



Is OSR Rooting Limiting Resource Capture?

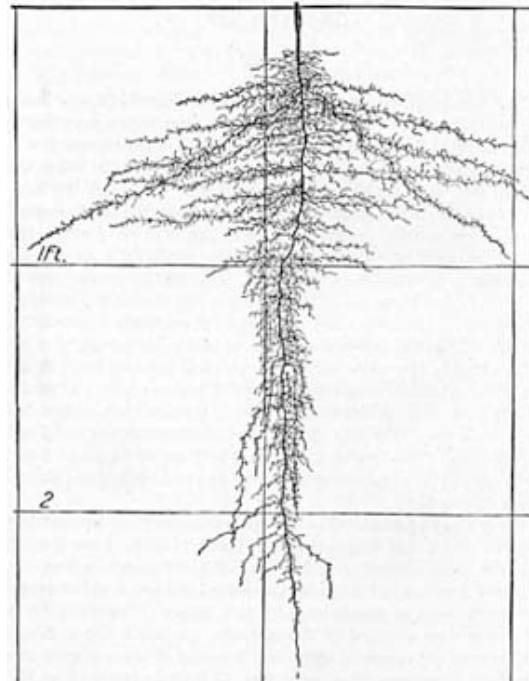
Dr Charlotte White

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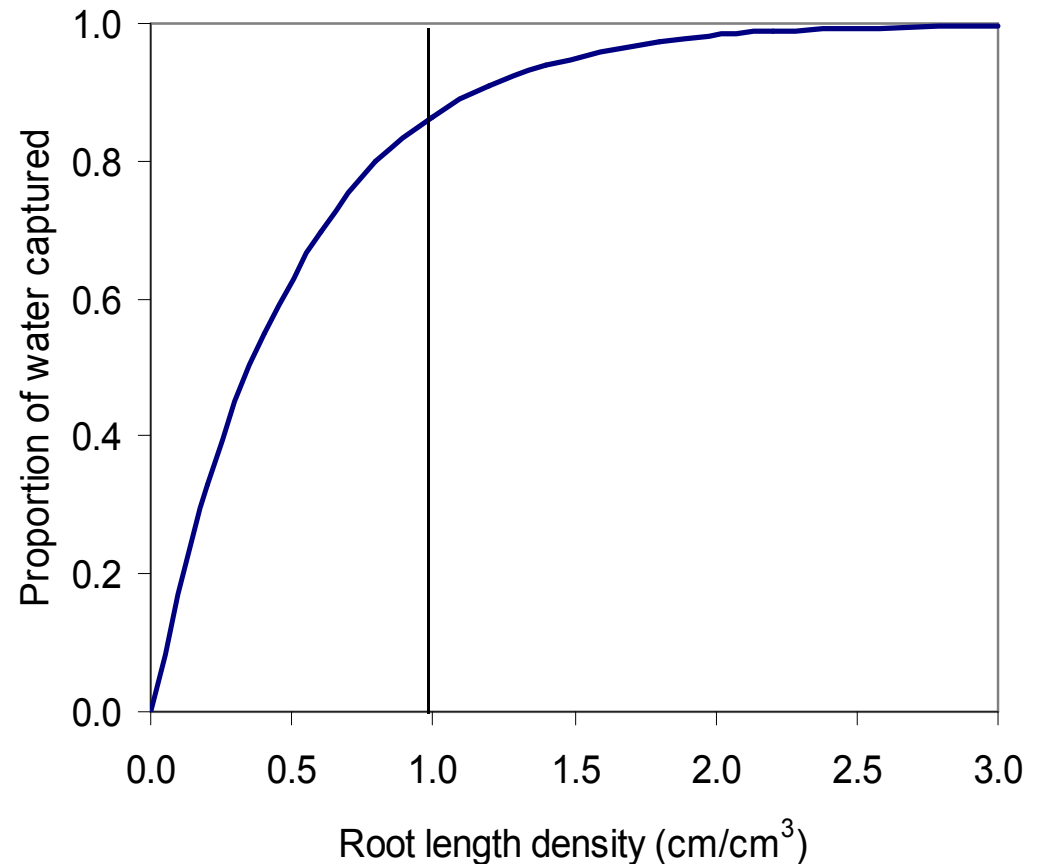
Root development

