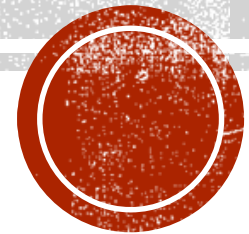


**CANOLA: ARE SAFE RATES OF P
CHANGING?**



CURRENT RECOMMENDATIONS

Safe Rates of P₂O₅

- 17 to 22 kg P₂O₅ / ha
- 28 kg P₂O₅ / ha under good moisture

Removal Rates

- 1-1.2 kg P₂O₅ / bu > Safe Rate

Safe rates of SO₄- S

- 11 kg S / ha

Typical Recommendation

- 15- 30 kg S / ha

Soil Texture	1 in. spread ¹ (disk or knife) ²			2 in. spread ¹ (spoon or hoe)			3 in. spread ¹ (sweep)		
	Row Spacing (in.)								
	6	9	12	6	9	12	6	9	12
	SBU ³								
	17%	11%	8%	33%	22%	17%	50%	33%	25%
Light (sandy loam)	0	0	0	10	0	0	20	10	0
Medium (loam to clay loam)	0	0	0	20	10	0	30	20	10
Heavy (clay to heavy clay)	10	0	0	30	20	10	40	30	20



OBJECTIVES

- Are current P fertilizer recommendations adequate for high yielding cultivars?
- Does all fertilizer P need to be seed placed or is side banding equally effective?
- Are current recommendations regarding safe rates of P and S suitable for typical knife or hoe openers in use today?



EXPERIMENTAL DESIGN

- 3 Sites: Scott, Indian Head, & Melfort
- RCBD 4 Replicates
- 2-Way Factorial
 - Rate: 0, 20, 40, 60, 80 kg/ha P₂O₅ & 15 S
 - Placement: Sideband (SB) & Seed-Placed (SP)
- Data Collection
 - Plant Density: 2, 4, 6 WAP
 - Biomass: 6 WAP
 - Days to Maturity: 60% SCC
 - Yield
 - Green Seed
 - TKW



TREATMENT APPLICATION

Treatment #	kg/ha P ₂ O ₅	Placement
1	0	SP
2	20	SP
3	40	SP
4	60	SP
5	80	SP
6	0	SB
7	20	SB
8	40	SB
9	60	SB
10	80	SB
11	0 & 15S	SP
12	20 & 15S	SP
13	40 & 15S	SP
14	60 & 15S	SP
15	80 & 15S	SP



SITE INFORMATION

Scott

- SBU 10%
- Loam

SOIL TEST NUTRIENT LEVELS

Depth (inches)	NO ₃ -N	P	K	SO ₄ -S
0-6	13	>30	261	11
6-12	6			2
12-24	5	“low”		2

Indian Head

- SBU 6%
- Clay Loam

SOIL TEST NUTRIENT LEVELS

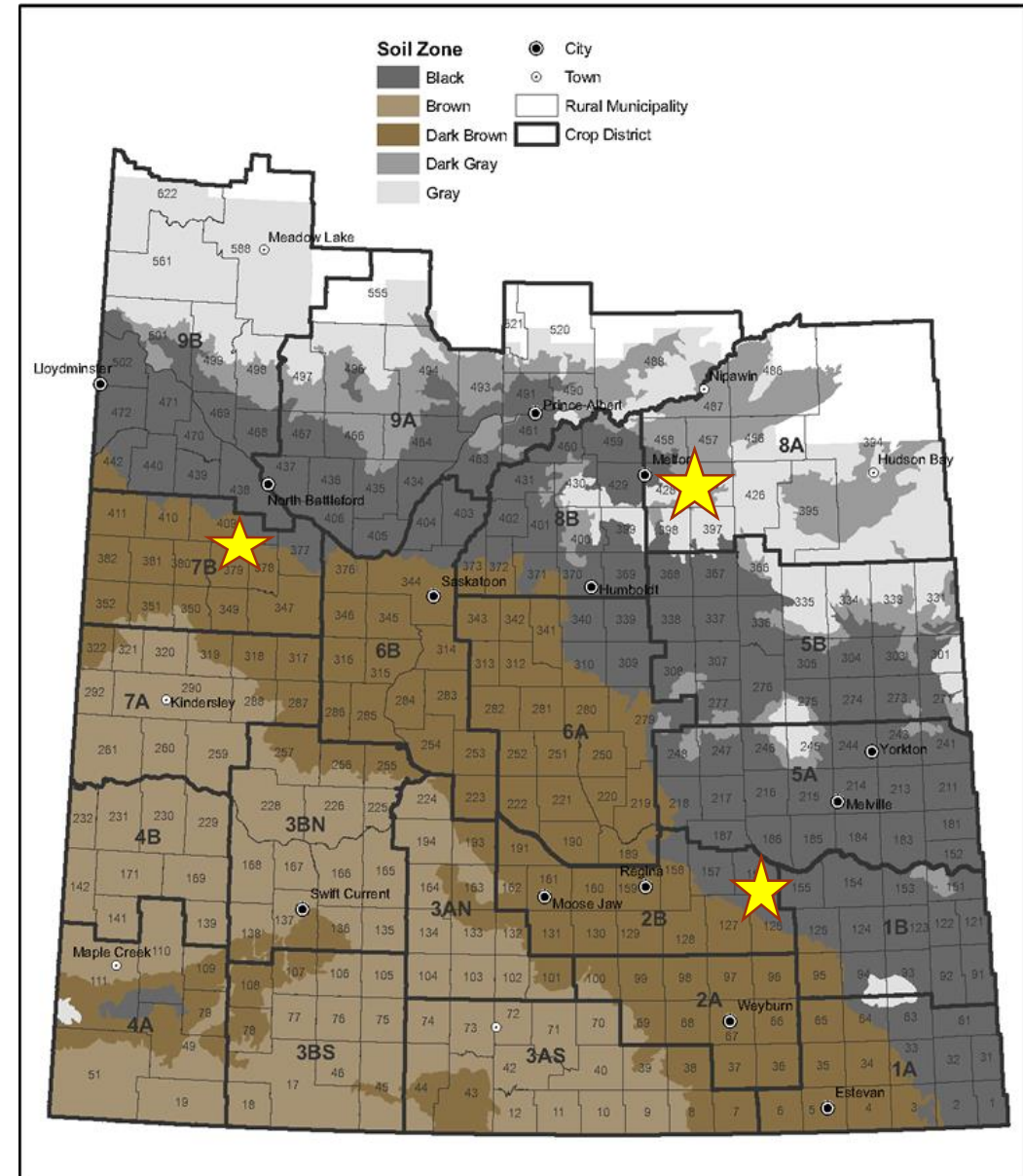
Depth (inches)	NO ₃ -N	P	K	SO ₄ -S
0-6	10	6	>540	9
6-24	11	“very low”		19

