Seeding Rates for Precision Seeded Canola

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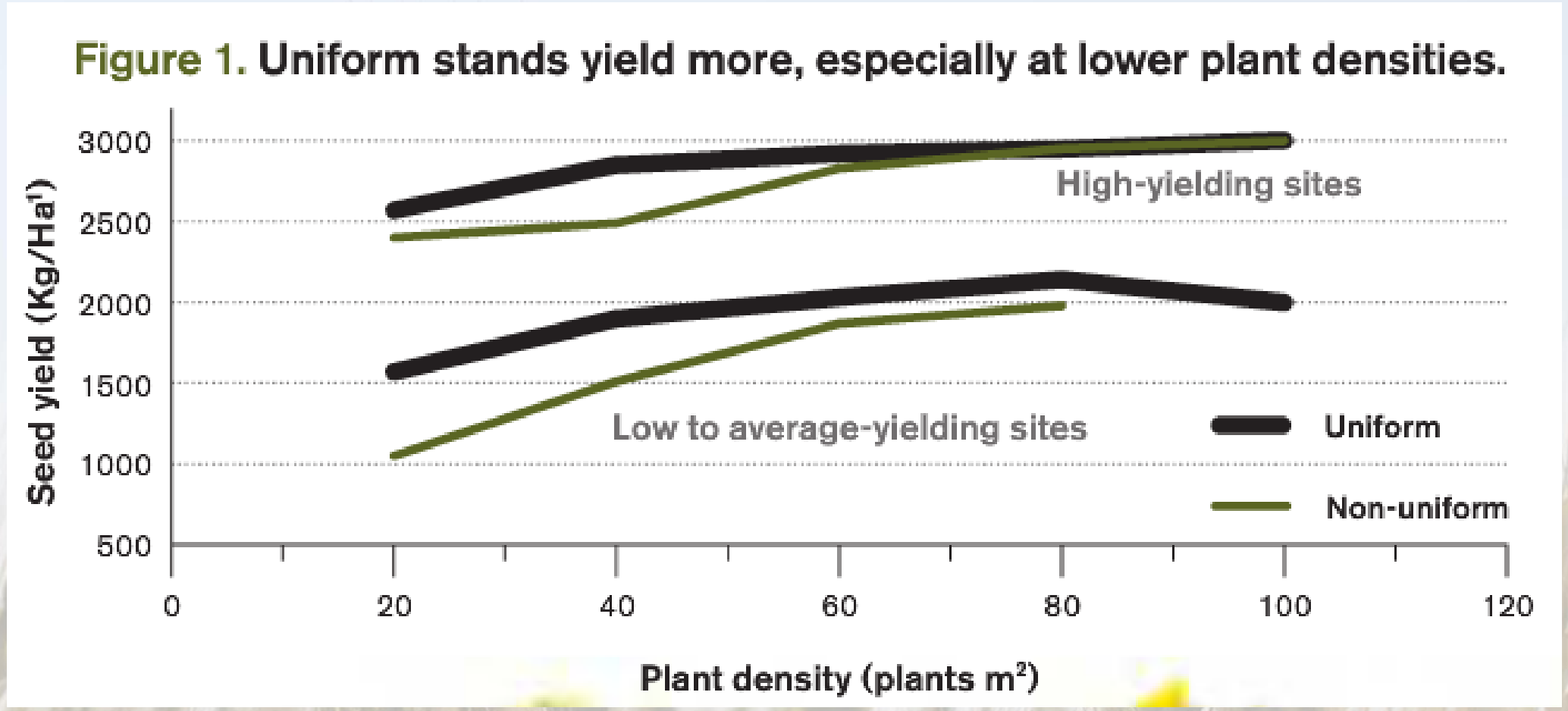
Canola: Relationship between Plant Density & Seed Yield

- Yields are generally maximized at plant populations above 50 plants m^{-2}
- Canola can compensate at low plant populations by increasing branching to maintain yield over a range of plant densities
- Uniformity of plants show to be important when plant density decreased



Canola Council of Canada. 2013. Canola Digest Science Edition. [Online]. Available: ttp://www.canolacouncil.org/media/546908/science2013/index.html#/3/zoomed

