Filling Feed Gaps: Hay and Silage Feed Testing on the Limestone coast (SE South Australia).

A two-year initiative by The Drought Hub and Mackillop Farm Management Group to provide subsidised feed testing and education around best practice hay and silage production and on-farm feeding decisions.

Key Messages:

- Fodder testing is paramount in making sound economic and effective feeding decisions.
- More rain/ tonnage is not always the best outcome when producing fodder.
- Water soluble carbohydrates are an important driver for animal production/ hay quality.
- While there are overall 'trends' there can be significant variations in quality within the same fodder type and year.

A key component of this project was to compare the quality of fodder over the last two seasons (2022/2023 – 2023-2024), with the goal to highlight seasonal variability and where possible, improve production quality. Over the course of the project, there were 120 opportunities for primary producers in the limestone coast region to access 2 for 1 feed tests and a one-on-one consultation with an advisor to interpret results. Upon the completion of the project, a workshop was held for participants and general community to discuss results between seasons, decision making around when/ if to make hay/silage and how to read and use feed test information to make practical feeding decisions on farm. A podcast covering similar topics and featuring one of the participants of the FFG initiative is also available on 'The Prosperous Farmer' channel on Spotify.

The two seasons feed test results were at very different ends of the quality spectrum. 2022 seasons hay come off the back of one the wettest spring on record for the area (see figure 1). This resulted in a lot of poorer quality fodder that was high in fibre (NDF), low in sugars (WSC), energy (ME) and protein (CP). Conversely, the 2023 seasons hay was a product of an exceptionally dry spring (see figure 1.1). While there was significantly less hay produced per hectare than the year before, the hay that was bailed before the early summer rain is of fantastic quality. This due to absence of the nutritional dilution effect that occurs with excessive rainfall, as well as a clean, quick finish.

