



Food Animal Initiative

ENVIRONMENTS FIT FOR ANIMALS FIT FOR THEIR ENVIRONMENT

FAI Technical Datasheet C2 - Total mixed ration feeding for ruminants - Update August 2005

At FAI we are interested in what really matters to animals and there is considerable evidence that through total mixed ration (TMR) systems we can provide ruminants with a viable alternative to the diet which they would consume in their natural state i.e. one which is readily available 24 hours per day and high in fibre.

'the facts.....'

Ruminants require long fibre (10cm) for the development and maintenance of a healthy rumen. This can be provided as hay, straw or long silage and can be mixed in the TMR or provided separately.

Many TMR systems (such as those typically used in the USA) provide ruminants (cattle) with high levels (up to 90%) of available carbohydrate which can lead to rumen damage, acidosis, laminitis and a subsequent rise in cost of production.¹ High dietary grain levels have been linked with E. coli O157 H7.²

Dirty feed and water restricts intakes of feed reducing daily Liveweight gain (DLWG).³ Feed intake can be maximised by checking that it is always within reach. This requires activities such as checking feed barrier height in relation to bedding height (small calves and sheep) and making sure restraining bars do not restrict access to feed (larger animals).

Feed intakes and growth rates are likely to be maximised and most even in a group when all animals can have access to the feed barrier simultaneously. With cattle shy feeders hang back and go to the feed barrier when there is space. Cattle cannot select from the TMR in the way that sheep and pigs are able due to their 'scoop' mode of eating. Thus the effects of restricted feed barrier space are less relevant for cattle. Optimum feed barrier space is being studied as part of an MLC funded PhD at FAI.

Cattle wish to lie for around 10 hours per day and will restrict feeding time to do this if dry lying area is limited.⁴



TMR being fed from a Keenan feeder wagon

'..... the FAI response!'

The balance between grain and roughage is kept at about 40:60 by weight i.e. the roughage is the main part of the diet. The grain is only crushed sufficiently for cattle to make sure that the husk is broken open in the rumen to release the starch interior for digestion. Whole grain is fed to sheep as it cannot exit to the lower gut until ground through rumination due to the restriction of passage due to the narrow size of the gut lumen.

Long fibre is provided by strawing up generously (approx 25kg per head twice weekly for cattle). Water troughs are cleaned twice weekly and the feed is swept up to the animals in the afternoons where it is not contained within their reach. Any feed not consumed is discarded and fresh feed is provided to appetite every morning.

Feed is weighed every day for each group and adjusted according to appetite. New groups of animals are started on a restricted ration depending upon age and previous feeding regimes and are taken up to full appetite in about a week.

1. Owens et al 1998 J. Anim. Sci., 76:275-286

2. See www.prairieroserranch.com/ecoli.html

3. Phillips CJC 1993 Cattle Behaviour, Farming Press Books, Ipswich

4. Metz, JHM 1984 Reaction of cows to short term deprivation of lying Applied Animal Behav Sci., 13:301-307