



Phosphorus Management for Soybeans in Manitoba

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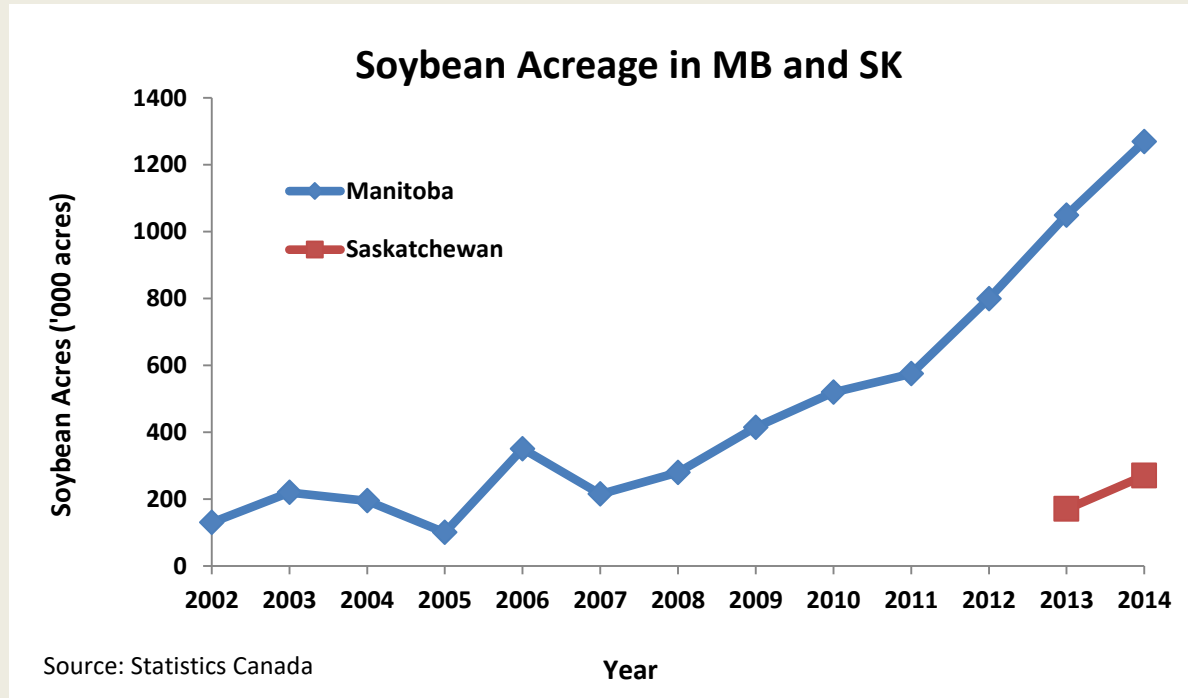
U of MB¹, MAFRD², and AAFC³

Soils and Crops Workshop

Saskatoon - SK

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BACKGROUND



- Soybeans remove large amounts of P (≥ 0.85 lb P_2O_5 /bu)
- More soil P tests are declining into low levels
- Low seed bed utilization increases risk of fertilizer toxicity in seed row (current guidelines in MB recommend a maximum of 10 lb/ac)



OBJECTIVES

- Assess risk of reduced plant stand and yield from seed-placed P
- Assess dry matter and seed yield response to P fertilizer placements and rates



MATERIALS AND METHODS



- 8 sites established in 2013
- 10 sites established in 2014



MATERIALS AND METHODS

- Row spacing varied from 7 to 12”
- Opener type: knife or disc... low seed bed utilization

Site	Olsen P (ppm)		Soil Texture	Row Spacing Inches	Seeder Opener Type
	2013	2014			
Roseisle	N/A	4 (VL)	L Fine Sand	8	Knife
Melita	3 (VL)	5 (L)	Loamy Sand	9.5	Knife
Brandon	5 (L)	6 (L)	Clay Loam	8	Knife
Carman	N/A	15 (H)	Loamy Sand	8	Knife
Roblin	7 (L)	22 (VH)	Clay Loam	9	Knife
Beausejour	8 (L)	13 (M)	Clay	9	Disc
Arborg	14 (M)	22 (VH)	Clay	9	Disc
St Adolphe	23 (VH)	25 (VH)	Clay	7.3	Knife
Portage	34 (VH)	18 (H)	Clay Loam	12	Disc
Carberry	44 (VH)	11 (M)	Clay Loam	12	Disc



MATERIALS AND METHODS

- **Monoammonium phosphate (11-52-0) was applied in spring, at the rates of 20, 40 and 80 lb/ac , in the seed row, side banded or broadcast.**
- **Plant stand assessed with 2, 3 and 4 weeks after planting**
- **Midseason biomass collected at R3**
- **Seed Yield**
- **Seed Quality**
- **Data analysed using SAS Proc Mixed**

