Comparing feed options –
Maize silage is often cheaper

Agnote DAI 285, 2nd edition
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INTRODUCTION

Supplementary feeding with hay, silage or grain is a management strategy which can be undertaken to meet normal production targets or as a drought management strategy.

VALUING FEED

Buying feed at the right price is the process of valuing feed based on its energy and protein content. A buyer should carefully check their costs and returns to ensure the price is warranted. For example, if the dairy farmer's rule-of-thumb of one litre of milk per kilogram of high quality roughage applies, the maximum they can pay is $300/tonne for grain and around $225/tonne for average quality hay, if the milk price is 30 c per litre. Higher milk yields per kg DM (e.g. 1.3–1.4 litres) are possible when dairy cows in early-mid lactation are fed high quality diets.

Beef and lamb producers will only profit from production feeding when feed prices are low to average or when there is a large price premium for finished stock. Finishing stock also has the advantage of reducing grazing pressure.

Normally the feed value of a grain or roughage is determined by its energy value but there may be special nutritional circumstances where a premium is paid for these feeds. In terms of energy, feeds are often compared using cents per megajoule. (¢/MJ)

The following table has been produced using NSW Agriculture's Feedcost Calculator It provides a ¢/MJ value for a range of prices and energy levels (MJ/kg DM). The user can obtain a print out of dry matter, energy and protein levels of typical feeds by selecting this link and going to the table at the bottom of the article. The energy level of the feed (ME) can then be used in Table 1 to estimate ¢/MJ.

USING THE TABLE

When the price per tonne and energy value of a feed is known, this table can be used to find the cheapest feed in terms of ¢/MJ.

The first step is to convert the feed price to a $/tonne dry matter basis because the moisture component of the feed has no feed value. In Australia, grain is generally around 90% dry matter (10% moisture); hay is around 88% dry matter (12% moisture) and maize silage is around 33% dry matter.

To convert from $/tonne actual price to $/tonne dry matter ($/tDM) use the formulae actual price ÷ dry matter% as a decimal.

For example if during drought a grain at 90% dry matter costs $288/tonne, the cost of the grain $/t DM = $288 ÷ 0.9 or $288 x 10 ÷ 9 = $320/tDM

If maize silage at 33% dry matter which costs $60/tonne will cost $60 ÷ 0.33 = $180/t DM.

Based on Table 1, if the ME of the grain is 13 MJ/Kg DM, then the cost is 2.46 ¢/MJ. In comparison, maize silage in comparison at 10 ME costs 1.8 ¢/MJ. On this basis, maize silage is the cheaper feed provided that wastage is the same. In practice, the losses from silage due to air spoilage and feeding out can be around 10%. In this case a 10% loading should be added to the cost of the maize silage. This would increase the cost of the maize silage to 2.0 cents/MJ, which is still cheaper than the grain. It should also be considered that protein supplements (urea/protein meals) will need to be fed with maize silage, depending on the livestock being

Table 1: Feed costs ¢/MJ for a range of feed costs $/tDM and ME MJ/Kg DM

ME	140	160	180	200	220	240	260	280	300	320	340	360	380	400
7	2.00	2.29	2.57	2.86	3.14	3.43	3.71	4.00	4.29	4.57	4.86	5.14	5.43	5.71
7.5	1.87	2.13	2.40	2.67	2.93	3.20	3.47	3.73	4.00	4.27	4.53	4.80	5.07	5.33
8	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
8.5	1.65	1.88	2.12	2.35	2.59	2.82	3.06	3.29	3.53	3.76	4.00	4.24	4.47	4.71
9	1.56	1.78	2.00	2.22	2.44	2.67	2.89	3.11	3.33	3.56	3.78	4.00	4.22	4.44
9.5	1.47	1.68	1.89	2.11	2.32	2.53	2.74	2.95	3.16	3.37	3.58	3.79	4.00	4.21
10	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00
10.5	1.33	1.52	1.71	1.90	2.10	2.29	2.48	2.67	2.86	3.05	3.24	3.43	3.62	3.81
11	1.27	1.45	1.64	1.82	2.00	2.18	2.36	2.55	2.73	2.91	3.09	3.27	3.45	3.64
11.5	1.22	1.39	1.57	1.74	1.91	2.09	2.26	2.43	2.61	2.78	2.96	3.13	3.30	3.48
12	1.17	1.33	1.50	1.67	1.83	2.00	2.17	2.33	2.50	2.67	2.83	3.00	3.17	3.33
12.5	1.12	1.28	1.44	1.60	1.76	1.92	2.08	2.24	2.40	2.56	2.72	2.88	3.04	3.20
13	1.08	1.23	1.38	1.54	1.69	1.85	2.00	2.15	2.31	2.46	2.62	2.77	2.92	3.08
13.5	1.04	1.19	1.33	1.48	1.63	1.78	1.93	2.07	2.22	2.37	2.52	2.67	2.81	2.96
14	1.00	1.14	1.29	1.43	1.57	1.71	1.86	2.00	2.14	2.29	2.43	2.57	2.71	2.86

fed. Advice should be sought from local NSW Department of Primary Industries extension officers regarding this.

CONCLUSION

In times of high grain prices growing maize silage may be an attractive option for producers who have the land, water and stock nearby. As maize silage has a high moisture content, it is uneconomic to transport it over large distances (e.g. more than 20 km).

Care is needed to ensure that transport costs between the grower and buyer are not excessive. The buyer must allow for feeding-out expenses, wastage and protein supplementation if required.

FURTHER READING

Buying feed on a feed value basis. Chapter 8 of the NSW Agriculture Opportunity Lot Feeding Manual.

Gross margin budgets at: www.agric.nsw.gov.au/econ/budget

DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of writing (April 2005). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of NSW Department of Primary Industries or the user's independent adviser.