



Charles Sturt
University

Redefining flowering times of barley and wheat for future climates

Felicity Harris¹, Nectarios Costadopoulos¹, Kenton Porker², Pengcheng Hu², James Hunt³, Corinne Celestina³, Victor Sadras⁴, Max Moldovan⁴, Rick Graham⁵, Blakely Paynter⁶, Hammad Khan⁶ and Kelly Angel⁷

¹ Charles Sturt University, ² CSIRO, ³ University of Melbourne, ⁴ SARDI, ⁵ NSW DPI, ⁶ DPIRD, ⁷ Birchip Cropping Group

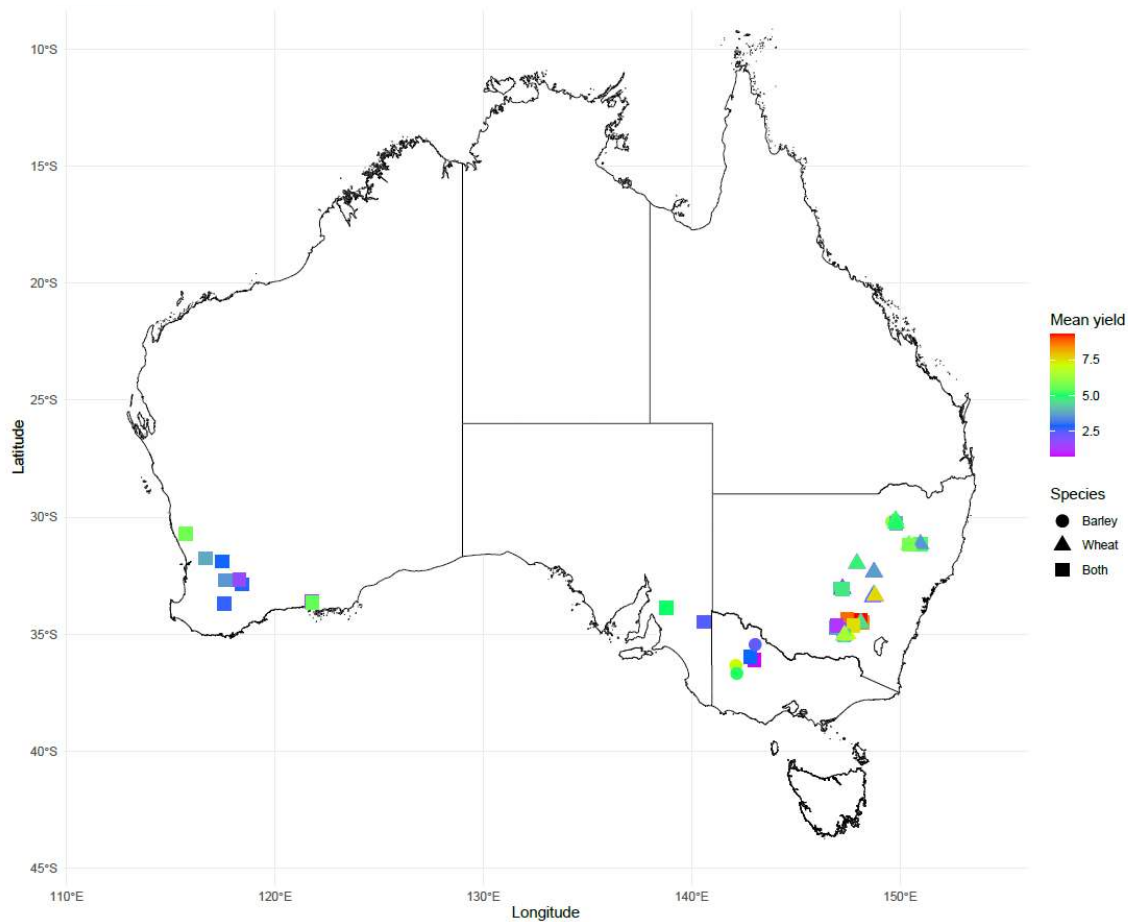






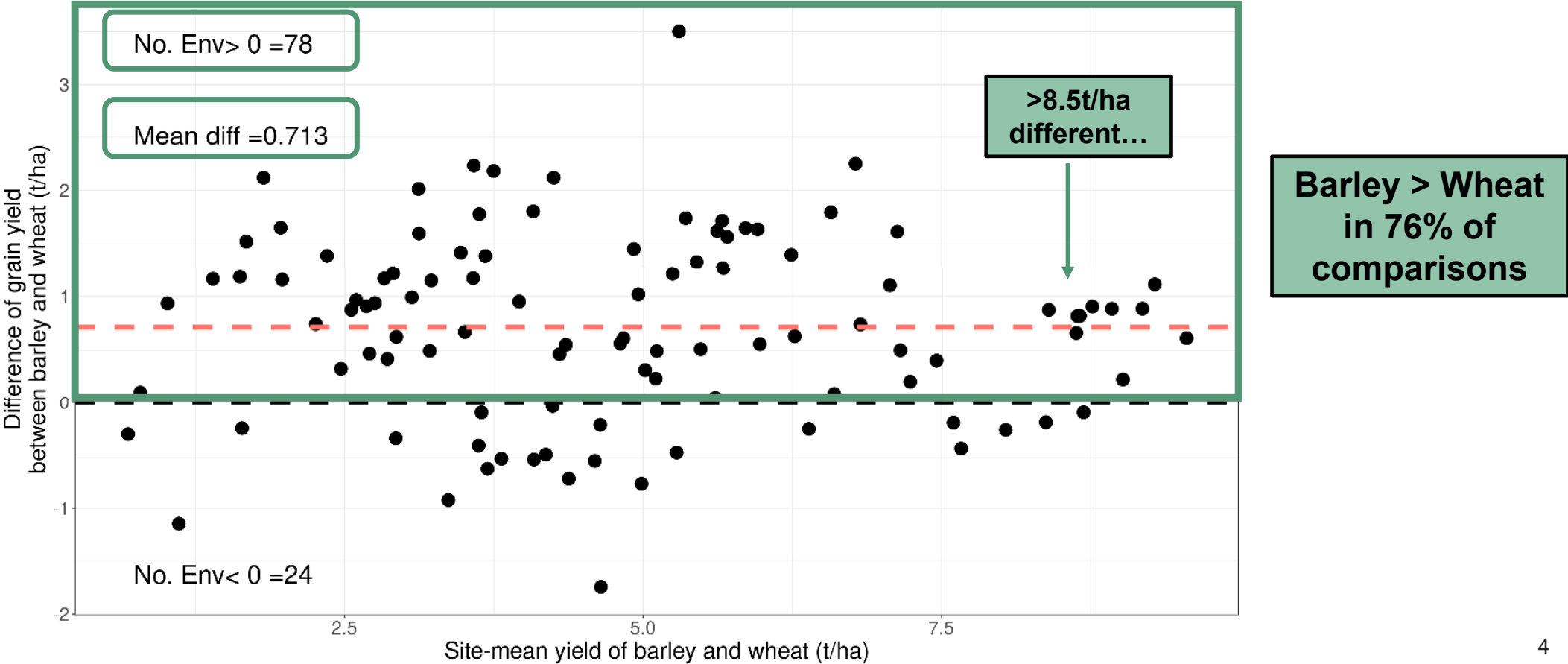
Comparing barley and wheat across environments...

