

Research Briefing Note

Assessing the historical frequency of drought events on grazing properties in Australian rangelands.

Stafford Smith, M. and McKeon, G. (1998) *Agricultural Systems* 57: 271-299

BACKGROUND

National drought policy in Australia allows for the occurrence of 'exceptional circumstances', which are outside the conditions for which producers can reasonably be expected to prepare. Policy states that these should be 1-in-20 year events. But an exceptional event defined by soil moisture may be different to one defined by rainfall or economics.

AIM

- To use a simulation model of a pastoral property to assess how different measures of exceptional circumstances would have performed over the past 100 years in two regions of the rangelands.

RESULTS

- All measures (rainfall, various soil moisture measures, pasture growth, liveweight gain and economic productivity) identified the worst drought periods in both NE and SW Queensland; but the measures differed considerably for lesser events, when economic and biological hardship were often not synchronised.
- Total soil moisture was the best and most consistent single measure, but there is a strong case for integrating more than one measure.
- Periods perceived as exceptional are also affected by choice of averaging method and assumptions about the baseline management strategies; hence the choice of measure and method affects whether policy promotes sustainable management.
- Revocation criteria (for declaring the end of a drought) are as important as criteria for declaring a drought.

IMPLICATIONS

It is extremely hard to identify a measure that is both objective and equitable. More objective measures (like rainfall) unfairly discriminate between managers; the more equitable measures (e.g. potential pasture growth) become increasingly subjective. Subjective measures also increase the opportunities for disputation. Ideally no exceptional circumstances policy would be needed; while it is, a basket of well-defined indicators seems the best outcome.

FUNDING SOURCE

CSIRO Multi-Divisional Program on Climate Variability; Bureau of Resource Sciences

Further Information: Mark Stafford Smith
CSIRO Sustainable Ecosystems
PO Box 2111, Alice Springs, NT 0871
Ph: (08) 8950 7162 Fax (08) 8950 7187
E-mail: mark.staffordsmith@csiro.au

November, 1998