



OSR Establishment

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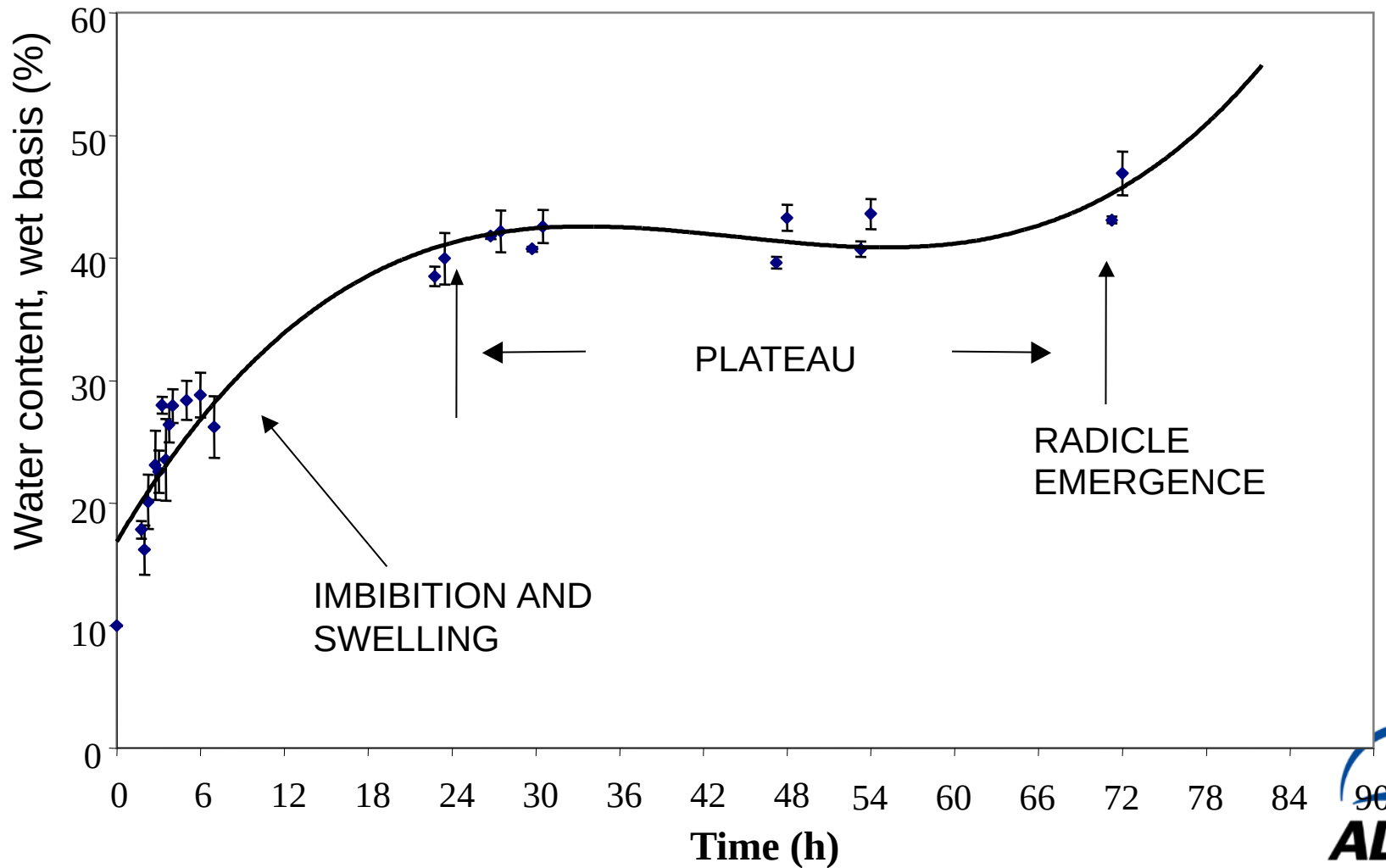