85 field experiments (2010–2022); AAR: 117–978 mm; GY: 0.2–11.8 t/ha

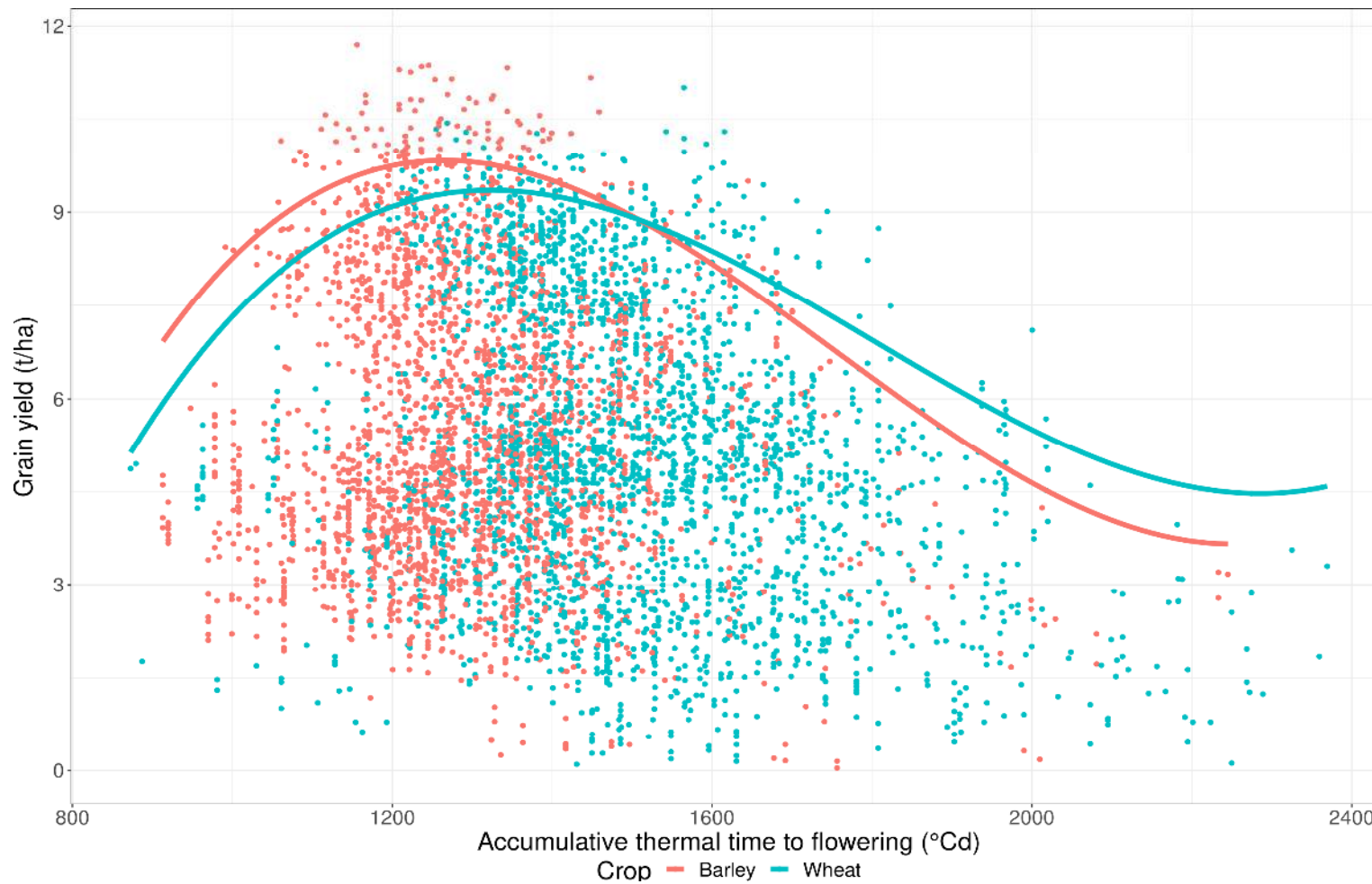




