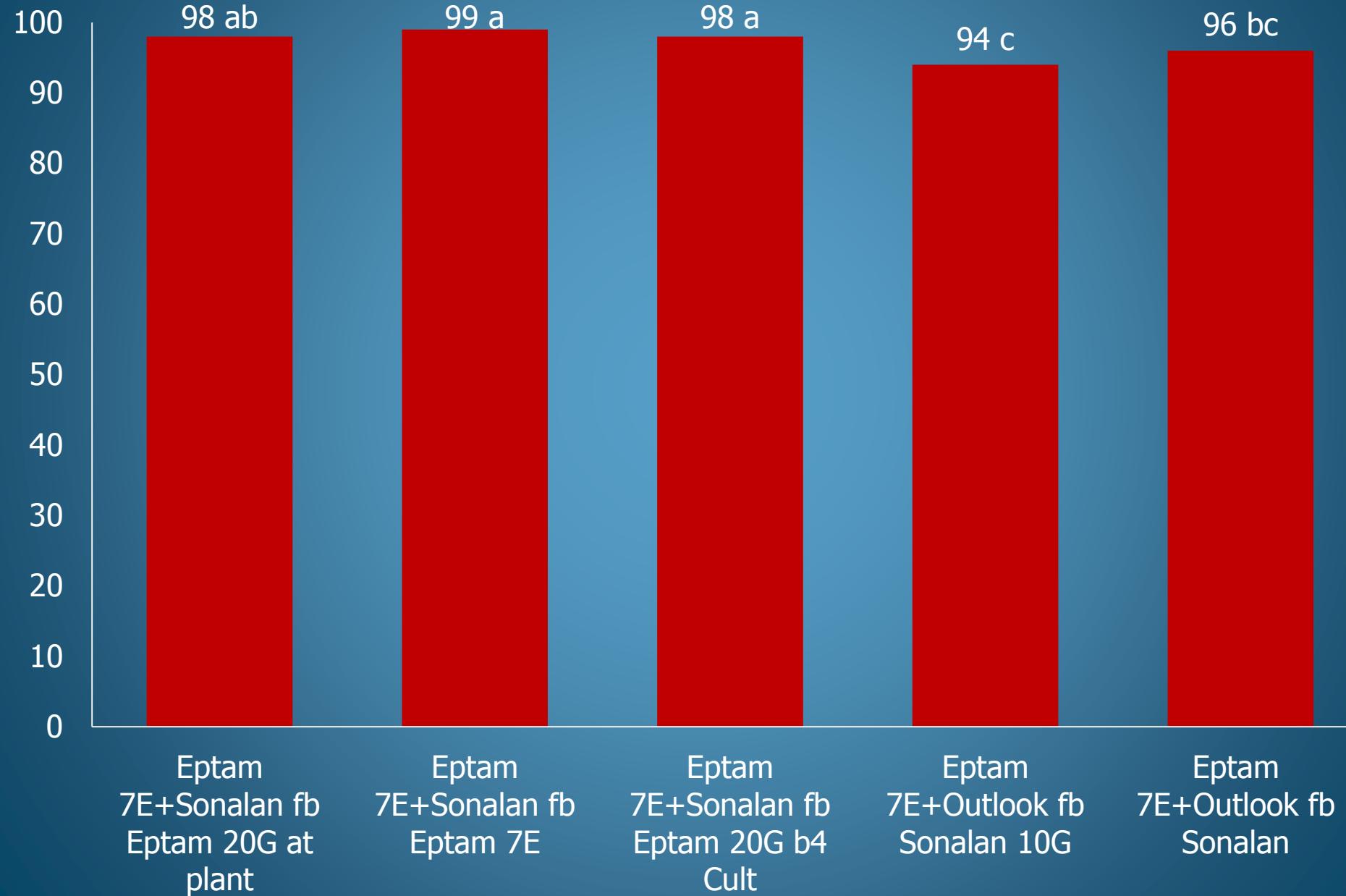
# Hairy nightshade



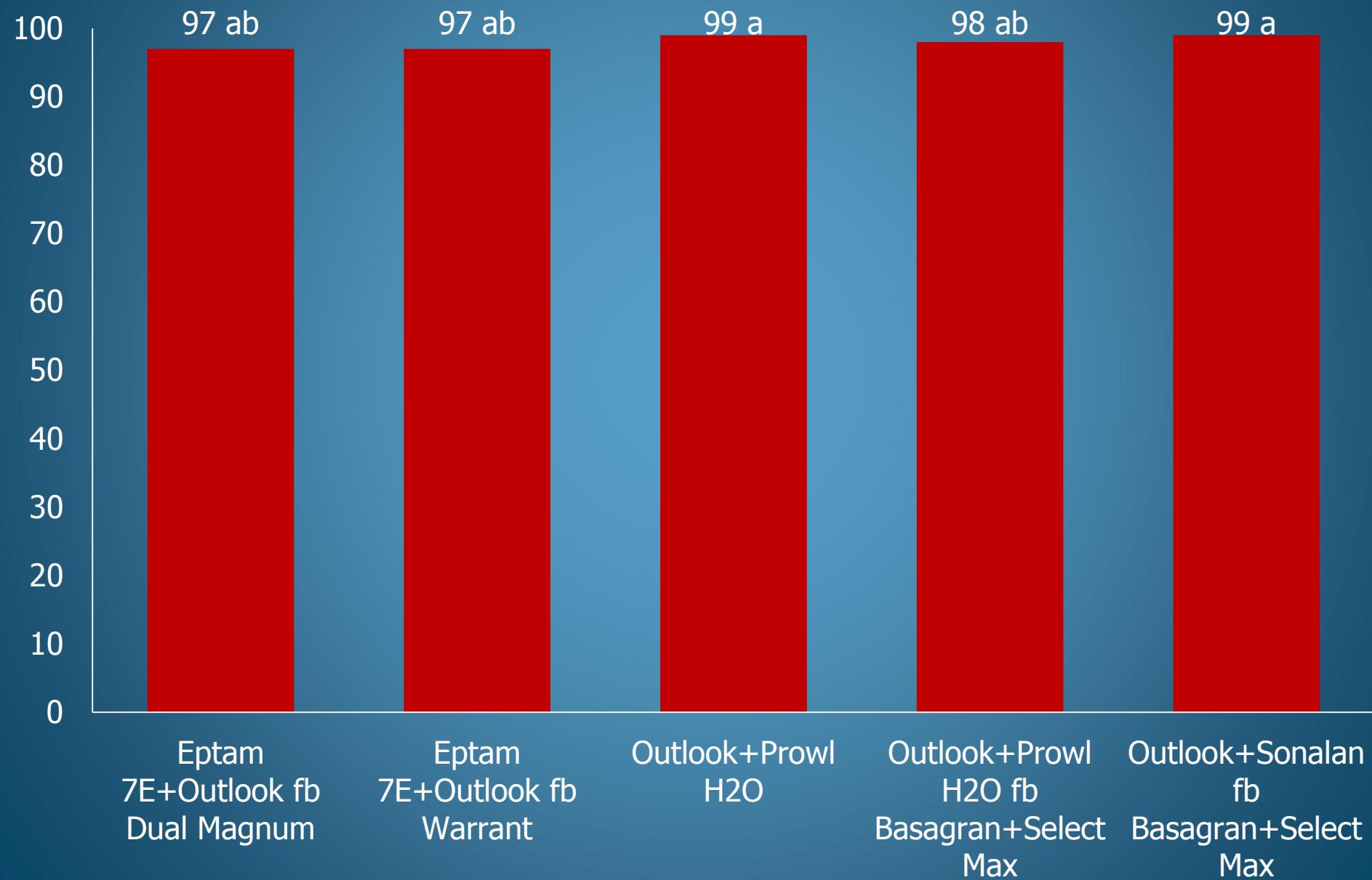
# Hairy nightshade



# Redroot pigweed