Soil moisture & soil/seed contact

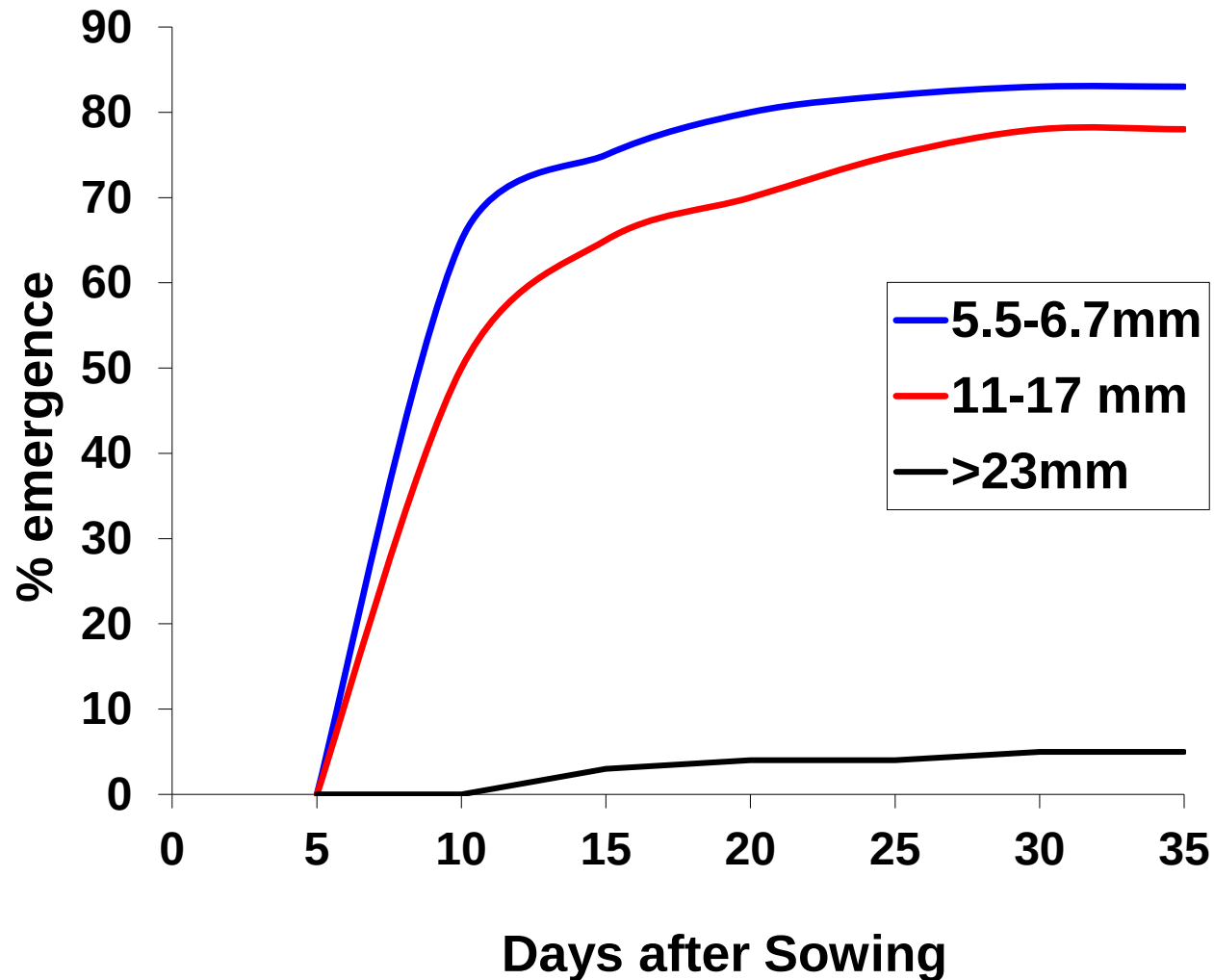
- Soil moisture & seed/soil contact are critical
- If dry then better to delay until moisture present
- Technology for estimating soil moisture from satellite and weather data becoming available



