

## Fortified molasses mixes for cattle

### Bill McKiernan

Research Leader Animal Production, Production Research, Orange - Head Office

#### WARNING

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

Molasses is an excellent energy source in drought but needs to be fortified with urea and/or protein meal. These fortified molasses rations rely on adequate paddock roughage (over 700 kg dry matter per hectare), and are fed twice weekly at this stage.

When paddock roughage is below 700 kg dry matter per hectare, these rations need to be fed three times weekly or with the addition of 1–2 kg of

roughage/hd/day (see Primefact 322 *Feeding calves in drought*).

Molasses rations are fed in open troughs. (Do not confuse this with the roller drum method.)

Although fortified molasses mixes are much more expensive than roller drums or blocks, experience has shown that they are far more effective in promoting the utilisation of dry feed and maintaining animal condition and production. Molasses has little protein, therefore urea and/or protein meal must be fed to balance the animal's requirements and allow effective use of dry feed.

#### Buying molasses

Bulk molasses is always the cheapest per tonne; molasses in drums is always the most expensive. When buying drummed molasses, check the weight stated on the drum so that you know how much you're buying. Drums are commonly sold through resellers at 4 drums to the tonne on a pallet.

Seek a specific assurance from suppliers that drums were properly cleaned before being filled with molasses and did not contain contaminants which could result in unacceptable stock residues.

Table 1. Recommended molasses rations (calculated assuming adequate roughage is available)

Class of stock	Molasses	Cottonseed meal	Urea	Phosphate*
These amounts must be fed 2 times per week.				
30 cows with calves at foot. For lactation and successful rejoining. Suitable for poor cows.	250 kg (1 drum)	50 kg	8 kg	3 kg
30 cows late pregnancy. Plenty of better quality dry feed. Suitable for good scrub.	250 kg (1 drum)	25 kg	8 kg	3 kg
30 weaners (200 kg). For normal growth.	125 kg (½ drum)	50 kg	2 kg	2 kg
30 head of dry stock. For maintenance of weight and condition.	250 kg	–	8 kg	2 kg

\*See Table 2 for phosphate rate adjustments for different products. Weights shown are for products containing 21% phosphorus (Kynofos 21® and Biophos®).



## Molasses measurement guide

1 kg =	0.66 L
1 gal. =	7 kg
1 L =	1.5 kg
1 drum =	250 kg (4 drums/pallet)

## Urea

Prilled urea fertiliser is used as a non-protein nitrogen supplement in molasses mixes. It stimulates microbial activity in the rumen and is an important ingredient when feeding molasses.

Use prilled urea only, because it is easier to dissolve in the mix than is granulated urea.

In these mixes prilled urea is used at 3% by weight of molasses. Start at 1% in week 1, go to 2% in week 2, then 3% in week 3. Cattle should **not** consume more than 60g urea per head per day.

## By-pass protein

Most proteins are broken down in the rumen by micro-organisms, although this depends on the time taken to pass from the rumen. By-pass protein, however, passes through the rumen and is digested in the intestines along with microbial protein. It therefore adds to the animal's protein supply. Cottonseed meal is an example of a by-pass protein source. Other suitable protein sources are linseed meal, sunflower seed meal and soybean meal.

The most cost-effective source should be used. Manufactured protein meals are available that are as good or better and can be less expensive.

## Meatmeal

It is illegal to feed ruminant animals with meatmeal derived from ruminant animals.

## Roughage

Best results are obtained when roughage is available. There is a risk of molasses 'drunkenness' if molasses is fed with little or no roughage.

## Phosphorus

Molasses contains very little phosphorus. On phosphorus-deficient, unsupered country, this deficiency can be met with monocalcium phosphate or dicalcium phosphate mixed with molasses at 1–2% by weight. Both are low in fluorine and cadmium.

Monoammonium phosphate (MAP) and diammonium phosphate (DAP) fertilisers are **not**

**recommended** as sources of phosphorus for cattle. MAP and DAP now contain fluorine at levels which can cause fluorosis if fed to stock for an extended period.

Various phosphate fertilisers are available. See Table 2 for rate adjustments.

Table 2. Phosphate rate adjustments

Product	Ingredient	Phosphorus content	Rate adjustment
<b>Kynofos 21®</b>	mono- and dicalcium phosphate (50:50)	21%	none
<b>Biophos®</b>	mono- and dicalcium phosphate (67:33)	21%	none
<b>Palaphos®</b>	dicalcium phosphate	15.3%	×1.25
<b>DCP</b>	dicalcium phosphate	18%	×1.12

The rate adjustment shown is the amount by which you will need to multiply the figure given in Table 1. For example, if you use DCP for 30 weaners, you will need 2 kg (from Table 1) × 1.12 (from Table 2) = 2.24 kg.

## Method of feeding

Molasses is fed undiluted in open troughs. No water is added. 200-L drums cut lengthways make good temporary troughs and provide enough trough space for 30 head, although with molasses feeding, trough space is not as important as it is with grain feeding. Old bathtubs or heavy steel troughs are more resistant to corrosion. Where long troughs are used, a bar 30 cm above trough level helps prevent wastage and injury by preventing animals being pushed in.

## Mixing

It is important to thoroughly mix the required amount of urea into the molasses first, otherwise poisoning can occur. Urea content should be increased gradually in the mix over a 3-week period. Protein meal is added last.

Mixing urea with water and adding to molasses is **not** advised when preparing a fortified molasses mix. This increases the risk of poisoning and can cause fermentation in hot weather. If it rains on the mix and if the urea has not been mixed in properly, then urea poisoning can occur. Paddles welded to a post-hole boring attachment on a chainsaw makes an excellent mixer.

Mechanical trailer-mounted or stationary feeder/mixers can be made to run off a tractor power take-off or with their own drive mechanisms. If large numbers of cattle are to be fed molasses, time and labour can be saved by mixing and/or feeding with these devices.

### **Managing intake**

If the cattle are aggressive eaters and are gorging, halve the urea levels and add more protein meal.

### **Further information**

For further information see

- Drought feeding and management of stock  
[www.agric.nsw.gov.au/reader/drtfeeding](http://www.agric.nsw.gov.au/reader/drtfeeding)  
or contact your nearest NSW Department of Primary Industries Livestock Officer (Beef Cattle).

---

© State of New South Wales  
through NSW Department of Primary Industries 2006

ISSN 1832-6668

Replaces Agnote DAI-8

Check for updates of this Primefact at:

[www.dpi.nsw.gov.au/primefacts](http://www.dpi.nsw.gov.au/primefacts)

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (October 2006). 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 New South Wales Department of Primary Industries or the user's independent adviser.

The product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended and that the inclusion of a product name does not imply endorsement by NSW Department of Primary Industries over any equivalent product from another manufacturer.

Job number 7053