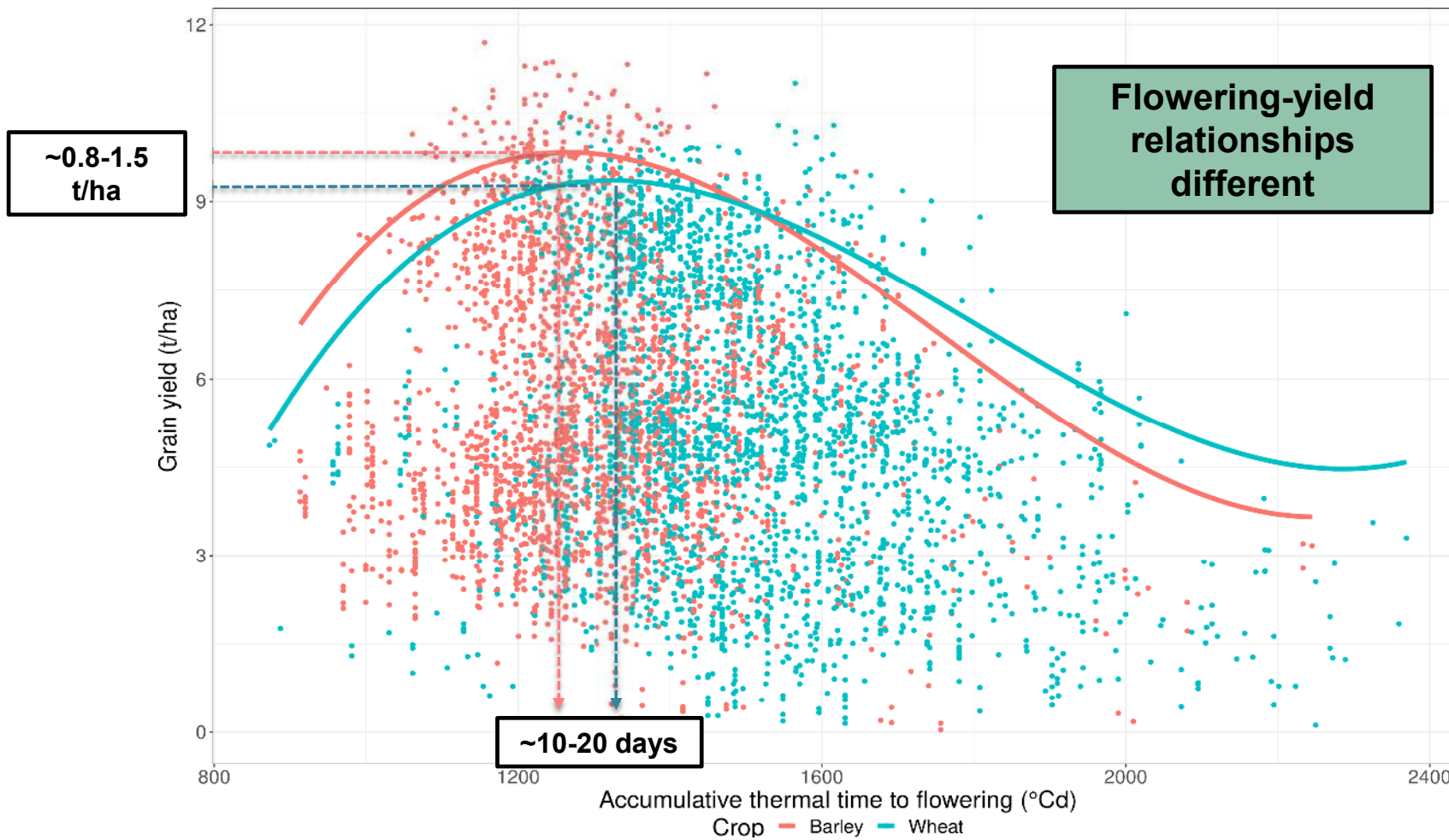
Barley maintains a yield advantage over wheat...