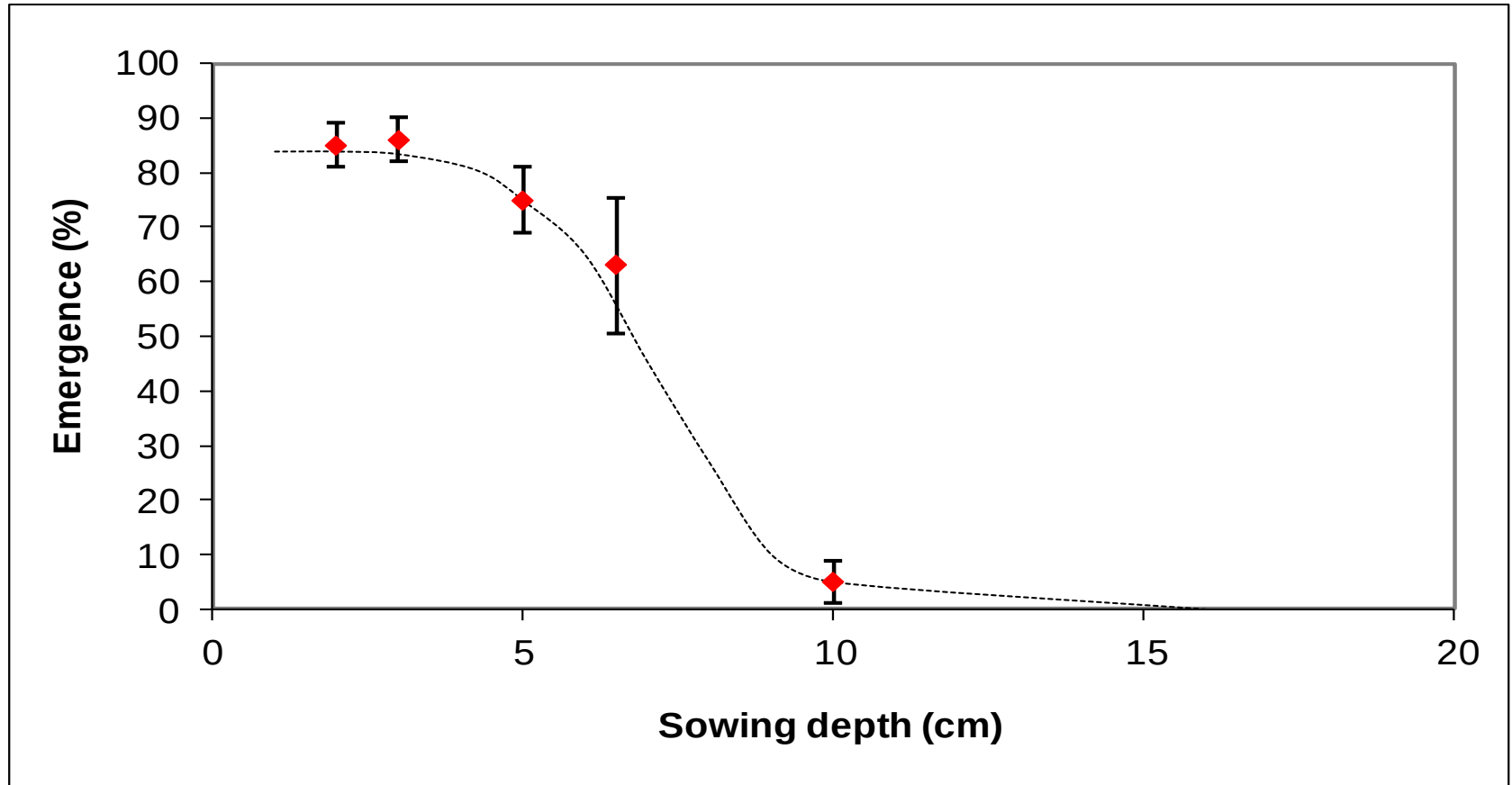
Seed imbibition & germination



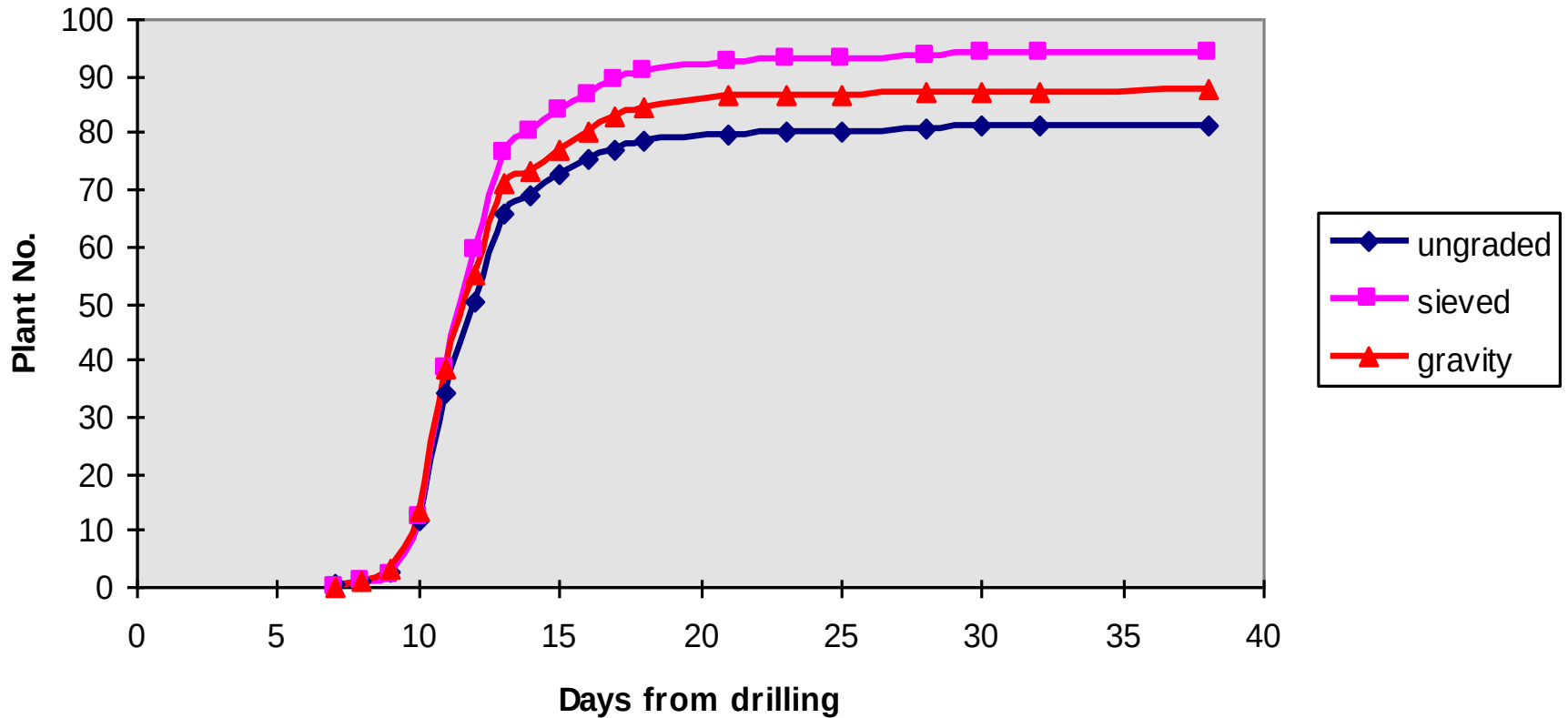
Aggregate size & establishment



Drilling depth (sandy soil)

