Effect of Seeding Rate, Row Spacing, and Herbicides on Weed Control in Dry Beans

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Introduction

- Hesterman, et al.- Producing Soybeans in Narrow Rows
  - Narrow row advantages
    - Increased light interception
    - Reduced within-row plant competition
    - Earlier canopy closure
    - Reduced soil erosion
    - Higher podding on the stem
    - Increased yields

Introduction

- Blackshaw, Muendel, Saindon- Canopy Architecture, Row Spacing, and Plant Density Effects on Yield of Dry Bean in the Absence and Presence of Hairy Nightshade
  - 9 inch rows compared to 27 inch row
    - Less hairy nightshade biomass in all years
    - Increased yield at a seeding rate of ~195,000 plants per acre
    - Increased yield in 1 out of 3 years at a seeding rate of ~95,000 plants per acre

Introduction

- Mike Thornton, Don Morishita- Effect of Row Spacing, Plant Architecture, and Herbicides on Weed Control in Dry Bean
  - Yields in 7.5-inch rows greater than or equal to yields in 22-inch rows

Seeding Rates

- 22-inch rows
  - 100,000 seeds per acre
- 7.5-inch rows
  - 100,000 seeds per acre
  - 125,000 seeds per acre
  - 150,000 seeds per acre
  - 175,000 seeds per acre
  - 200,000 seeds per acre

Herbicide Treatments

- We applied a pre-emergent treatment of 0.77 lb ae/acre Roundup PowerMax and 1.27 lb ai/a of BroncMax

Timing	Herbicide	Common Name	Rate
N/A	**Control**	N/A	N/A
N/A	**Hand Weeded Control**	N/A	N/A
Pre-Emergent	**Eptam 7-E**	EPTC	3 pt/a
Pre-Emergent	**Sonalan HFP**	Ethalfluralin	3 pt/a
Pre-Emergent	**Eptam 7-E**	EPTC	3 pt/a
Pre-Emergent	**Sonalan HFP**	Ethalfluralin	3 pt/a
1st tri-foliate	**Varisto**	Imazamox, Bentazon	21 fl oz/a
Pre-Emergent	**Eptam 7-E**	EPTC	3 pt/a
Pre-Emergent	**Sonalan HFP**	Ethalfluralin	3 pt/a
1st tri-foliate	**Outlook**	Dimethenamid-P	1 pt/a

Aerial Photo

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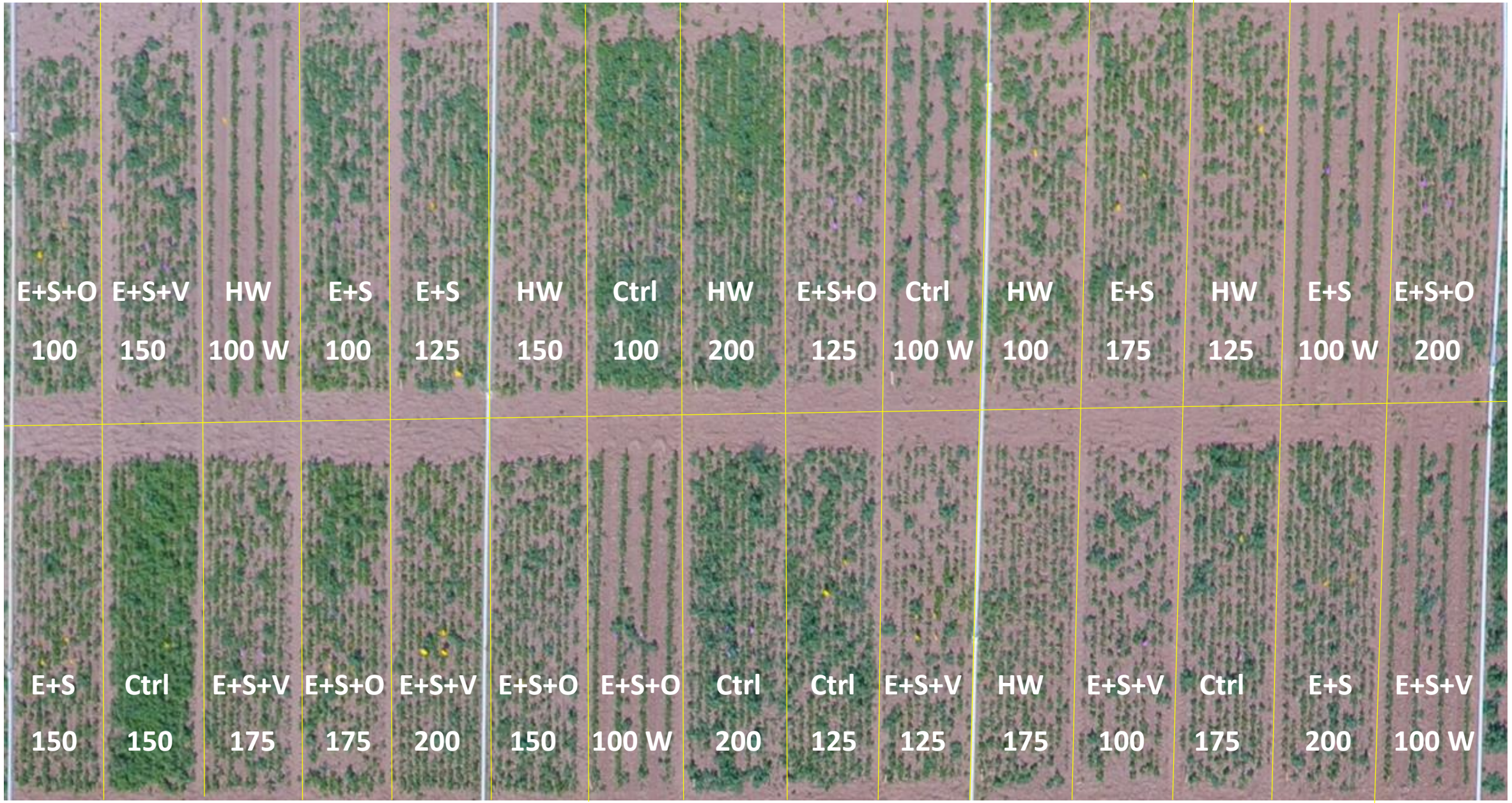
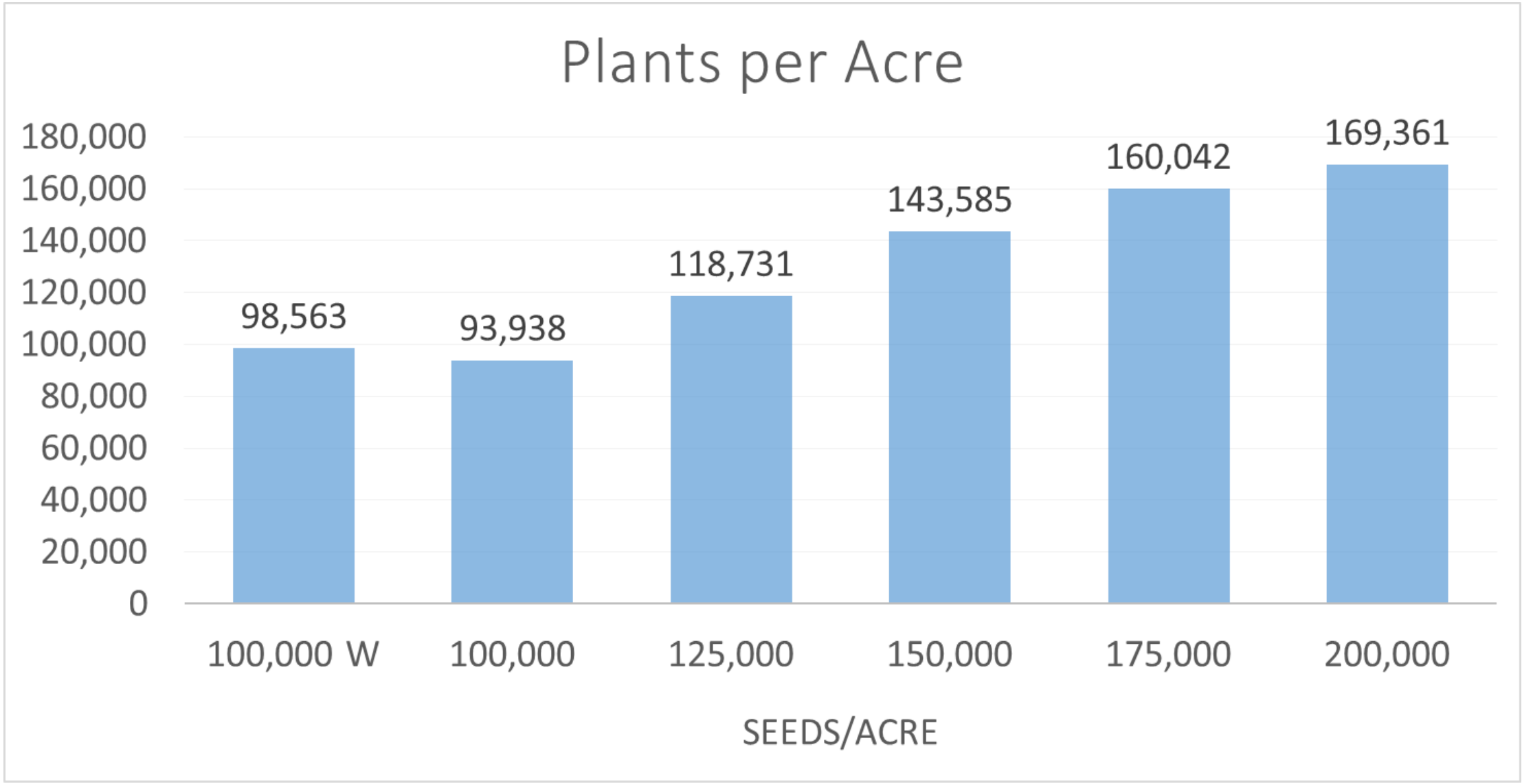