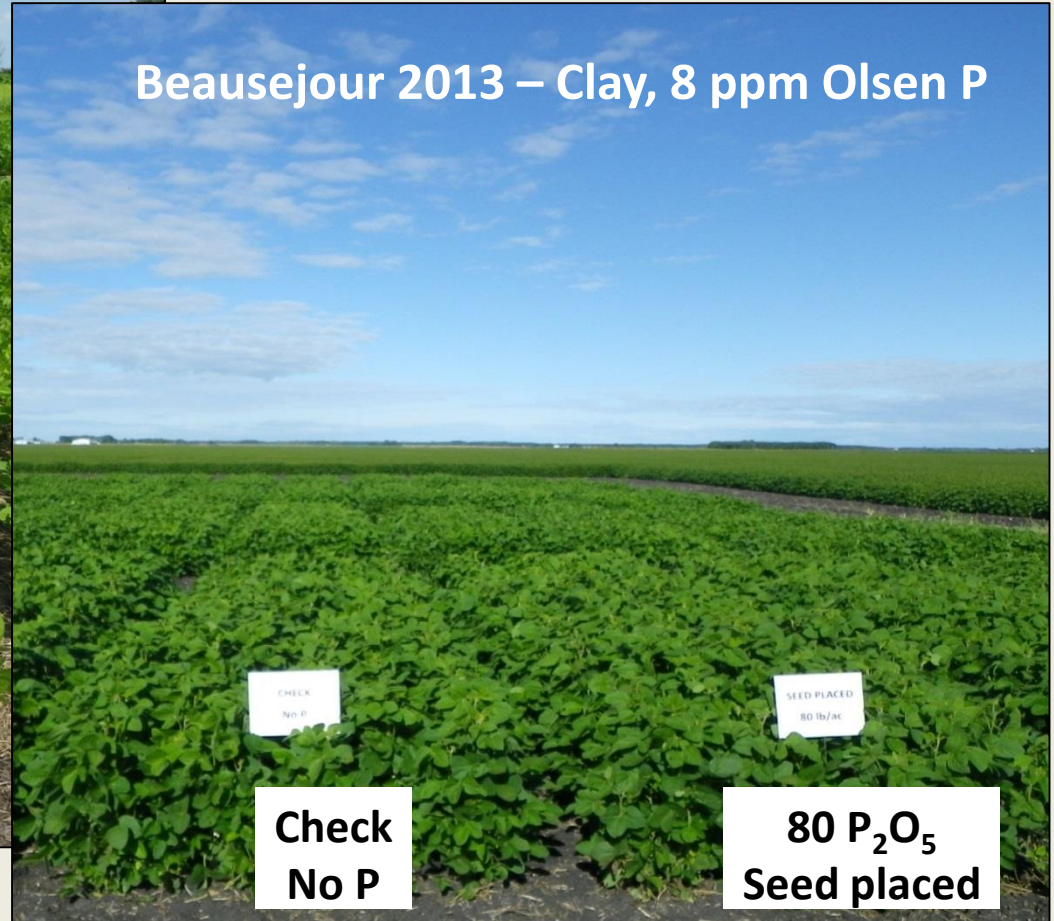


RESULTS

Melita 2013 – Loamy Sand, 3 ppm
Olsen P

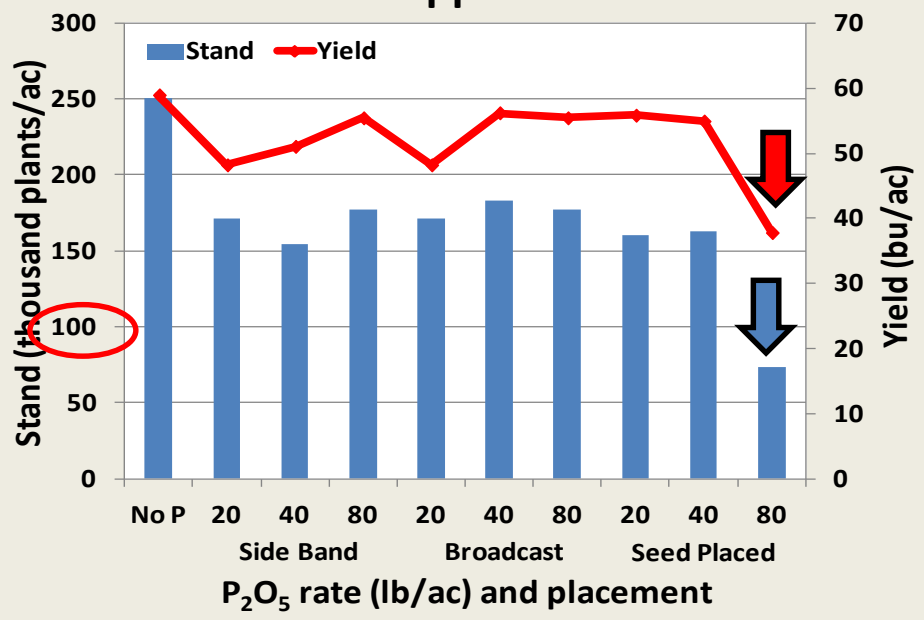


Beausejour 2013 – Clay, 8 ppm Olsen P

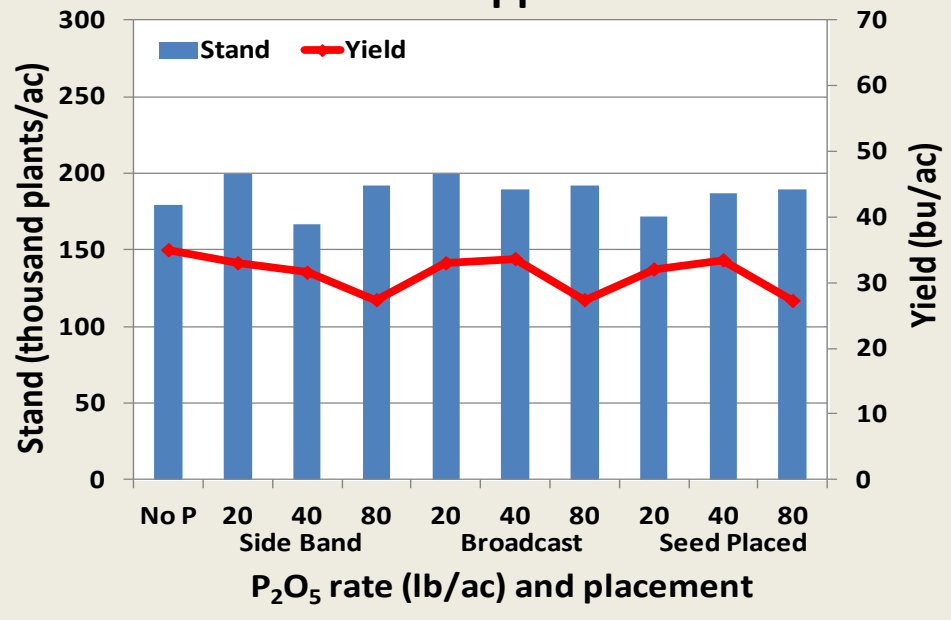


2013

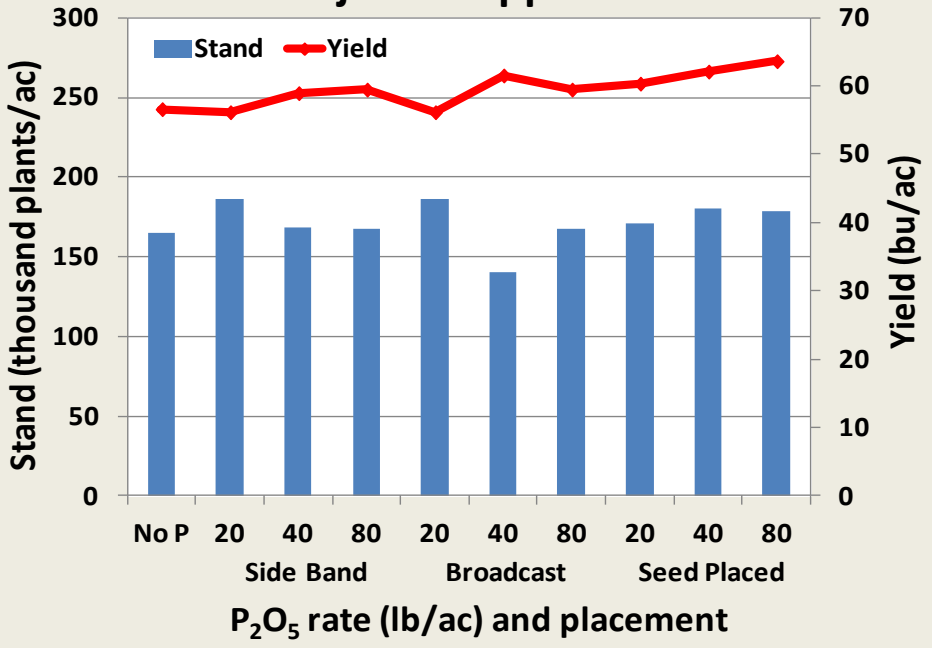
Melita – 3 ppm Olsen P