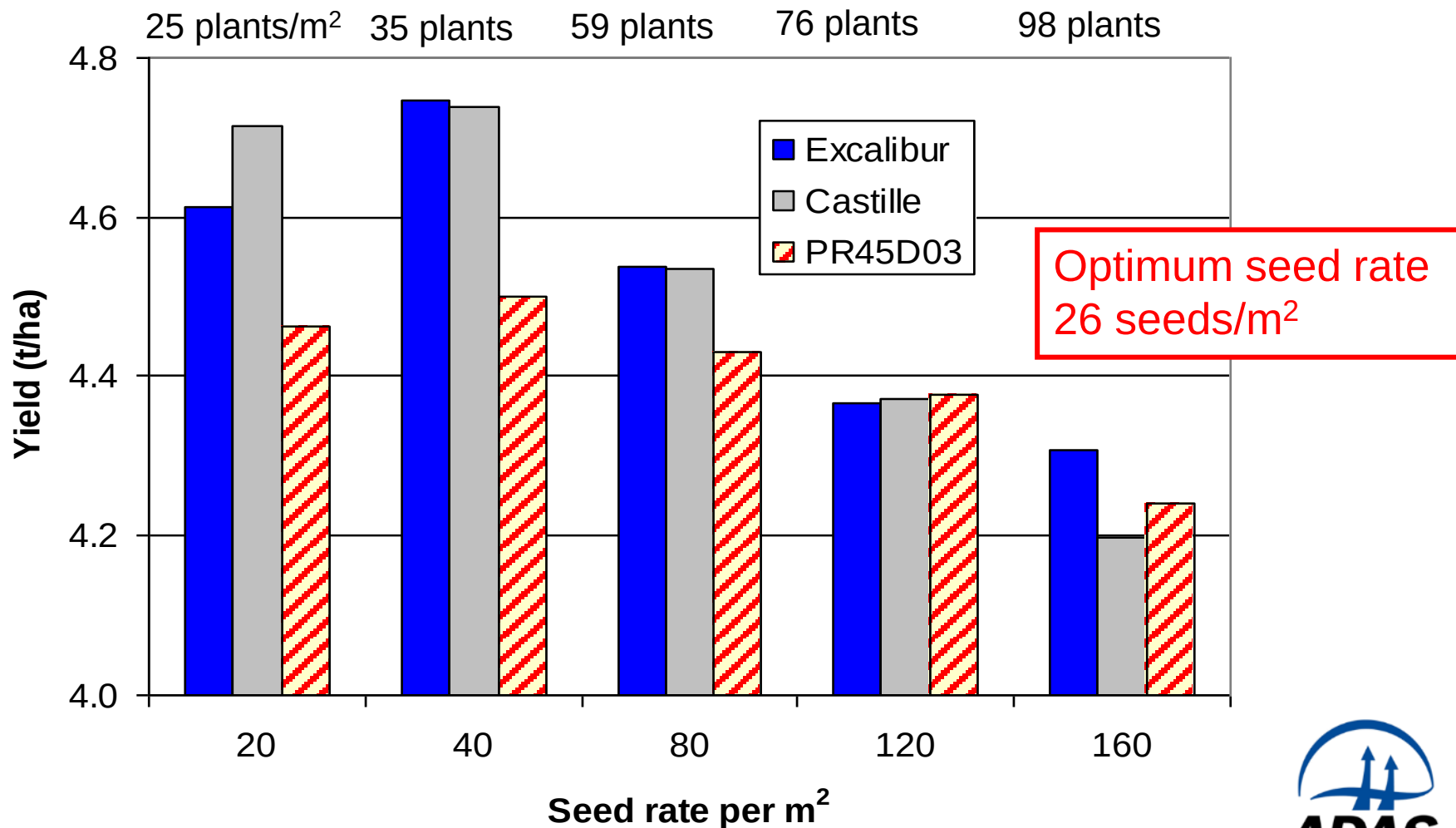


Seed size (field conditions)