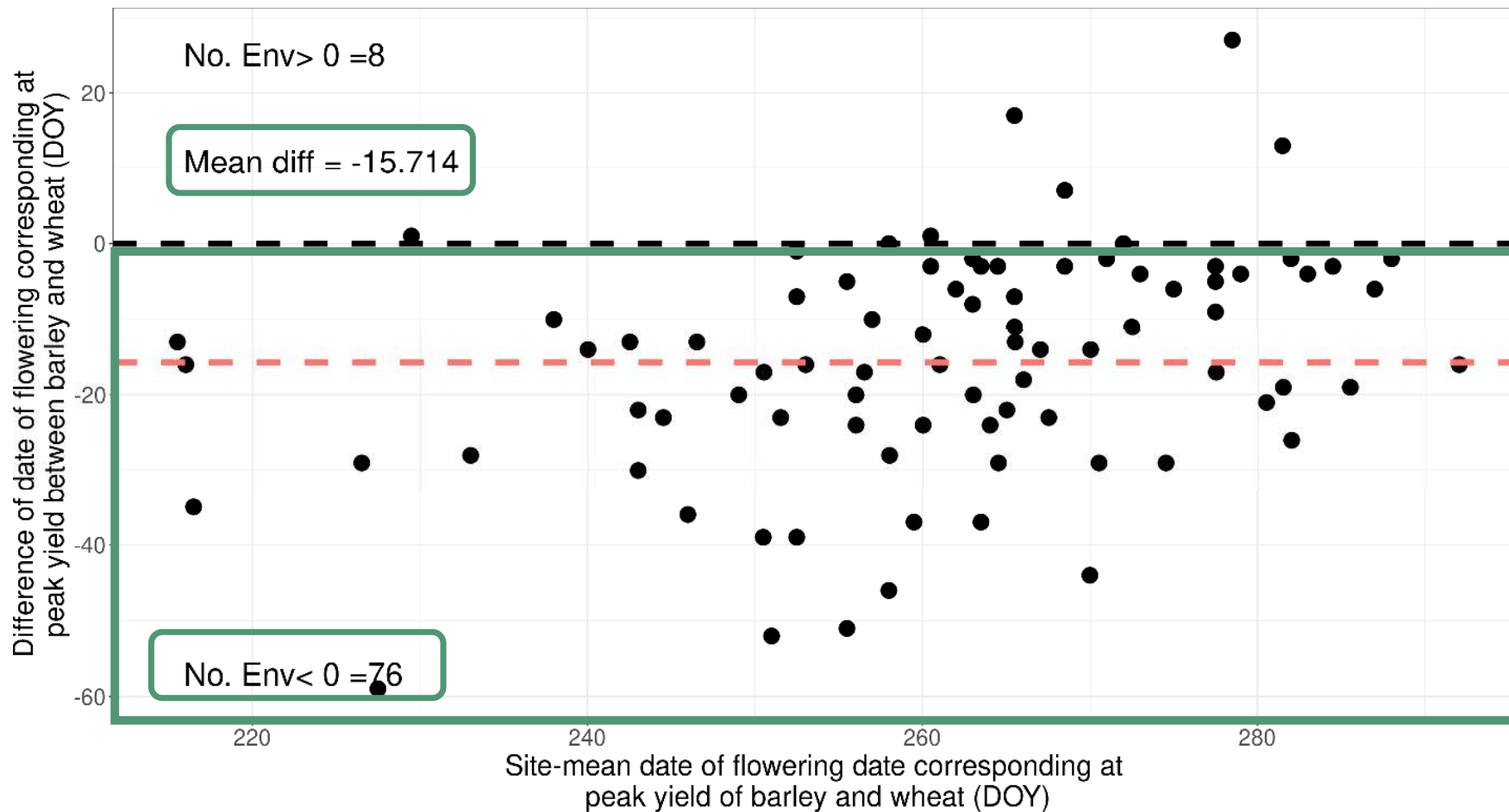
Increased barley yields despite earlier flowering...