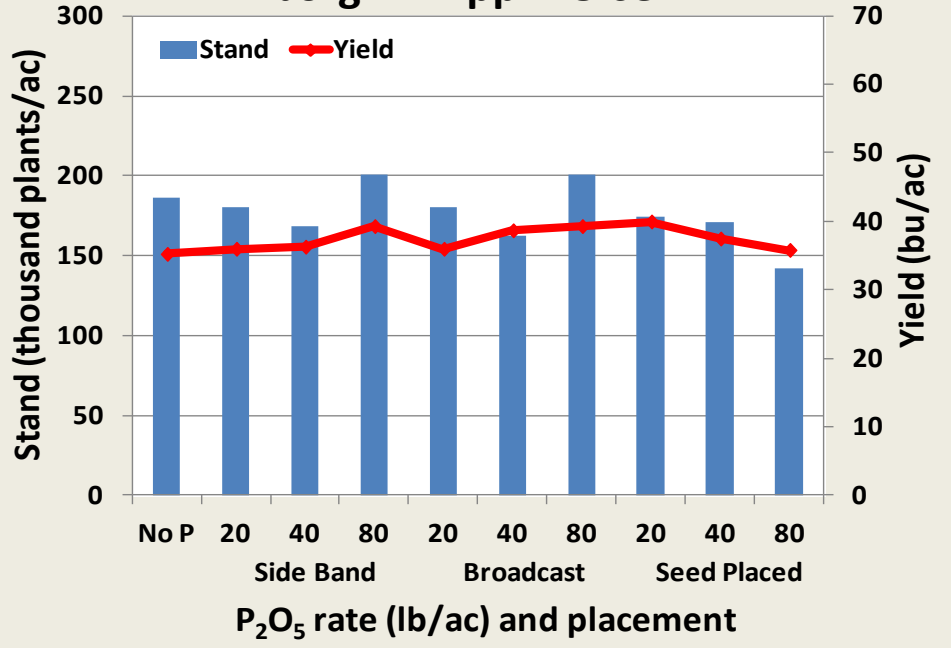
Brandon – 5 ppm Olsen P



Beausejour – 8 ppm Olsen P

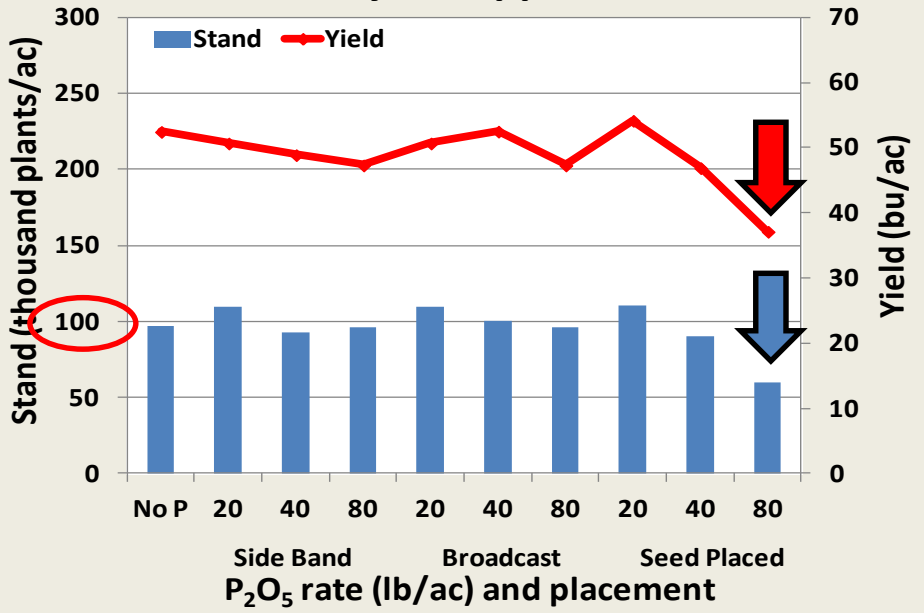


Arborg – 14 ppm Olsen P

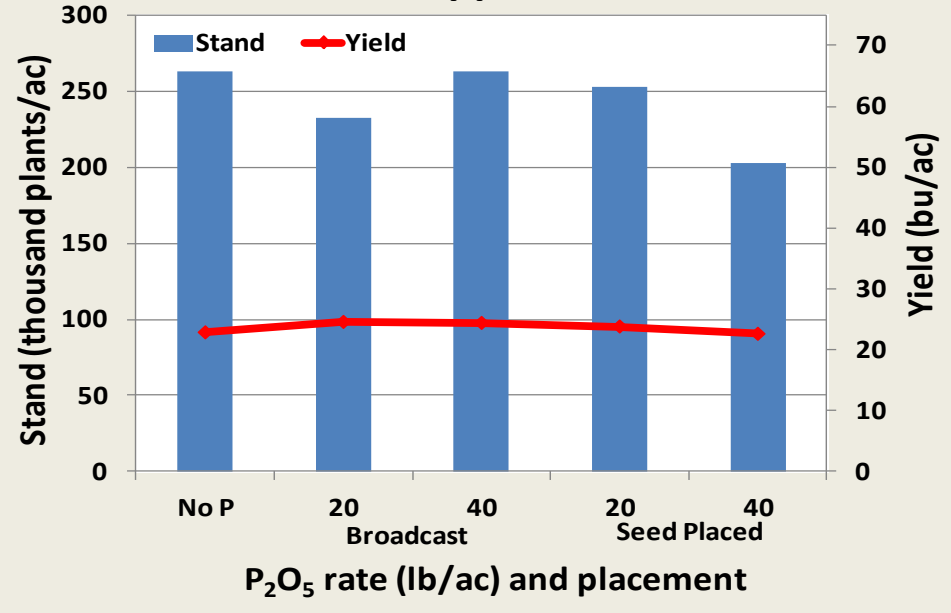


2013

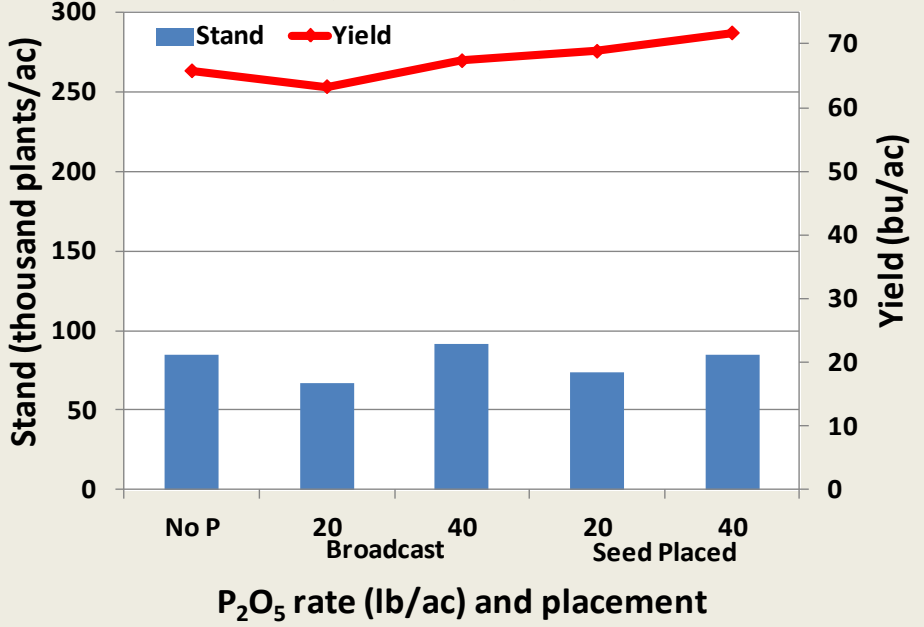
Carberry – 44 ppm Olsen P



