

Molasses Blends in Dry Cow Rations

- Minimise calving and early lactation problems by looking into nutrition and management in the dry period
- Adopting the dietary cation anion balance (DCAB) approach helps prepare the dry cow for the increase in calcium demand post calving
- New data shows that using a molasses based liquid feed is an option in DCAB rations where it was previously not considered due to potassium content
- Molasses based liquid feeds have many beneficial effects in a dry cow ration such as improving palatability, driving intakes and reducing sorting



Overview

Good nutrition and management in the dry period is a major challenge but getting it right can help to minimise calving problems and early lactation metabolic disorders. The level of feeding in the dry period has been found to affect early lactation performance, over-feeding being more harmful than slight under-feeding. Cows should dry off at a condition score in the range of 2.5-3.0 and calve down in the same range. If dry cows consume too much energy, they will accumulate fat. Towards the end of the dry period their dry matter intake will be significantly reduced, increasing the risk of fatty liver, ketosis and LDAs at calving. The aim of dry cow feeding is to maintain body condition by ensuring an adequate energy intake whilst also trying to maintain intakes so that the cow is prepared for early lactation in the milking herd. The rule of thumb is that the energy requirement for a dry cow is 15% of bodyweight plus 10MJ. So, a 700kg dry cow should be fed around 115MJ/day.

Historically, molasses and molasses blends have not been considered as suitable feeds in a dry cow ration due to the high level of potassium present in the raw materials. This could potentially disrupt the dietary cation-anion balance in the ration and predispose the animals to metabolic issues such as milk fever.

What is DCAB?

The **Dietary Cation-Anion Balance** system is used as a dry cow feeding approach to prevent metabolic issues arising post calving. It involves balancing the minerals in the ration to create favourable conditions to help prevent the risk of milk fever.

The aim of DCAB is to counteract the inputs of positively charged cations such as potassium and sodium with acidifying negatively charged anions such as chloride and sulphur thus lowering the cow's blood pH. The mild acidosis triggers the metabolism of calcium from the bones reserves to allow for the increase in calcium requirements post calving.

In preventing milk fever, the aim is to reduce the DCAB around 3 weeks ahead of expected calving in the range of 200 mEq/kg to -200 mEq/kg.

By careful and constant analysis of the raw materials that ED&F Man use, we can calculate the typical DCAB value for our molasses blends produced at our Liverpool site. The results of this testing are shown in the table above, as our raw materials are constantly changing please get in touch for specific values. The table below shows two example dry cow diets highlighting the possibility of a molasses blend in a dry cow ration without increasing the overall DCAB of the ration.

Blend Name	Typical DCAB (meq/100g DM)
Regupro Syrup	63.97
Economol	34.99
Stockmol 20	47.29
Molale	55.91
StiMOLator	55.35
Pot Black	51.25
Regumix	42.72
Regumaize 44	29.60
Regupro 38	60.38
Regupro 50	81.04
Glycomol	79.17
Glyco-Ale	59.88

Additionally, the use of a molasses blend in a dry cow ration would have an overall positive effect due to the 6-carbon sugars present. Sugars stimulate the rumen microbes promoting efficient fermentation which can help the prepare the rumen pre-calving for the upcoming change in diet, but also improve the utilisation of straw in the ration.

Straw provides a good base for dry cow rations as it helps to maintain rumen fill to prepare the cow for higher intakes post-calving. Although straw is fairly indigestible, the addition of sugars to the diet has been proven to increase fibre digestibility therefore allowing the cow to make the most of the digestible fraction in the straw.

By promoting faster and more active fermentation, they will increase rumen throughput and so stimulate dry matter intakes. Sugars also have an impact on volatile fatty acid (VFA) production. VFAs are the fuel for the animal so higher VFA levels will mean the cow has access to more energy.

Where sugars are fed, we see an increased production of butyrate and reduced acetate output and this reduces the acid load in the rumen because butyrate is a less powerful acid. Butyrate is also a growth factor for the rumen epithelium and therefore promotes more efficient energy absorption through the rumen papillae which is key during the transition period.

Not only do sugars have a beneficial impact on acid production, but they also help maintain optimal pH by increasing the rate at which acid leaves the rumen by stimulating absorption across the rumen wall. By doing so sugars reduce the total acid content and help maintain a more stable pH within the rumen.

The use of molasses based liquid feeds can maintain palatability of high straw diets, that often contain other unpalatable ingredients such as magnesium chloride; as well as improving the homogeneity of the mix helping to prevent ration sorting.

	DIET 1 Whole dry period	DIET 2 Transition diet
Maize silage (kgDM)		3.7
Grass silage (kgDM)	2.4	1.3
Wheat straw (kgDM)	4.4	3.5
Soybean hulls (kgDM)	1.6	
Regumaize 44 (kgDM)		1.0
Economol (kgDM)	0.89	
HiPro Soya (kgDM)	0.9	0.9
Rape meal (kgDM)	0.9	0.9
Rolled barley (kgDM)	0.57	0.44
Mineral (kgDM)	0.15	0.15
Magnesium chloride (kgDM)	0.18	0.1
Dry matter intake (kg)	12.03	12.03
Energy density (MJ/kgDM)	8.79	9.8
DCAD (meq/kg)	100	118



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