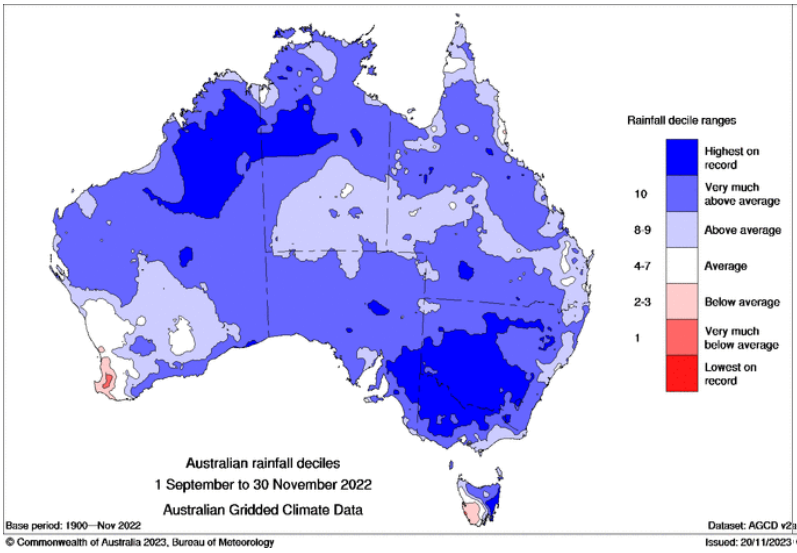


Figure 1.0: Graph depicting 2022 Spring

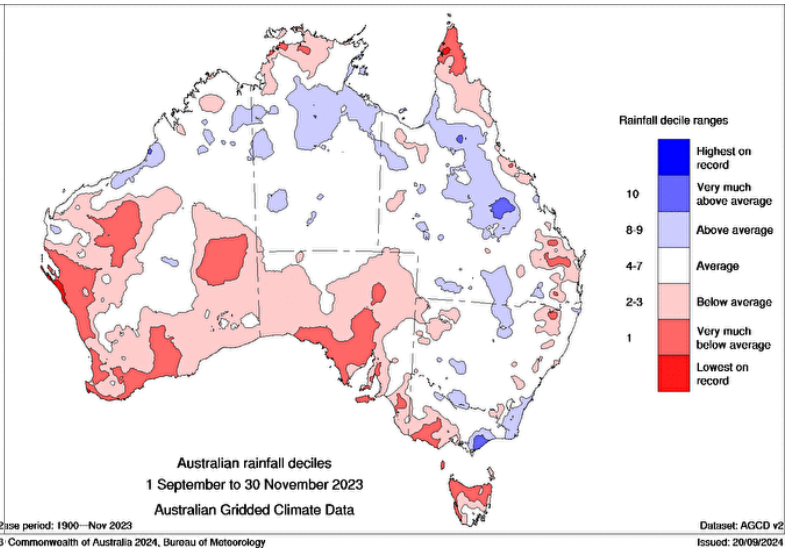


Figure 1.1: Graph depicting 2023 Spring

As seen in Tables 1-3, 2023/24 hay is on average a higher quality product. The variation in samples particularly 2023/24 is mostly due to the time of year it was cut/bailed. Earlier cut samples were of fantastic quality. Significant early summer rain decimated the quality of later samples which in most cases were already cut and on the ground. It is also worth noting that there was little silage made in 2023 vs 2022, silage is expensive to make per MJ/DM and where a season looks like a short dry finish a lot of producers choose to make hay. This is in contrast with 2022 where the spring was very wet and producing a power of feed that wanted to 'bolt'. In that instance silage was an effective way to conserve fodder. This variation is the reasoning behind why feed testing is so vital.

Tables 1: Comparison of key feed test values of cereal hay between 2022/23 and 2023/24.

Cereal Hay	Limestone Coast 2022/23 Average	Limestone Coast 2023/24 Average
Metabolisable Energy (ME) %	8.2 (6.9- 13.3)	9.4 (7.5-10.9)
Crude Protein (CP) %	7.9 (4.7 – 10.4)	9.3 (4-13.5)
Neutral Detergent Fibre (NDF) %	63.6 (54.4-69.5)	51.7 (44.1-64.3)
Digestibility %	61.4 (46.6-84.4)	64.5 (52.9-73)

Tables 2: Comparison of key feed test values of pasture hay/silage between 2022/23 and 2023/24.

Pasture	Limestone Coast 2022/23 Average	Limestone Coast 2023/24 Average
Metabolisable Energy (ME) %	Hay: 7.2 (5.4-8.3) Silage: 9.4 (9.2-9.5) (limited data)	Hay: 9.1 (7.1-10.9) Silage: 10.65 (9.9-11.4)
Crude Protein (CP) %	Hay: 8.5 (4.5-12.1) Silage: 12.2 (11.1-13.5) (limited data)	Hay: 11 (7.2-14.6) Silage: 16 (10.9-22)
Neutral Detergent Fibre (NDF) %	Hay: 61.6 (56.8-66.8) Silage: 51.8 (49.8-52.9) (limited data)	Hay: 52 (33.6 – 61.9) Silage: 46.7 (37.5-52.9)
Digestibility (DMD) %	Hay: 51.4 (41-57.8) Silage: 61.3 (60-62.3) (limited data)	Hay: 62.3 (50.9-72.5) Silage: 70.4 (65-76)

Tables 3: Comparison of key feed test values of lucerne hay/silage between 2022/23 and 2023/24.

Lucerne	Limestone Coast 2022/23 Average	Limestone Coast 2023/24 Average
Metabolisable Energy (ME) %	Hay: 8.6 (8.4-8.7) (limited data) Silage: 9.6 (8.6-10.1)	Hay: 8.34 (6.6-9.8) Silage: 10.4 (limited data)
Crude Protein (CP) %	Hay: 15.2 (13.7-16) (limited data) Silage: 17.2 (13.3-23.2)	Hay: 18.55 (16.9- 21.6) Silage: 23.9 (limited data)
Neutral Detergent Fibre (NDF) %	Hay: 49.6 (49.4-50.1) (limited data) Silage: 51.3 (45.5-57)	Hay: 48.7 (36.3-60.9) Silage: 43 (limited data)
Digestibility (DMD) %	Hay: 59.5 (58.3-60.1) (limited data) Silage: 62.72 (55.5-66.6)	Hay: 57.96 (47.7 – 67) Silage: 68.55 (limited data)

Deciding which hay to buy:

It's helpful to consider the cost of hay or silage as a cost per MJ or energy unit rather than per tonne. One way to do this is work out ME in a tonne and divide the cost by it to get a cents/MJ. Another consideration almost regardless of ME, hay that is very high in NDF/ low in digestibility not only reduces intake but is often synonymous with hay with a low WSC reading. Hay of poor quality may work on paper with additional supplements etc, but animals may refuse to eat, or waste significant amounts. Consider hay tests as a whole, rather than by one or two values only.

ACKNOWLEDGEMENT

This project is supported by the South Australian Drought Resilience Adoption and Innovation Hub, through funding from the Australian Government's Future Drought Fund.



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