Seed Metering Systems for Air-Carts

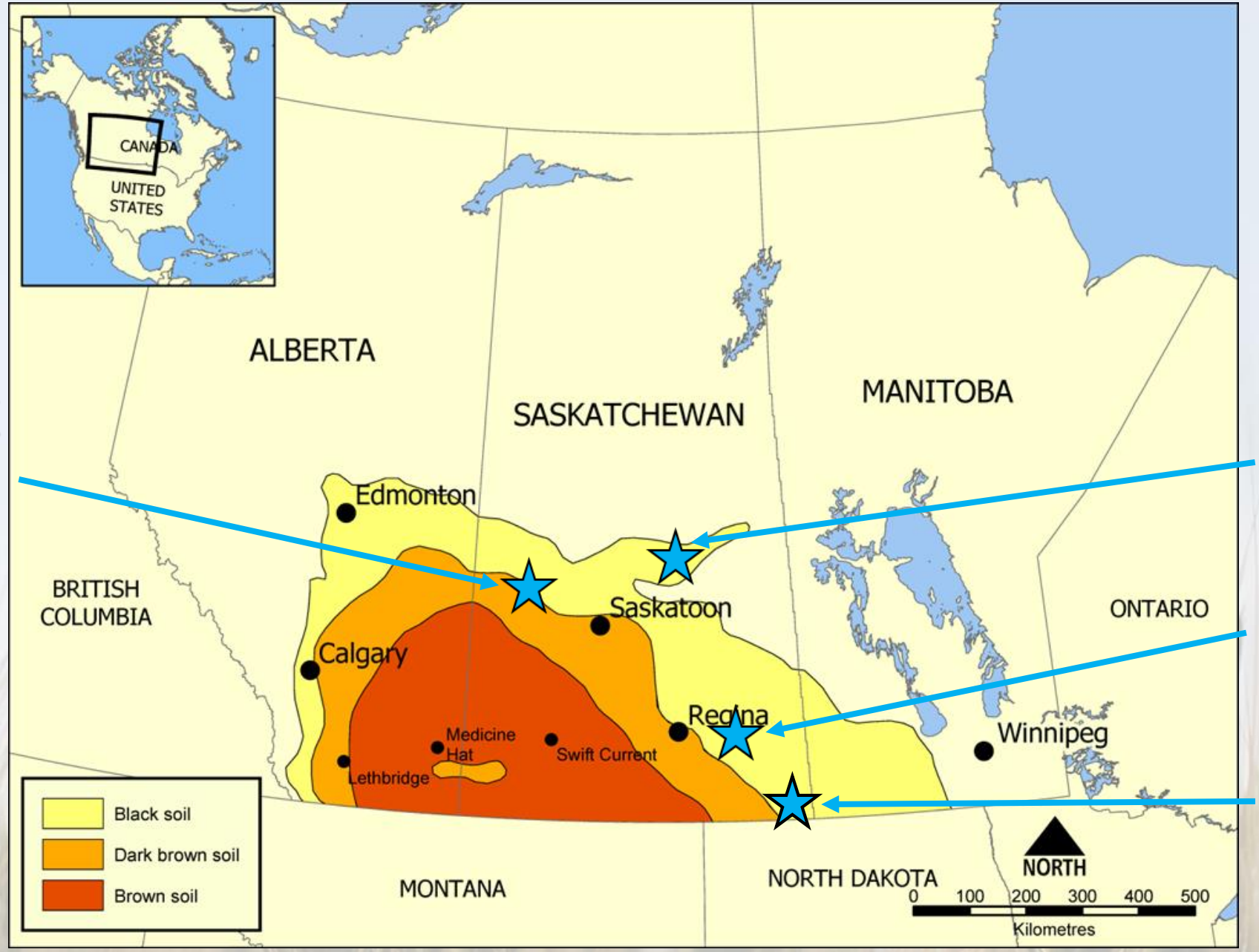
UltraPro Roller

Valmar Roller

Study Objectives

- Assess seedling uniformity of the UltraPro Roller compared to a traditional Valmar Roller
- Determine if differences in uniformity affect minimum plant population require to reach maximum yield potential of canola

Scott, SK
(**Dark Brown** Soil Zone)



Melfort, SK
(**Black** Soil Zone)

Indian Head, SK
(**Black** Soil Zone)

Redvers, SK
(**Black** Soil Zone)

"Palliser's Triangle map". Licensed under Creative Commons Attribution-Share Alike 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Palliser%27s_Triangle_map.png#mediaviewer/File:Palliser%27s_Triangle_map.png


