

Summer sown cropping following excessive winter waterlogging

Locally relevant spring and/or summer sown cropping opportunities for grain growers following excessive winter waterlogging – South-Western Australia

Hosts: Walker Family (Green Range), Curwen Family (South Stirlings), Webb Family (Scotts Brook), Warburton Family (Kojonup) and Tyson Family (Wickepin).

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KEY MESSAGES:

- Extremely late (October) sown cereals can be profitable on the South Coast of WA when sown into a full soil moisture profile.
- Growing a summer crop may conserve more soil moisture than a chemical (bare) fallow.
- There was no negative impact in any of the trials/demonstrations of the summer crop on the productivity of the following winter crop.
- Summer forage crops can be profitable, or at least pay for themselves, if more than one grazing can be achieved.

Background

The project was set up in response to the severe waterlogging experienced along the south coast of WA in 2021. SILO data shows that the entire Great Southern region received decile 8-10 rainfall for 2021, with the key seeding months of April-June receiving well above the 51-year average rainfall. In addition, the region had also received above-average rainfall for the 2019-2020 summer. As a result, growers attempted to sow crops very late or re-seeded paddocks that had failed with variable success. The seasonal conditions presented an opportunity to look at the agronomic and economic opportunities of summer crops to use the excess soil moisture and mitigate waterlogging in the following season and to understand the impact of summer crops on the following winter crop.

Methodology

In the summer period between 2021/22, six successful field trials were spread across the medium to high rainfall zones of the Central Wheatbelt, Great Southern and Southern Coastal regions of WA. Excessive winter waterlogging had occurred in the 2021 season across all trial locations. The field trials included:

- A small plot trial (led by Nutrien Ag Solutions) – multiple crop types for grain production
- Two multi-crop type farm-scale demonstration trials (led by SCF & Southern Dirt)
- Three single crop type farm-scale demonstration trials (led by SCF, Facey Group & Southern Dirt).

In 2022, cereals were either sown over the summer cropping sites or the already sown winter wheat & winter canola crops and were taken through to harvest.

Results and Discussion

Green Range Small Plot Trial – Winter Crop 2022

The grain yield of the barley, sown over the summer cropping treatments, varied from 7.73 to 8.44 t/ha. Although yields across the site were variable (but all still good), the key learning from the 2022 growing season is that there was no apparent negative impact of growing a summer crop on the following winter crop, when compared to the (bare) fallow treatment (Figure 1).

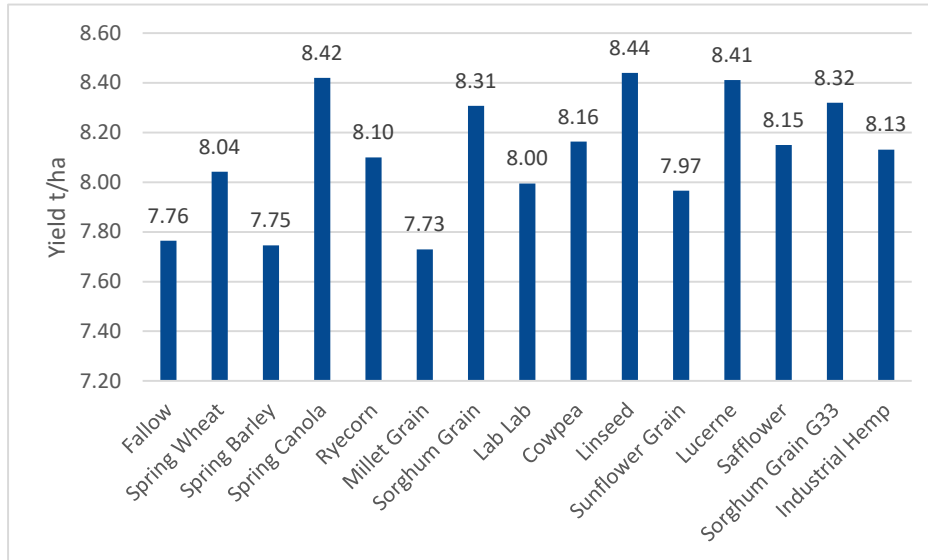


Figure 1: Grain yield (t/ha) for the barley sown over the Green Range small plot summer crop treatments, 2022.

Multi Crop Type Demonstrations – Scotts Brook & Green Range

Soil moisture (volumetric water content) data collected from both sites show that growing a summer crop increased the fallow efficiency i.e., there was more soil moisture in the soil profile for the following winter crop (Figure 2). This was particularly interesting given the dry summer over which the summer crops were grown. This may have been due to the summer crops providing soil cover and reducing evaporation and/or allowing rainfall that was received to better infiltrate into the soil profile rather than runoff.

The 2022 winter crop production at each of the multi crop type trials also highlighted that there was no significant yield disadvantage as a result of growing summer crops beforehand (Figure 3).

