

Evaluation of Novel Herbicide Tolerant Traits in MD Soybean Systems



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EXTENSION



Soybean Herbicide Tolerance Traits

- Roundup Ready 2 Yield (Glyphosate)
- Xtend (Dicamba, Glyphosate)
- Xtendflex (Dicamba, Glyphosate, Glufosinate)
- LibertyLink (Glufosinate)
- LibertyLink GT27 (Glufosinate, Glyphosate, HPPD??)
- Enlist E3 Beans (2,4-D, Glyphosate, Glufosinate)





- 1) Mature Palmer amaranth plant
- 2) Palmer amaranth starting to flower
- 3) Mature palmer amaranth in soybean field

Research Questions

- Efficacy controlling Palmer amaranth
 - Glufosinate
 - Dicamba
 - 2,4-D
- Efficacy on controlling annual grass weeds
 - Glufosinate
 - Glyphosate
 - Sethoxydim
- Any antagonism from tank-mixes
- Effects of application timing



Herbicide Treatments

- Broadleaf products alone
- Grass products alone
- Broadleaf product + grass product
- Glufosinate + 2,4-D +/- grass product
- Timely (26 DAP) Late (47 DAP)

1. Control - No POST Herbicide
2. Glyphosate
3. Sethoxydim
4. Glufosinate
5. Glufosinate + Glyphosate
6. Glufosinate + Sethoxydim
7. 2,4-D
8. 2,4-D + Glyphosate
9. 2,4-D + *Sethoxydim**
10. 2,4-D + Glufosinate + Glyphosate
11. 2,4-D + Glufosinate
12. 2,4-D + *Glufosinate + Sethoxydim**
13. Dicamba
14. Dicamba + Glyphosate
15. Dicamba + Sethoxydim

*off-label tank-mix

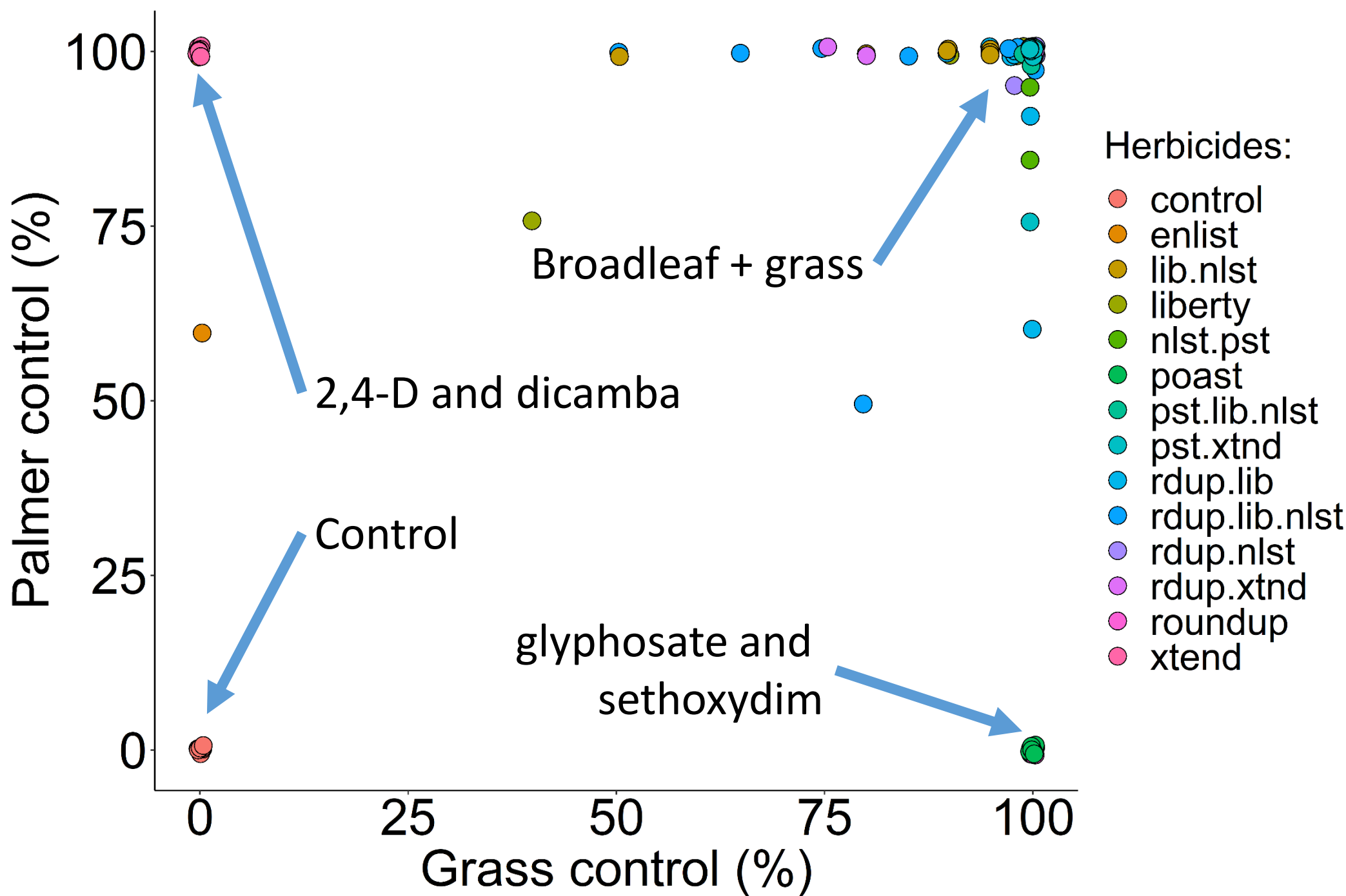
	Rep 1			Rep 2			Rep 3			Rep 4		
Buffer	9	9	Buffer			Buffer			Buffer	11	11	Buffer
	11	11								12	12	
	8	8								6	6	
	7	7		1	1		3	3		10	10	
	10	10		2	2		2	2		9	9	
	6	6		14	14		13	13		8	8	
	4	4		13	13		15	15		7	7	
	5	5		15	15		14	14		4	4	
	12	12		3	3		1	1		5	5	
	15	15		7	7		6	6		2	2	
	2	2		11	11		12	12		1	1	
	3	3		6	6		5	5		13	13	
	13	13		12	12		4	4		15	15	
	14	14		9	9		11	11		14	14	
	1	1		8	8		8	8		3	3	
				4	4		7	7				
				5	5		9	9				
				10	10		10	10				
	Late	Early		Late	Early		Late	Early		Early	Late	