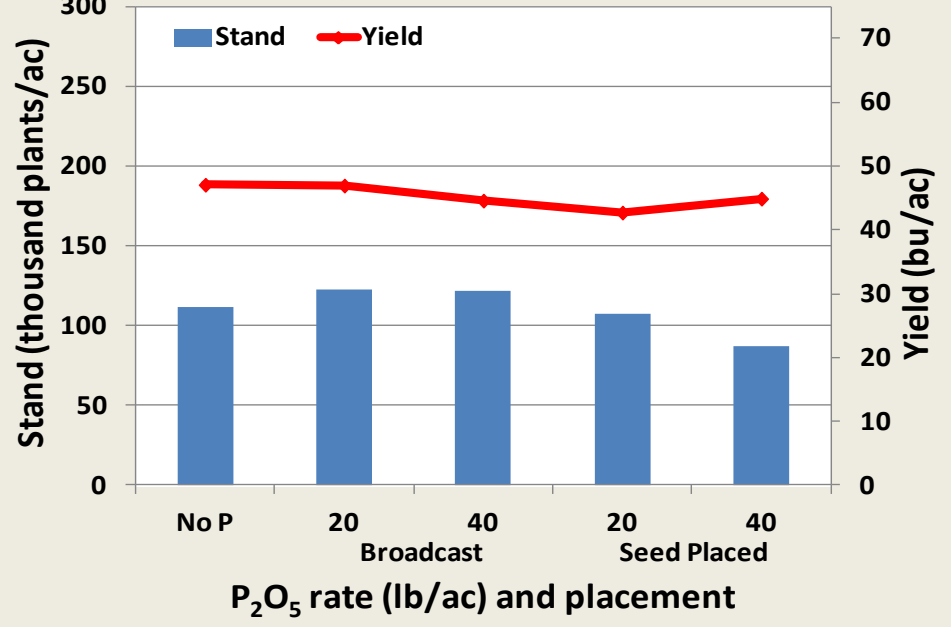
Roblin – 7 ppm Olsen P



St Adolphe – 23 ppm Olsen P

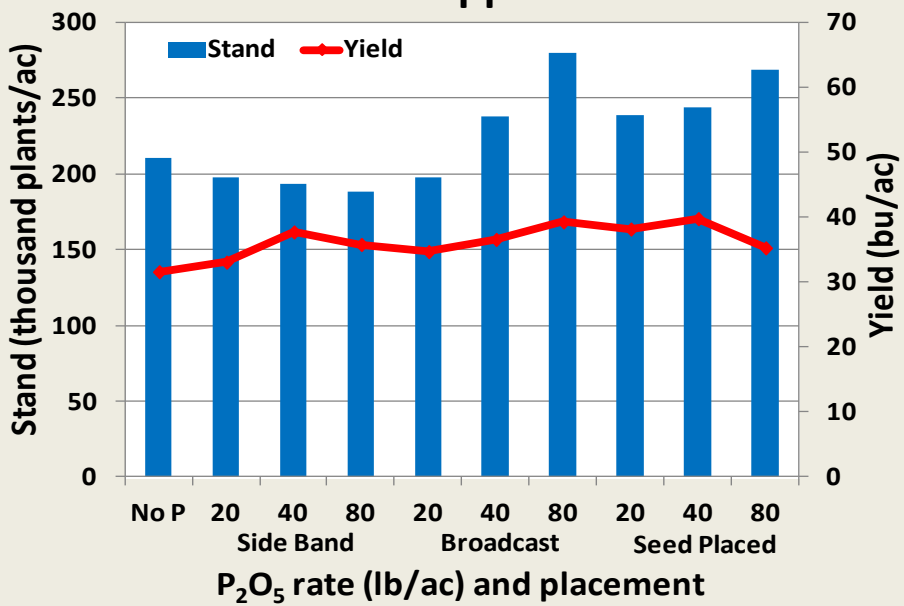


Portage – 34 ppm Olsen P

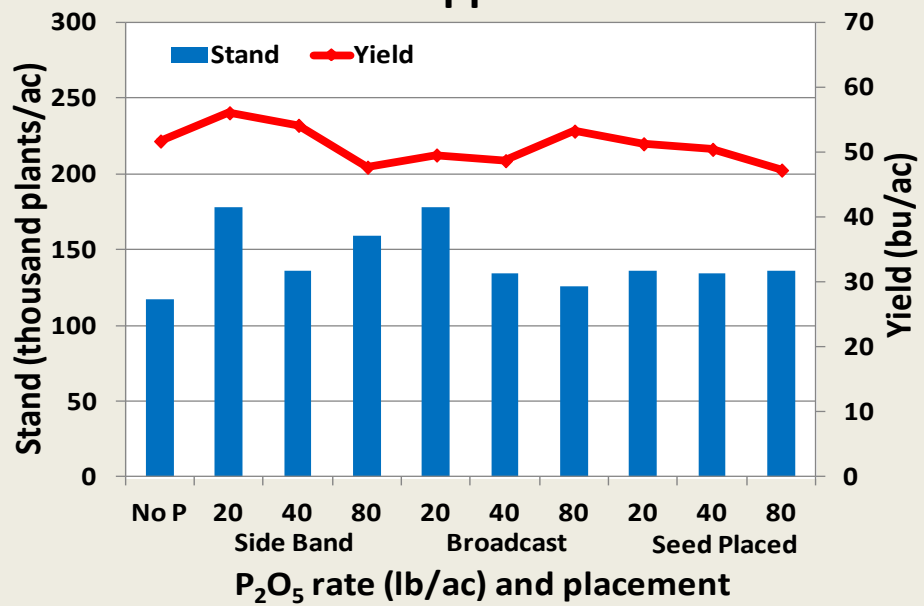


2014

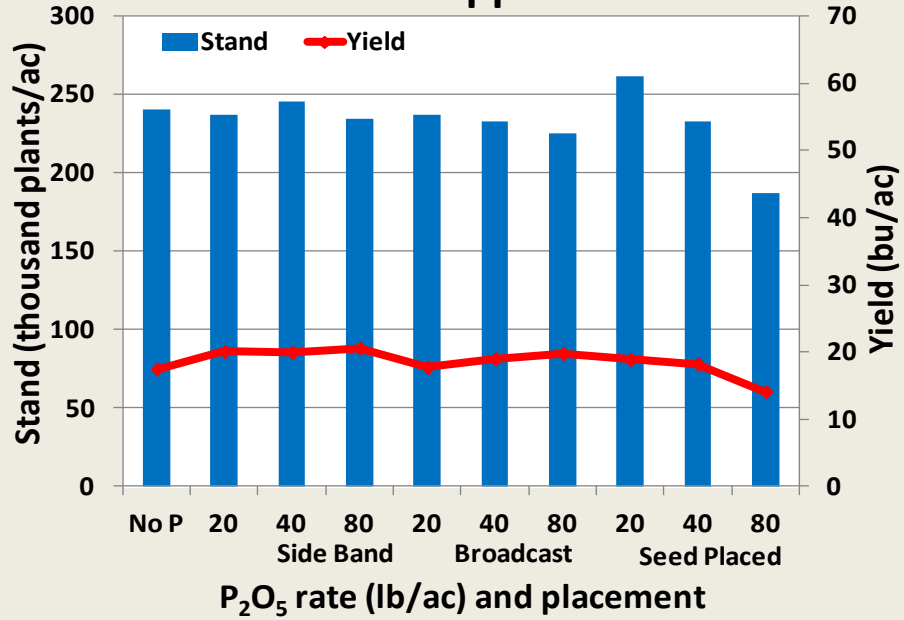
Roseisle – 4 ppm Olsen P