Data

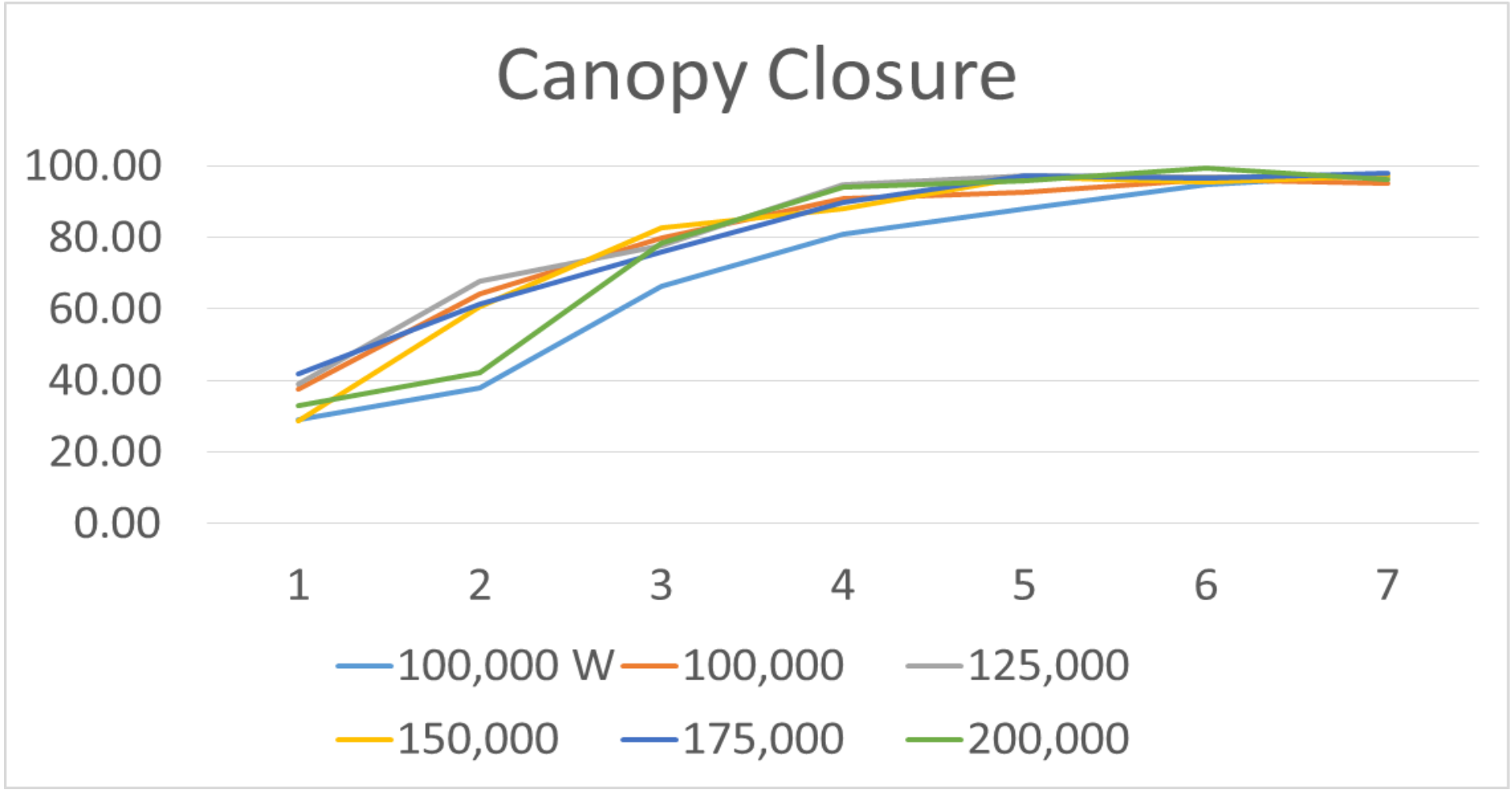
- Stand count
- Light interception
- Visual crop injury evaluations
- Visual weed control evaluations
- Weed counts
- Pod distance to the ground
- Weed biomass
- Pods per plant
- Beans per pod
- 100 bean weight
- Harvest