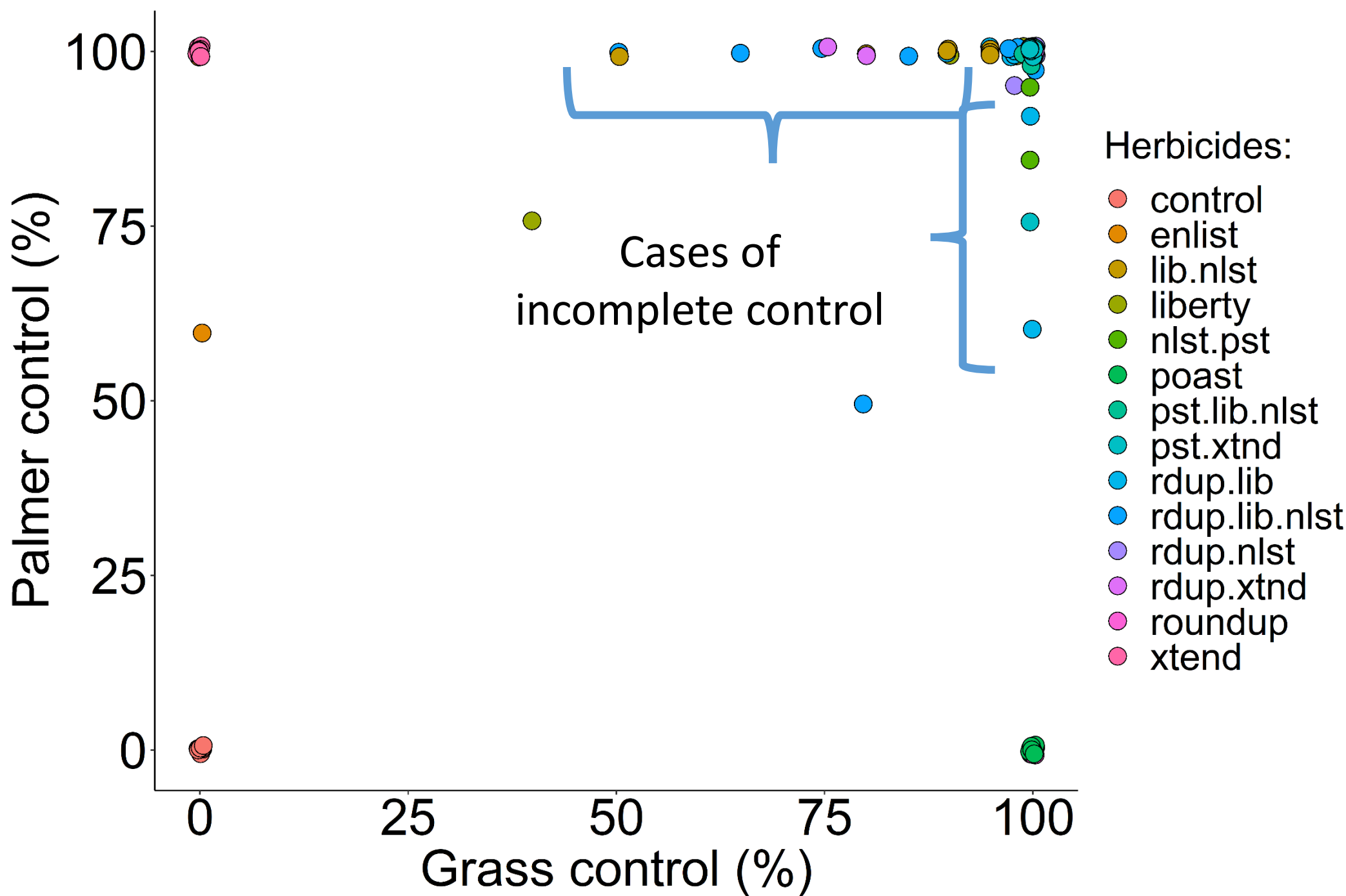
- 4 replicates, split-plot design
- 30' × 25' plots
- Buffers: 90' reps, 60' HT varieties
- Planted Jun 4
- Timely spray Jun 30 (26 DAP)
- Late spray Jul 21 (47 DAP)
- Assessed at 21 DAT