- Tap rooted crops (Dicots)
- One main 'tap root'
- Lateral roots develop radially



Critical Root Length Density (RLD)

- Critical root length density =
- 1 cm root per cm³ soil



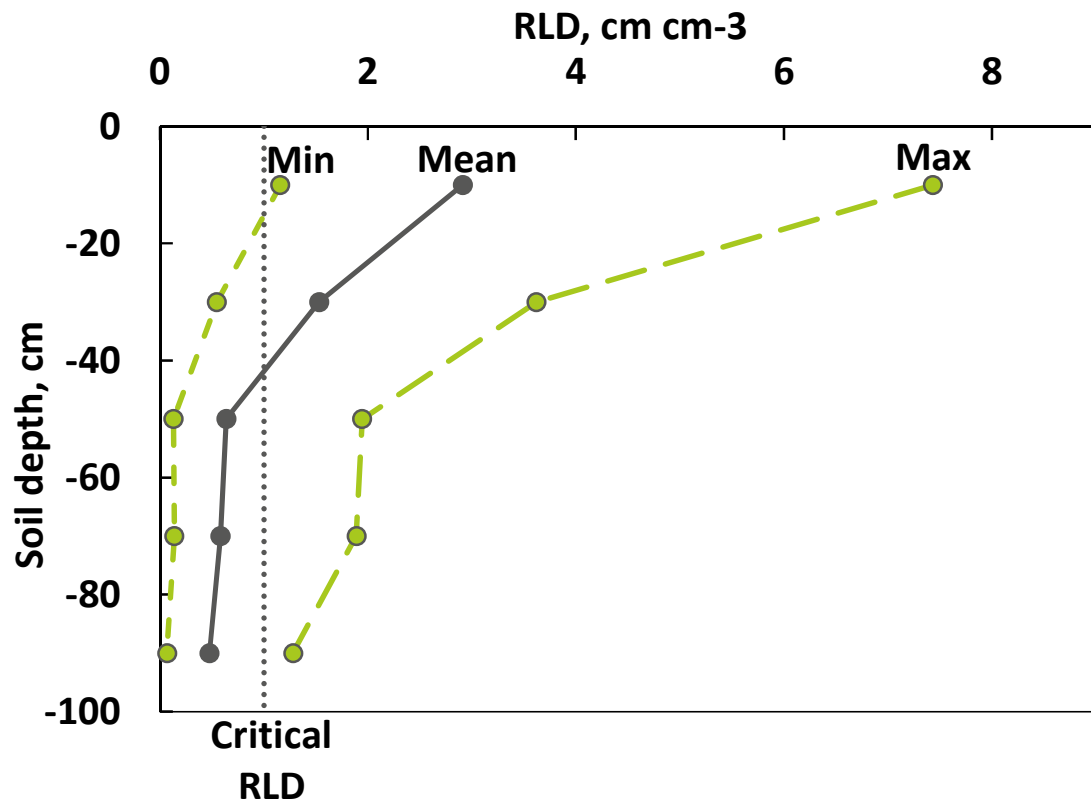
Ann. Bot. 91, 383-390

Measuring rooting in the field

- Extract soil cores to 1m
- Wash out roots (20cm horizons)
- Remove organic debris from root sample
- Measure root length and thickness



Survey of OSR rooting on farm



- 40 crops
- 2004 – 2013
- Av. rooting inadequate below 40 cm

White *et al.*, 2015 JXB 66(8): 2293-2303

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How much water can OSR roots extract

	Min RLD	Mean RLD	Max RLD
Loamy sand	44 mm	82 mm	100 mm
Clay loam	71 mm	133 mm	163 mm
Silty loam	96 mm	178 mm	219 mm

- 3 mm water transpired per day
- 20 mm transpired per tonne biomass
- 30 mm transpired per tonne of seed



Conclusions

Need to :

- Increase rooting below 40 cm soil depth
- Understand what factors affect rooting in the field
 - Genetics, e.g. Hybrids vs Conventional,
 - Soil condition e.g. compaction & drainage,
 - Cultivations,
 - Agro-chemicals e.g PGRs



Thank you

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