Melfort

- SBU 8%
- Clay Loam

SOIL TEST NUTRIENT LEVELS

Depth (inches)	NO ₃ -N	P	K	SO ₄ -S
0-6	39	22	700	10
0-12	68	“low”		15

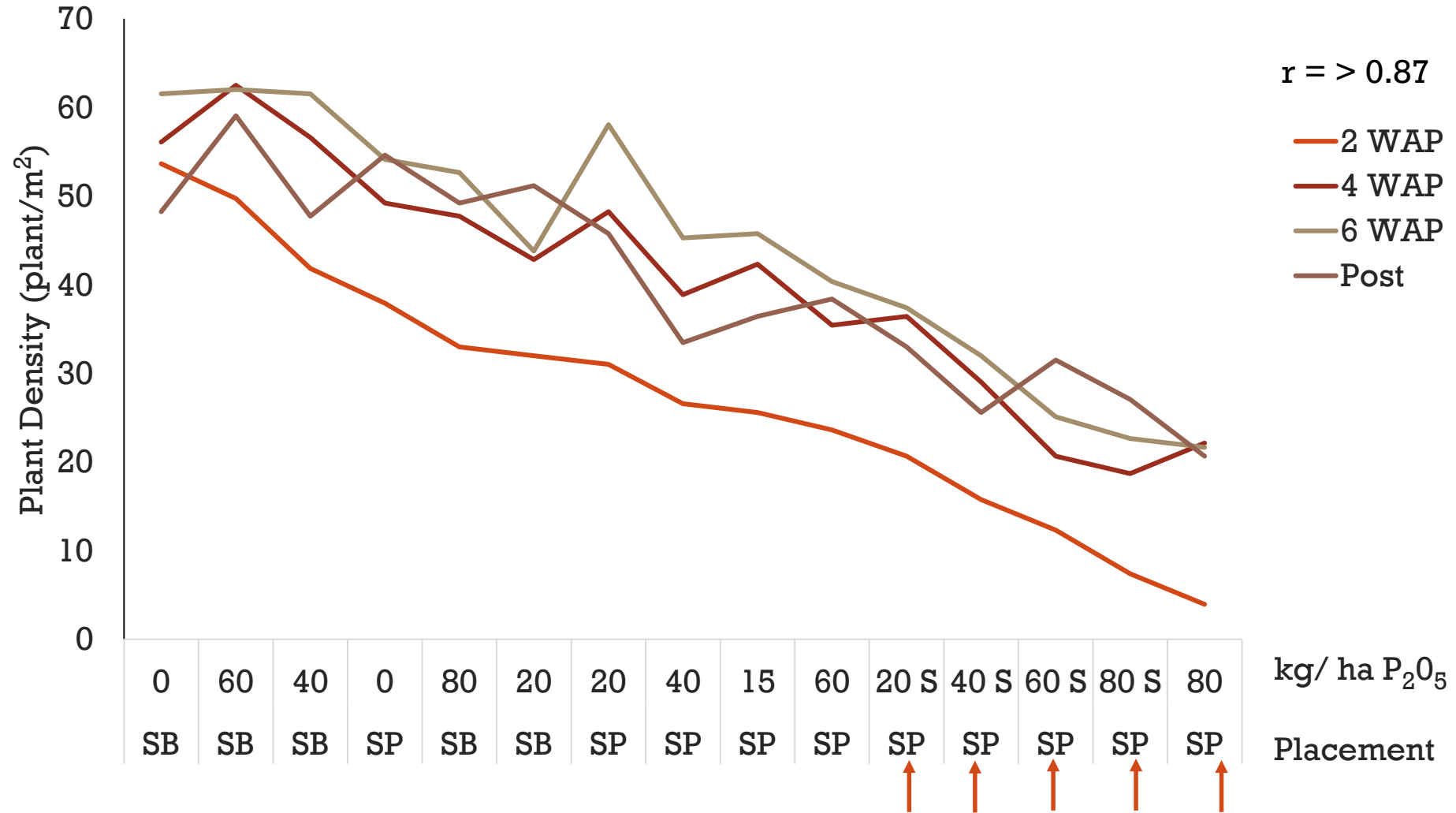


PRELIMINARY RESULTS: SCOTT

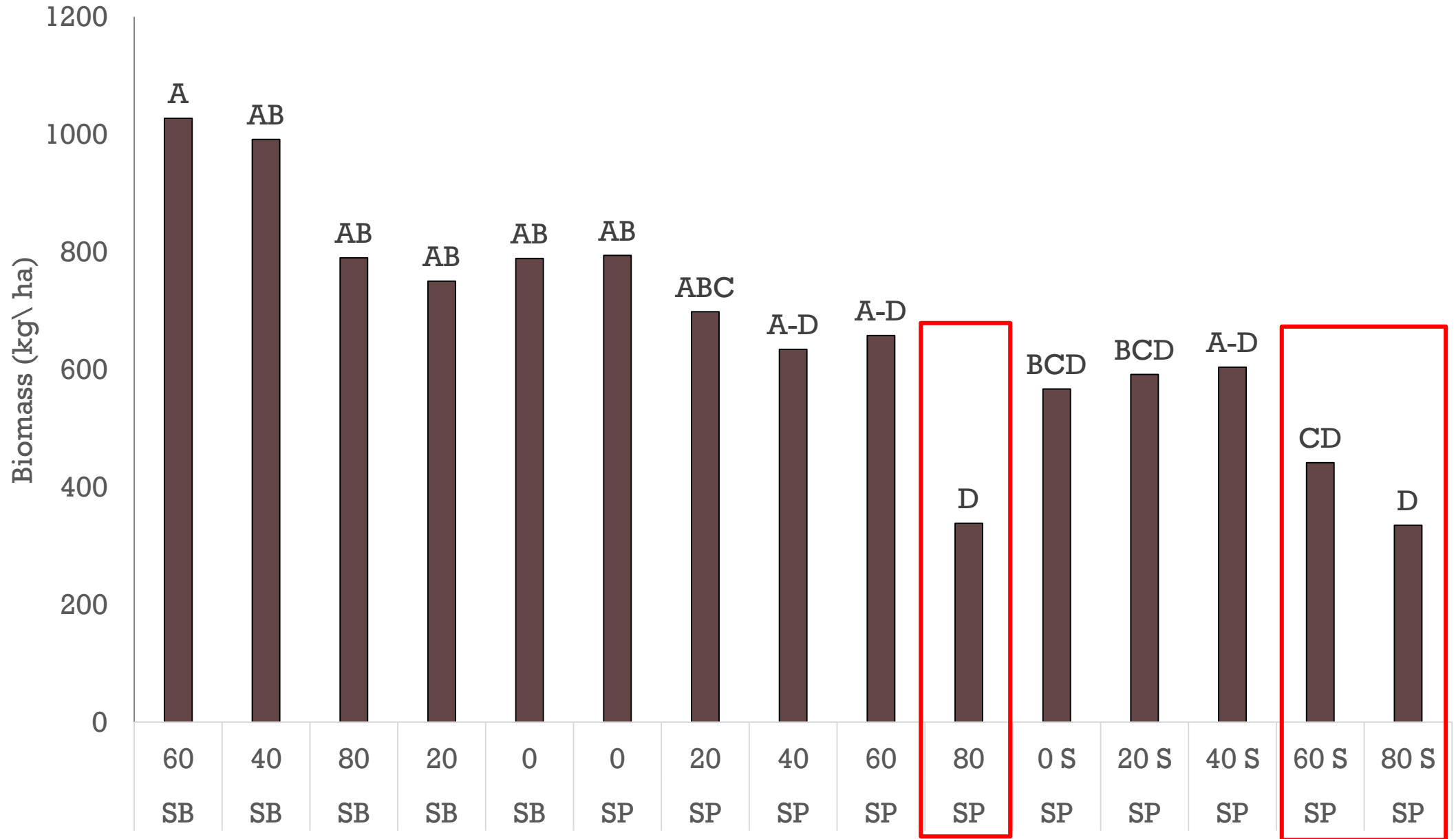
	Yield (kg/ha)	TKW (g/ 1000s)	Green Seed (%)	Dry Weight (kg/ha)	DTM -	PPMS (plant/m ²)
Fertilizer Rate (Rt)	0.026	0.489	<0.0001	0.003	0.0004	0.003
Placement (Pc)	0.005	0.872	0.013	<0.0001	0.085	<0.0001
Rt * Pc	0.004	0.518	0.05	0.014	0.360	0.0008