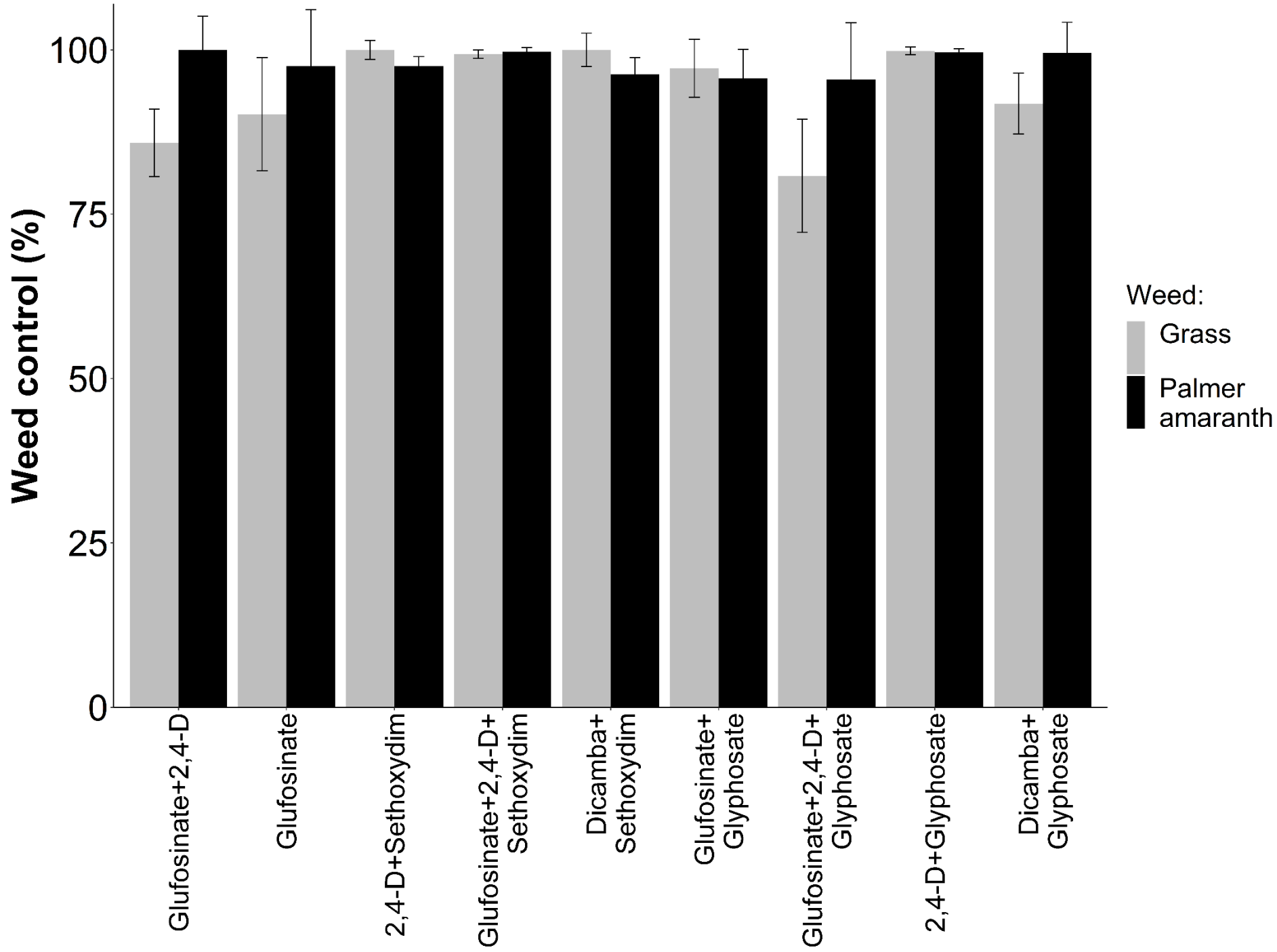


Spray Composition

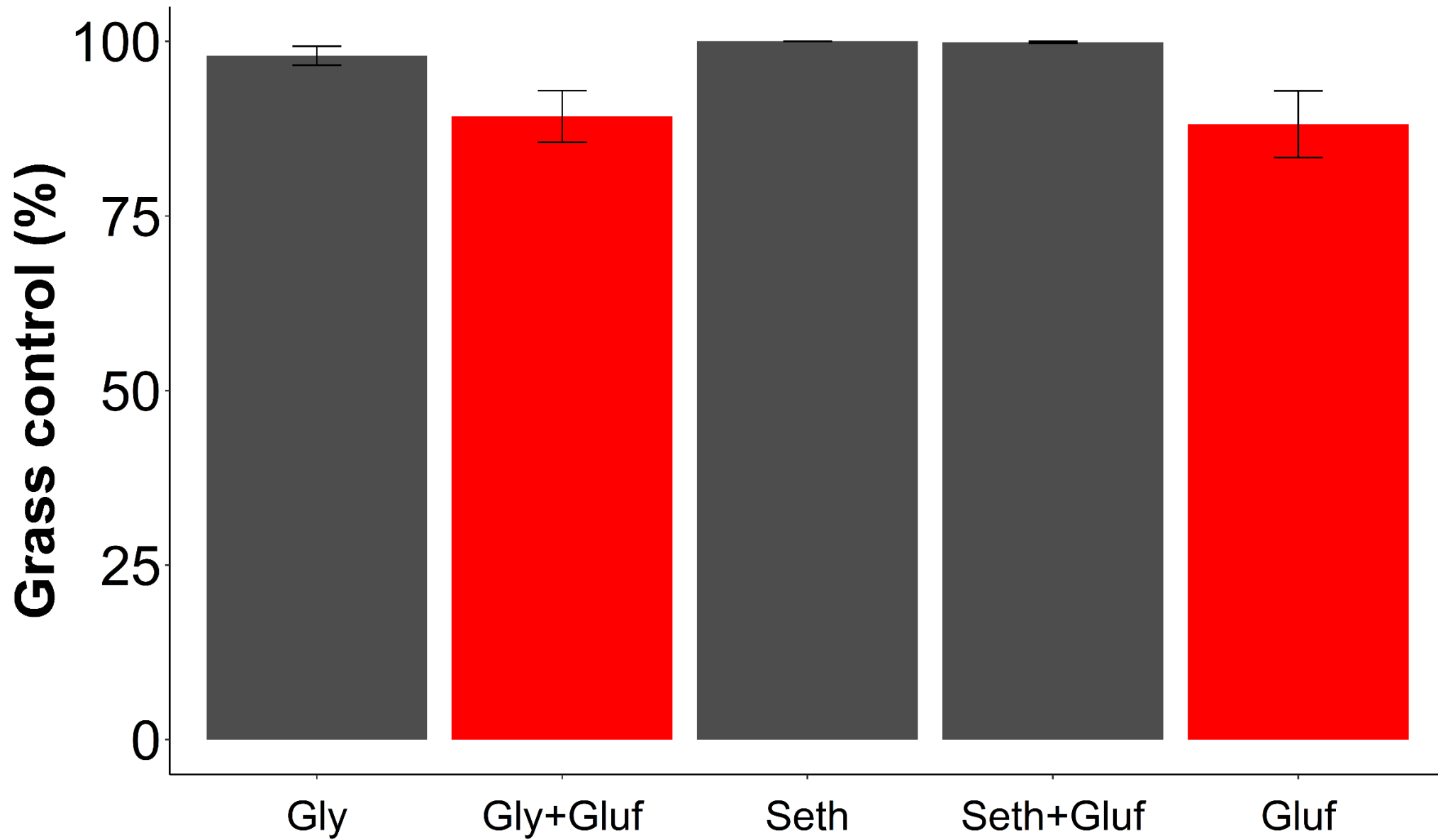
1. **Control - No POST Herbicide**
2. **Glyphosate** - Roundup Powermax (1261 g ai/ha)
3. **Sethoxydim** - Poast (525 g ai/ha) + COC (2.3 L/ha) + AMS (3362 g/ha)
4. **Glufosinate** - Liberty (881 g ai/ha) + AMS (3362 g/ha)
5. **Gufosinate + Glyphosate** - Liberty (881 g ai/ha) + Roundup Powermax (1261 g ai/ha) + AMS (3362 g/ha)
6. **Glufosinate + Sethoxydim** - Liberty (881 g ai/ha) + Poast (525 g ai/ha) + COC (2.3 L/ha) + AMS (3362 g/ha)
7. **2,4-D** - Enlist One (1065 g ai/ha)
8. **2,4-D + Glyphosate** - Enlist One (1065 g ai/ha) + Roundup Powermax (1261 g ai/ha)
9. **2,4-D + Sethoxydim*** - Enlist One (1065 g ai/ha) + Poast (525 g ai/ha) + COC (2.3 L/ha) + AMS (3362 g/ha)
10. **2,4-D + Glufosinate + Glyphosate** - Enlist One (1065 g ai/ha) + Liberty (881 g ai/ha) + Roundup Powermax (1261 g ai/ha) + AMS (3362 g/ha)
11. **2,4-D + Glufosinate** - Enlist One (1065 g ai/ha) + Liberty (881 g ai/ha) + AMS (3362 g/ha)
12. **2,4-D + Glufosinate + Sethoxydim*** - Enlist One (1065 g ai/ha) + Liberty (881 g ai/ha) + Poast (525 g ai/ha) + COC (2.3 L/ha) + AMS (3362 g/ha)
13. **Dicamba** - Xtendimax with VaporGrip (559 g ai/ha) + Drift Guard (1.2 L/ha)
14. **Dicamba + Glyphosate** - Xtendimax with VaporGrip (559 g ai/ha) + Drift Guard (1.2 L/ha) + Roundup Powermax (1261 g ai/ha)
15. **Dicamba + Sethoxydim** - Xtendimax with VaporGrip (559 g ai/ha) + Poast (525 g ai/ha) + COC (2.3 L/ha) + AMS (3362 g/ha)