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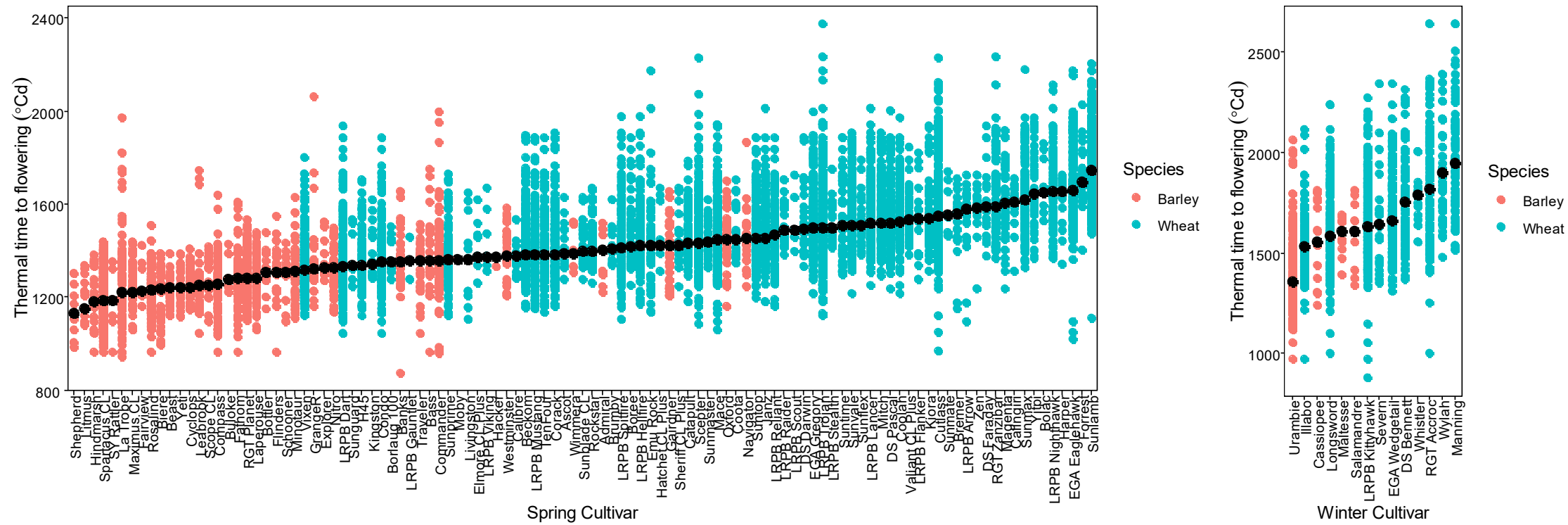


Increased barley yields despite earlier flowering...