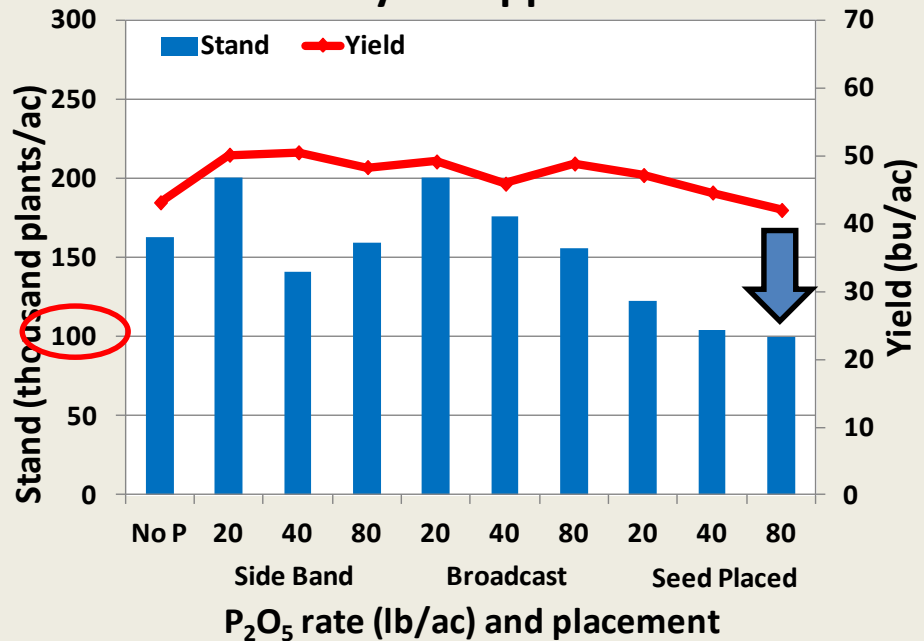
Melita – 5 ppm Olsen P



Brandon – 6 ppm Olsen P

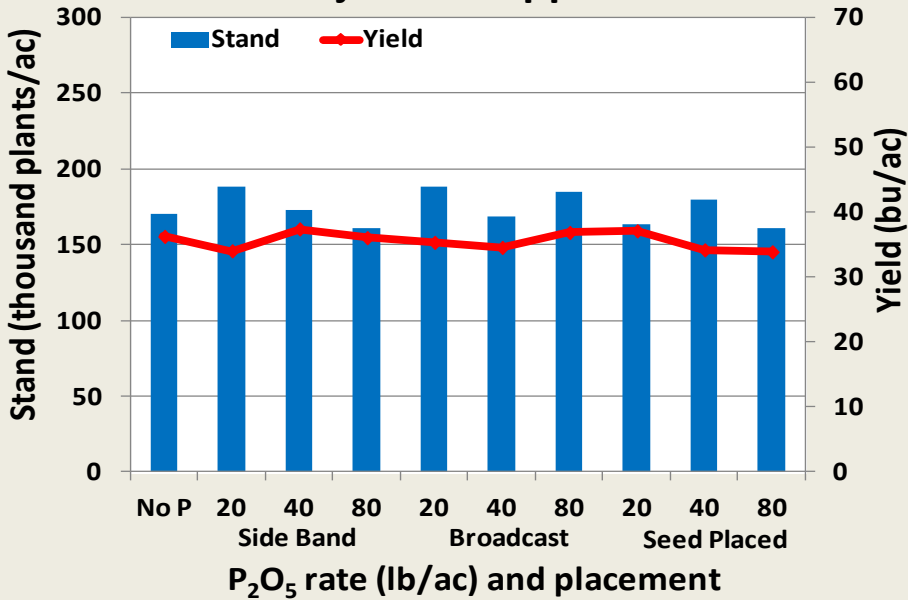


Carberry – 11 ppm Olsen P

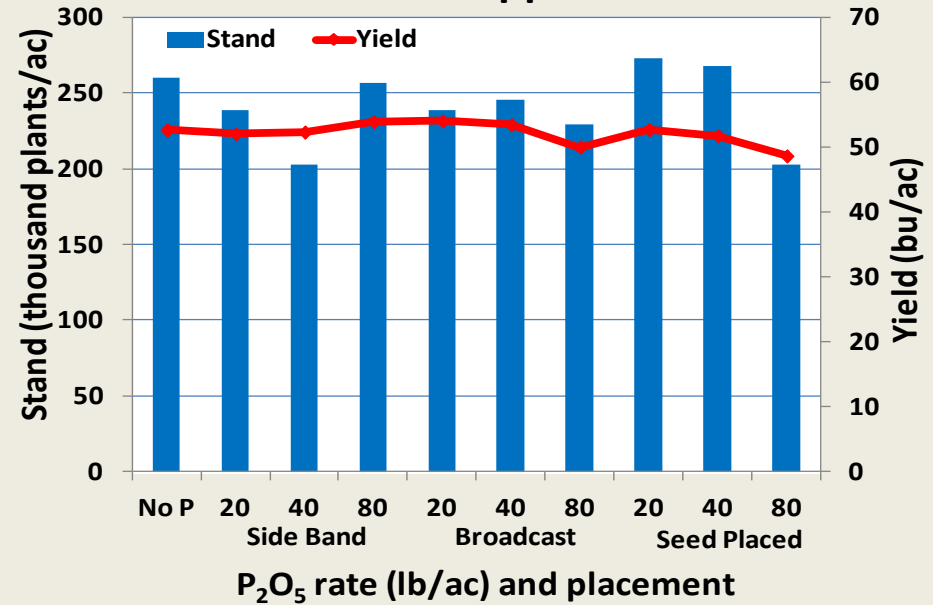


2014

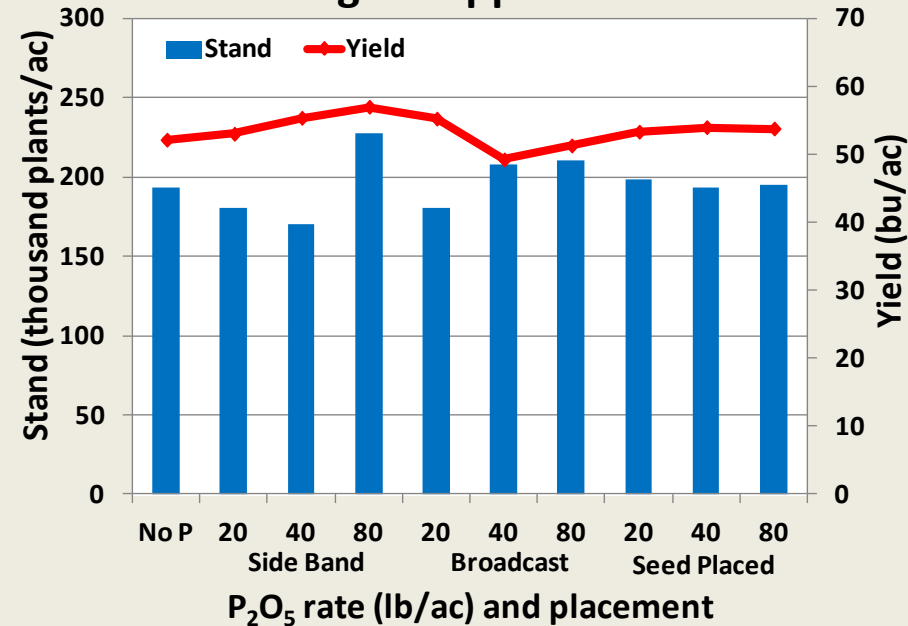
Beausejour – 13 ppm Olsen P



