could be ensiled and used as high quality stored feed. Irrigation, if it were needed during more extended dry periods than those encountered in this experiment, would be most effectively used to grow corn or sorghum rather than perennial grasses.

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Letters to the Editor

Comments on the paper 'Burning, then resting reduces wiregrass (*Aristida* spp.) in black speargrass pastures' by C.J. Paton and K.G. Rickert. *Tropical Grasslands* 23, 211–218.

I was interested to read this paper but would like to suggest caution in the acceptance of the tentative findings from the paper until they are further validated in long term practice. My reservations arise in part from the design of the experiment reported and the short term character of the results, and in part from ecological considerations.

1. The 3 treatments which were reported were:
(i) 25% of the paddock burnt in spring,
(ii) 25% of the paddock burnt in late summer and
(iii) 50% of the paddock left as an unburnt control.

These three treatments not only lack spatial replication but, more importantly, are not independent of each other. The treatments appear to have been grazed in common and we know (*Tropical Grasslands* **20**, 69) that animals concentrate on recently burned areas. This means that the presence of the burning treatments reduced the grazing pressure on the unburnt control area in the same paddock; the spring burning treatment would have received some deferment after the later summer burn was imposed; the late summer burn treatment would not have received any possible benefit of deferment since the spring burn treatment was not subsequently imposed. Additionally the presence of calves would have varied seasonal grazing pressure to the disadvantage of the later summer burn treatment.

The paper goes on to describe the benefits in botanical composition (reduced wiregrass) obtained from resting the late summer burnt area. The authors suggest that burning in spring and resting both improved pasture condition and indicate that they did not combine them into a single treatment. However, they suggest that spring burning followed by resting is likely to be the best strategy. I think judgement should be deferred until such a combination is substantiated.

2. My second reason for caution arises from the seasonal differences in the acceptability to stock of poorly used grasses. Wiregrass is most likely to be eaten by stock as young growth following a spring burn and resting at this time might well increase the competitive capacity of wiregrass. In the sourveld of southern Africa a spring rest is disastrous for the control of unwanted grasses, since this is the only period of the year when they are well eaten by stock.

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Reply

Professor Humphreys suggests 'caution in the acceptance of the tentative findings from this paper', firstly because of differential grazing pressures across treatments and secondly because resting the pasture after burning in spring 'could be disastrous for the control of unwanted grasses', referring of course to wiregrass.

In the first instance, this experiment was designed to mimic, on a commercial scale, the common practice of partial burning of speargrass pastures. It attempted to use a simple practical technique, i.e. fire-induced heavy grazing, to arrest the dominance of wiregrass in a pasture that was once speargrass dominant. As Prof. Humphreys rightly points out, burning a pasture alters the grazing pattern of the cattle. Cattle prefer to graze the 'green pick' that appears after a fire, including wiregrass in the vegetative stage. However, once stem elongation occurs as the wiregrass grows after a fire, it is rarely grazed. These and other observations led to our original hypothesis, that burning would favour the establishment of speargrass while the fire-induced heavy grazing soon after burning might reduce wiregrass. Both these concepts were outlined in the introduction and supported with evidence from previous work.

The above strategy worked almost too well. Although the spring burn initially increased speargrass and reduced wiregrass, continued heavy grazing during a drought led to wiregrass dominance. The speargrass seedlings failed to survive the heavy grazing, but not so the wiregrass species, a point emphasised in the discussion. Dr Robert Brown had similar results at Charleville with another wiregrass species. When the pastures were rested the amount of wiregrass declined and the amount of speargrass increased. Perhaps the sourveld of southern Africa does not respond in a similar manner, as pointed out by Prof. Humphreys, because fire does not stimulate the establishment of a preferred species.

Although the study had limitations, such as the size and number of grazing exclosures, it provided two noteworthy outcomes. Firstly it suggests a simple practical method of controlling wiregrass that could be more fully tested in subsequent experiments. Secondly, it implies that a knowledge of seed dynamics for the key species in the pasture will lead to a better understanding of how to manipulate pasture composition through management.

In a recent experiment at the Brian Pastures Research Station, Dr David Orr has substantiated our results. After three years of resting with burning each spring, wiregrass changed from the dominant species to a minor component of the pasture. Thus, the conclusion from the study is reasonable and valid.

Several burning regimes and grazing deferment strategies, including that recommended in our paper, are now being tested in more detail at the Brian Pastures Research Station.

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