The 2024 season at Hart

Rebekah Allen[1], Myfanwy Purslow[1], Kaidy Morgan[1] and Rohan Kimber[2]

[1]Hart Field-Site Group, [2]South Australian Research and Development Institute (SARDI)

A dry start to the 2024 season challenged our decision-making on all fronts, from crop choice and seeding decisions, to pre-emergent herbicide selection. Hart and surrounding regions received a late break to the season on May 30, with 16.2 mm of rainfall falling across the following three days. Although summer rainfall across January and February was low, above average rainfall in December of 2023 (Figure 1), contributed to some stored soil moisture at Hart.

Seeding at Hart commenced dry on April 18, with crop establishment, pre-emergent herbicide time of sowing and profitable cereal trials. The majority of Hart's program was sown by mid-May, with seeding completed by June 10. Early sown crops emerged six to eight weeks post seeding, with the majority of crops emerging at a similar time in early June. By this time, Hart had only received 21.6 mm of growing season rainfall (GSR), and crops were developing slowly in marginal moisture and cold conditions. Rainfall throughout June was inconsistent, with small, scattered showers totalling 30.6 mm for the month (Figure 2).

Initial Yield Prophet® outputs in July predicted grain yield outcomes for Scepter wheat ranging from 0.7-6.2 t/ha. Total top-dressed nitrogen applied to wheat varieties at Hart was 60 kg N/ha (130 kg urea), however final yield achieved was only 0.56 t/ha. More information can be found in the HART BEAT newsletter for July: https://www.hartfieldsite.org.au/pages/resources/hart-beat-newsletters.php

October received the highest rainfall for 2024, 48.2 mm which included a 25 mm rainfall event on October 18 (Figure 3). In total, Hart received 240.2 mm of annual rainfall (400 mm average) and 176 mm of GSR (300 mm average). Growing season rainfall at Hart placed the region in a Decile 2 for 2024 rainfall records, when compared to the past 100 years.

The dry conditions experienced, particularly across the northern districts, significantly subdued the intensity of pathogen spore dispersal and lowered the abundance of foliar diseases observed in trials at Hart. New pathogen monitoring technology by Bioscout's Spore Scout unit placed within the Hart field site captured this effect, with low numbers of airborne spores detected for botrytis, blackleg, cereal powdery mildew and generic rust. Access to this data is free during the GRDC funded pilot study and can be accessed by registering your interest at https://www.bioscout.com.au/grdc.

The Bioscout Spore Scout units will remain at Hart during the 2025 season, with additional nearby monitoring sites to compare outputs, located throughout the Mid North and upper Yorke Peninsula. Central to these networks are SARDI's Plant Health Surveillance sentinels, working in collaboration with Bioscout to better inform growers on the abundance of airborne plant pathogens. Access to deployments of SARDI sentinels is free at: https://phs.dtfx.com.au/dashboard/previousdeployments

Drought conditions in the Mid North farming region in 2024 resulted in low crop yields, however dry seasons still have value in broadacre cropping research and offer valuable insights and information to learn from. The Hart team hope that trial data and other local research findings in this book provide you with value leading into the 2025 cropping season.

