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Alternative roughage feeds

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WARNING

The use of unusual sources of roughage has been associated with chemical contamination of stock. See Primefact 311 *Dangers in feeding waste material to livestock*.

Drought increases the risk of unacceptable residues in stock. Risks include contaminated feed, increased intake of contaminated soil, concentration of existing residues as animals lose condition, and many other causes. Refer to Primefact 312 *Drought increases residue risks* for details before purchasing stockfeed or making feeding decisions.

Introduction

In widespread droughts, of long duration, the supply of hay (and its escalating price) forces beef producers to look for alternative roughage feeds. In some situations (e.g. lactating cows), some roughage is required to ensure reasonable production and adequate utilisation of high grain rations (i.e. to assist rumen function).

Most alternative roughages are low in quality with regard to energy, protein and digestibility, are bulky to transport (hence expensive to freight), can contain pesticide residues and are crop or food industry by-products. They are not complete feeds and must be fed (up to 2 kg/head/day as roughage) in conjunction with other energy feeds (such as grain or fortified molasses).

The availability of these alternative roughage sources is often inconsistent.

Feeding misconceptions

Alternative roughage feeds are often used to provide cattle with 'sufficient fill'. This conception that cattle need to be 'full' (i.e. have a rumen full of feed) is not correct. It actually creates problems from impaction, leads to starvation deaths (cattle are not fed other, more nutritious feeds) and causes losses from metabolic diseases.

Starvation deaths are common. With feeds of low digestibility (less than 45%), cattle cannot consume sufficient intake to meet their requirements for energy and hence survival.

Sources of alternative roughage

The *Stock Foods Act 1940* and the *Stock Diseases Act 1923* have been amended to **ban feeding restricted animal material to ruminants**. 'Restricted animal material' is defined in the Regulations under both Acts as tissue, blood or feathers derived from the carcass of an animal and includes any substance produced from or containing any such tissue, blood or feathers, but does not include tallow or gelatin.

Poultry shed litter. Poultry litter from broiler sheds and manure from layer sheds can contain feathers and portions of dead birds, and may also include discarded or spilled feed containing meatmeal. Therefore it is **illegal** to feed these products to ruminants.

Mushroom compost often includes broiler litter or poultry manure. Where this is the case, it is **illegal** under the Stock Foods Act to feed mushroom compost to ruminants. Mushroom compost therefore should **not** be fed to ruminants unless it can be proved that the mushroom compost on offer does not contain restricted animal material as outlined above.

Cotton hulls are a by-product of the oil crushing industry. Manufactured at Narrabri by Cargill Oilseeds, hulls are an excellent roughage widely used in the feedlotting industry.

Rice hulls are a by-product of rice processing, and are manufactured by Rice Growers Co-op, Leeton, and their stockfeed subsidiary Coprice Feeds. It is **abrasive**, and use is suggested in adult cattle at **no more** than 1 kg/head/day. At high feeding rates (3–4 kg/head/day), impaction can be expected.

Sunflower hulls are abrasive and **not** recommended because they can cause damage to the oesophagus and rumen.

Grape marc is variable in feed value. The biggest quantity is in the Riverina. Moisture content varies. Energy level depends on seed content. Feed value differs between red and white varieties. **Obtaining vendor declarations for chemical residue status is critical.**

Bagasse is a by-product of sugarcane processing. It does mix well with molasses. It is used in tropical areas as a cattle feed base. Moisture content varies. **Obtaining vendor declarations for chemical residue status is critical.**

Oat hulls are the least abrasive of the hulls. Use at **no more** than 1 kg/head/day and feed to **adult** cattle only.

Canola hay is made from failing canola crops. Protein, energy and digestibility are all variable. It is a good choice as a roughage compared with others in the field. **Do not use it as the sole feed source** because of alkaloid poisoning risks. Use at 20% of diet or mix with other roughages 50:50.

Rice straw is baled after rice bays have been harvested and dried out. It is low quality roughage in terms of digestibility, energy and protein.

There are many other sources of roughage, but talk to your District Livestock Officer (Beef Cattle) about using these feeds before you purchase them.

To achieve low intakes of these roughages:

- process (hammermill) to reduce length to 12–15 mm (if you have the equipment to do the job);
- otherwise, feed them every second day.

Where impaction is a risk, feed **molasses** on a weekly basis, or preferably a fortified molasses mixture (see Primefact 271 *Fortified molasses mixes for cattle)*.

The use of **cane tops** is discussed in Primefact 314 *Cane tops as cattle fodder*.

Understanding feed analysis terms

DM (Dry matter) — the higher the better for lower freight costs.

CP (Crude protein) — the total crude protein in the feed but does not take account of digestibility and degradability of the protein.

ADF (Acid detergent fibre) — as the percentage increases, the digestibility of the feed decreases. ADF measures cellulose and lignin content of a feed. Ruminants have a low utilisation of cellulose, and lignin is indigestible. For alternative roughages the ADF indicates the digestibility of any protein.

ME (Metabolisable energy) — the measure of the energy in a feed. Above seven is best.

Average feed values

	DM%	CP%	ADF%	DDM%	ME%
Cottonseed hulls	93.6	7.7	63.6	34.4	5.15
Rice hulls	93.2	2.0	74.2	23.3	3.5
Sunflower hulls	91.8	6.3	63.4	34.1	5.1
Grape marc	50.7	13.3	60.8	39.1	5.9
Bagasse	-	-	-	-	-
Oat hulls	92.5	4.2	38.9	53.4	8.0
Canola hay	87.8	13.8	35.8	59.8	8.9
Rice straw	-	-	-	-	-

Further information

- Drought feeding and management of stock

or, contact your nearest Local Land Services Livestock Officer (Beef Cattle).

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