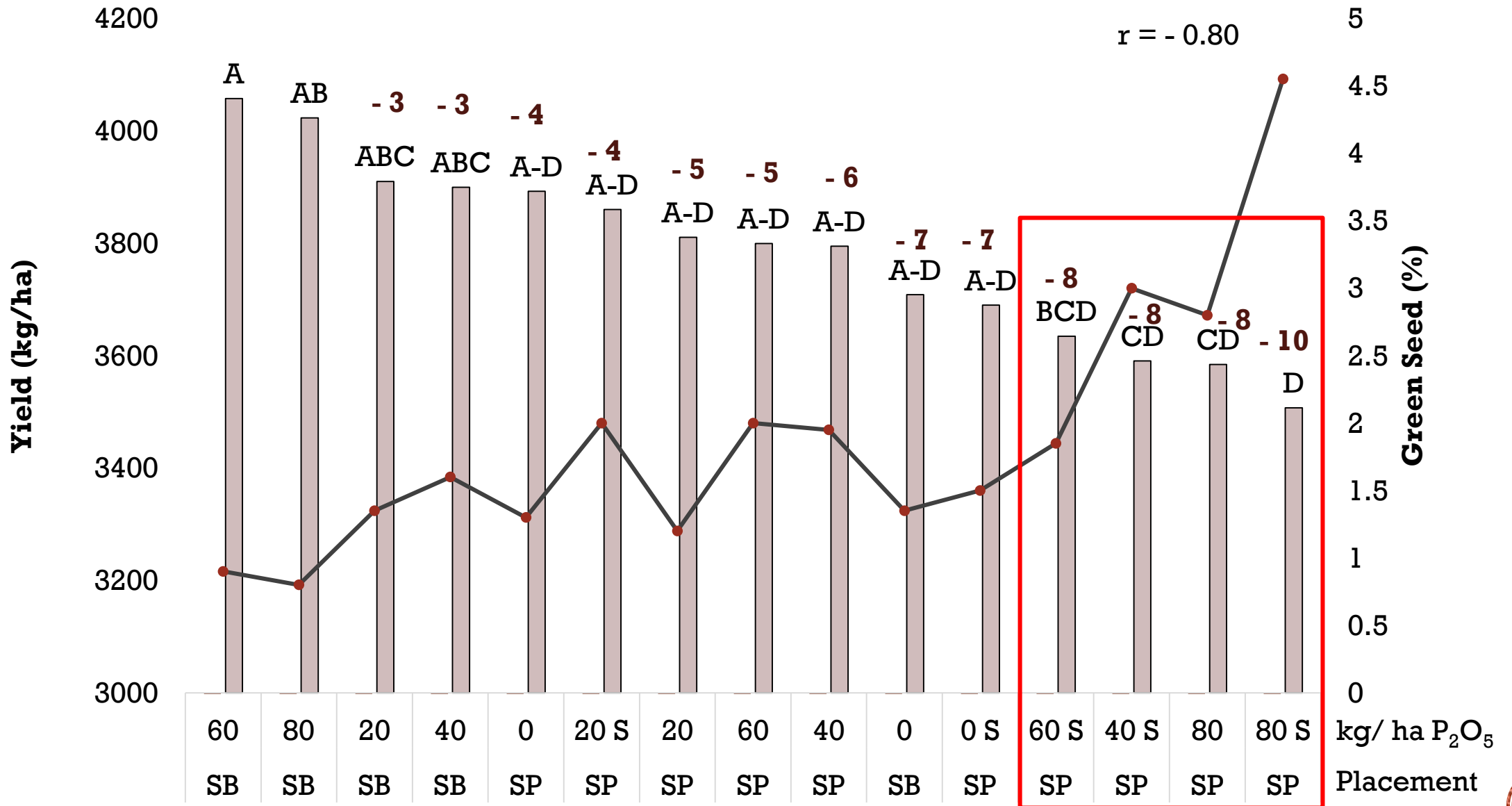
PLANT DENSITY



DRY WEIGHT



SEED YIELD & GREEN SEED

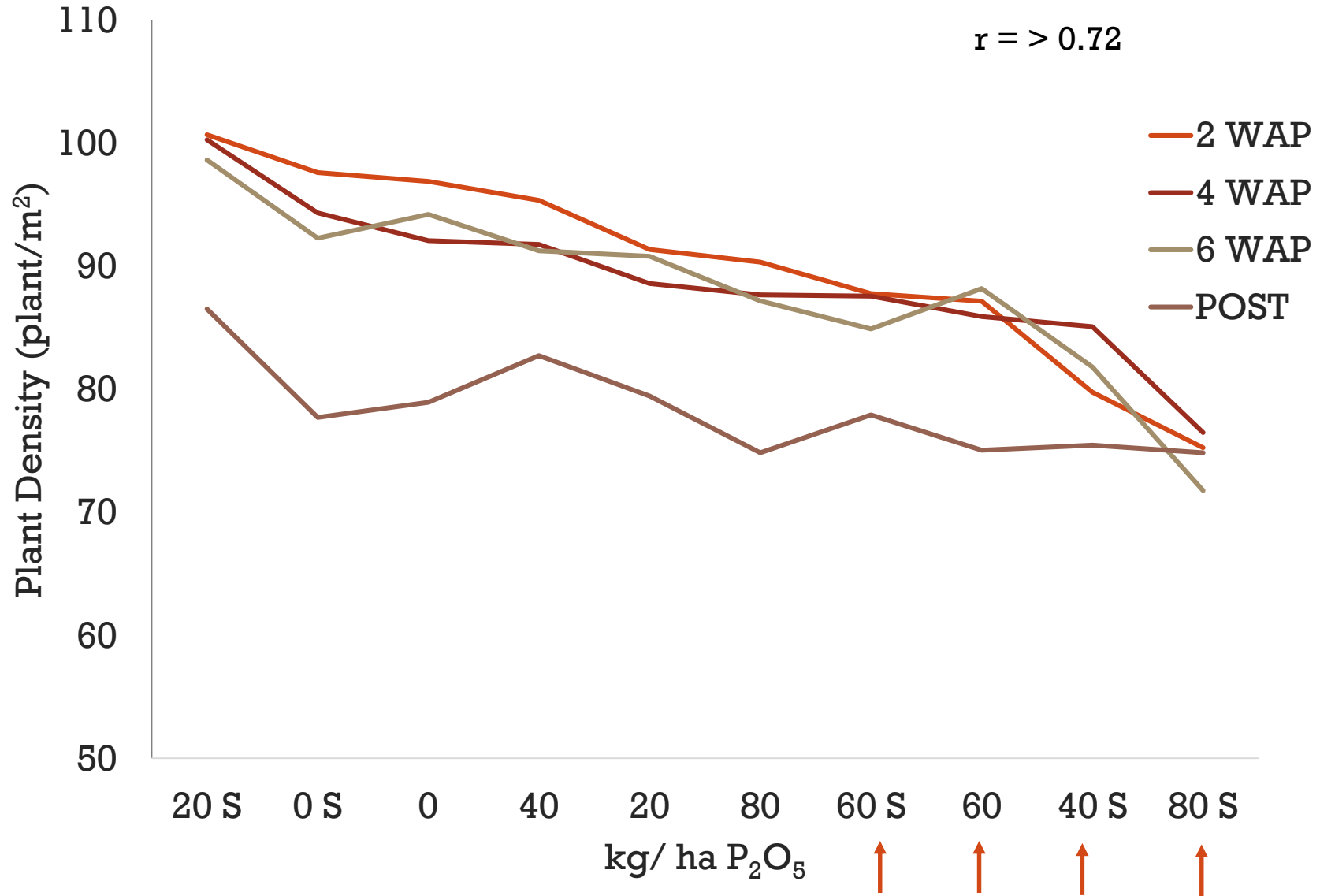


PRELIMINARY RESULTS: INDIAN HEAD

