

Improved permanent forages for dry season grazing in Northern Australia 1. ponded pastures

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Poor quality native pasture in the dry season (April-October) has always been a serious constraint to beef production in northern Australia. Native pastures are by far the major feed resource, and conservative stocking does not compensate for the low nutritive quality of the pasture in the dry season.

Strategies to minimise the nutritional stress period have included feeding conserved fodder (as hay and silage), supplementation (molasses, urea and minerals), grain feeding, annual crops and cultivated herbaceous pastures.

Ponded pastures, oversowing adapted exotic legumes and grasses into native pastures, and growing browse and trees which fix atmospheric nitrogen are recent options that are being commercially used on beef properties in central Queensland. The concept of ponded pastures is discussed in this paper and the other options are discussed in companion papers.

Ponded pastures are those that have been established in water trapped during the wet season by constructed earth banks. These banks are designed to pond water up to 1 m deep and are surveyed with a vertical interval equal to the depth of water to be ponded (1). In 1986 the area planted to ponded pastures exceeded 26 000 ha in central Queensland.

The most suitable sites are on plains which accept runoff water following heavy rains. These low-sloping sites are preferred to achieve cost-effective pondage systems.

Ponded pastures allow the fattening of steers during the dry season. When the fat stock are removed, weaners and breeding cows can utilize the remaining pasture. The improved 'dry season' nutrition has increased breeding performance and increased turnoff at an earlier age.

Para grass (*Erachiaria putica*) has been the main grass planted and it performs well in water up to 60 cm deep. Para grass has the advantages of drought tolerance, responsiveness to fertiliser, and can carry high stocking rates. The commercial availability of seed is a further advantage. However para grass is susceptible to damage by the plant hopper (*Toya* sp.) which can kill large patches of the grass when the forage is most needed in the cool season.

Recently introduced grasses such as alemangrass (*Echinochloa polystachya*) and hymenachne (*Eymenachne amplexicaulis*) have been impressive in field observations where water has been up to 1 m deep. Native grasses such as watercouch (*Paspalum paspaloides*) and hymenachne (*Nymenachne acutigluma*) are also used but the latter is not well suited to the conditions in central Queensland.

Further evaluation of grass species suited to deeper ponding is required. Grasses adapted to water deeper than 60 cm will extend the period when green forage is available in the dry season. Alemangrass and hymenachne appear to be suited and other wetland grasses need to be assembled and evaluated. These would include *Echinochloa baploclada*, *E. pycnantha*, *E. stagnina*, *Entolasia lambricata*, *Eriochloa oeyeriana*, *Eriochloa punctata*, *Hymenachne pseudo-interrupta*, *Leersia denudata*, *Fanicum elephantipes* and *Vossia cuspidata*. Perennial legumes suited to ponding are also needed. Field studies on plant and animal production responses to applied fertilisers have been established at St. Lawrence.

1. Wildin, J.H. (1985). Proc. XV International Grasslands Congress, Kyoto, Japan. 1303-1304.