Flowering associated with peak yield was earlier in 90% of comparisons

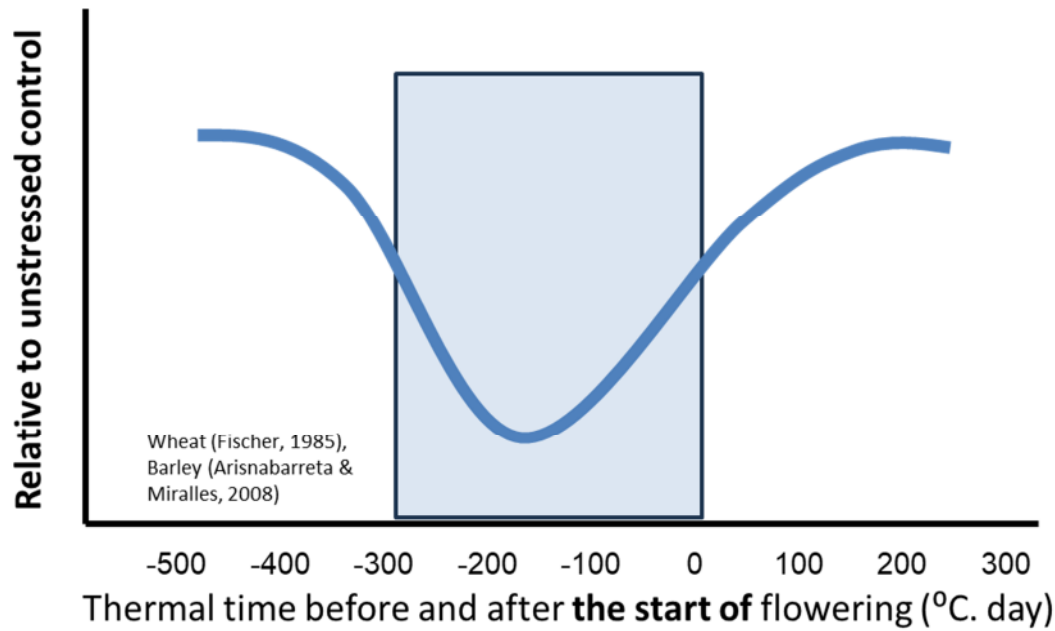
Narrow range in phenology compared to wheat...





Yield potential determined by critical period...

Proportional to rate of growth, duration, reproductive allocation (Slafer et al., 2023)



Source: Kenton Porker



Min. stress

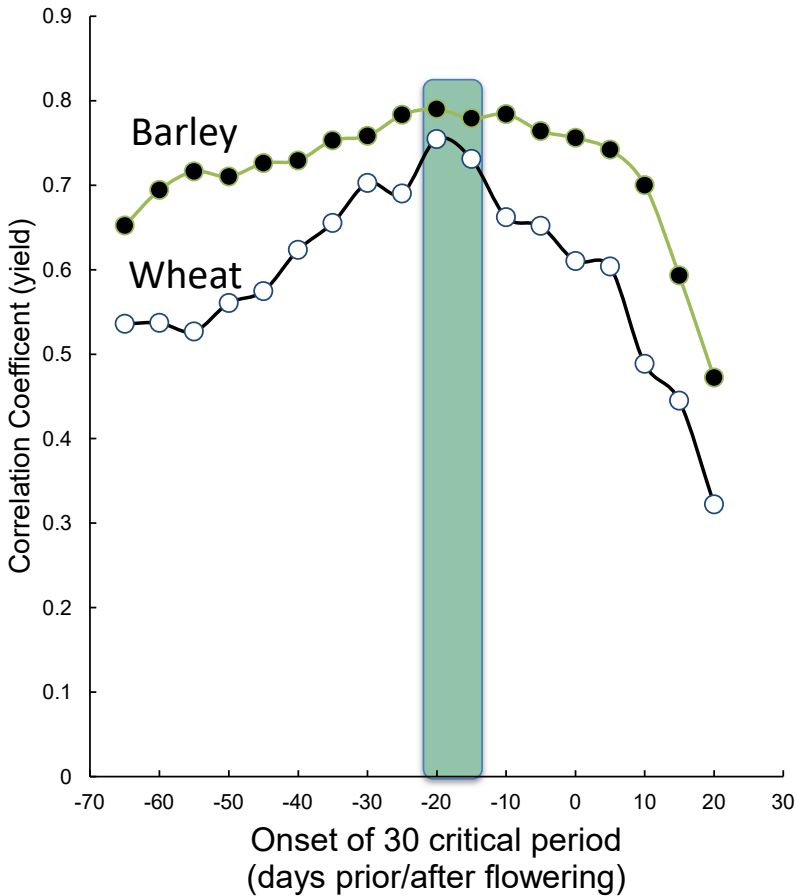


Max. growth



Critical period slightly different in barley...

