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Fodder Conservation

Fact Sheet series for the Small Rural Landholder

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The Issue

Conserving fodder in the form of hay or silage will add feed reserves for livestock fed on farm when seasonal conditions vary.

Nutrition requirements may not be available through grazing alone, particularly through summer as grass dries off.

Some farmers may decide to destock and not carry livestock through lean conditions. Whilst others are wanting to maintain their herds, particularly breeding stock and are relying on the fodder conserved or baled in the spring - early summer period.

The decision to conserve fodder as hay or silage can make the difference between how well cattle will perform for the next season.

Consistent liveweight gains can help predict 'finishing' timeframes and enable higher overall stock turnover on smaller properties.

The primary objective of any grazing enterprise is to conserve the highest quality fodder possible to ensure adequate nutrition is available to meet livestock energy and protein demands.

Cattle fed consistently well produce the best profit margins, particularly those destined for market. Estimating livestock daily feed demands ensures cattle are not overfed and feed supplies not wasted.

The fodder conservation (haymaking) period is critical to new season fodder storage and the feed requirements for livestock wellbeing.

It is important for farmers to pre-determine feed requirements for the next season to sustain their animals, maintain groundcover and ensure a healthy resilient business.

Feed gaps

Minimising feed gaps in the diet through the supply of quality fodder, especially during seasonal fluctuations in pasture availability, can maintain a daily weight gain incline rather than decline. This is important, as any period of weight decline will end up requiring additional fodder to regain the lost condition.

Therefore, keeping animals on a consistent nutritional plane is a cost effective feed management strategy.

Fodder Options

Clover or lucerne provides much needed protein to help with liveweight gain for growing animals and maintaining condition on lactating and breeding cows.

Generally, if these legumes are present in a pasture, the baling process can damage their potential value. The majority of fragile leaf can be shattered to dust if it hasn't been baled on either a cool night or when there is 'light' morning dew. Any chance of conserving much needed protein through the baling process is then lost.

Fodder Strategies

Common fodder options tend to be silage or dry hay. Both have advantages depending on seasonal pasture constraints, stocking rates and enterprise liveweight goals. (see over)

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Demonstrating Sustainable FARM PRACTICES

Fodder Conservation

COMMON GROUND

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Fodder Strategies

Silage

- Good option to help conserve the best possible fodder for livestock;
- Tends to retain high amounts of the original feed nutrients;
- Plants tend to retain leaf when baled, due to high moisture content;
- Provides the best strategy for protein and nutrition conservation; and
- Quick to make, so fodder can be conserved in hours rather than over several days, as is the requirement for hay.

Dry hay

- Feeding out dry hay through the season, especially when pasture is lush, extends pasture availability and tactical usage;
- In lush conditions a diet of poorer quality dry hay, in combination with grazing good pastures, reduces scouring and enhances digestion by absorbing nutrients and balancing out the diet; and
- When good pasture is not available for grazing, quality hay can be used to provide adequate nutrition, especially over summer.

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CASE STUDY: *Mornington Peninsula Fodder quality assessments*

Feed tests conducted throughout the Mornington Peninsula over the 2015-16 season indicate that most dry pasture hay baled is of average quality with minimal nutritional value for growing and maintaining livestock. Although dry hay is needed for winter, and, when lush feed is available, one of the main ingredients consistently missing in the pastures was legume species.

The following example feed test results for silage and hay samples highlight the fodder quality issues being discussed.

1. Pasture Hay sample

Test	*Result*
Dry matter (%)	*87.1*
Moisture (%)	*12.9*
Crude protein (% of dry matter)	*6.1*
Acid Detergent Fibre (% of dry matter)	*39.7*
Neutral Detergent Fibre (% of dry matter)	*64.9*
Digestibility (DMD) (% of dry matter)	*58.1*
Digestibility (DOMD) (Calculated) (% of dry matter)	*56.0*
Metabolisable Energy (ME) (MJ/kg DM)	*8.4*
AFIA Grade for legume and pasture hay & silage*	*C4*

** Australian Fodder Industry Association*

2. Legume Silage sample

Test	*Result*
Dry Matter (%)	*53.3*
Moisture (%)	*46.7*
Crude protein (CP) (% of dry matter)	*28.0*
Acid Detergent Fibre (% of dry matter)	*25.2*
Neutral Detergent Fibre (% of dry matter)	*29.6*
Digestibility (DMD) (% of dry matter)	*75.8*
Digestibility (DOMD) (Calculated) (% of dry matter)	*71.1*
Metabolisable Energy (ME) (MJ/kg DM)	*11.4*
AFIA Grade for legume and pasture hay & silage	*A1*

Results summary

- The results obtained from these sample of the feed tests highlight that pasture baled for silage conserves the highest nutrition compared to hay; and
- The silage tested at the highest grade because it contained lucerne and had been baled under the right temperature and moisture conditions.

General fodder nutrition "rules of thumb"

1. To produce high quality pasture hay that contains legumes, the plant must be leafy and lush with minimal seed head at time of mowing;
2. If the hay has low Digestibility of Dry Matter (DOMD), i.e. below 55%, the feed is slow to digest and is a poor source of energy for rumen microbes. Cattle cannot digest enough feed during the day to keep up with energy demands and will actually lose weight trying to digest poor quality hay;
3. For cattle to produce milk, hay must be high in Metabolisable Energy (ME) and Crude Protein (CP) and low in Neutral Detergent Fiber (NDF) (less than 50% is ideal);
4. When the hay has a combination of low Metabolisable Energy (ME), Neutral Detergent Fibre (NDF) and Crude Protein, animals are eating the equivalent of "cardboard";
5. Hay that contains approximately 8 mega joules of Metabolisable Energy (ME) per kg of dry matter will have crude protein values less than the critical level of 9%. Therefore, cattle fed this quality feed for a long period of time have extreme difficulties maintaining condition; and
6. Even if cattle were given free access to this type of quality hay they would still lose condition. There would be negative impacts on fertility rates and calf condition would also weaken.

What does this mean?

Pregnant cows, particularly in the last trimester of pregnancy, as well as "dry" stock, should be fed at nutritional levels aimed at sustaining longterm good health.

If grass baled for hay is done at "full seed" the stand of grass has been allowed to cure too long before cutting. This depletes nutrient availability in subsequent bales.

Inclement weather conditions can impact upon the curing time between cut grass and baling. Therefore, silage becomes a good option to ensure high nutrient availability in fodder reserves for the coming season.

What can I do?

- If you are purchasing fodder, ask for a feed test or fodder declaration so you know exactly what nutrients you're "buying" into your property;
- Assess your particular animal liveweight requirements to match feed demand, seasonal availability and market quality specifications; and
- Refer to 'Dietary crude protein (g/kg) requirements of different classes of cattle for maintenance and growth' by Hinton, D.G. (1994). Search "Supplementary Feeding for Sheep and Beef Cattle. Agmedia, East Melbourne".