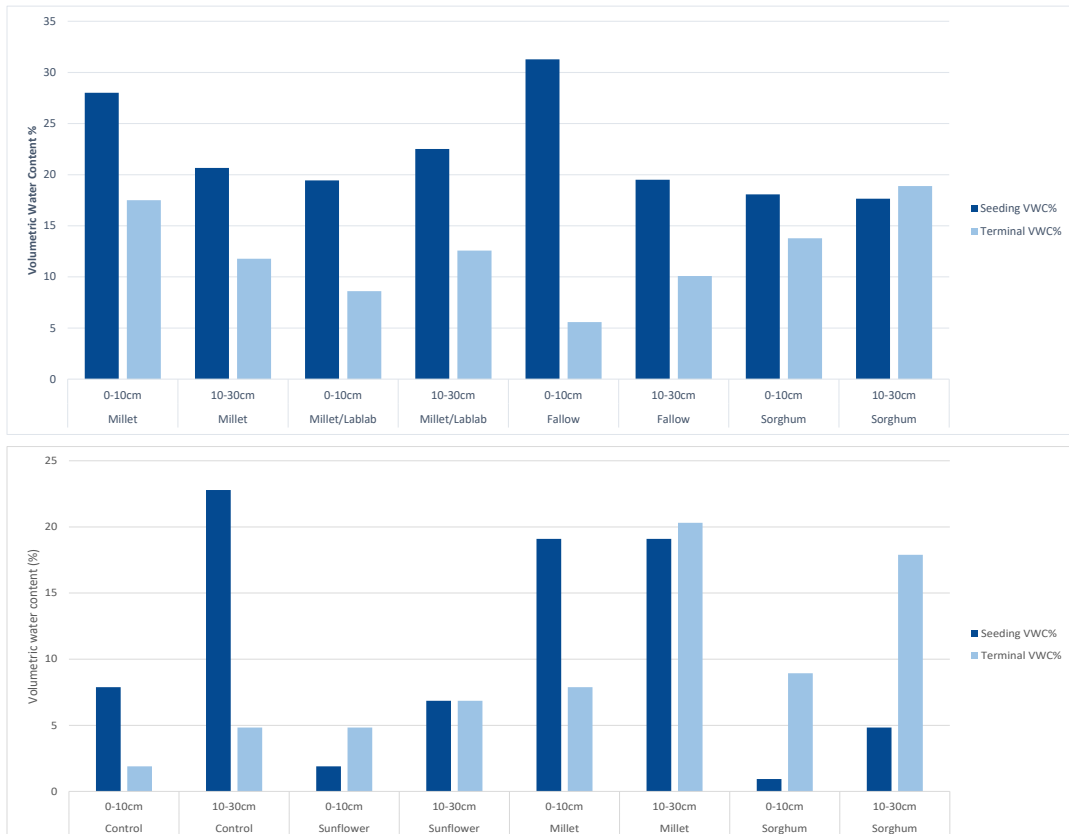


Figure 2: Starting and terminal volumetric water content percentage (VWC%) at Green Range (top) & Scotts Brook (bottom) for 0-10cm and 10-30cm soil depths, 2021/22.

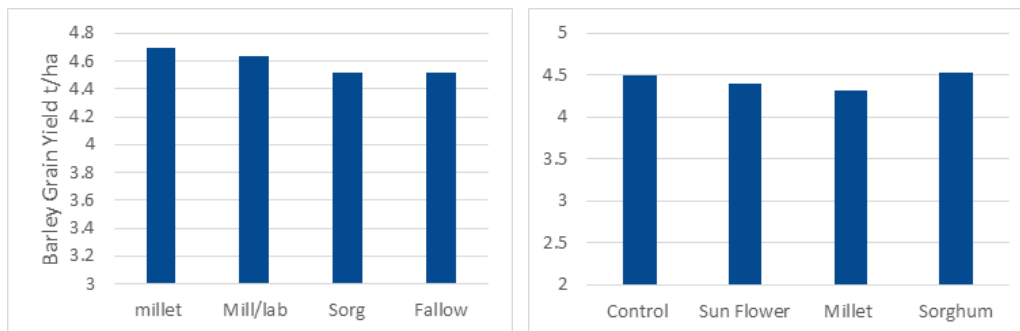


Figure 3: Grain yield (t/ha) for the barley sown over each of the summer cropping treatments at the Green Range demonstration (left) and winter wheat sown over each of the summer cropping treatments at the Scotts Brook demonstration (right), 2022.

Single Crop Type Demonstrations – Kojonup, South Stirlings and Wickepin

Each of the three farm-scale single crop demonstrations were sown with either winter canola or winter wheat, which were grazed and then taken through to harvest in 2022. Plant establishment and feed values were good across the board. Economic analysis completed showed that the grain yield was the driver of profit.

However, it could be argued that the grazing value of 90c/head/week was very conservative. The yield results from the harvest of the winter wheat at the Wickepin site, where two winter wheat varieties were grazed or ungrazed, shows that while selection of variety is important, grazing only had a minimal impact on yield (Figure 4).

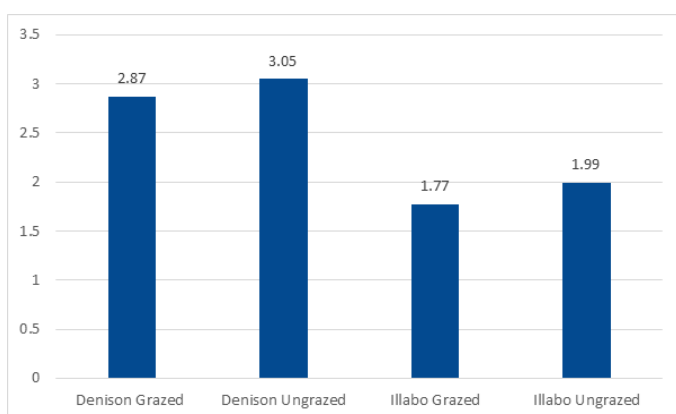


Figure 4: Grain yield for the winter wheats (Denison and Illabo), both grazed and un-grazed, at the Wickepin (WP) demonstration, 2022.

Conclusion

The results from the 2021/22 summer phase of this project highlight the viability of these crops in tough conditions and indicate that the risk of seeding summer crops could be significantly lower than the currently held consensus. A key learning from the 2022 growing season is that there was minimal impact of the summer crops on the following winter crops. It should be noted that 2022 was a very good season.

The final technical report for this project, compiling all the results, can be found on the SCF Website: www.scfarmers.org.au/summer-cropping

Acknowledgments

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