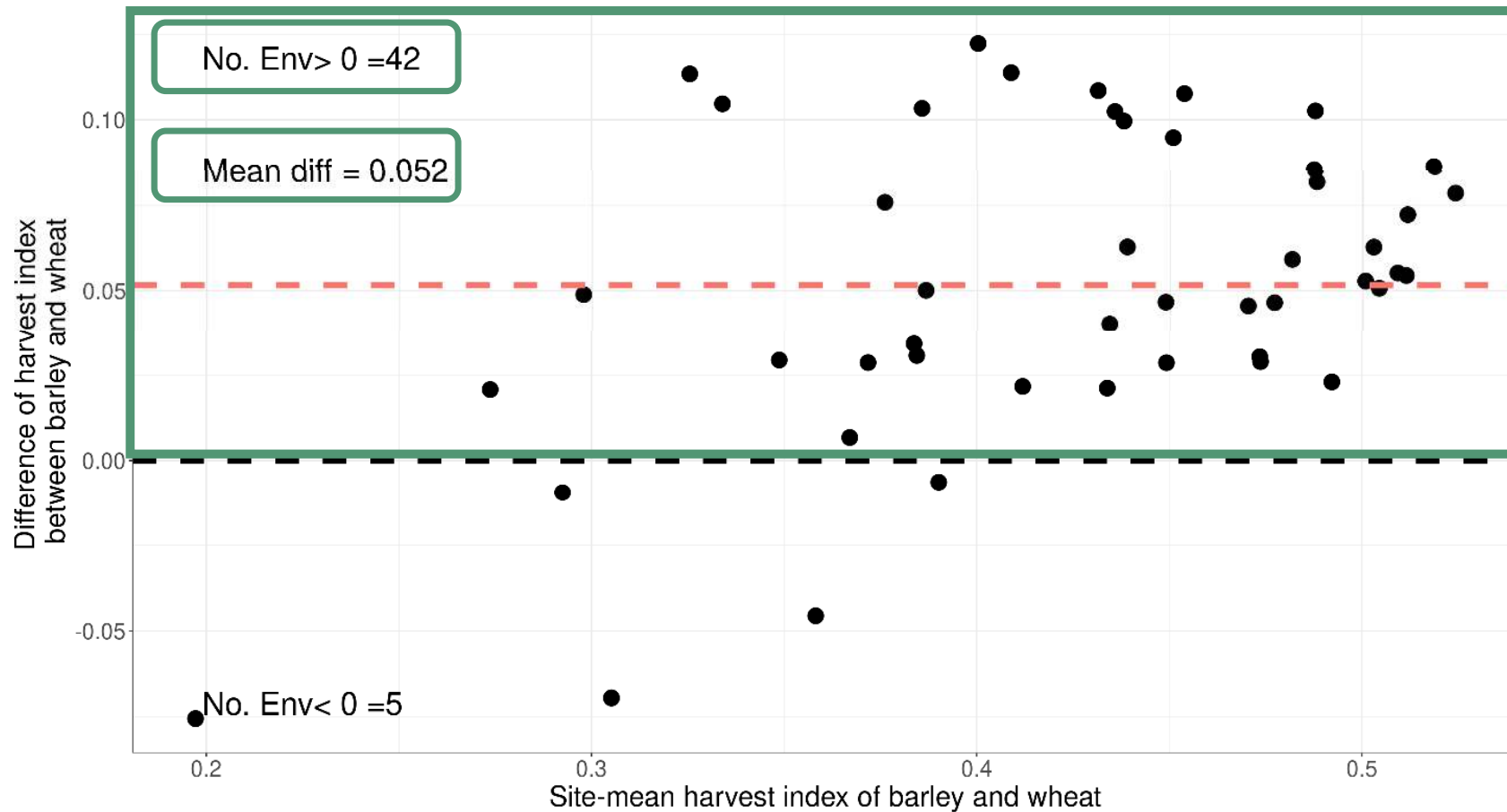
Sensitivity to timing and duration? (Porker et al., 2024 in review)





Differences in yield determination...

Barley accumulates biomass quicker, improved partitioning...



**Barley > Wheat
in 87% of
comparisons**

Take home messages...

