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## GRAZING LAND IN “A” CONDITION IS STABLE AND RESILIENT

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### ABSTRACT

The stability and resilience of grazing land in “A” condition was demonstrated in a central Queensland grazing trial where landscape stability was potentially compromised when short term grazing pressure was too high for long term sustainable use (Silcock *et al.* 2005). The pasture at the site was characterised by a predominance of the 3P (palatable, perennial, productive) grasses Desert bluegrass (*Bothriochloa ewartiana*), Black speargrass (*Heteropogon contortus*) and Golden beardgrass (*Chrysopogon fallax*). These grasses are the mainstay for animal productivity and sustainable long term grazing. The density of these grasses was maintained through seven years of mostly high annual utilisation levels with associated high grazing pressure. Increasing landscape instability was expressed through increasing runoff and soil movement, decreasing ground cover, and reduced perennial grass basal cover and pasture yield. With improving seasonal conditions towards the end of the trial there was an improvement in ground cover, perennial grass basal cover and pasture yield. The maintenance of the 3P grass density was able to generate the recovery. This data demonstrates the benefits of grazing land being in “A” condition when dry seasons occur.

### METHODS

A grazing trial was conducted from 1994 to 2001 on Ironbark (*Eucalyptus melanophloia*) pastures at Rubyvale, Central Queensland. The density and basal cover of major perennial grasses, ground cover, pasture yield, land condition, runoff and soil movement were recorded under low, and high grazing pressure. Pasture utilisation was calculated from modelled pasture growth and estimates of animal intake (Stone *et al.* 2008). Land condition was estimated using the definitions of Chilcott *et al.* (2004), where “A” pasture condition is based on the density of 3P grasses and “A” soil condition has no evidence of sheeting, scalding, rills or gullies. The definition also includes the ability of land to respond to rain and produce useful forage. The benefits from having good condition land are discussed.

### RESULTS

Six years of the grazing trial data from the high and low grazing pressure treatments are presented in Table 1. The runoff and soil loss data are presented from the high grazing pressure and no grazing treatments. High grazing pressure treatments were aiming for 75% pasture utilisation, although it was not achieved in some years because of the high levels of pasture growth. All landscape stability parameters except for 3P grass density showed a considerable effect from high grazing pressure when compared to low grazing pressure. Landscape stability considerably improved in 1998-99 following good rainfall and low grazing pressure, however soil movement was still considerably higher than the no grazing treatment. 3P grass density was not affected by high grazing pressure. Land condition maintained the “A” status for both treatments.

Table 1. Landscape stability parameters under low (L) and high (H) grazing pressure for six years

Landscape stability parameter and grazing pressure (L or H).	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
Perennial grass basal cover (%)						
L	2.3	2.7	2.2	2.2	3.6	3.6
H	1.8	1.5	1.0	1.3	3.1	1.5
3P grass density (plants/m <sup>2</sup> )						
L	26	19	18	17	17	22
H	29	18	18	18	18	29
Ground cover (%)						
L	49	42	80	70	82	74
H	38	18	58	45	75	58
Pasture yield (kg/ha)						
L	1588	1755	3374	2776	3990	3287
H	900	203	1510	454	3320	1353
Runoff (%)						
No grazing	15	4	8	0	4	0
H	24	17	30	12	13	8
Soil movement (kg/ha)						
No grazing	1934	116	322	25	261	60
H	4829	3490	10199	2284	2374	1648
Pasture utilisation (%)						
L	18	16	8	38	15	17
H	77	81	17	78	10	60
Land condition (A,B,C,D)						
L	A	A	A	A	A	A
H	A	A	A	A	A	A
Rainfall July – June (mm)	472	460	829	482	852	632

## DISCUSSION

The high grazing pressure treatment was a continual stress on the pasture and soils. This was evidenced by accelerated levels of soil movement and decreasing ability of the landscape to remain stable. However, the maintenance of the 3P grass density and some basal cover enabled landscape stability to improve rapidly in the 1998-99 year when there was a low pasture utilisation and good rainfall. This demonstrates one of the benefits of maintenance of land in “A” condition. The stability and resilience of the land is maintained, together with the ability to respond to rain and produce useful forage.

## REFERENCES

- Chilcott, C.R., Paton, C.J., Quirk, M.F. and McCallum, B. (2004). Grazing Land Management Education Package – Workshop Notes, Burnett. Meat and Livestock Australia Limited, Sydney.
- Stone, G., Fraser, G., O’Reagain, P., Timmers, P. and Bushell, J. (2008). A new methodology for the calculation of pasture utilisation for grazing lands. Proceedings Australian Rangeland Society Conference, Charters Towers. September 2008.
- Silcock, R.G., Jones, P., Hall, T.J. and Waters D.K. (2005). Enhancing pasture stability and profitability for producers in Poplar Box and Silver-leaved ironbark woodlands. (NAP3.208). Queensland Department of Primary Industries, Final Report. (MLA:Sydney)