# Redroot pigweed





Untreated Control



Eptam 7E+Outlook fb Sonalan 10G

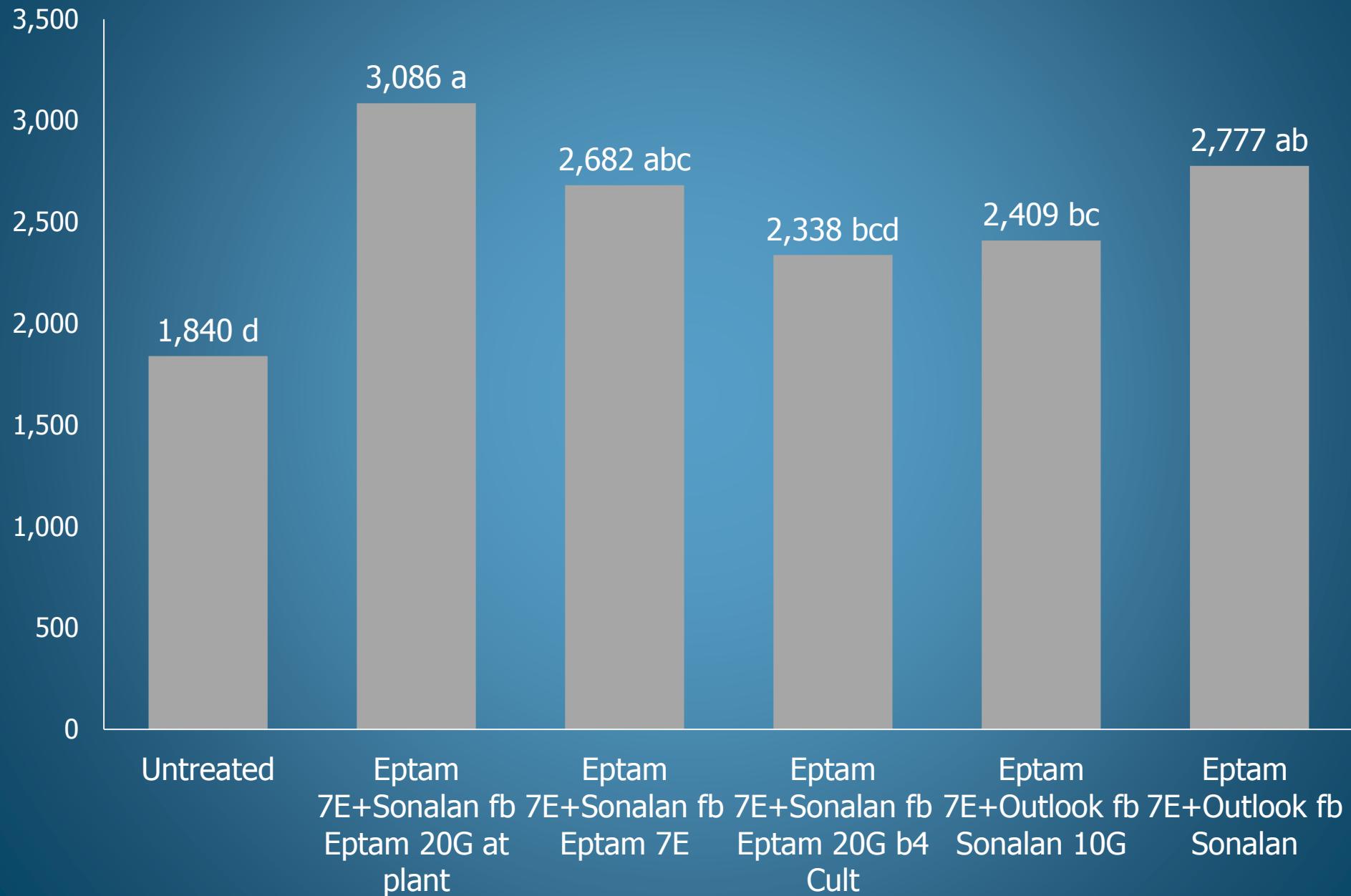


Eptam 7E+Sonalan fb Eptam 20G