Seed rates: East Yorks

- sown mid-September



20 seeds/m² - 25 plants/m²



160 seeds/m² - 98 plants/m²



Row width



Same seed rate, different row widths

100 seeds /m²

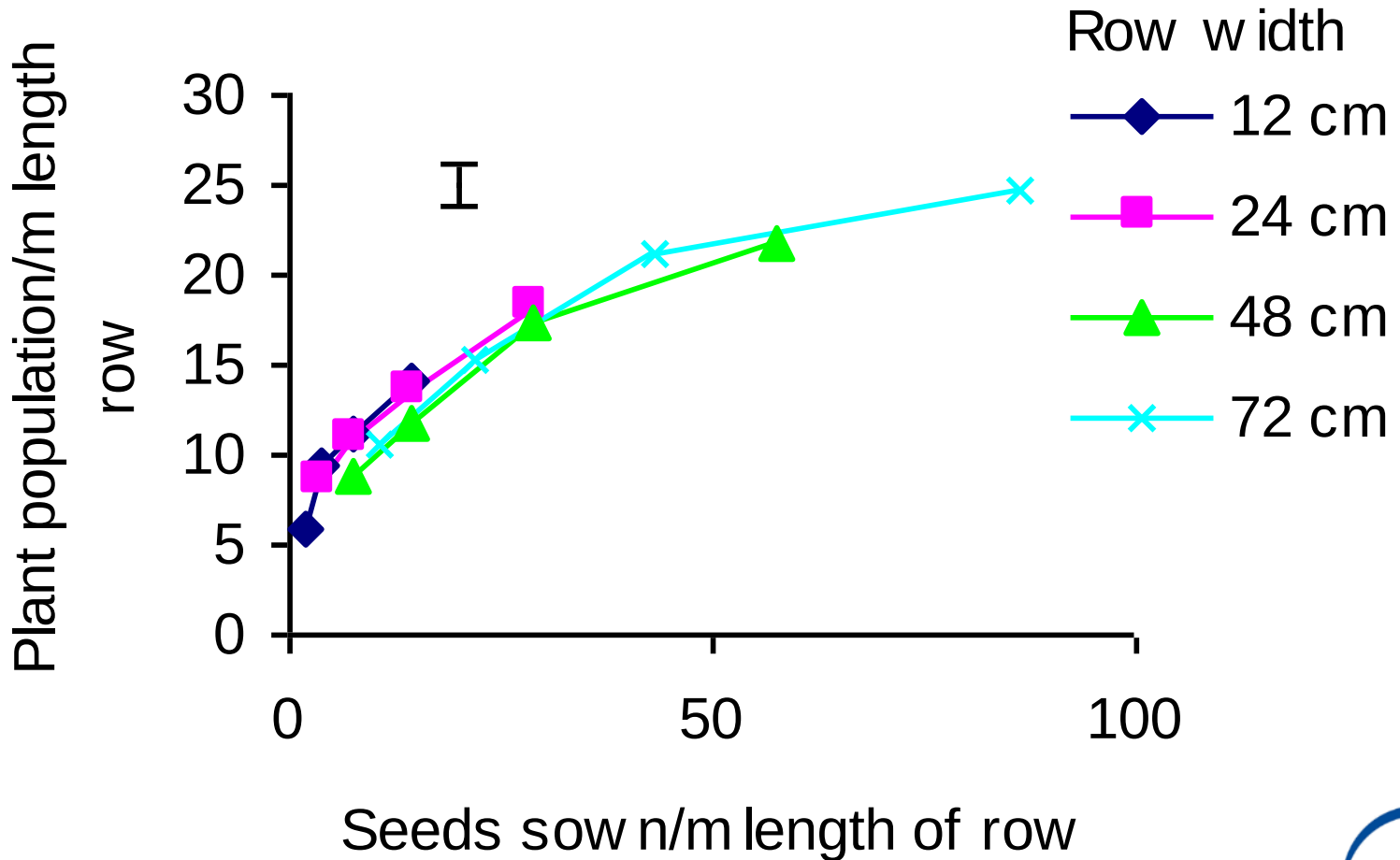


72 cm rows



12 cm rows

Plant spacing within rows

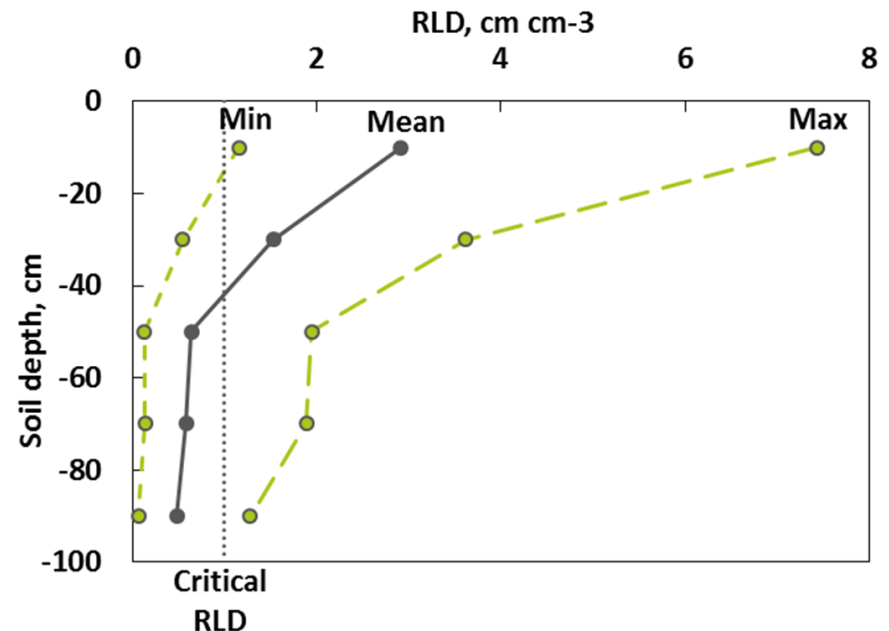


Conclusions

- Drill when moisture available
- Maximise seed-soil contact - Roll
 - Aggregate size <15 mm, sow depth 20-30mm (no deeper than 40mm)
- Where possible target optimum plant populations
 - usually 25-40 plants/m² (more in severe spring drought)
- Optimum sow date window longer than generally perceived
 - Into 2nd half of September
- Use varieties with high autumn vigour
- Row widths – no wider than 50 cm
 - Cannot pack in more than 25 plants per metre of row
- Autumn N required for up to half fields to achieve GAI one
- Ensure adequate P availability

