

BEEF PRODUCTION FROM SUBTROPICAL NATIVE PASTURES
WITH LEGUMES ADAPTED TO LOW PHOSPHATE SOILS

R.W. Dicker* and D.L. Garden**

New South Wales Department of Agriculture

* Agricultural Research and Advisory Station, Grafton, N.S.W., 2460

** Division of Plant Industry, C.S.I.R.O., Canberra, A.C.T., 2600.

Bargoo jointvetch (*Aeschynomene falcata*) and native glycine (*Glycine tabacina* P7874) are two legumes which persist on poor sandy soils in subtropical coastal regions of eastern Australia. They respond to moderate applications of superphosphate, need no specific management and improve the quality of native pastures. They were sown into lightly cultivated native pastures in the upper Clarence Valley and evaluated under grazing by cattle (1.23 heifers/ha). These pastures received 125 or 0 kg/ha superphosphate per year and were compared to native pastures receiving 125 kg/ha superphosphate per year. Nutritive value and pasture and animal production were measured over four years.

Total pasture available was similar for all treatments (2000-5000 kg DM/ha). However, there was always more legumes present in the sown pastures (5-18% of total DM). Jointvetch was the more dominant and stable legume component. Digestibility of the diet of grazing cattle was similar for all pastures (47% in winter - 61% in summer), but nitrogen content was always greater for the sown legume pastures. Intake of digestible organic matter was greater on legume pastures in spring. Phosphorus intake was at or below minimum requirement levels for growing heifers in autumn and winter on all pastures, and in spring and summer on legume pastures receiving no annual superphosphate.

Annual liveweight gains of heifers were greater on fertilized legume pastures than on fertilized native pastures in 1981/82 and 1982/83 (297 v 174 g/hd/d). The age at which 80% of the herd would have been in oestrus was predicted to be 18 months for heifers grazing fertilized legume pastures compared to 26 months for heifers on other pastures.

Although liveweight gains on all pastures were initially similar, in 1982/83 and 1983/84 gains on unfertilized legume pastures were less than those on fertilized legume pastures. All sown pastures had similar legume contents but, by the end of the experiment, both soil phosphorus and phosphorus intake of cattle were lower on unfertilized pastures.

The sowing of bargoo jointvetch and native glycine together with a low annual application of superphosphate, markedly increase the nutritive value and beef production of subtropical native pastures. The results stress the importance of both dietary nitrogen content and phosphorus intake of grazing cattle in this system.