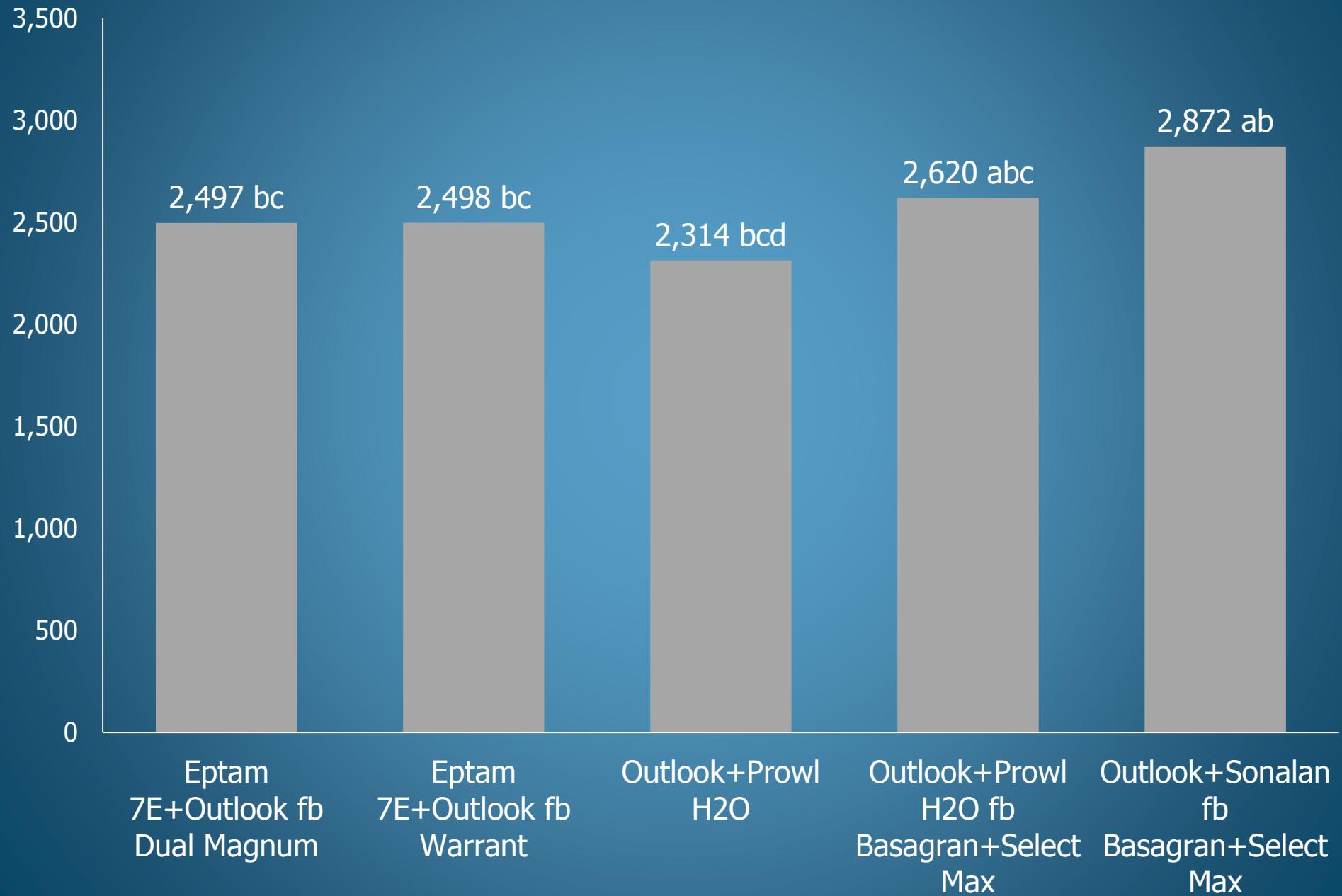


Eptam 7E+Outlook fb Sonalan

# Yield



# Yield



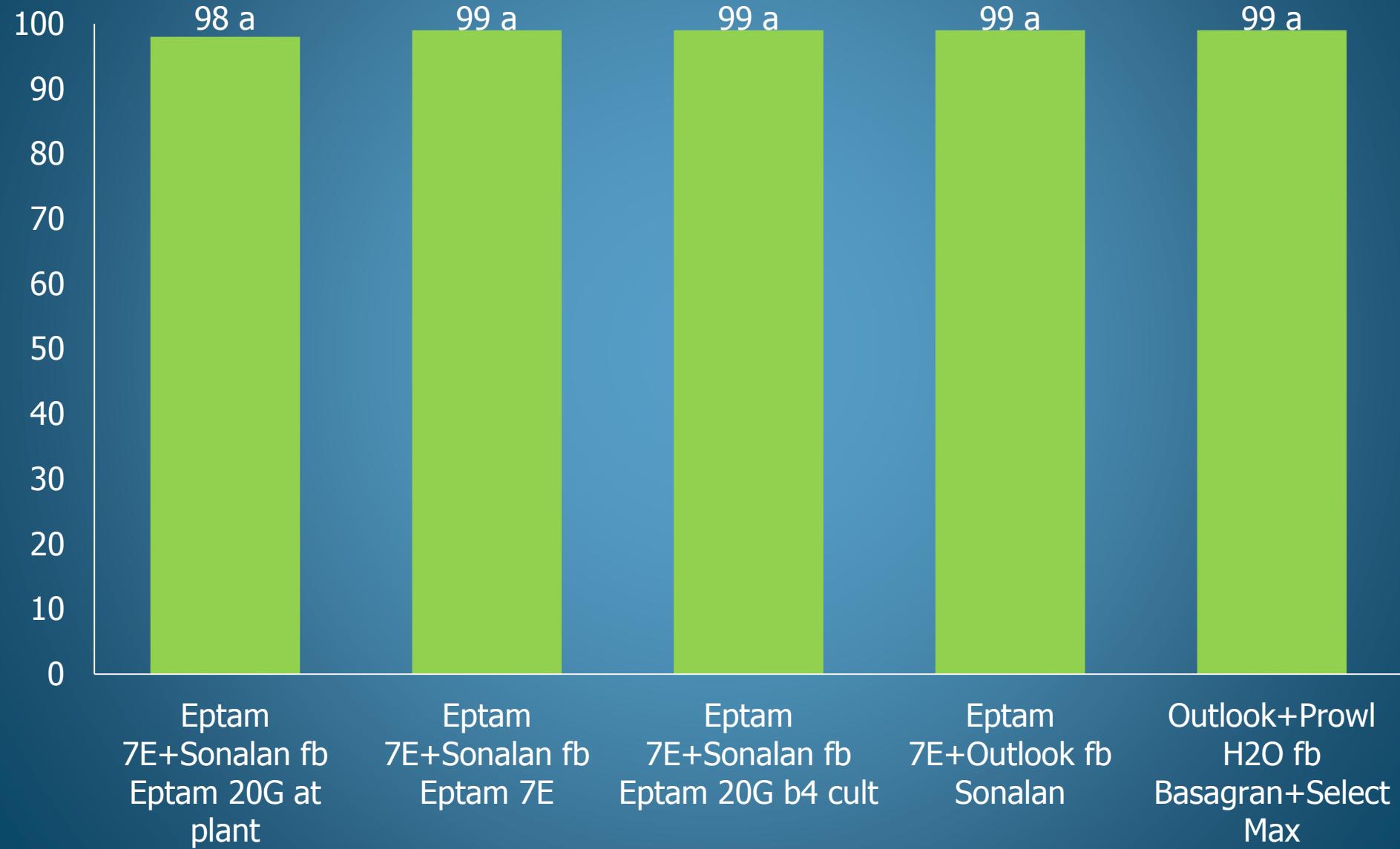
# 2015

- Had different results than 2014
- Low weed population
- Yields were similar throughout

# 2015

- Weed control ranged from 97-100% for all species and treatments
- Yield ranged from 2,843 to 3,683 lb/A
- Lowest was the untreated control
- No significant difference between all other treatments