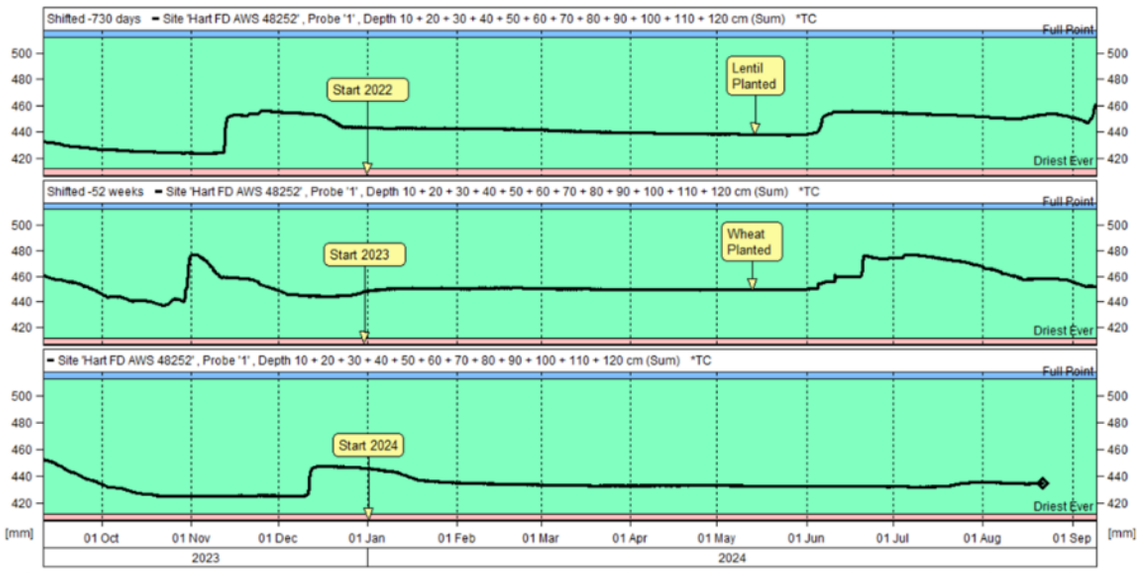

Figure 1. Soil moisture probe summed comparison (120 cm) for 2022 (top), 2023 (middle) and 2024 (bottom) at the Hart field site. This graph shows the fullest and driest points recorded so far (since approximately 2017). Hart soil moisture data is free to view via Agbyte https://www.hartfieldsite.org.au/pages/live-weather/soil-moisture-probe.php

The Hart field site (photo taken August 9, 2024).