Stand Counts



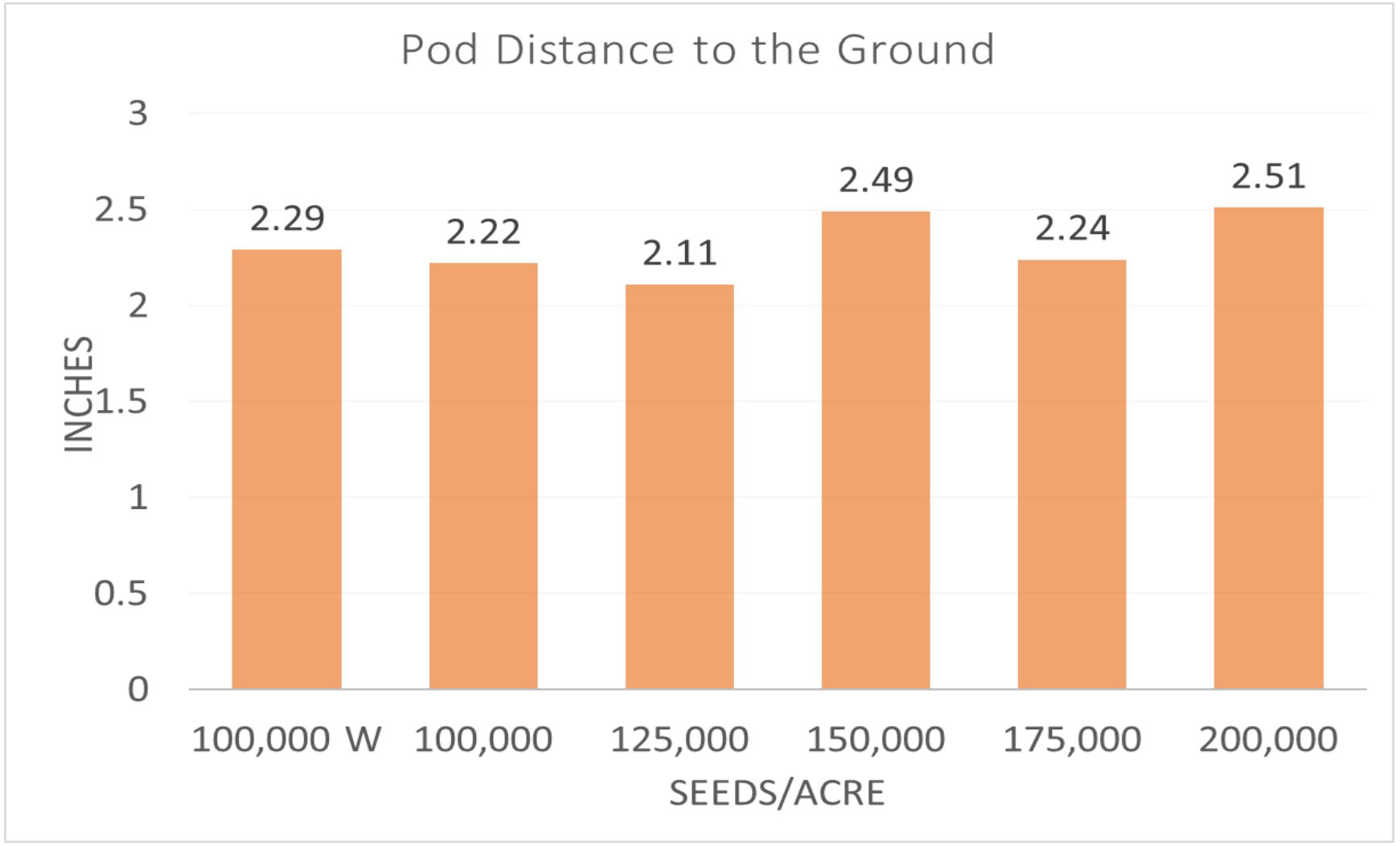
Canopy Closure

- The canopy of the 22-inch rows took longer to close than the 7.5-inch rows



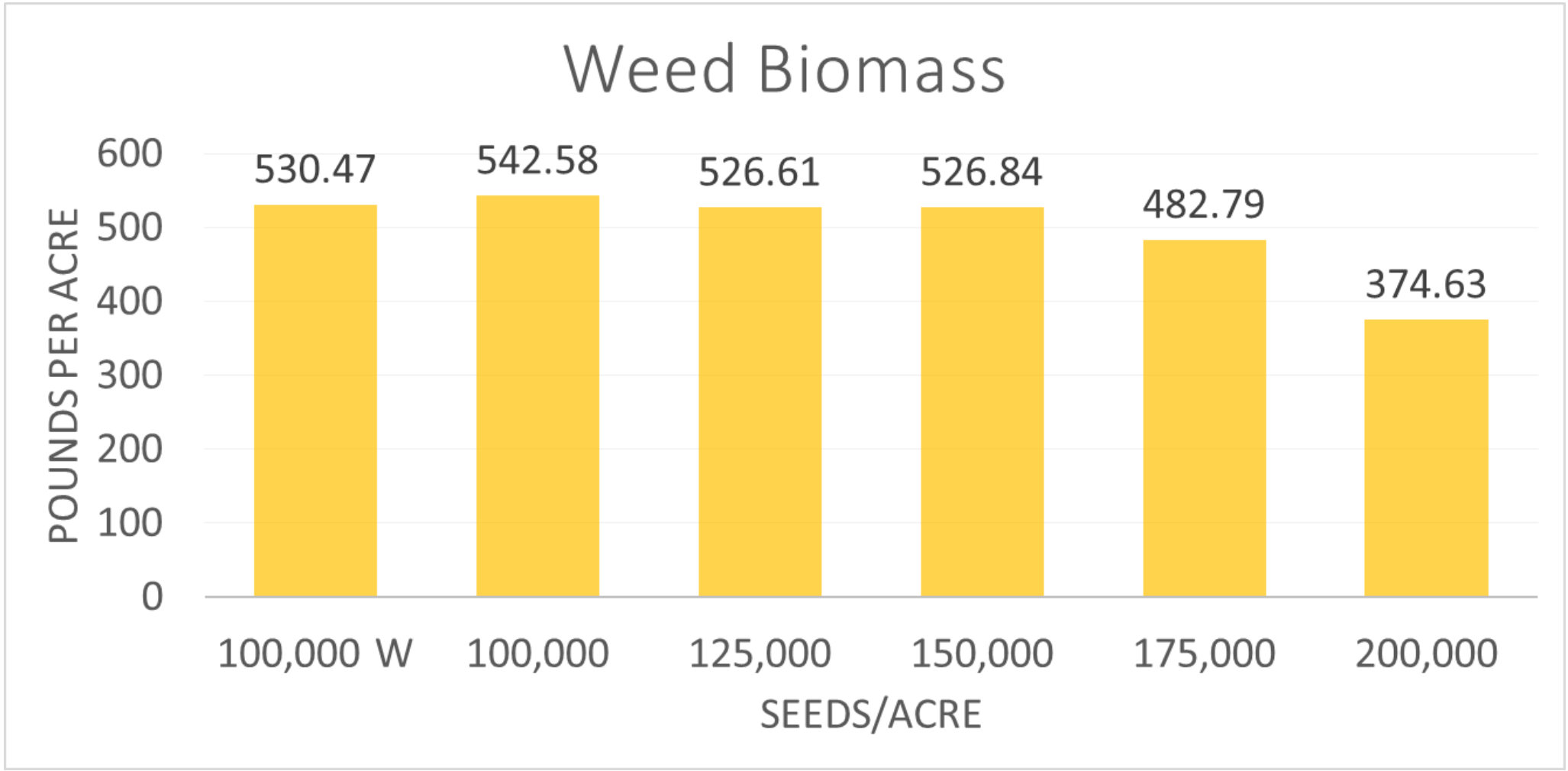
Pod Distance to the Ground

- No statistical differences



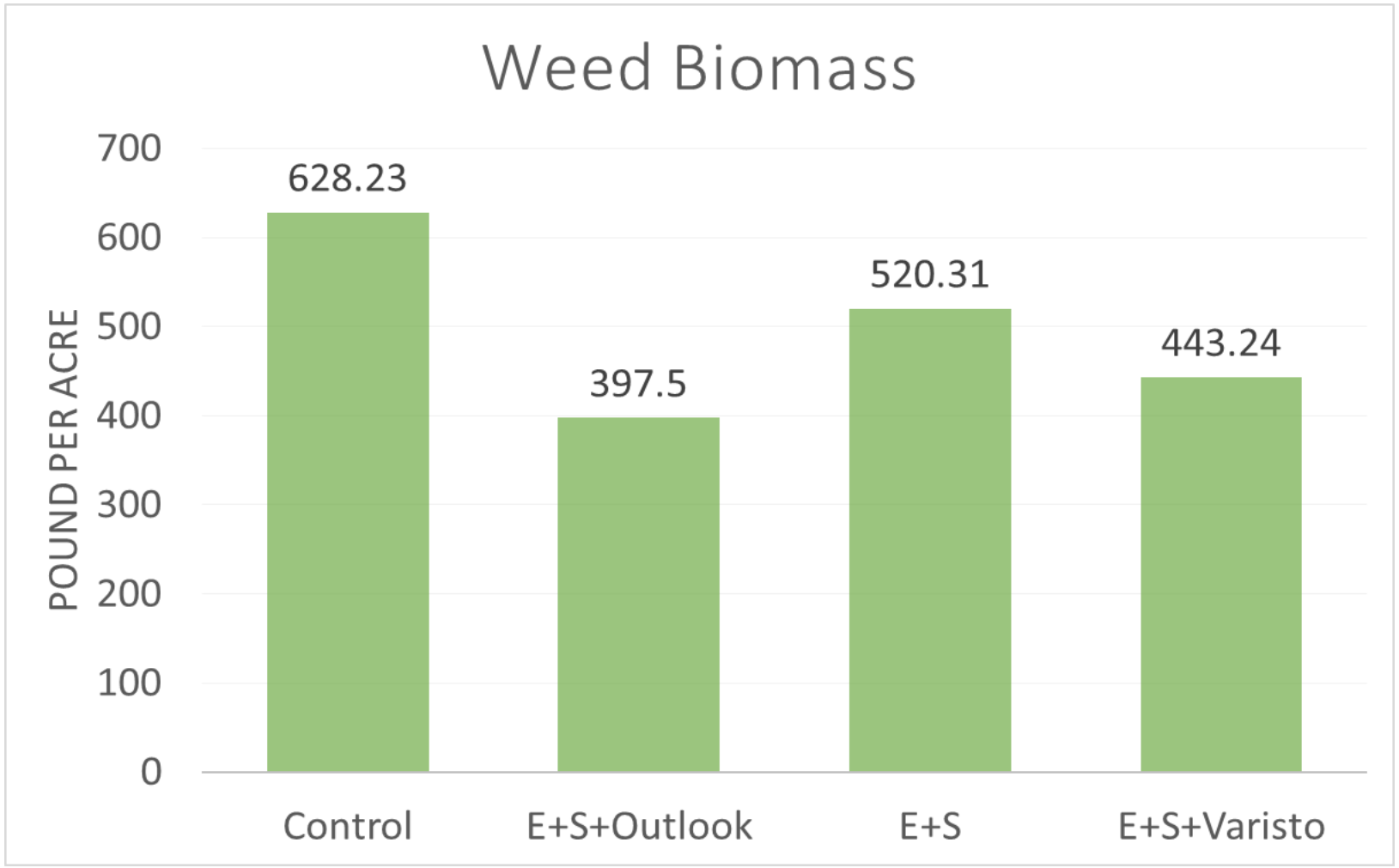
Weed Biomass

- No statistical difference
  - Roundup PowerMax watered in too soon