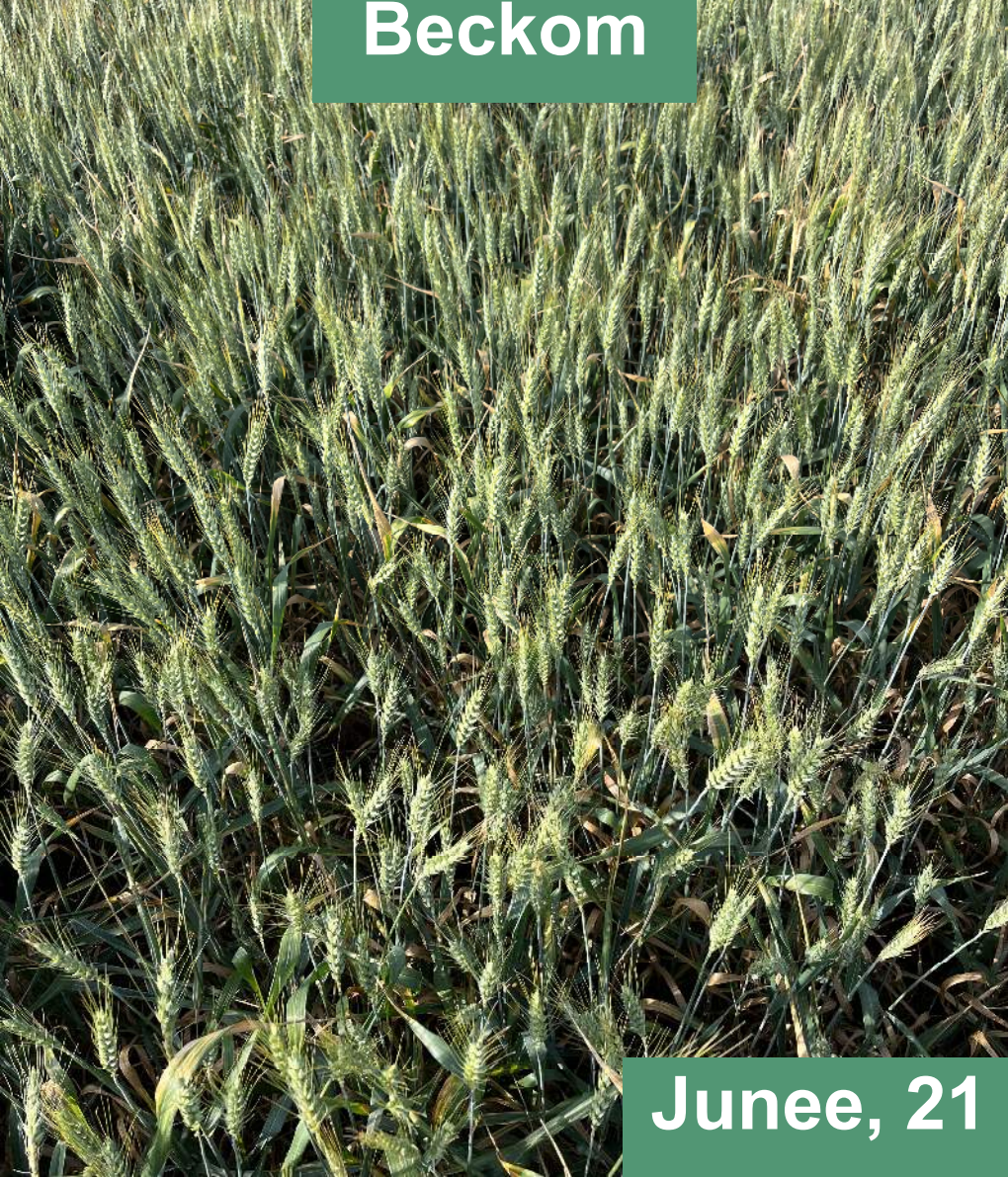
- Barley maintained a **yield advantage** over wheat in contrasting seasons
- Flowering time corresponding to peak yield was **earlier in barley – different risk profiles?**
- **Barley genotypes quick** compared to wheat, opportunity for increased phenology diversity in Australia
- Characterising **differences in critical period** to better understand flowering-yield relationships
- Integrating **G x E x M** synergies to challenge our understanding of flowering time in winter cereals for future climates



New diversity coming...



Beckom



Cyclops



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X @PhenologyisFun

Thanks for having us @AgronomyAus!



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