

MEASURING SPATIAL VARIATION WITHIN PASTURES

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Conventional pasture measurements based on mean paddock values give no indication of spatial variability. Further, relationships between pasture attributes and soil type, land class, dominant species, or animal utilisation derived from paddock means can be misleading. Such relationships greatly assist in developing management principles for both native and improved pastures.

The revised BOTANAL procedure (1) of field sampling techniques, data collection and processing can be used to study pasture variability. The method, based on visual estimation, allows rapid collection of a large number of recordings. This allows calculation of variability, and allows other factors such as aspect, slope position, soil type and patch grazing to be recorded and grouped into categories. Summaries of species composition, yield, frequency % and numbers of quadrats can then be determined for each category. For example, the yield could be categorised into <1000, 1000-3000, and >3000 kg/ha, and the composition determined for each category.

RESULTS AND DISCUSSION

Table 1 gives the composition from 420 quadrats in a single 14 ha paddock. Partitioning the paddock into three sections (top, mid and lower slope) illustrates how the paddock mean gave quite misleading pasture yield and composition figures. The proportion of spear grass (*Heteropogon contortus*), Wynn cassia (*Chamaechrista rotundifolia*), reed grass (*Arundinella nepalensis*), Seca stylo (*Stylosanthes scabra*) and other species varies with slope position.

Table 1. Percent composition and overall yield (kg/ha) in May 1994.

| Slope Position | Yield (kg/ha) | Percent composition | | | | |
|-------------------|------------------|---------------------|---------------|----------------|---------------|------------------|
| | | Spear grass | Reed grass | Wynn cassia | Seca stylo | Other species |
| Upper | 450 | 20 | - | 1 | 14 | 55 |
| Mid | 1000 | 35 | 11 | 14 | 5 | 35 |
| Lower | 2000 | 18 | 66 | 4 | 3 | 9 |
| Paddock mean | 980 | 30 | 21 | 12 | 5 | 32 |

Other measurements such as percent green, percent cover, relative defoliation, stage of plant development, and disease infestation can be recorded at each quadrat site. This allows measurements to be directly interrelated, instead of just comparing paddock means. This capability is extremely valuable for modelling purposes.

REFERENCE

1. Tohill, J.C., Hargreaves, J.N.G., Jones, R.M. and McDonald, C.K. 1992. Trop. Agronomy Tech. Memo. No. 78, Div. Tropical Crops & Pastures, CSIRO, St Lucia. 24 pp.