# Weed Control





Untreated control



Eptam 7E+Outlook fb Sonalan 10G

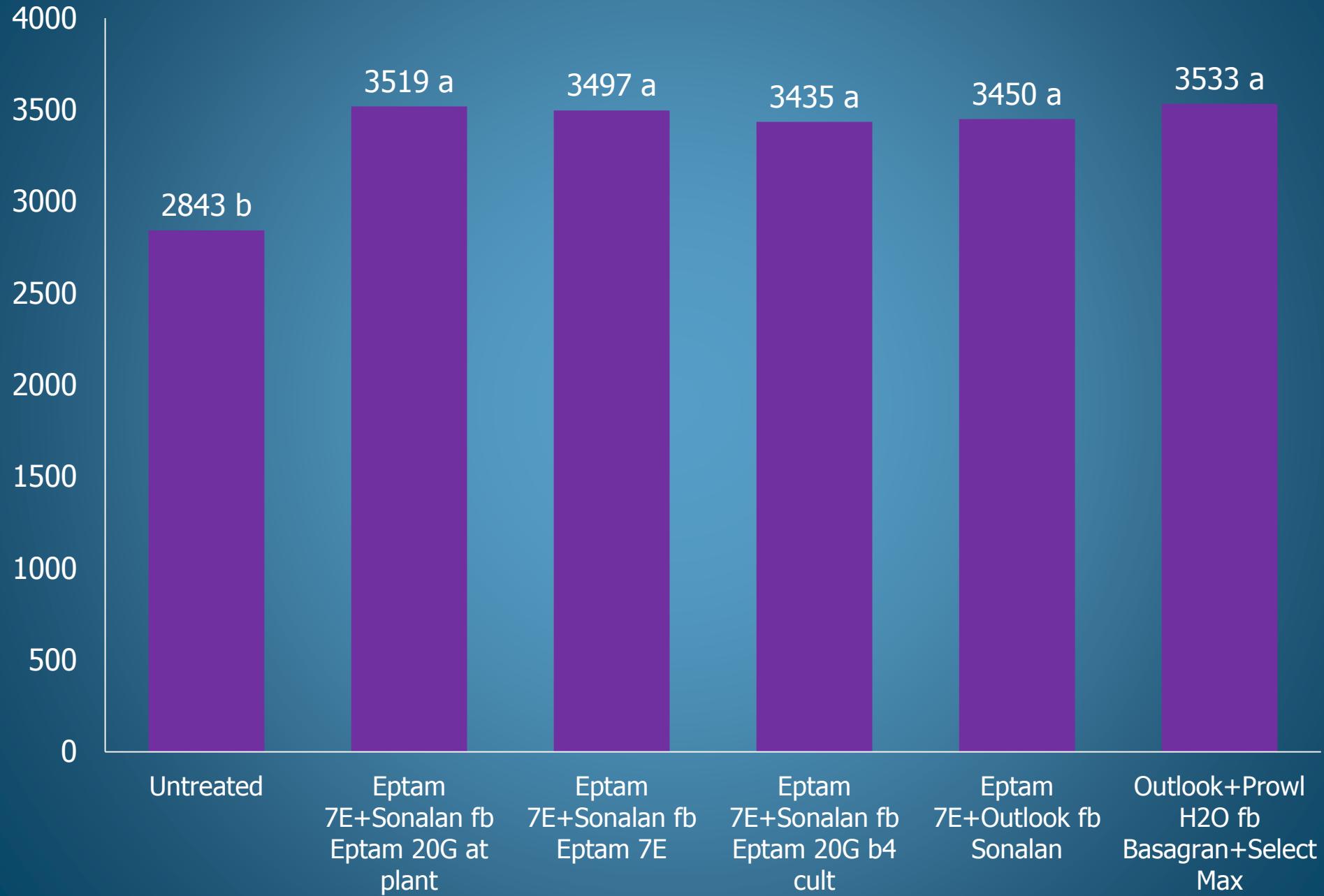


Eptam 7E+Sonalan fb Eptam 20G



Eptam 7E+Outlook fb Sonalan

# Yield



# Conclusion

- Sequential application controls weeds better than PPI by itself
- Eptam 20G did not perform any better than other herbicides
- Study will be repeated in 2016

# Questions?

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