Oregon Rooting: Objectives

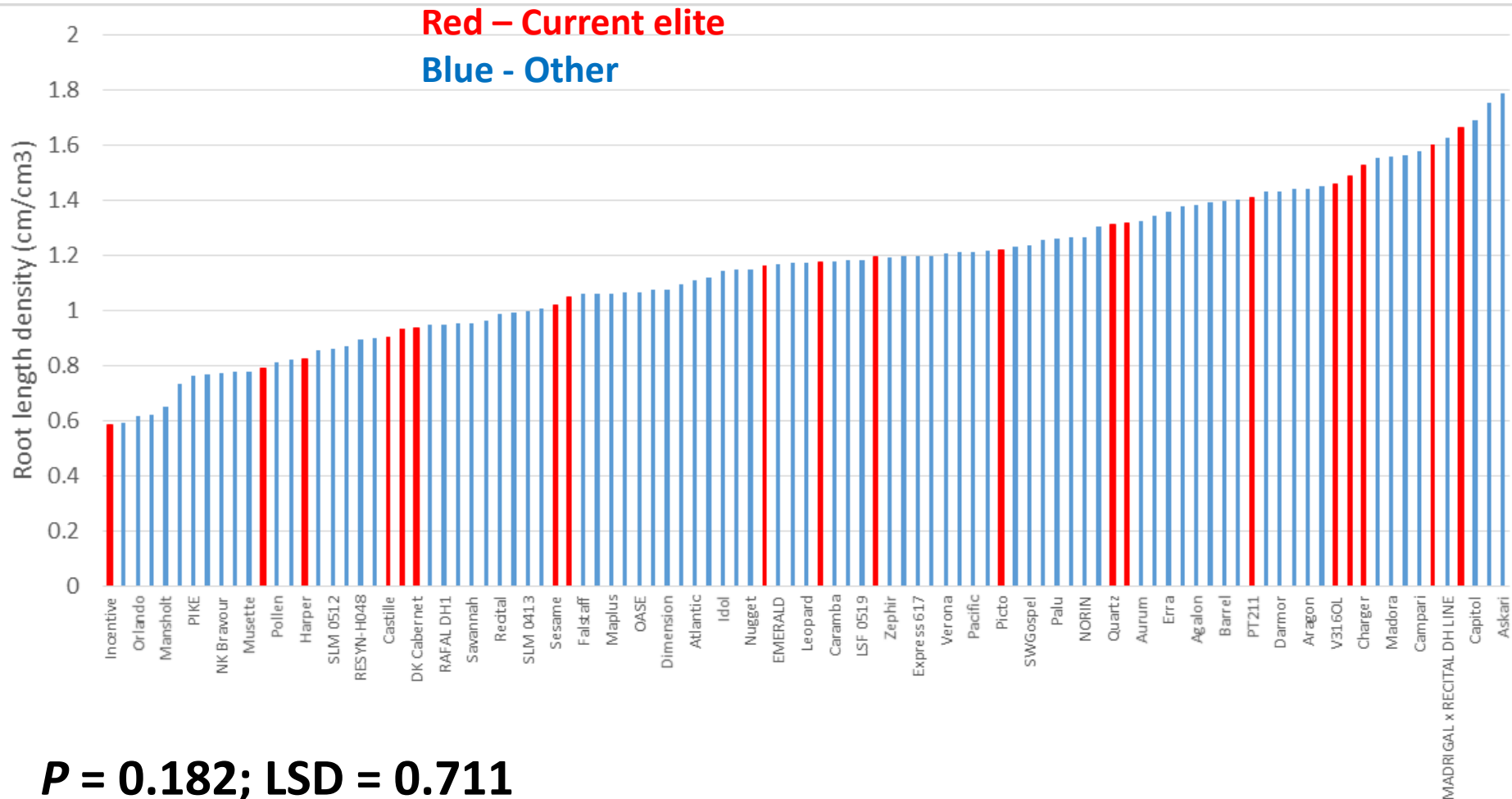
- **Background**
- Crops need a Root Length Density (RLD) of 1 cm root per cubic cm soil to extract all soil water
- 50% OSR crops have insufficient roots below 40 cm soil depth – yield limiting
- Rooting can be increased by:
 - Alleviating soil compaction
 - Earlier sowing
 - Possibly with variety choice