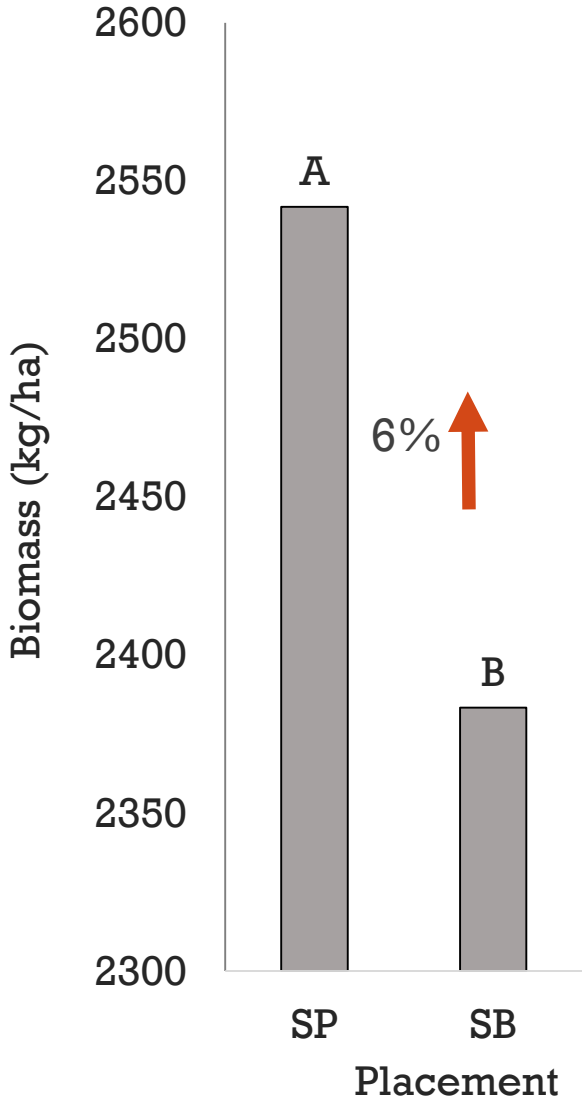
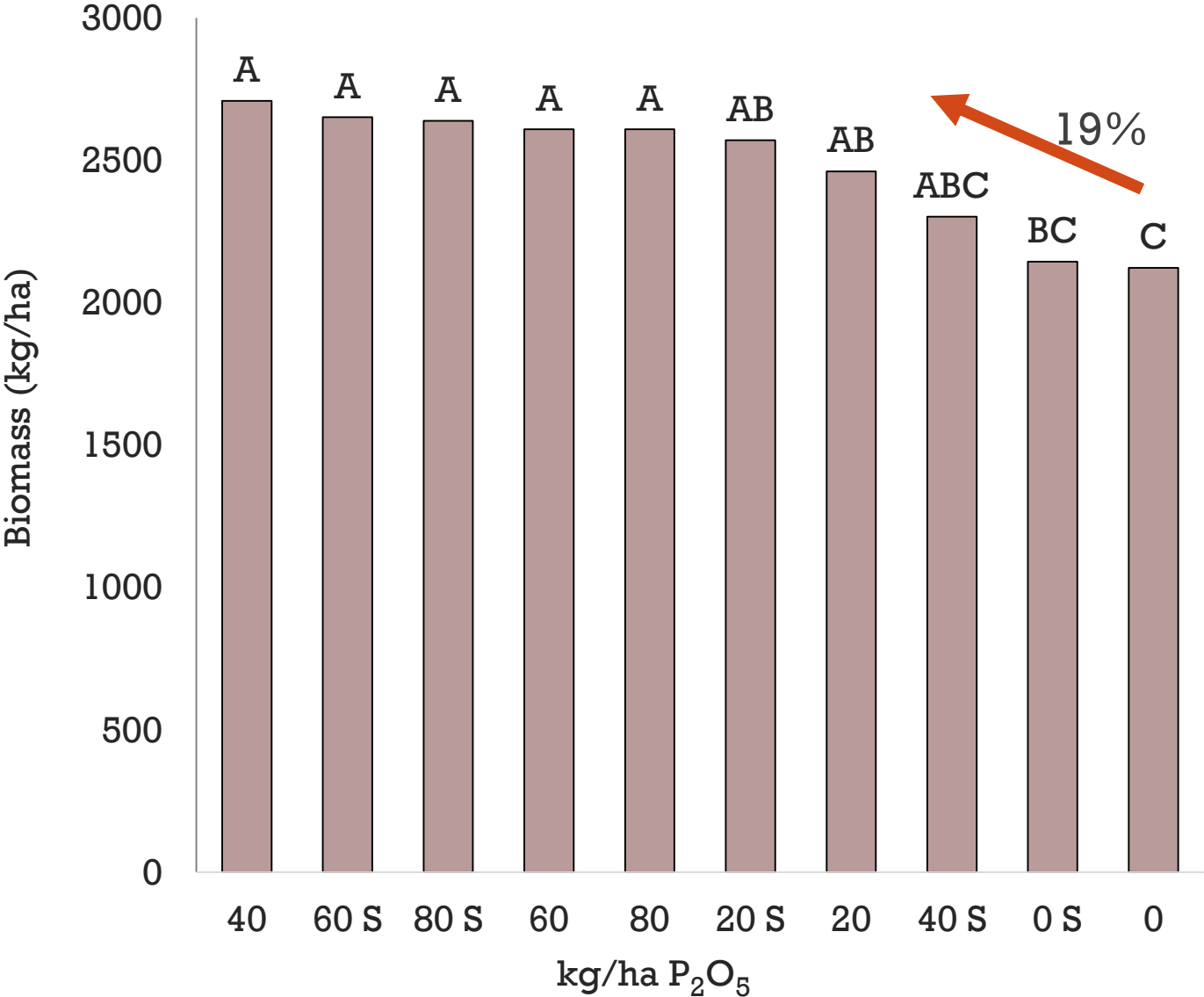
	Yield (kg/ha)	TKW (g/ 1000s)	Green Seed (%)	Dry Weight (kg/ha)	DTM -	PPMS (plant/m ²)
Fertilizer Rate (Rt)	0.335	0.202	0.331	0.008	0.523	0.01
Placement (Pc)	0.862	0.310	0.392	0.024	0.087	0.455
Rt*Pc	0.704	0.838	0.310	0.669	0.401	0.516