Target 10 seeds m-2

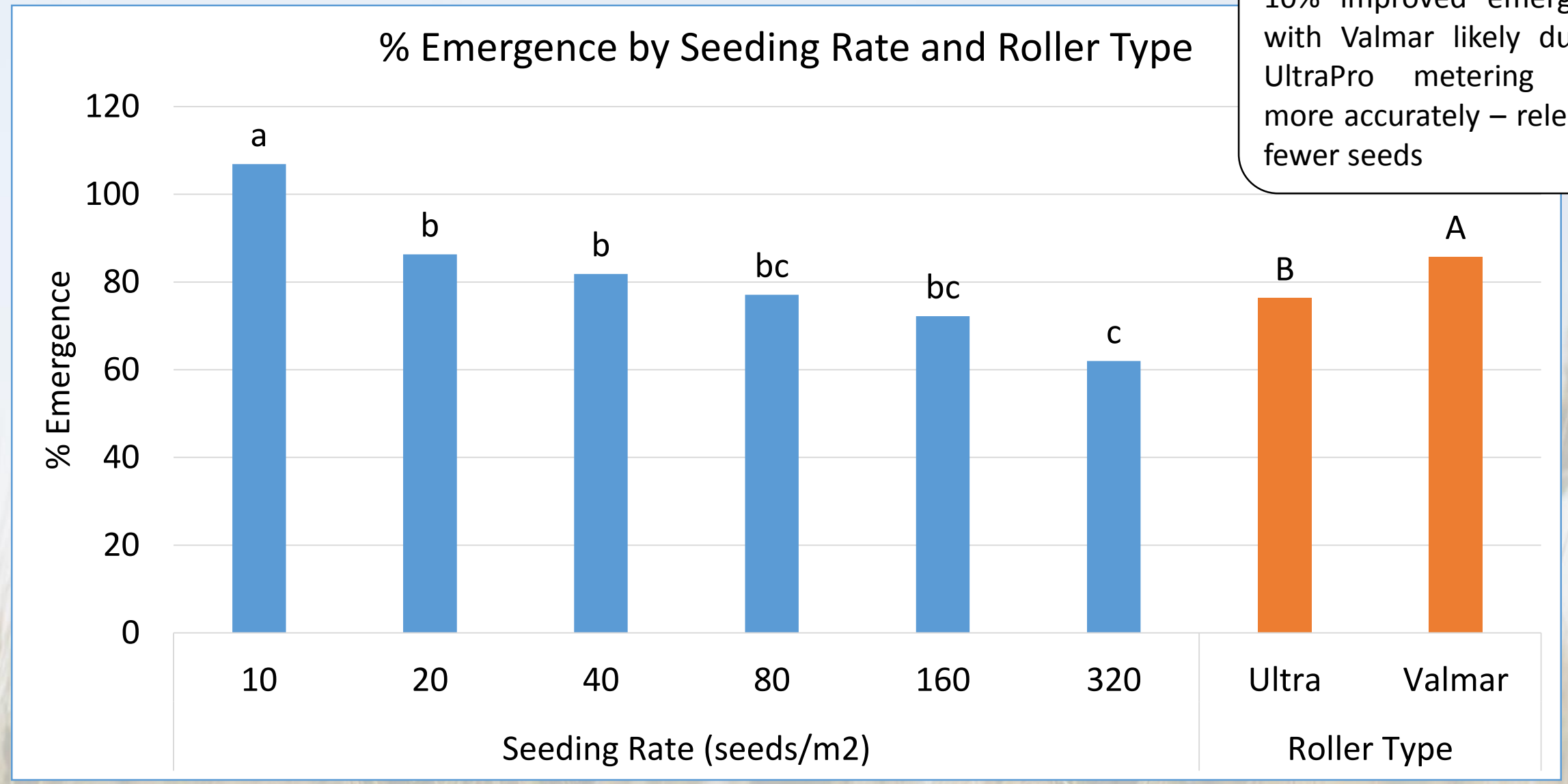

Target 20 seeds m-2


Target 40 seeds m-2


Target 80 seeds m-2

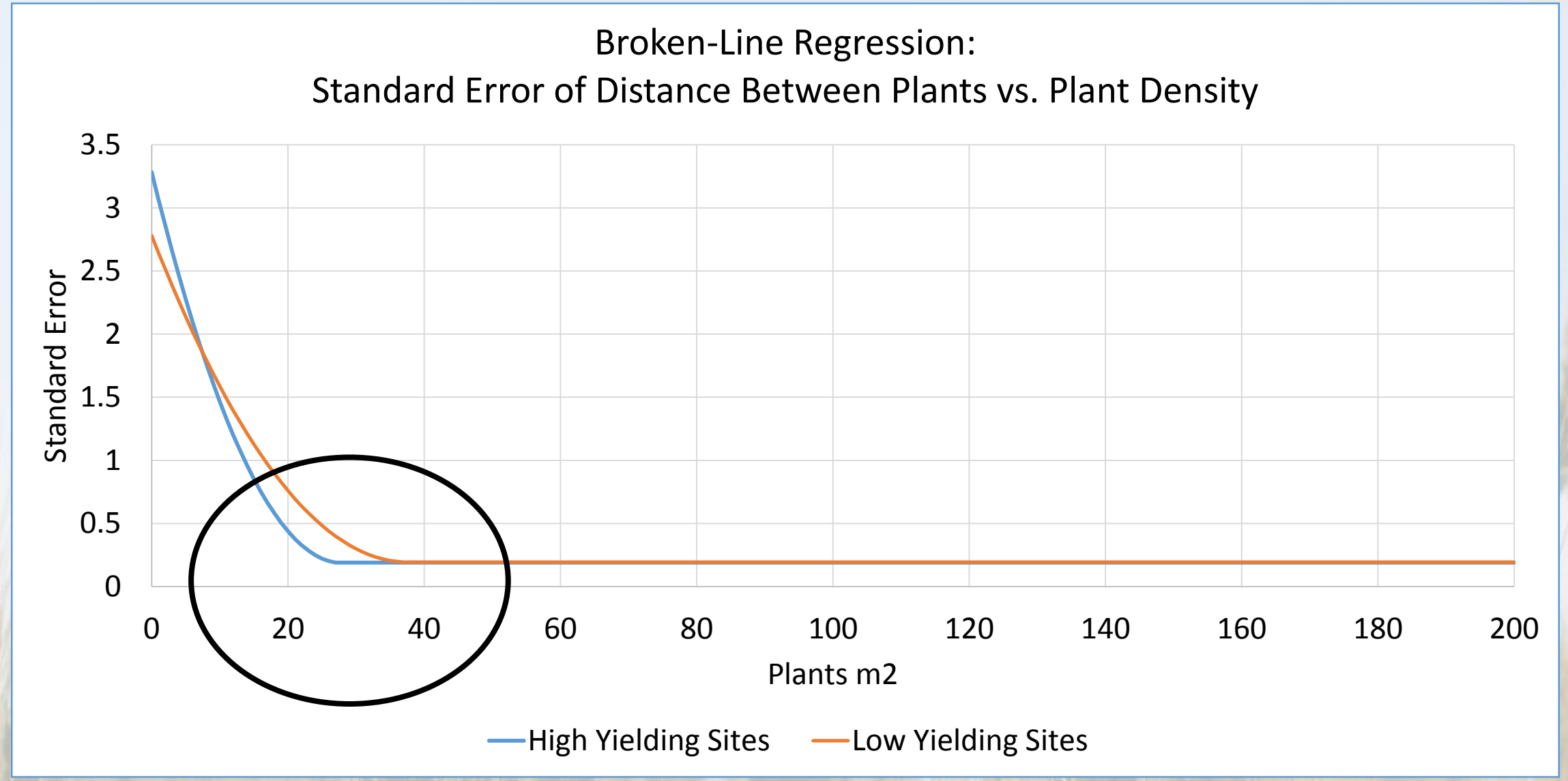

Target 160 seeds m-2

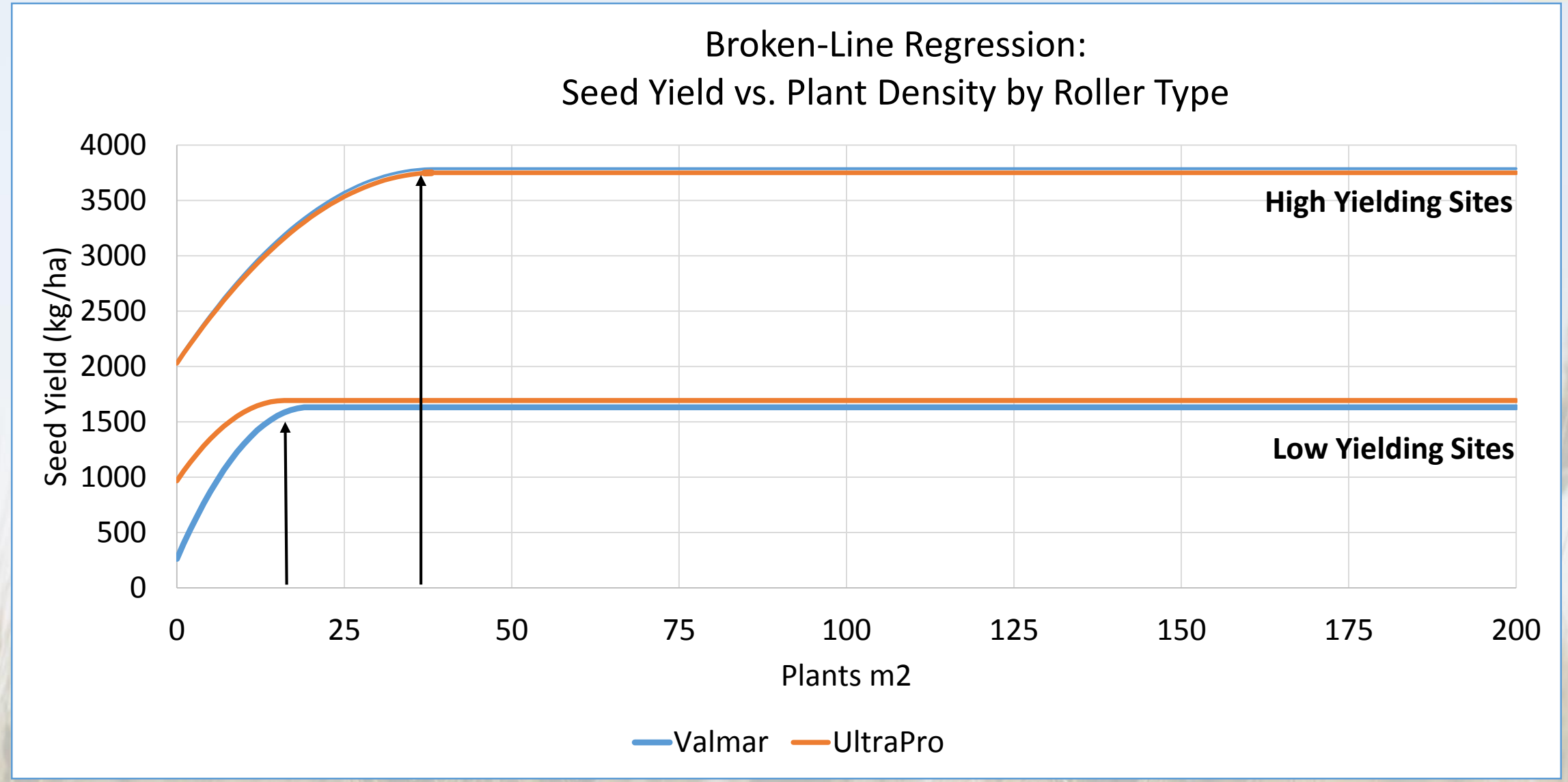

Target 320 seeds m-2



10% improved emergence with Valmar likely due to UltraPro metering seed more accurately – releasing fewer seeds

Seeding Rate Effect: ** Roller Type Effect: * Seeding Rate x Roller Type Interaction: **NS**


Broken-Line Regression:
Standard Error of Distance Between Plants vs. Plant Density
Standard Error
3.5
3
2.5
2
1.5
1
0.5
0
0
20
40
60
80
100
120
140
160
180
200
Plants m2
