THE DETERMINATION OF PASTURE FEED QUALITY IN CENTRAL QUEENSLAND

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The brigalow region in Central Queensland is regarded as some of the best country in Queensland for growing and finishing of beef cattle. However, there has been a lack of specific knowledge of the apparent nutritive value of either native or sown pastures for grazing beef cattle. Pasture nitrogen is known to be deficient for animal growth following frosting (Graham et *al* 1983). Information on other pasture nutrients, particularly energy is unavailable. Without supporting data it is difficult to define what are the nutrients limiting the production of grazing beef cattle in this environment.

A pasture sampling strategy has been designed to obtain samples pre-frost,post-frost and just prior to the onset of new summer growth. Sampling is being carried out at three locations - Brigalow Research Station at Theodore, 'Berrigurra', Blackwater and `Rowanlea', Calliope near the coast. The results for the 1991 sampling at Brigalow Research Station will be presented in this paper.

Grab samples of the major species present at a sampling site were collected and sorted into their components. The plant components were analysed for dry matter, nitrogen (N), ash and phosphorus (P) content by standard methods (A.O.A.C. 1980), while dry matter digestibility (DMD), organic matter digestibility (OMD) and metabolisable energy (ME) were determined using an in *vitro* technique.

The overall quality of the pasture components analysed in April, August and October 1991 was low and variable with no clear trend of declining quality over time from April to October.

Both Biloela buffel grass (*Cenchrus ciliaris*) and Callide rhodes grass (*Chloris gayana*) components were variable in N content (green leaf, 0.5 to 1.5%; green stem <0.5%; dead material <0.5%; <0.5% considered low), low in DMD (green leaf, 39 to 54%; green stem 24 to 38%; dead material, 22 to 33%) and low in ME (green leaf <7Mj/kg DM; green stem <5 Mj/kg DM; dead material <4.5 Mj/kg DM) and were often high in ash, particularly the green leaf (>10%). The P content of both grasses was generally adequate (>0.25%) in the green leaf, below this in the green stem and deficient in the dead material (<0.10%). Seca stylo (*Stylosanthes scabra*) whole plant samples were higher in N content than most green leaf samples from the grasses, but lower in P content (<0.08%), DMD (<29%) and ME (<4.0 MJ/kgDM).

The data suffers from the fact that pasture quality analysis indicates the apparent dietary quality on offer to the animal, but does not allow for the fact that animals may select a diet higher in quality than that indicated by chemical analysis (R. Hendricksen *pers comm*).

The pasture quality shown from these analysis indicates that potentially, cattle could perform better on these pastures if nitrogen and energy content can be improved. Different approaches have been taken to increase dietary nitrogen and energy including supplementation, pasture renovation, forage crops and legume introduction. In an associated experiment, Brahman cross steers (340 kg liveweight) grazing similar pastures gained an additional 85 kg between April 1991 and December 1991, due to the provision of an ad lib grain ration through self feeders compared to control steers. This highlights the benefit of additional nutritional inputs over the winter-spring period to optimise animal performance.

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