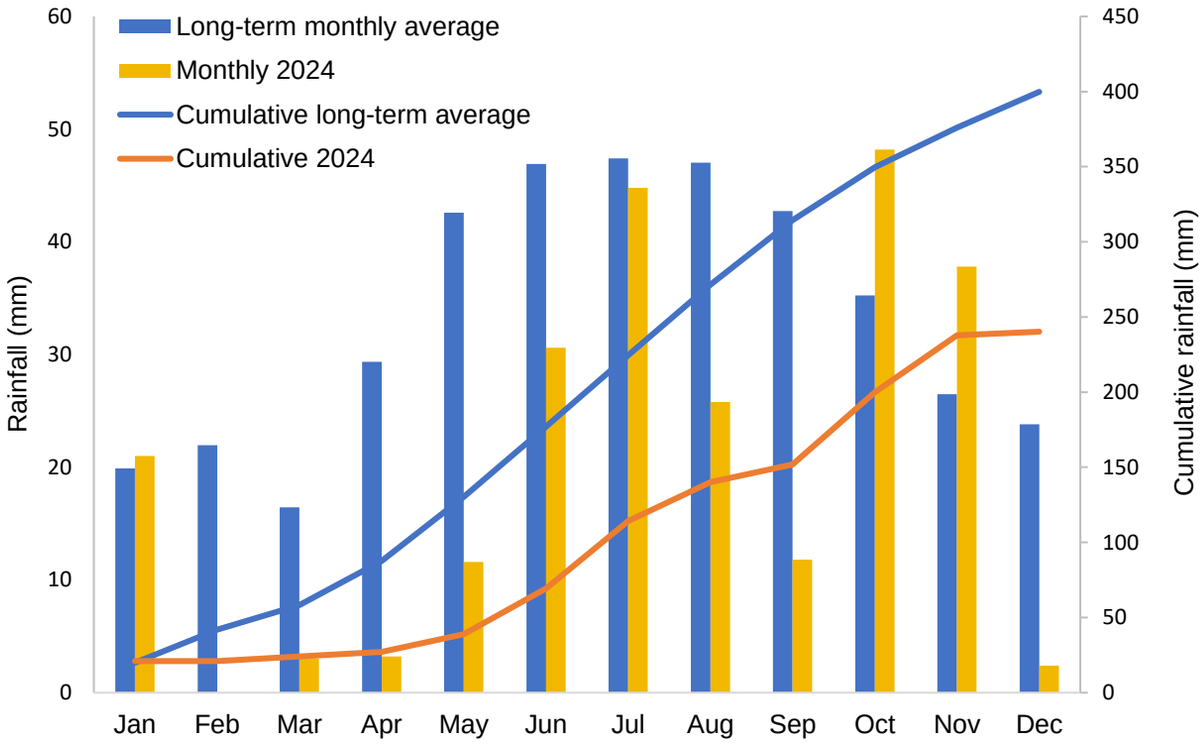

Figure 2. Hart rainfall graph for the 2024 season and long term average. Lines are displayed to present cumulative rainfall for long term average (blue) and 2024 (orange). Current season rainfall data sourced from Mid North Mesonet https://mesonet.com.au/.

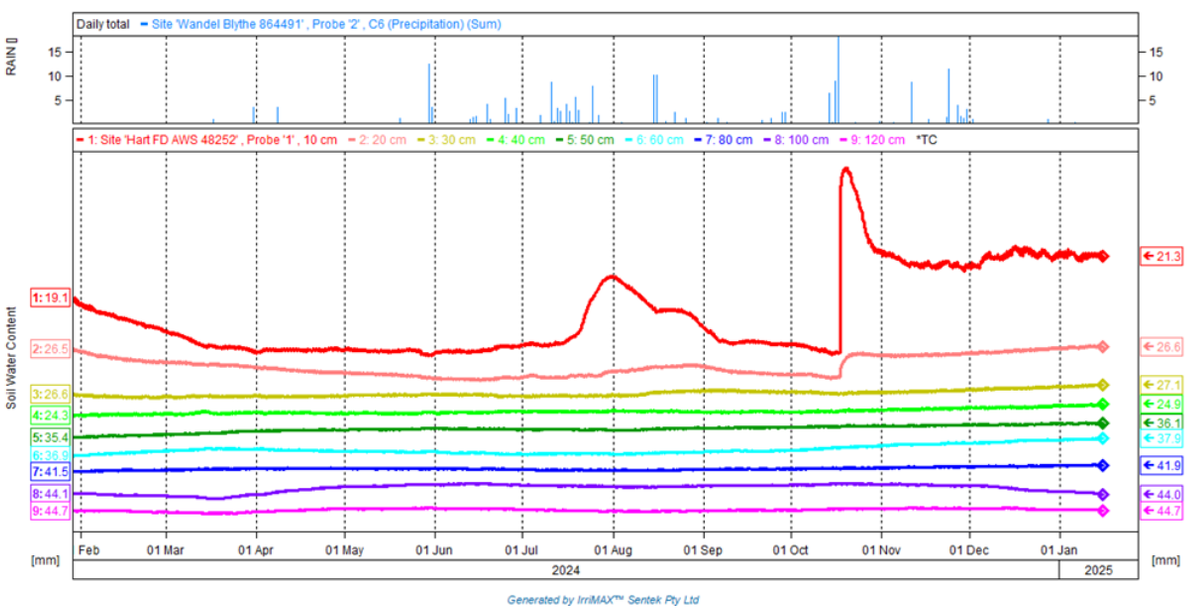

Figure 3. Soil moisture probe stacked sensor for 2024 growing season at the Hart field site. The red peak indicates an October rainfall event at Hart (48.2 mm), infiltrating to approximately 20 cm. Hart's soil moisture data is free to view via Agbyte: https://www.hartfieldsite.org.au/pages/live-weather/soil-moisture-probe.php.