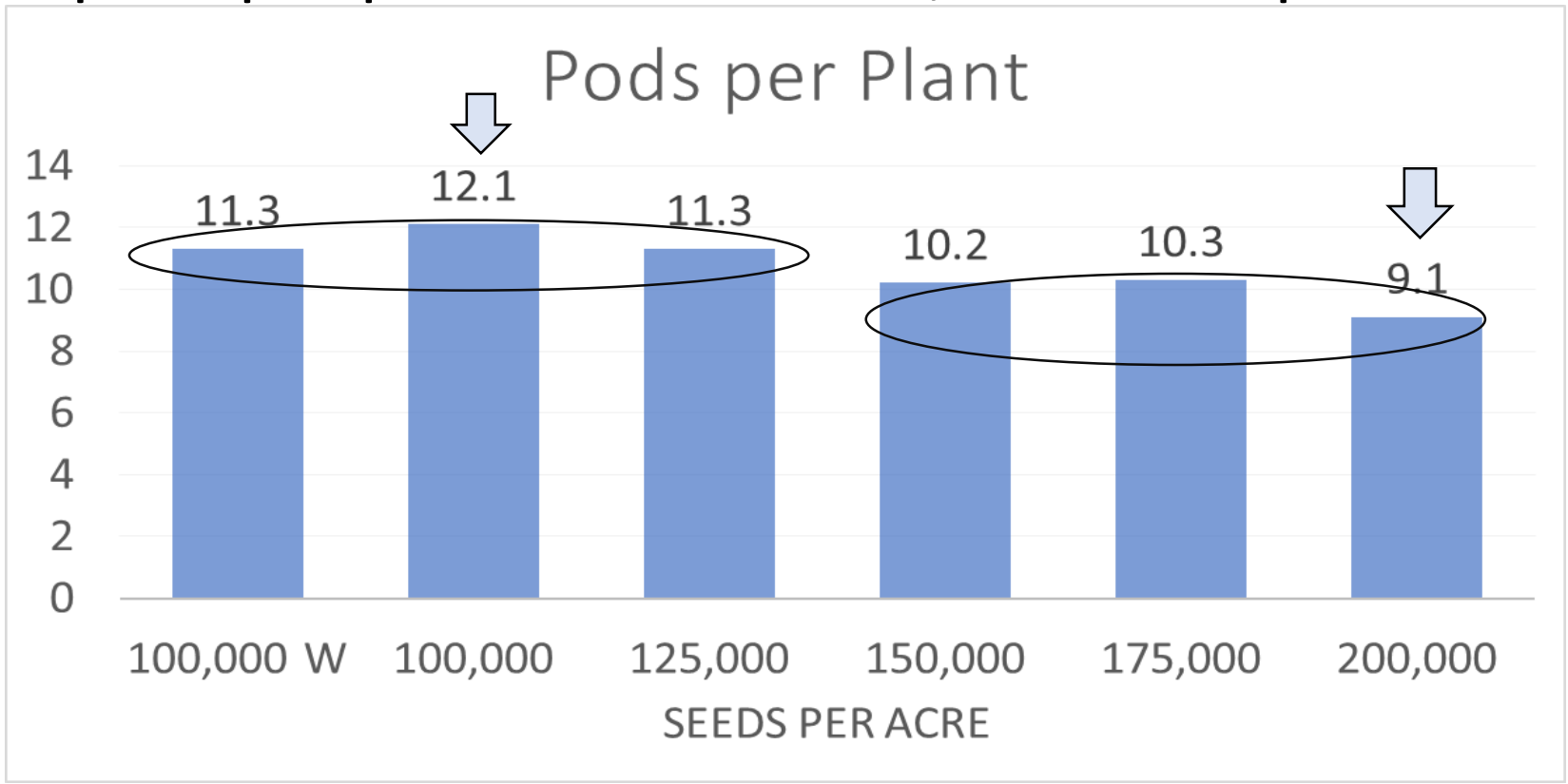
Weed Biomass

- E+S+Outlook and E+S+Varisto had less weed biomass than the control



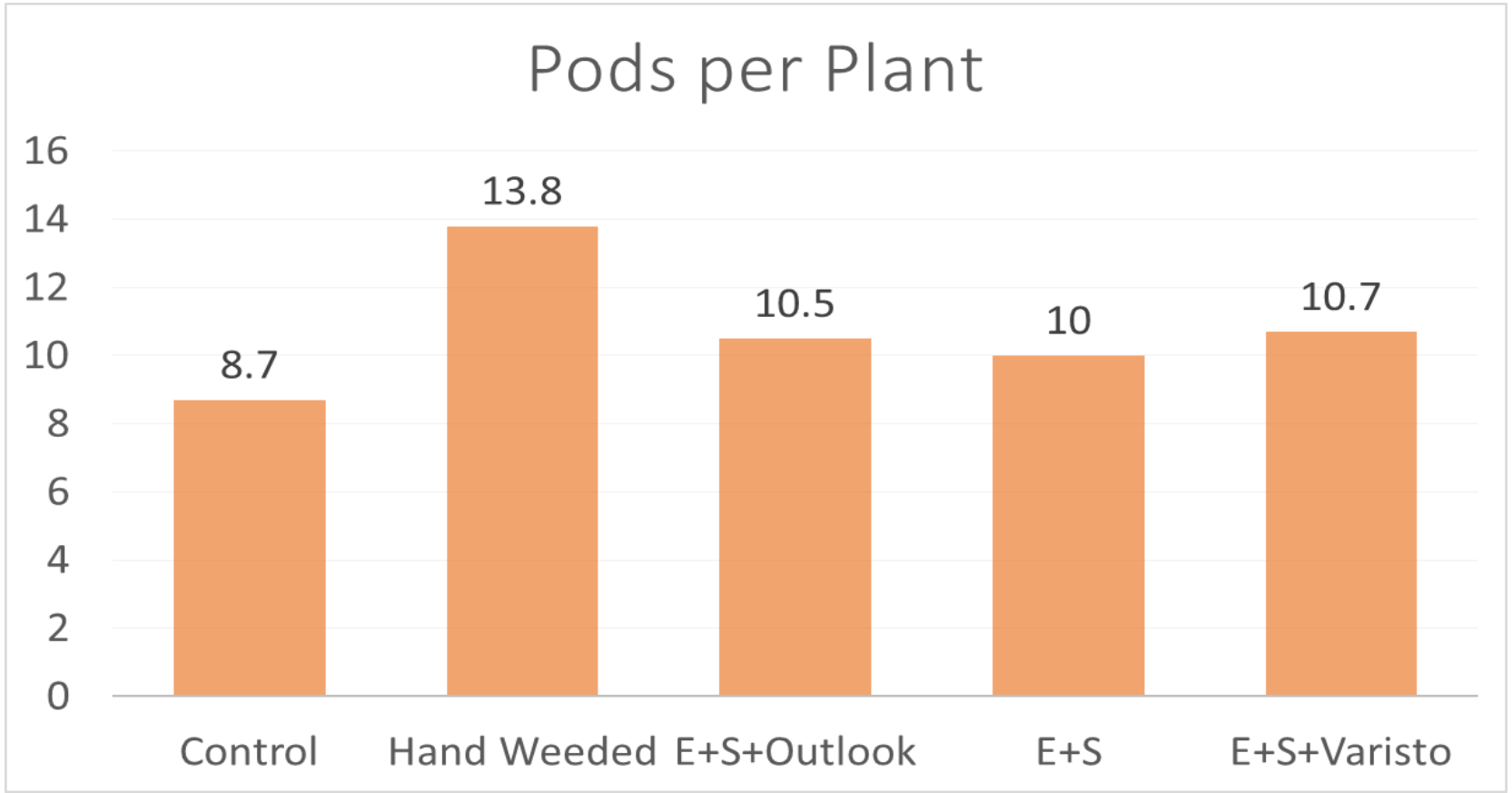
Pods per Plant

- The 100,000 seeds per acre had more pods per plant than the 150,000, 175,000, and 200,000 seeds per acre
- The 100,000, 100,000 W, and the 125,000 seeds per acre, had more pods per plant than the 200,000 seeds per acre