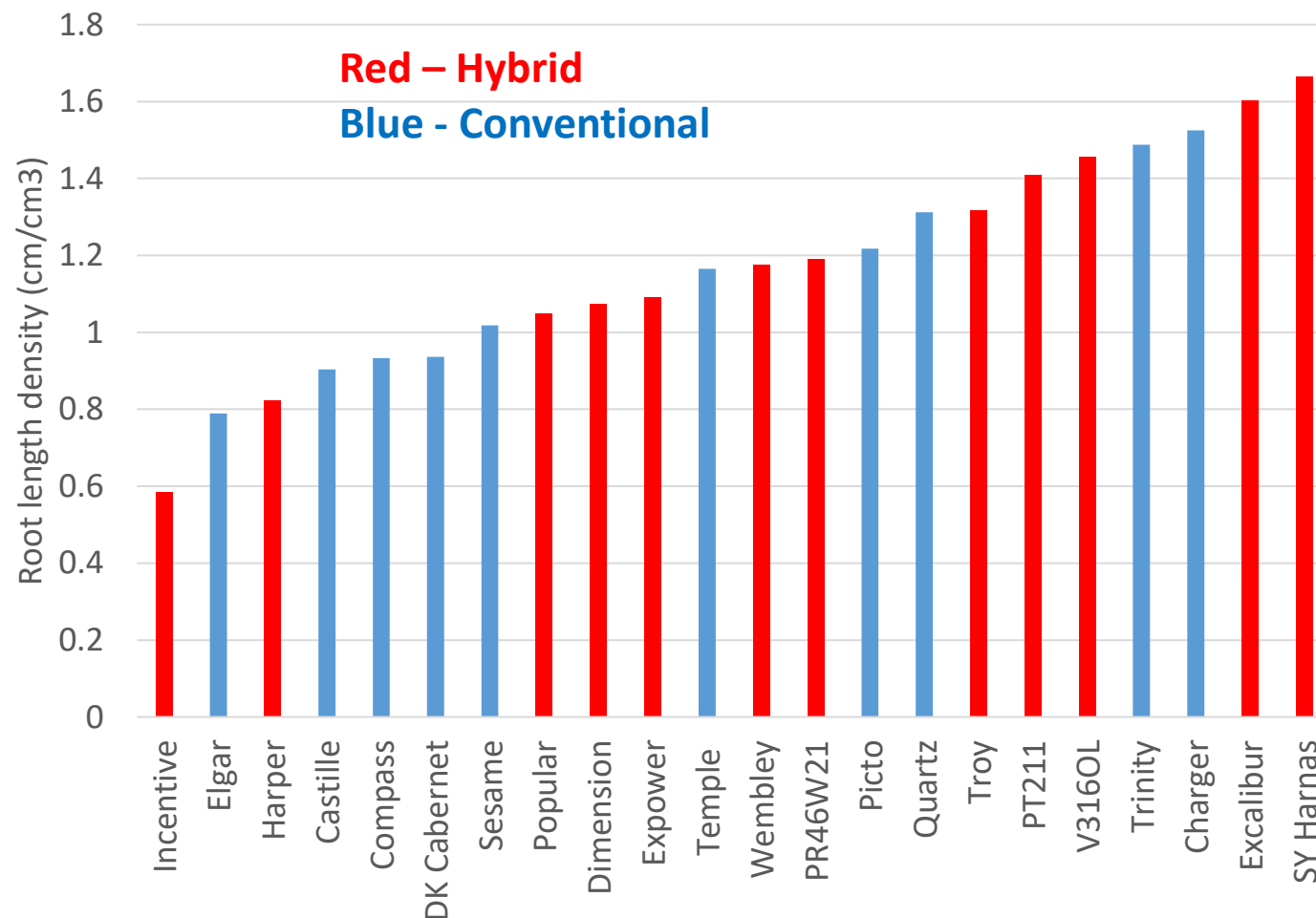
Objectives

- Identify deep rooting varieties
- Understand the genetic control of rooting

2016: Root length density (cm root/cm³ soil)

