Your pasture paddocks. How variable are they?

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Introduction

In the higher rainfall grazing areas of Eastern Australia, landscapes are extremely variable and farmers have divided these areas into paddocks for ease of management. However, the rationale behind division does not always appear to make the best use of landscape features. Further, when resources such as fertiliser, lime or pasture seed are applied it is often at a uniform rate, despite the variation in landscape characteristics that can be observed. The aim of this project was to assess the range of variation in pasture production in two paddocks in southern NSW and investigate the factors that influence this variation.

Method

A paddock 25km west of Adelong and another near Cootamundra were selected for this experiment. Both paddocks had good variation in slope, aspect and soil conditions. The Adelong site was native grass/annual volunteer-based pasture while the paddock at Cootamundra was phalaris/sub clover based. To assess dry matter production, approximately 100 cages were placed across each paddock in a grid pattern. At each cage position measurements of botanical composition, soil fertility and soil depth were taken.

Results

Pasture production was generally lower at the Adelong site with twenty-five percent of cages producing less than 1500 kg/ha and only thirteen percent producing more than 7000 kg/ha during the measured period (June 1998-April 1999), compared with 1% and 47% respectively at Cootamundra.

Table 1. Total dry matter (DM) production (kg/ha) for period June 1998-April 1999 at Adelong and Cootamundra sites

	Adelong	Cootamundra
Production range (kg/ha)	300-9000	800-15000
% Cages producing less than 1500 kg/ha	25	1
% Cages producing more than 7000 kg/ha	13	47

Soil fertility, soil depth and gravel content were less favourable for plant growth at the lower productivity sites (Table 2).

Table 2. Soil characteristics of low (less than 1500 kg DM/ha) and high (greater than 7000 kg DM/ha) productivity sites at Adelong

	pH	OlsenP mg/kg	Olsen Available P mg/m^2 to 10 cm	OC %	CEC c.mol/kg	Al %	A-depth cm	Total depth cm	Gravel %
<1500	4.4	6.2	819	2.2	4.7	9.2	20	43	46
>7000	4.9	9.3	1027	2.9	8.0	2.5	35	58	29

There was a similar range in production across all aspects (Table 3), although a smaller proportion of total growth occurred on the southern aspect of the hill, which is probably linked to colder climatic conditions on this side during winter restricting growth.

Table 3: DM production (June 1998-April 1999), soil depth and percentage of DM produced during winter for Adelong site.

	North	South	East	West
Range in production (kg/ha)	990-7651	781-9282	642-7822	186-7132
Percentage of growth in winter	27	16	35	34

Conclusion

This experiment has shown that there is a considerable range in production in typical paddocks in southern NSW, whether they are native based or sown to introduced species. A combination of soil, botanical and climatic factors are likely to be contributing to the variability recorded. Work now needs to focus on ways of managing this variability in order to increase the efficiency of inputs such as fertilisers. With better fertiliser management practices in these areas, pasture production may be better able to match livestock requirements particularly at times of year when feed shortages are an issue.