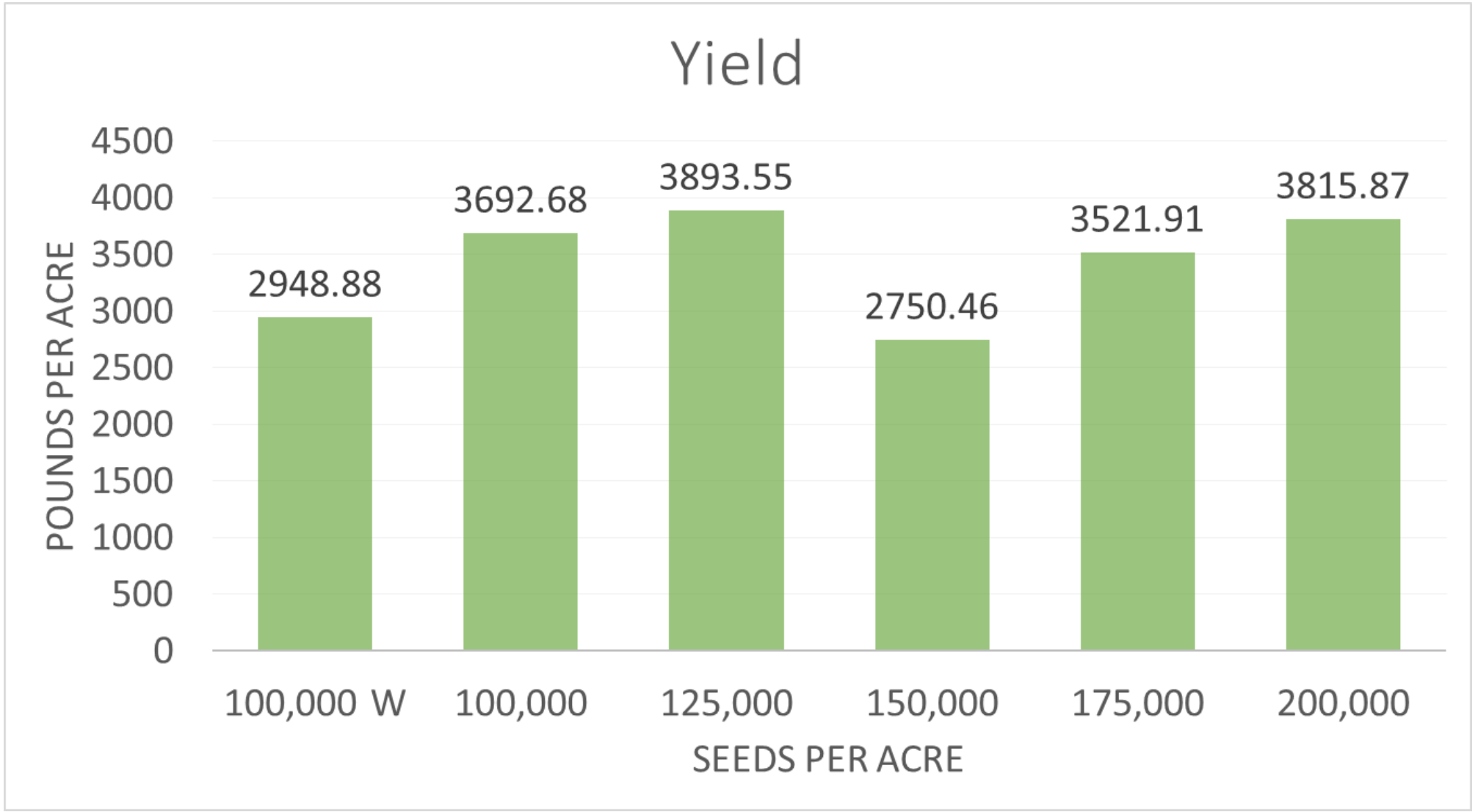
Pods per Plant

- The hand weeded control had more pods per plant than any other treatment
- The E+S+Outlook and E+S+Varisto treatments had more pods per plant than the control



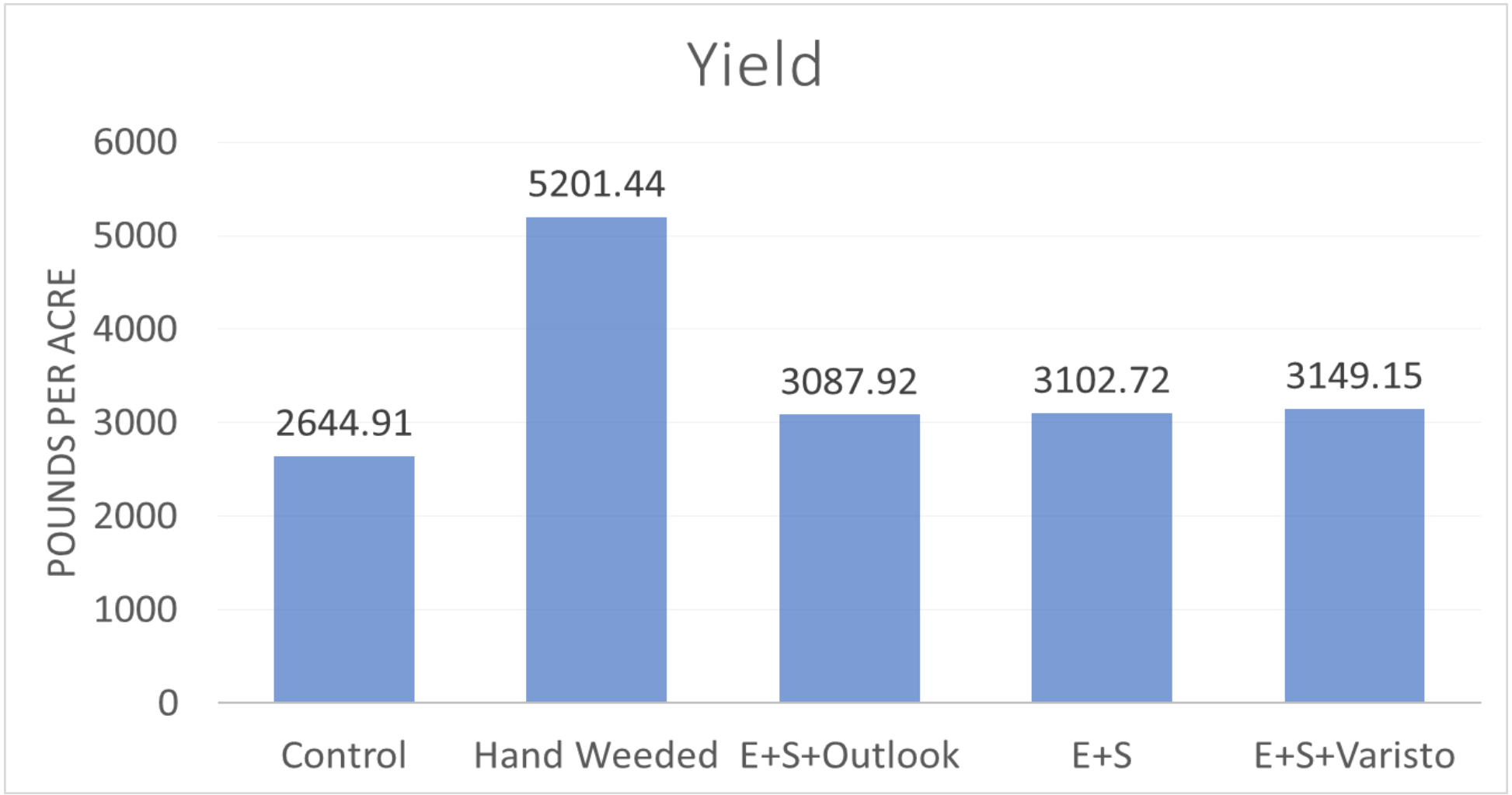
Yield

- No statistical Differences



Yield

- The hand weeded control had a higher yield than the other treatments



Conclusion

- The canopy of the 22-inch rows took longer to close than the 7.5-inch rows
- E+S+Outlook and E+S+Varisto had less weed biomass and more pods per plant than the control
- In general, the lower seeding rates had more pods per plant than the higher seeding rates
- The hand weeded control had the highest yield

Comparing Dry Bean Productivity, Weed Incidence and Management In Three Tillage Systems

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Objectives

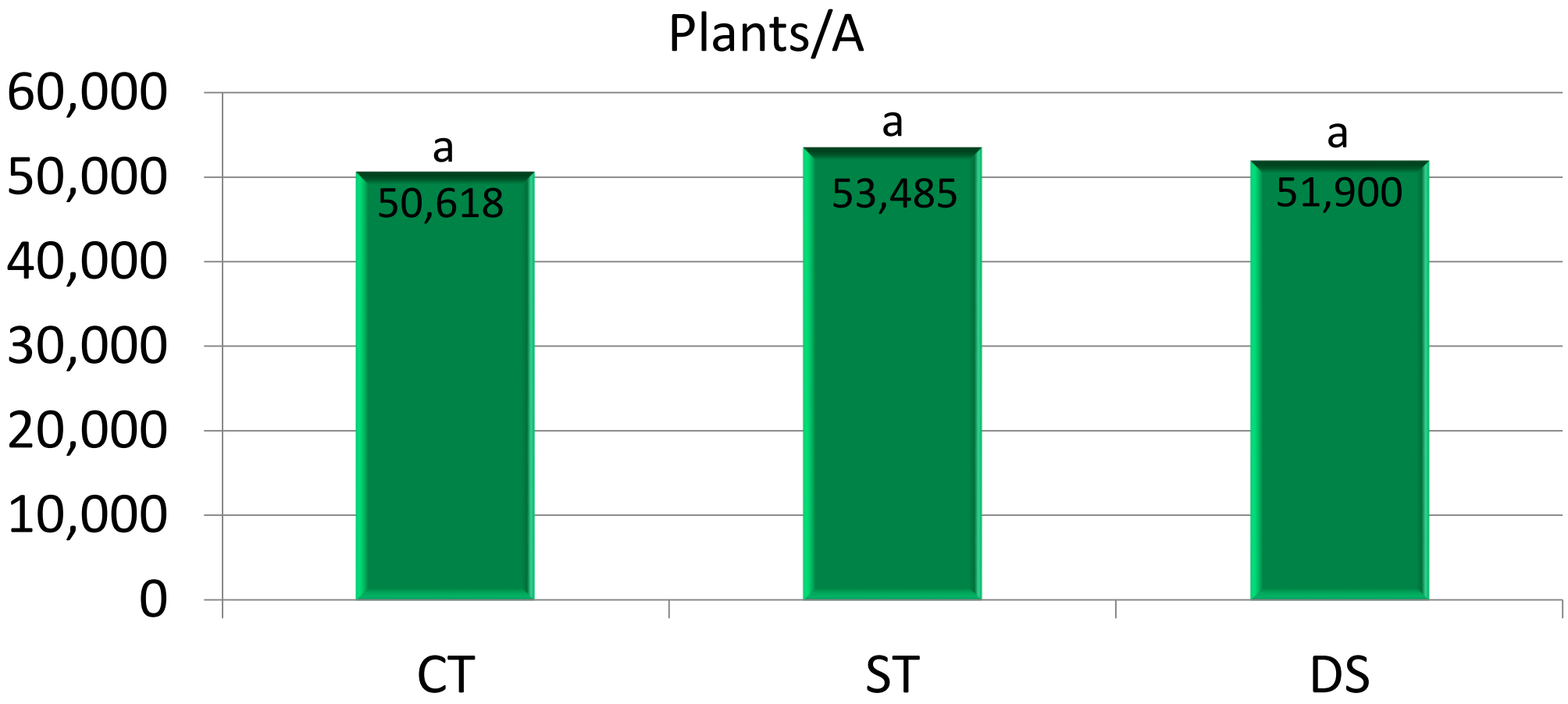
- Compare conventional tillage (CT), strip tillage (ST) and direct-seeding (DS) effects on dry bean seedling emergence and stand establishment.
- Compare the effect of CT, ST and DS on dry bean productivity.
- Compare the effect of various herbicide treatments in CT, ST and DS dry beans on weed emergence and control.

