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Department of Agriculture, Fisheries and Forestry

Future Drought Fund

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South-West WA Drought Resilience Adoption and Innovation Hub

CSIRO

CSIRO Long Coleoptile Project: 6-Week Post-Sowing Questions

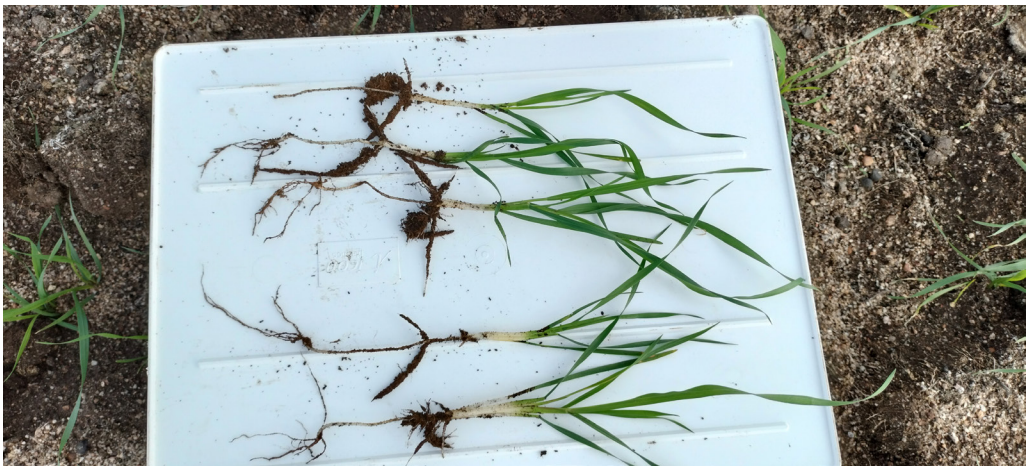
13th June 2023 interview with CSIRO Scientist Dr. Sarah Rich on improving sowing opportunities for increased farm resilience in a changing climate funded by the Future Drought Fund.

FACEY GROUP
Shaping the Future

By Tina Astbury, Senior Agricultural Project Coordinator

The Future Drought Fund and CSIRO are working with Facey Group and 5 other grower groups to compare the establishment, yield, and grain quality of a range of long coleoptile wheat, legumes, and oats at two different seeding depths. The varieties include top-performing wheats for the area as well as selected long coleoptile breeds.

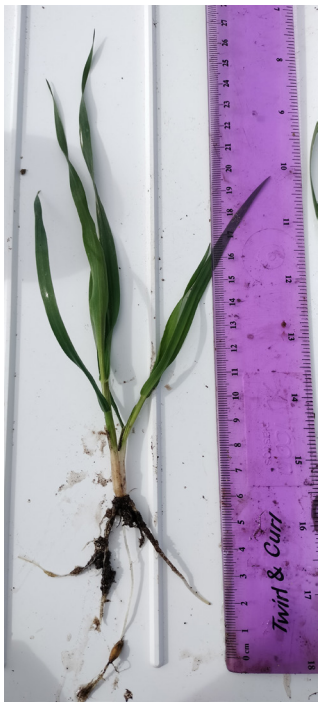
Are there any varieties you are excited to see emerging today 6 weeks after they were sown?
Bale and Calibre as they are both long coleoptile breeds that are recently released. Bale has a longer season whereas Dual is a mid-season wheat. The Mace/Mace18 lines are interesting as they are genetically identical aside from Mace18 having the Rht18 gene which increases the coleoptile length. It has also been interesting to see how the varieties Magenta and Yipti have emerged from deeper sowing given they are older varieties.

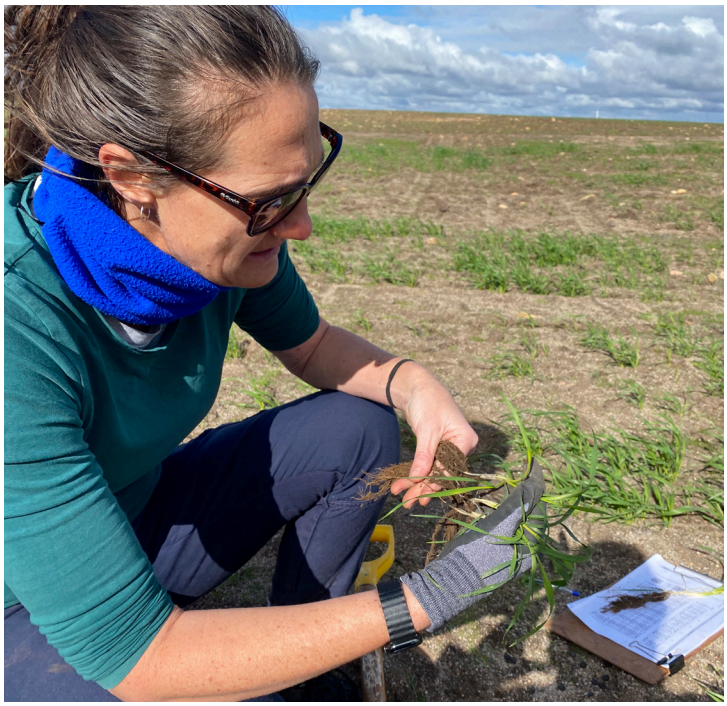


How are the other sites going as part of this project?
3 trials went in within a week of each other and they still have plants emerging. On this site at the six-week stage, most of the plants have emerged. The last 2 sites were sown last week in drier areas on heavy soils so it will be interesting to see how the different coleoptile lengths handle the heavier soil conditions. In general coleoptile length is better in warmer conditions and in lighter sandy soils so later sown trials on heavier soils will certainly look different to this trial.

Can you tell us anything more about the range of oat varieties in this trial?
Including oats in this trial was part of a student project. It has been very interesting to see them emerge well from deeper sowing. In greenhouse testing, they were coming up from 20 cm! Oats do have variable coleoptile lengths and their emergence is also dependent on the length of the mesocotyl which helps the plant emerge through the soil before the formation of the first leaf. Oats could be a great choice for early sowing options into moisture.

What do you think will be the main outcomes of this trial?
Because this trial is part of several farm trials, we have really good information about how long coleoptile varieties perform in different soil types and it does seem they struggle a bit more on heavier





loams. We want people to get interested in the upcoming varieties. To have a better understanding of the advantages of sowing deeper and when it is a good management fit, plus understand how important the variety choice is.

Any final words?
I've done computer models on where soil moisture sits in the profile depending on soil type and rainfall patterns and in WA there is often a deep sowing opportunity early in the season. With deeper soil moisture and a variety that is bred for a longer coleoptile, there is good evidence we can increase the capacity of the crop to get started early or in dry conditions. As part of a current GRDC investment, the agronomy of deep sown wheats is being researched and financial modelling undertaken on the costs and benefits of deep sowing in terms of increased fuel costs, and wear and tear on machinery. I'm looking forward to meeting growers at some upcoming pop-up field walks and answering any questions they might have.