High Yielding Sites
Low Yielding Sites


Broken-Line Regression:
Seed Yield vs. Plant Density by Roller Type
Seed Yield (kg/ha)
4000
3500
3000
2500
2000
1500
1000
500
0
0
25
50
75
100
125
150
175
200
Plants m2
High Yielding Sites
Low Yielding Sites
Valmar
UltraPro


Target 10 seeds m-2


Target 20 seeds m-2


Target 40 seeds m-2


Target 80 seeds m-2


Target 160 seeds m-2


Target 320 seeds m-2

Target 10 seeds m^{-2}

Target 20 seeds m^{-2}

Target 40 seeds m^{-2}

Target 80 seeds m^{-2}

Target 160 seeds m^{-2}

Target 320 seeds m^{-2}

Preliminary Conclusions

- Lowest seeding rate was likely not metered our accurately
  - It appears the UltraPro may more accurately meter out seed than the Valmar
- Increasing plant population rapidly decreased variability in distance between seedlings
  - Plant uniformity was affected by plant density, not roller type
- Plant uniformity does not appear to be as important as plant density/other factors in determining canola yield potential
  - High yielding sites – needed 38 plants m^{-2} to reach maximum yield, but uniformity was maximized at 27 plants m^{-2}
  - Low-yielding sites – needed only 17 plants m^{-2} to reach maximum yield, but uniformity was maximized at 38 plants m^{-2}

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