Herbicides

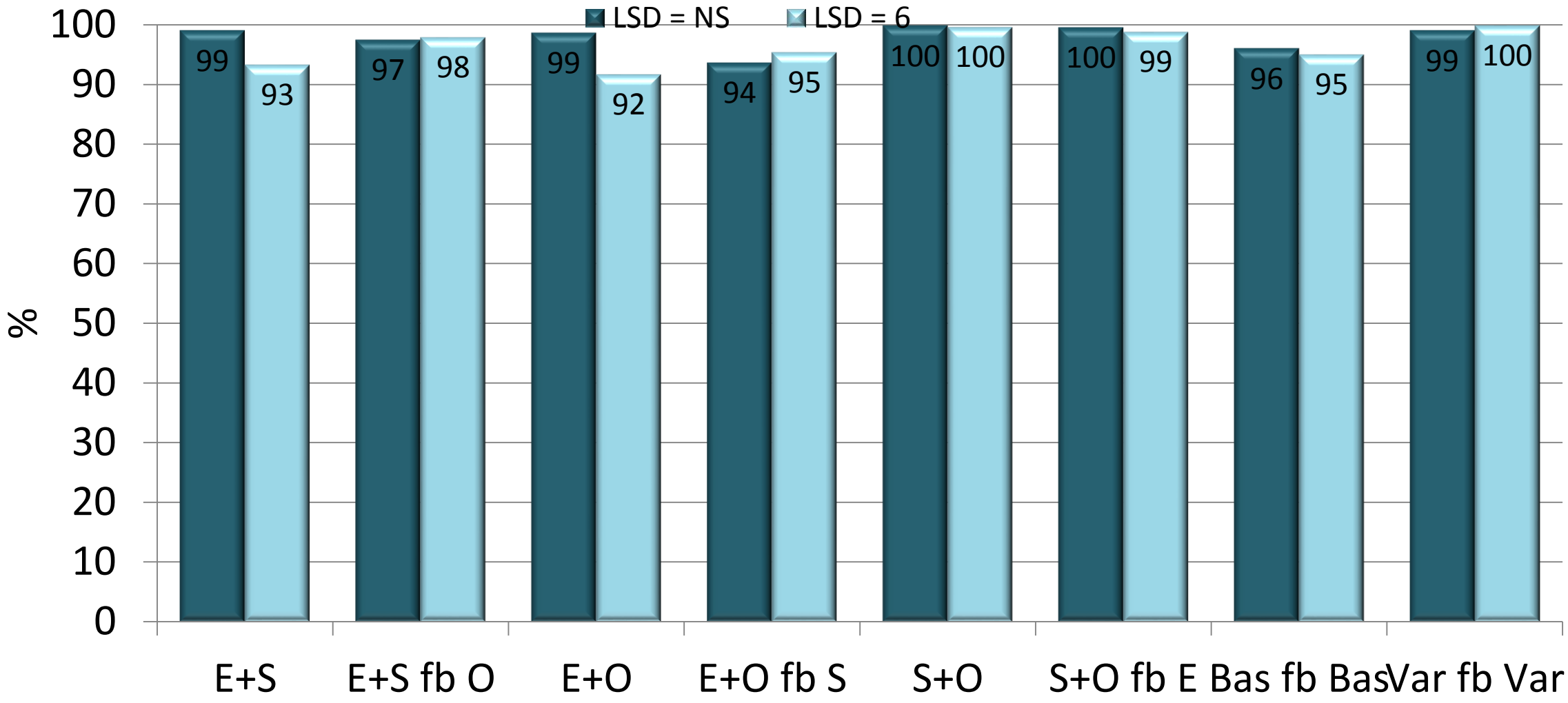
Treatment	Rate
Control	
Eptam + Sonalan	3 + 3 pt/A
E+S fb Outlook	3 + 3 pt/A fb 14 fl oz/A
Eptam + Outlook	3 pt + 14 fl oz/A
E+O fb Sonalan	3 pt + 14 fl oz/A fb 3 pt/A
Sonalan + Outlook	3 pt + 14 fl oz/A
S+O fb Eptam	3 pt + 14 fl oz/A fb 3 pt/A
Basagran + Select* fb Bas + Sel*	18 fl oz fb 18 fl oz/A
Varisto* fb Varisto*	21 fl oz fb 21 fl oz/A

*Also included MSO (1% v/v) + UAN (2.5% v/v)

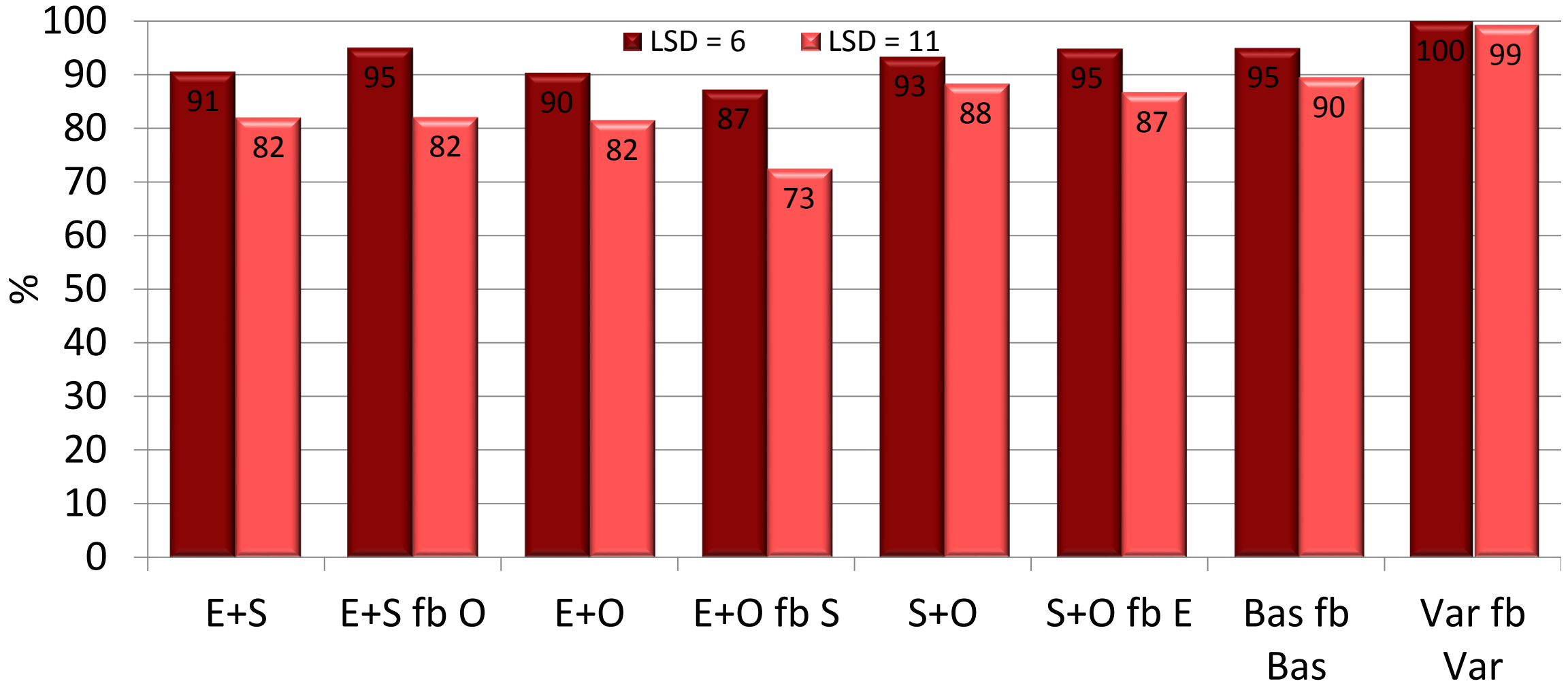
Plant Stand


Plants/A
60,000
50,000
40,000
30,000
20,000
10,000
0
a
50,618
a
53,485
a
51,900
CT
ST
DS