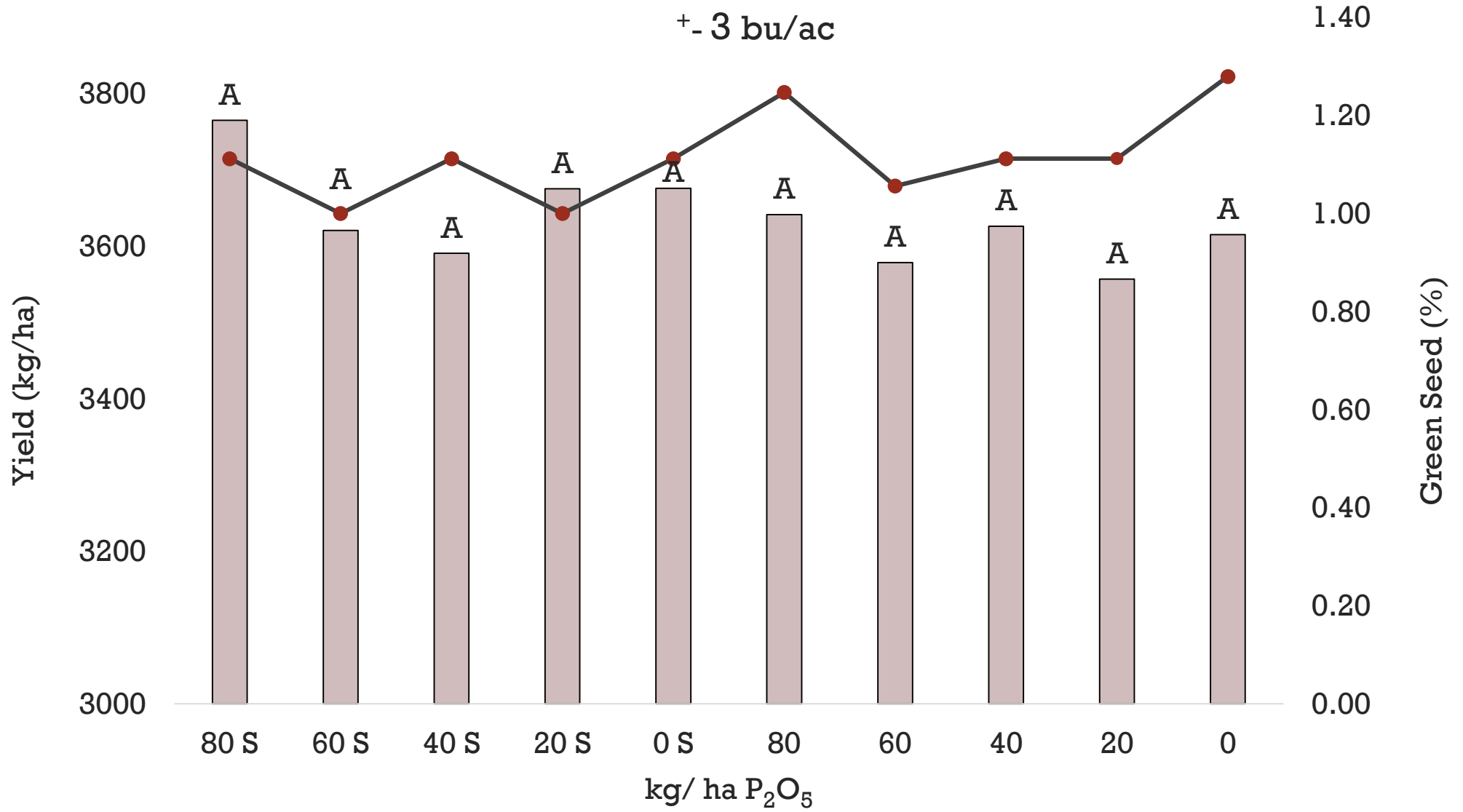
PLANT DENSITY



DRY WEIGHT



SEED YIELD & GREEN SEED

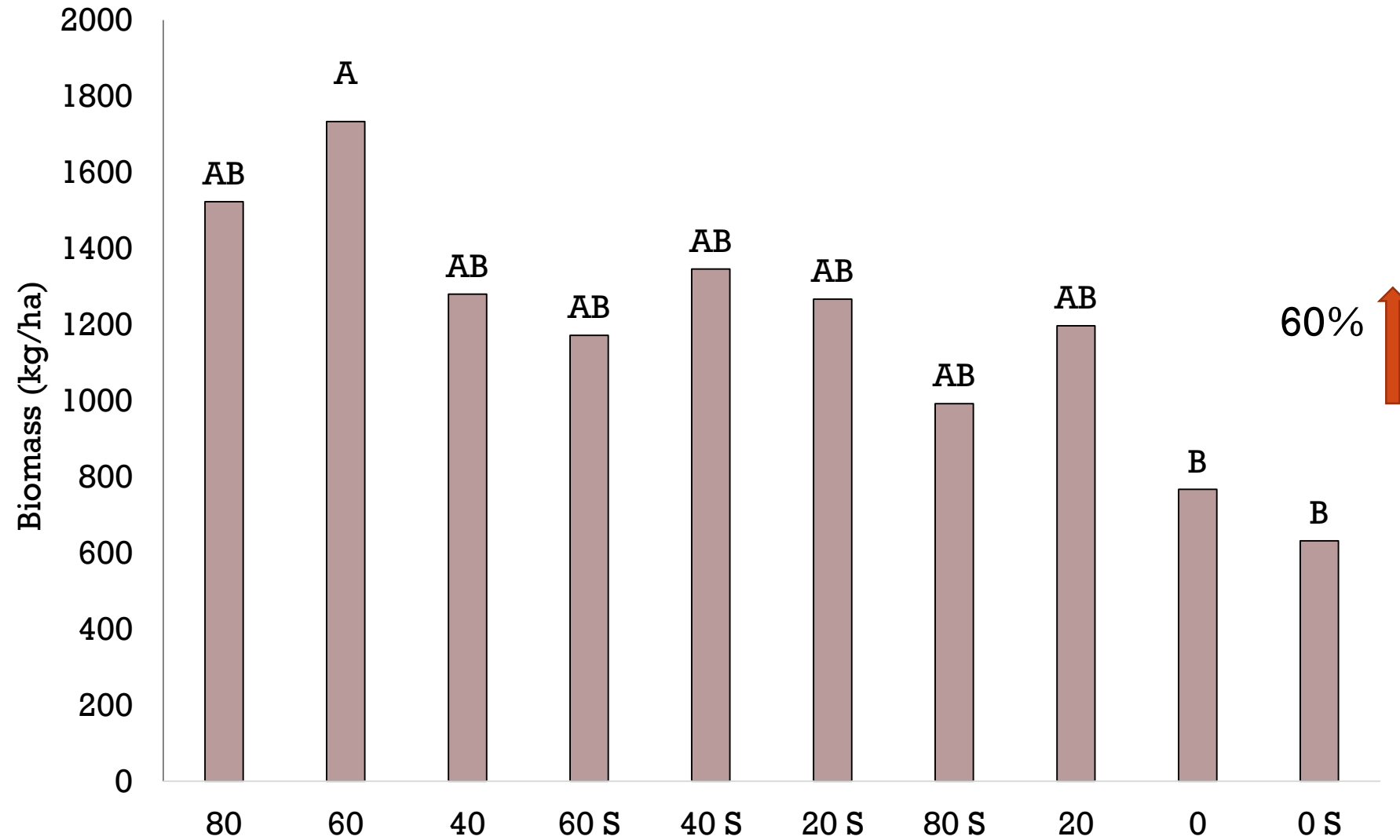


PRELIMINARY RESULTS: MELFORT

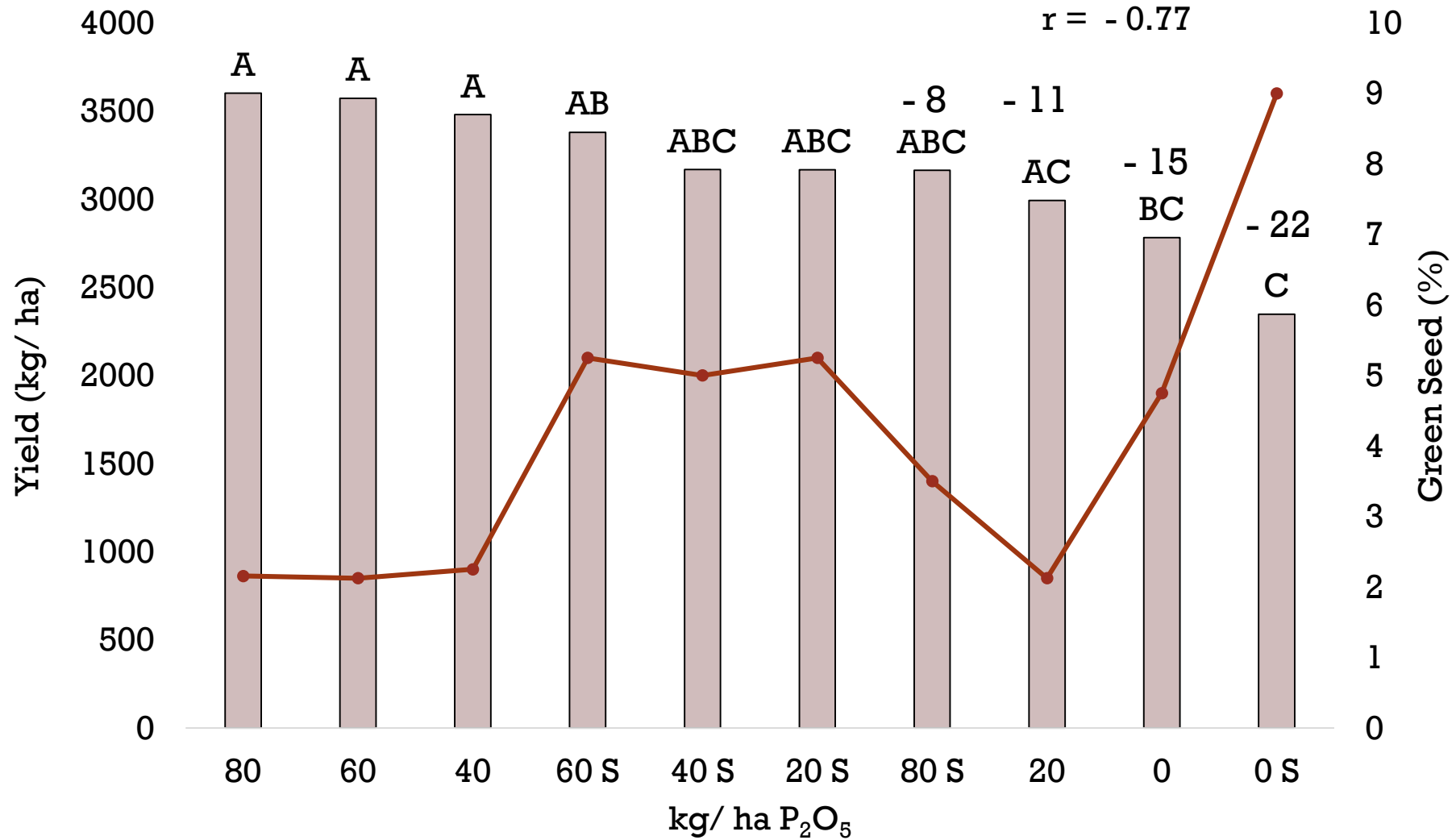
	Yield (kg/ha)	TKW (g/ 1000s)	Green Seed (%)	Dry Weight (kg/ha)	DTM -	PPMS (plant/m ²)
Fertilizer Rate (Rt)	0.0004	0.316	0.0002	0.003	-	0.573
Placement (Pc)	0.265	0.987	0.992	0.709	-	0.967
Rt*Pc	0.937	0.639	0.656	0.196	-	0.065



DRY WEIGHT



SEED YIELD & GREEN SEED



IMPLICATIONS

Effects of P & S were Site Dependent

- **Scott:**
 - Placement & Rate Interaction
 - Side-banding higher rates effective
 - >40 kg/ ha
 - S above recommended rate negative effects
- **Indian Head**
 - Placement & Rate
 - Early season effect
 - Yield & GS unaffected : 3 bu/ac difference
- **Melfort**
 - Rate significant effect on yield and GS
 - > 40 P₂O₅ greatest yield
 - S applications < P₂O₅ alone



FUTURE RESEARCH

- Are current P fertilizer recommendations adequate for high yielding cultivars?
 - $>40 \text{ kg/ ha } P_2O_5 > 15 \text{ kg S/ ha}$
- Does all fertilizer P need to be seed placed or is side banding equally effective?
 - Location dependent? Scott > Melfort > Indian Head
- Are current recommendations regarding safe rates of P and S suitable for typical knife or hoe openers in use today?
 - 17 to 22 kg P_2O_5 / ha
 - 11 kg S / ha



ACKNOWLEDGEMENTS



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Agri-Food Canada

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Agroalimentaire Canada





**QUESTIO
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