

Fitzroy stylo - a pasture legume for northern Brigalow soils

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Sown pastures on the duplex soils in central Queensland, formerly carrying brigalow (Acacia harpophylla), need a perennial pasture legume for two reasons. Firstly, sown grass pastures, mainly of buffel grass (Cenchrus ciliaris), become nitrogen-deficient and decline in productivity (1), leading to lower animal production. Secondly, many of these soils are being cropped and a legume/grass ley phase is required for stable production. Many legumes have been tried but only some recently-introduced Stylosanthes accessions have persisted. These were evaluated under grazing.

Methods

In the first experiment, the persistence and productivity of seven Stylosanthes accessions (S. scabra cv. Fitzroy, Seca and CPI 34925, S. hamata cv. Verano, S. guianensis cv. Graham, CPI 40294 and S. viscosa CPI 34904), were tested under grazing on duplex (Db, pr, Dd) soils at Brigalow Research Station, Theodore (M.A.R. 730 mm) (24°50'S, 149°17'E). Plots of 0.4 ha were planted by broadcasting legume seed (6 kg ha⁻¹) with Biloela buffel grass on to a roughly cultivated seed-bed in December, 1976. There were two replications. Plant survival was monitored in permanent quadrats and populations measured annually. In 1980, animal liveweight and pasture yield were measured at monthly intervals. In the second experiment on similar soil, Gatcher wheat was undersown in May 1978 with Fitzroy Stylo (100 viable seeds m⁻²; equivalent to 4 kg ha⁻¹) and Biloela buffel. Establishment populations were recorded at 11 weeks.

Results and Discussion

Fitzroy stylo (2), which has persisted for five years, was by far the most promising accession. Winter survival was good and although plants were desiccated to ground level after 22 frosts in one year, 92% of the plants survived. Under common grazing initial plant populations increased from 2.2 (S.E. ± 0.46) to 11.5 (S.E. ± 2.62) plants m⁻² in the first three years.

In 1980, the plots were grazed on a monthly rotation at a stocking rate of 2.5 beasts ha⁻¹. Hereford yearling steers grazing the Fitzroy/buffel grass pastures for 131 days, from January to May 1980, were 57 kg liveweight heavier (16% increase) than steers grazing a buffel grass control. The yield of pasture on offer (2 600 kg d.m. ha⁻¹) contained 15-20% legume.

As well as providing a productive pasture, leys should be easy to establish so that they can combine well with the cropping phase. When a companion crop of Gatcher wheat was undersown with pasture, a population of 21 Fitzroy plants m⁻² resulted from successive establishments following rain in June and July. The wheat crop, sown at 40 kg ha⁻¹, had no adverse effect on pasture establishment. In the second year, Fitzroy stylo yielded 1 300 kg d.m. ha⁻¹, 33% of total pasture yield.

These preliminary results suggest that on these brigalow duplex soils Fitzroy stylo has potential for improving animal production and may also be a suitable ley pasture legume. The possibility of Fitzroy stylo re-establishing, after a cropping phase, from residual hard seed reserves in the soil is being examined. More information is also being obtained on the nitrogen contribution by Fitzroy stylo to the soil-plant system.

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2. Oram, R.N. 1980. J. Aust. Inst. Agric. Sci. 46: 139-140.