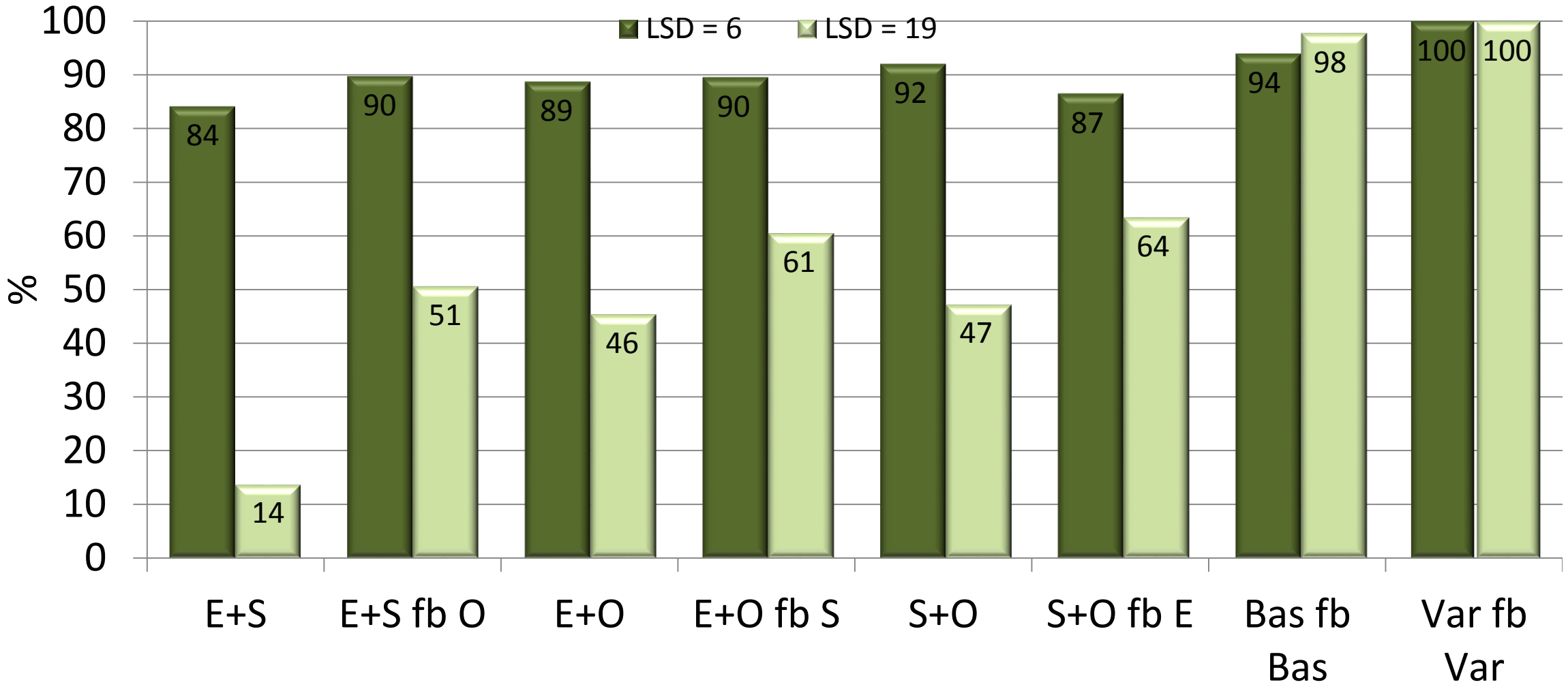
C. Lambsquarters Control



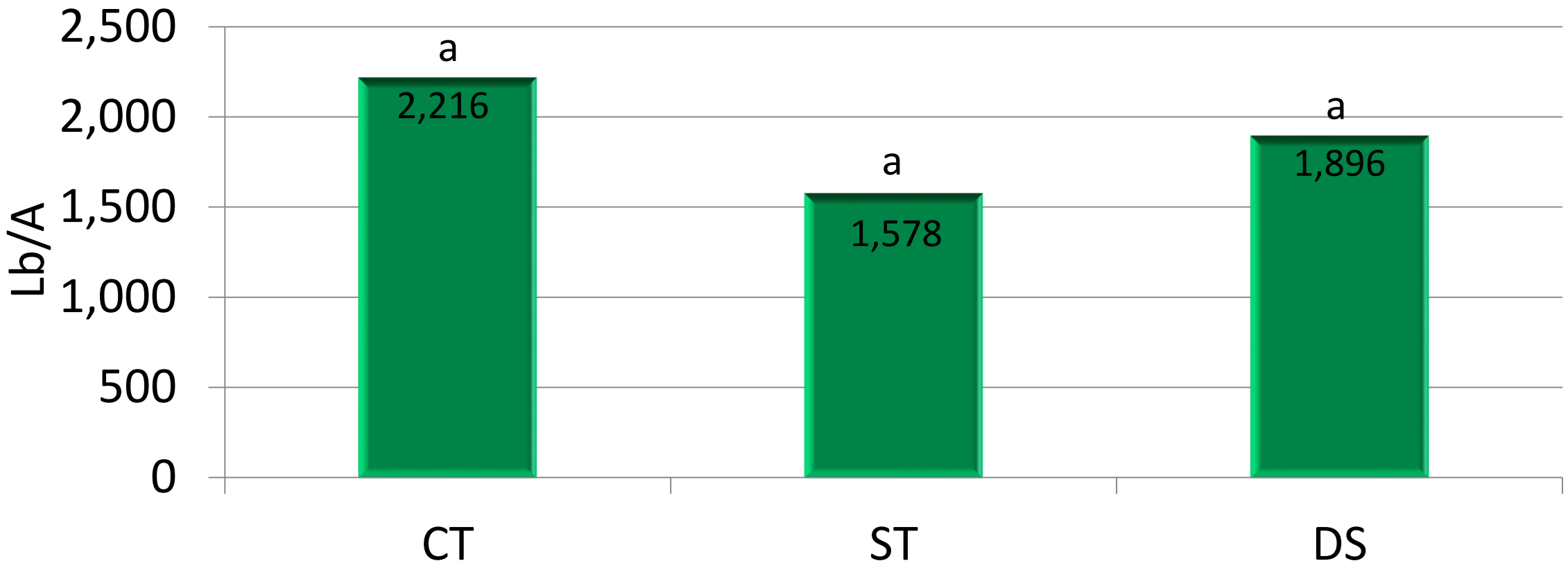
Redroot Pigweed Control



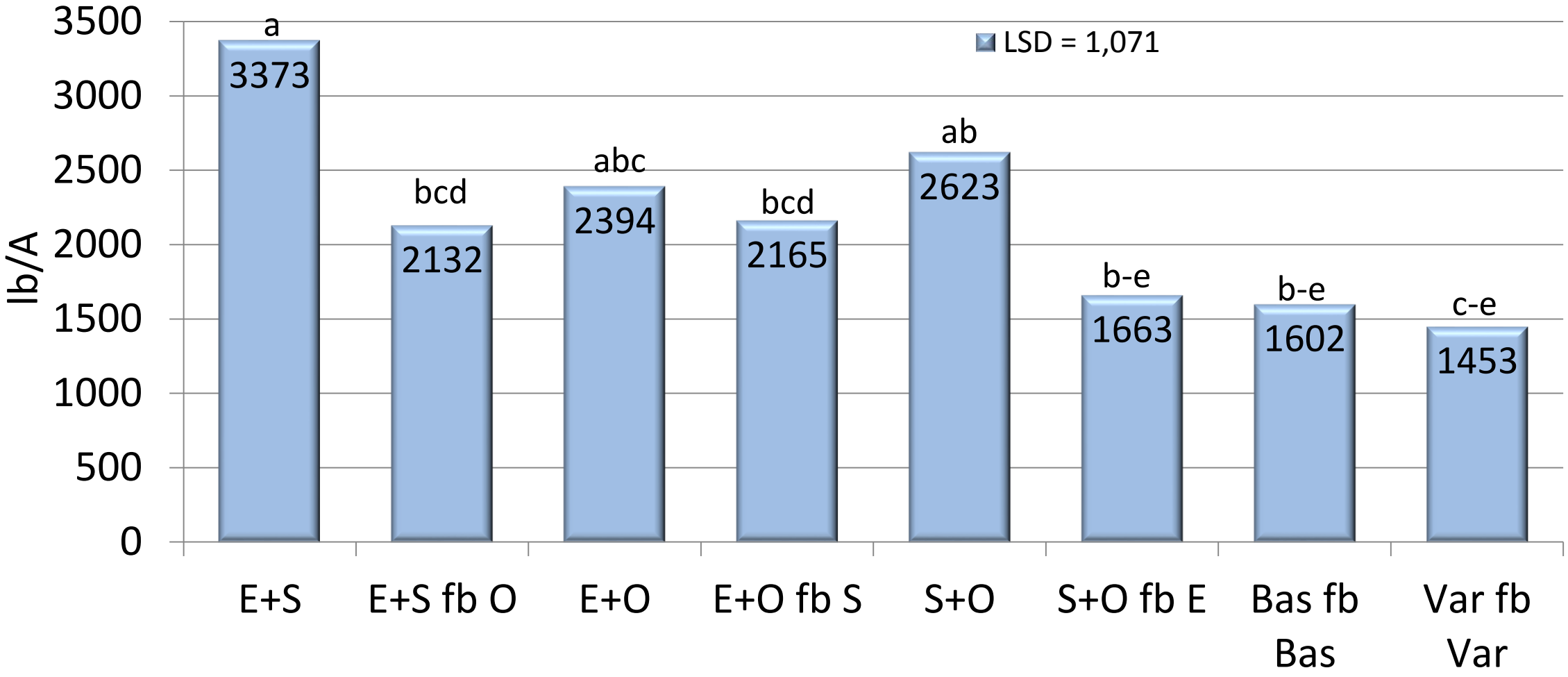
Hairy Nightshade Control



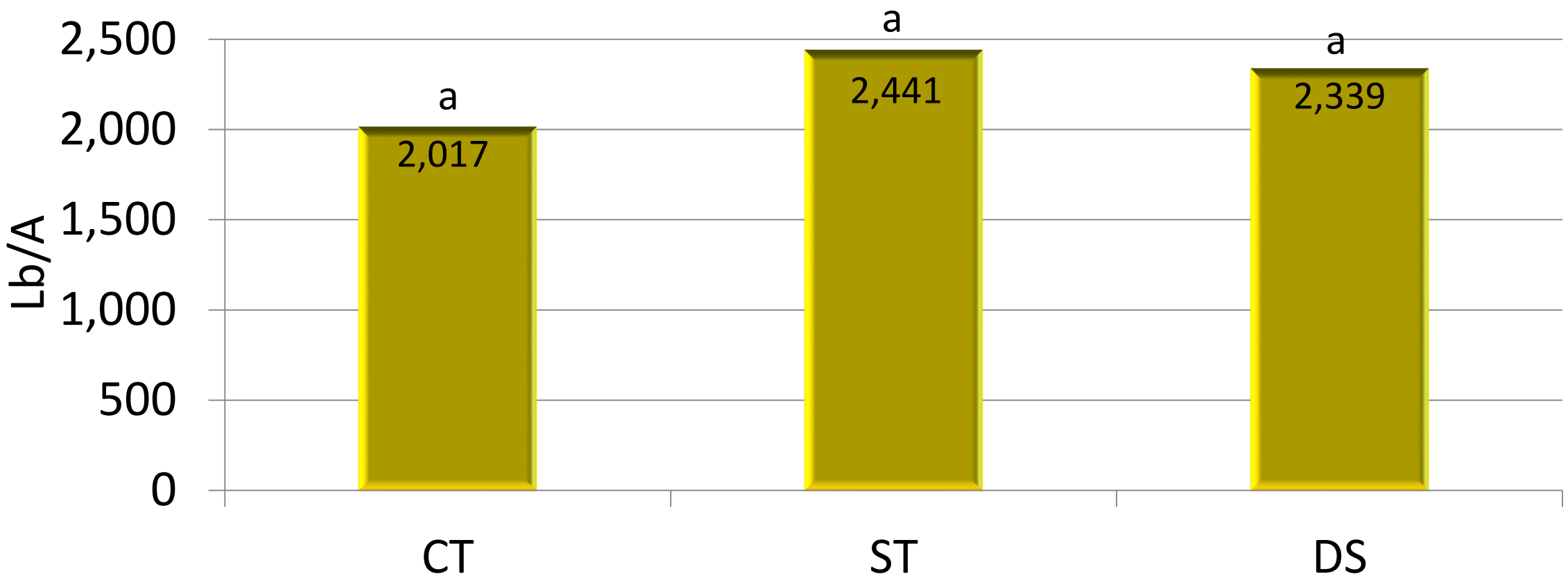
Total Weed Biomass



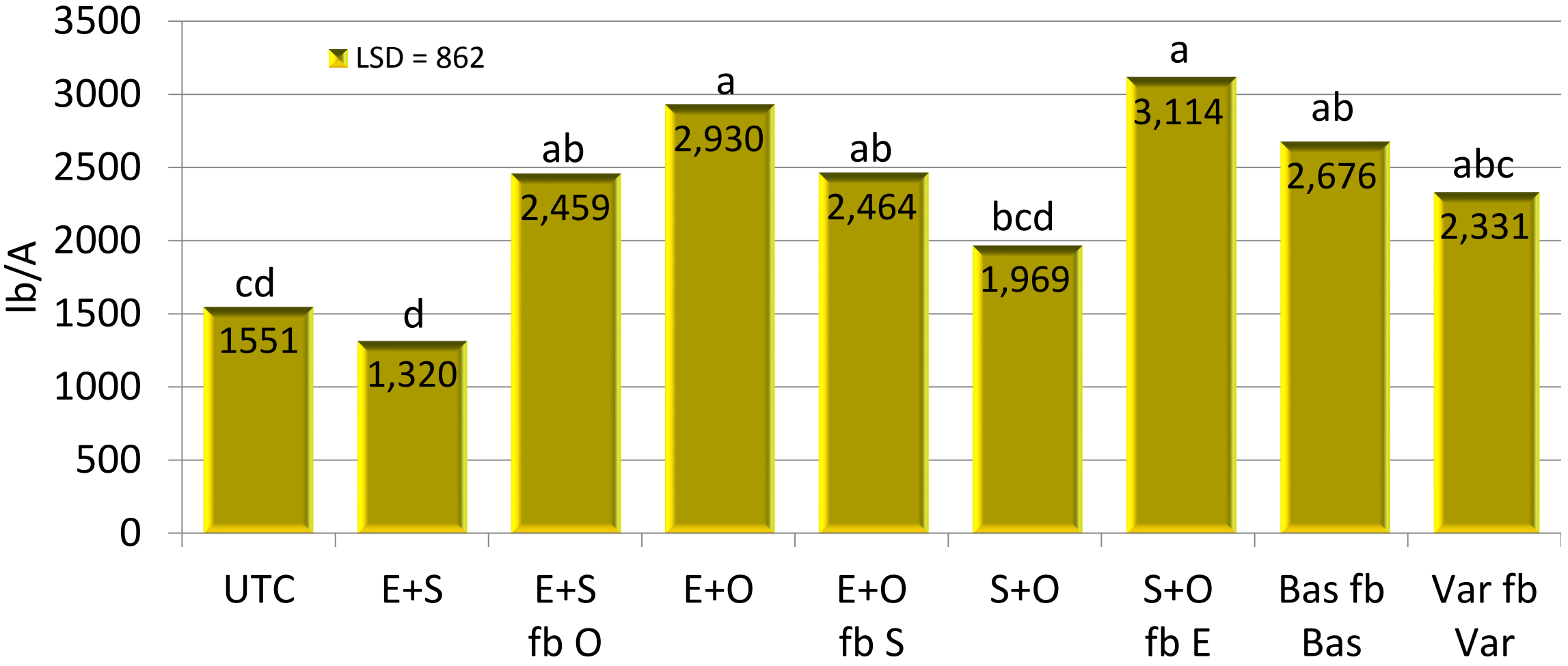
Total Weed Biomass



Bean Yield



Bean Yield (lb/A)



Summary

- No difference in weed control between CT, ST and DS.
- Common lambsquarters control equal among herbicides.
- Redroot pigweed all good early in season.
  - Lowest later in season with Eptam + Outlook fb Sonalan
  - Varisto and Basagran control best late season
- Hairy nightshade control good to excellent early in season
  - Varisto and Basagran control best late season

Summary

- No difference in total weed biomass between CT, ST, and DS.
- Lowest weed biomass with Sonalan + Outlook fb Eptam, Basagran, and Varisto.
- Bean stand equal between CT, ST and DS.
- Bean yield equal between CT, ST and DS.
- Ep + Son fb OL, Ep + OL & fb Son, Son + OL fb Ep, Basagran and Varisto had highest seed yields.