THE CONTRIBUTION OF CLOVER IN A SUBTROPICAL PASTURE TO THE LIVEWEIGHT GAIN OF HEREFORD STEERS.

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INTRODUCTION: The north coast of New South Wales has a humid subtropical climate. Fertile soils in this area support high levels of dryland pasture production (>10t dry matter/ha/yr). Milk and beef production are pasture-based and have been valued at $90M and $75M annually. However, the nutritive value of beef pastures is often low, as they are usually dominated by C_4 grass species (kikuyu, setaria, paspalum, carpet and rhodes grass). The nutritive value of these species is low relative to the C_3 legumes (white clover, Kenya clover, Maku lotus) which are variable, often minor components of the sward. Clover contents in these pastures would usually be regarded as low at 0 to 10% and high at 20 to 30% of total dry matter.

Robinson and Helyar (1989) showed that the efficiency of beef production (kg beef / kg pasture) was increased by greater clover production . Better knowledge of the value of clover in subtropical pastures may contribute to improved pasture management, increased animal production and greater profitability.

ANALYSIS: Data were collected from a phosphorus and stocking rate experiment at Wollongbar from 1980 to 1983. Hereford steers were grown on kikuyu and Kenya "Safari" clover pastures. The clover content varied considerably between the various treatments (7-26%), but was not significantly correlated with phosphorus rate or dry matter production (see Robinson and Helyar, 1989 for details). Rowe's (1983) function (Eqn. 1) was modified and we fitted Eqn. 2 to the data by linear regression (R^2 = 0.78, n = 27).

$$AP = a - b \,.\, SR/PP \quad \ldots (1)$$

$$AP = 246\ (21) - 104\ (82) \,.\, SR/PP(\text{non-clover}) - 10.7\ (5.6) \,.\, SR/PP(\text{clover}) \quad \ldots (2)$$

where AP = animal production (kg/hd/yr), SR = stocking rate (hd/ha) and PP = pasture production (t/ha/yr) Figures in brackets, e.g. (21), are the standard errors of the estimates.

RESULTS: Equation (2) was used to construct Table 1. The clover content has had a large effect on the level of animal production per head and per hectare. When the clover content is low, production was depressed (<0.5 kg/head/day) at medium to high stocking rates. Conversely, when the clover content is high, acceptable levels of production are achieved at 3 to 4 steers / ha.

Table 1. Predicted liveweight gains (kg/head/yr) for a kikuyu and Kenya clover pasture producing 10 tonnes of dry matter per hectare per year.

	Stocking rate (head/hectare)		
% clover	2	3	4
10	202	179	157
15	207	187	169
20	209	191	172

DISCUSSION: The results indicate the benefits of a high clover content when stocking rates are moderate to high. The economic returns from increased clover contents are potentially very good. For example, an increase in clover content from 10 to 20% at 3 head/ha results in an extra 36 kg of beef/ha/yr.

To achieve a high clover content economically and reliably we need to further investigate the role of phosphorus fertilization and liming on pasture composition. Also, we need to continue the selection of C_3 legumes competitive with the various C_4 grasses.

REFERENCES:

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