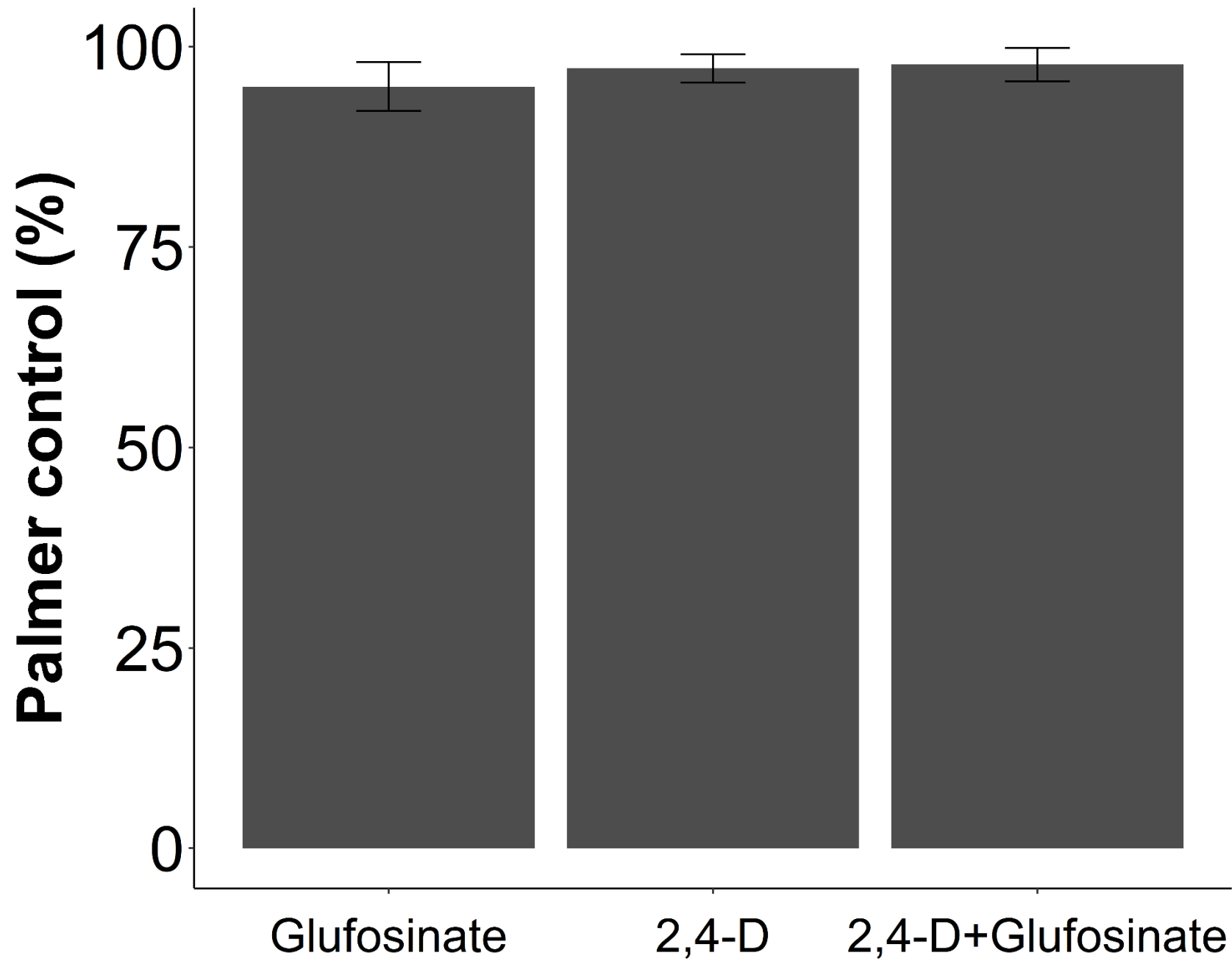


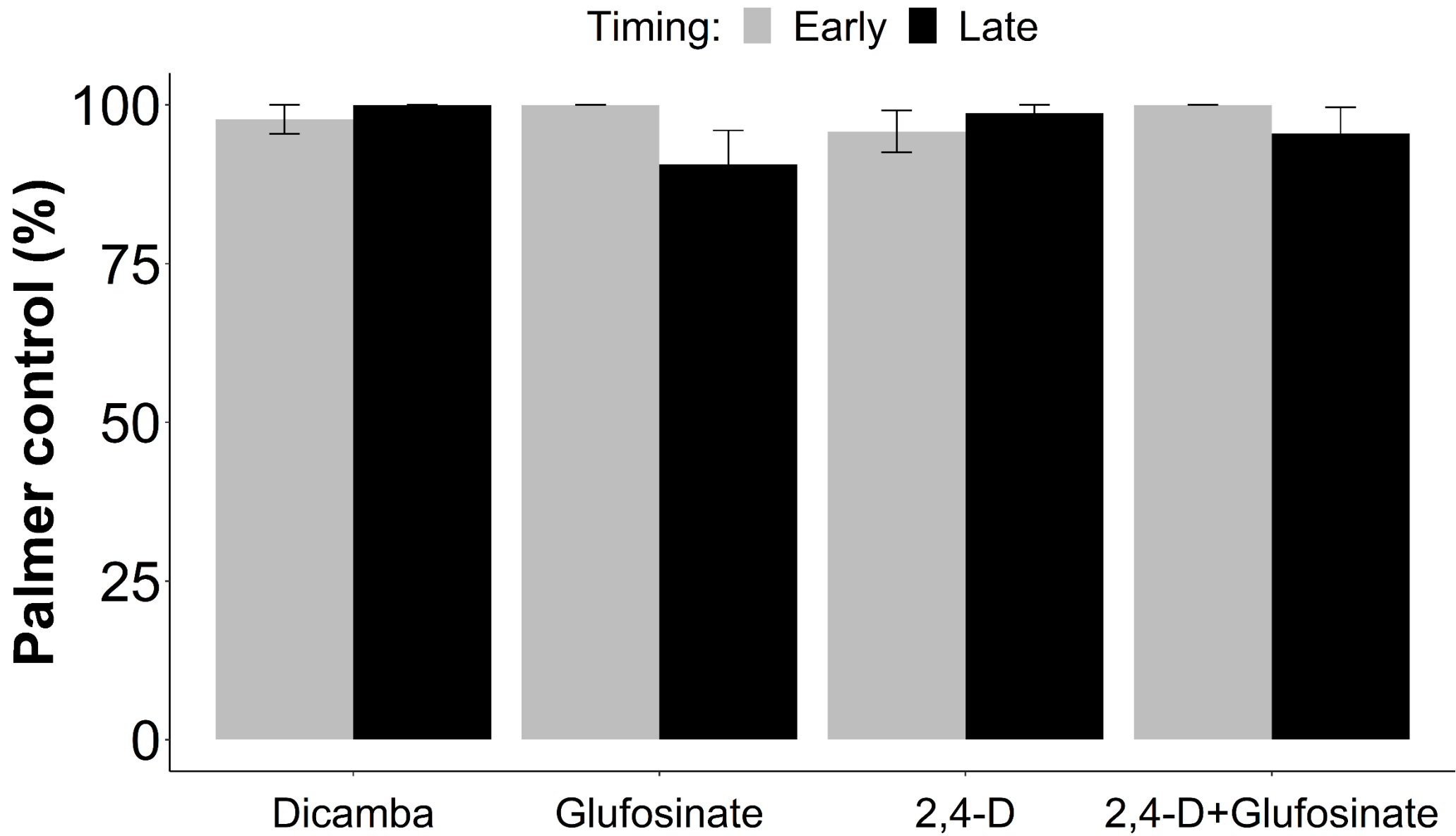




Herbicide	# plots	Grass % ctrl	Palmer % ctrl
Glufosinate+2,4-D+Glyphosate	8	81.3	93.5
Glufosinate+2,4-D	7	85	100
Glufosinate+Glyphosate	7	96.9	92.9
Glufosinate	4	81.8	93.8
2,4-D+Sethoxydim	2	100	90
Glufosinate+2,4-D+Sethoxydim	2	99.5	99
Dicamba+Glyphosate	2	77.5	100
2,4-D	1	0	60
Dicamba+Sethoxydim	1	100	75
2,4-D+Glyphosate	1	98	95







Initial Conclusions

- Glufosinate
 - Incomplete control of annual grass weeds
 - Apparent antagonism with glyphosate on grass
- Timing
 - No statistically significant differences
 - Glufosinate slightly lower control in late application
- Palmer amaranth control
 - All three AI worked well
 - No apparent antagonism with tank mixes
- Next field season
 - Xtendflex soybeans - dicamba + glufosinate + glyphosate
 - Fomesafen (Group 14; Flexstar, Reflex)

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