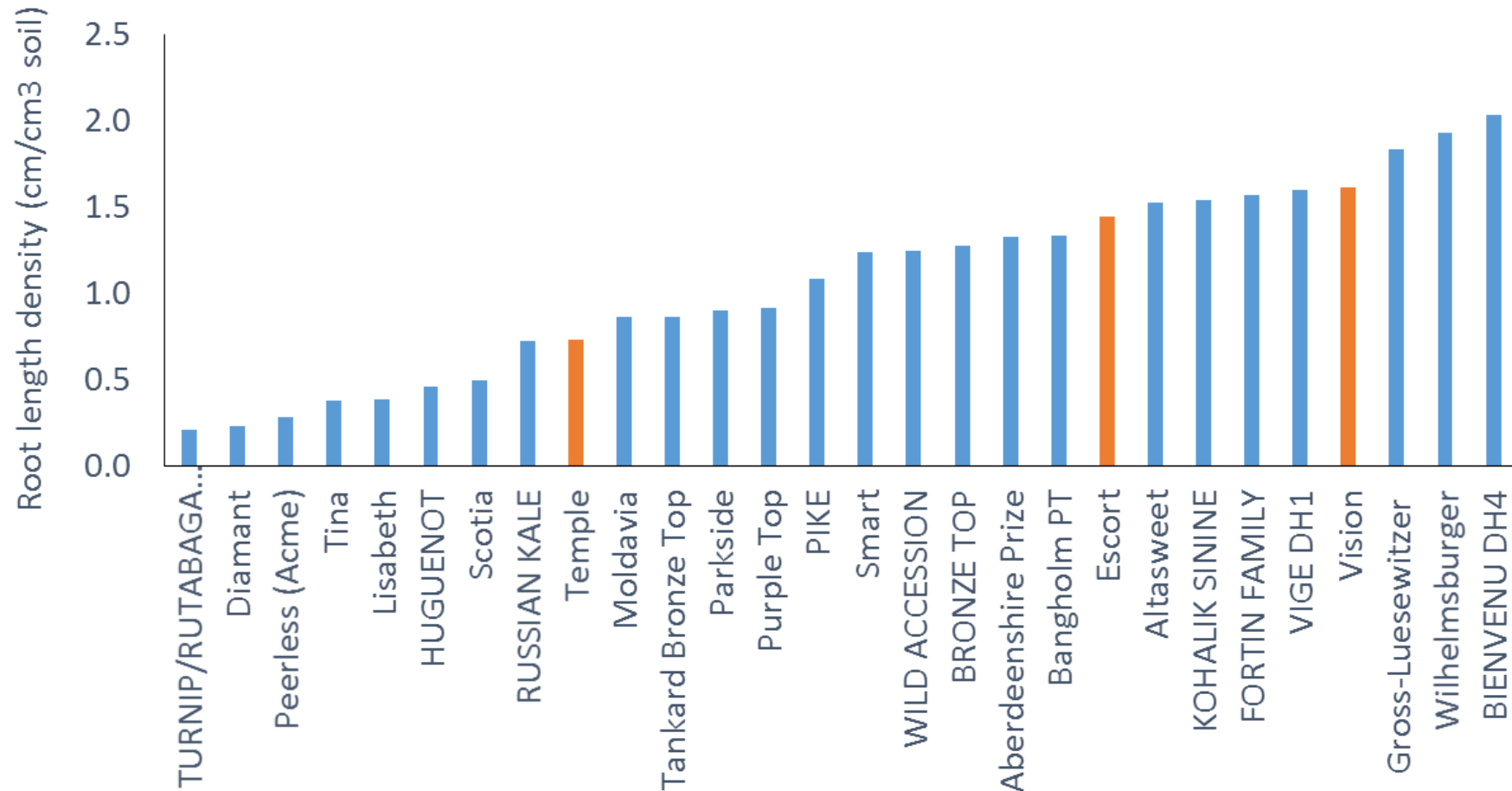


2016: Root length density

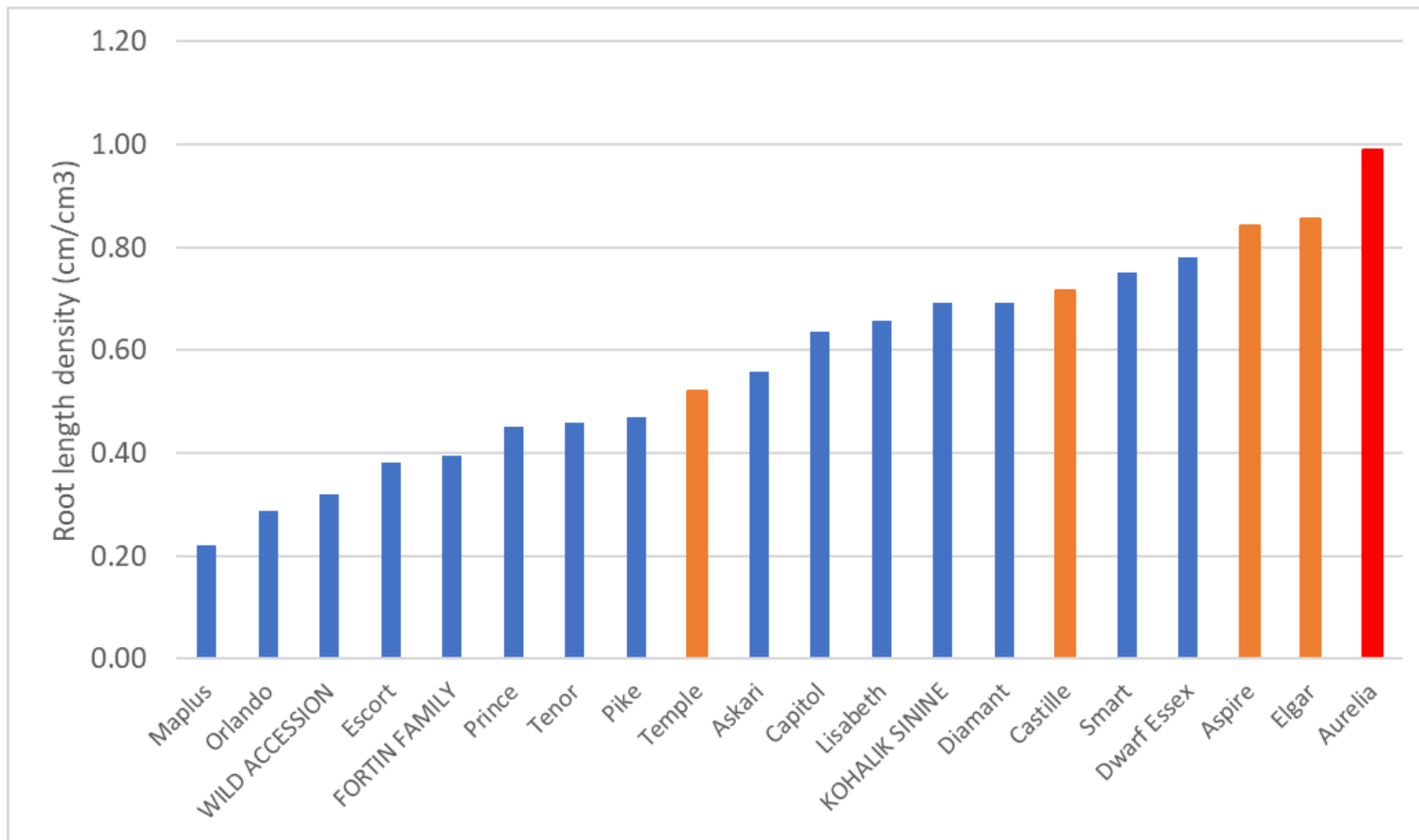


Elites: $P = 0.21$; $LSD = 0.70$

2018: Root length density



2020: Root length density



N.S. $P > 0.1$

Orange bars are UK conventional varieties & red bars are UK hybrids

Oregon Rooting: Emerging messages

- > 57 UK elite, outclassed and non-UK varieties tested since 2015
 - OSR, swede & forage types
- Site & season have a very large influence on rooting
- Conventional varieties can root as well as hybrids
- No varieties found with consistently better rooting than UK elites