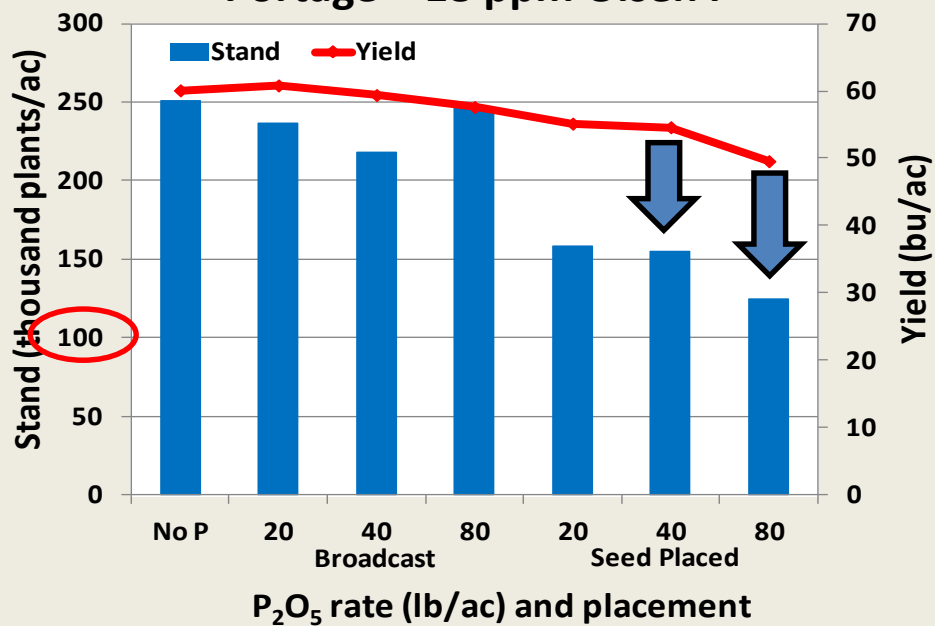
Carman – 15 ppm Olsen P



Arborg – 22 ppm Olsen P

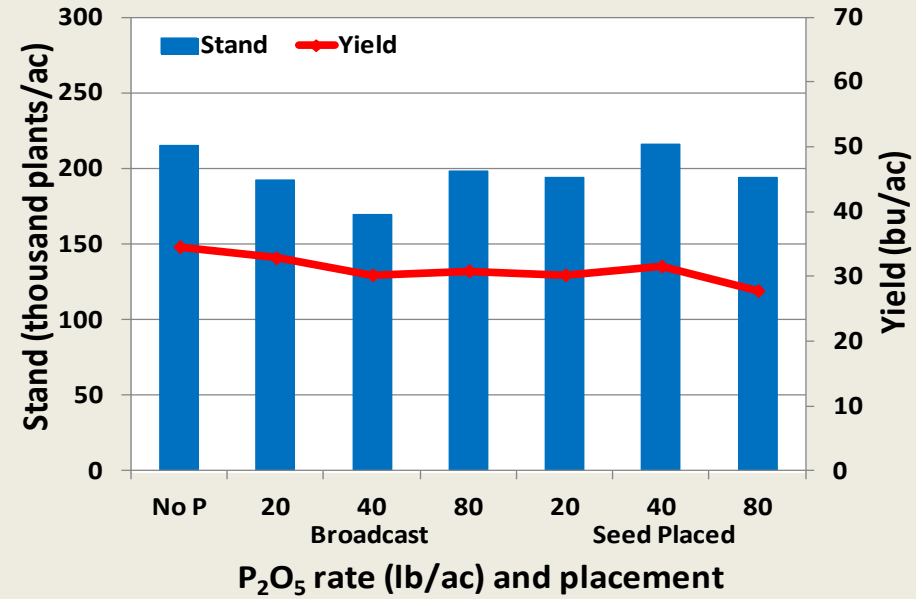


Portage – 18 ppm Olsen P

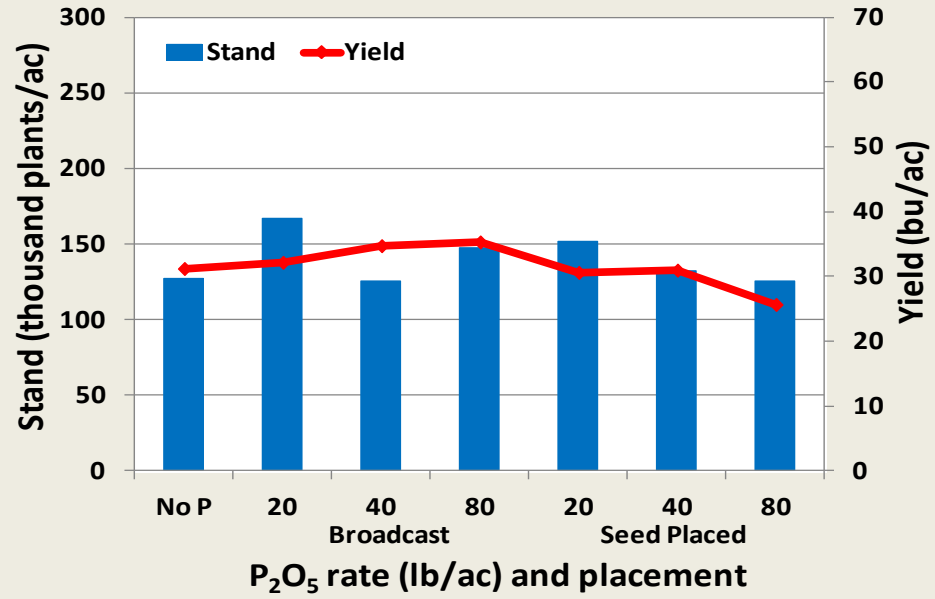


2014

Roblin – 22 ppm Olsen P



St Adolphe – 25 ppm Olsen P



CONCLUSIONS

- The probability of reduced stand from typical agronomic rates of seed-placed P is small and the risk of reduced seed yields is even smaller.
- P fertilization regardless of soil test P, P rate and P placement did not increase seed yield for soybean.
- If there is no response, why apply P? ... maintain P fertility for and from other crops in rotation.
- As the study goes into the third year, we look forward to learning more about P fertilization for soybeans in Manitoba.



ACKNOWLEDGEMENTS

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