

Elemental sulphur fertilizer use in the northern tablelands of N.S.W.

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In many areas of the northern tablelands the major plant nutrient limiting pasture production is sulphur. These areas have been traditionally fertilized with superphosphate fortified with elemental sulphur (e.g. S.F. 35; S.F. 45) or gypsum. Recently, fertilizers containing 100% elemental sulphur have provided a cheaper alternative. Whereas sulphate forms are immediately available for plant uptake, elemental sulphur must first be oxidized by soil organisms into the sulphate form. Weir et al. (1964) have demonstrated the importance of the particle size of elemental sulphur on the oxidation process, with particles larger than 0.35 mm providing a slow release source of sulphur.

A factorial experiment was established on native pasture oversown with *Trifolium repens* cv. Haifa to compare different sulphur fertilizers, establish the optimum rates and compare annual and triennial applications.

Figure 1 indicates that with a triennial application there was no significant difference between gypsum, S.F. 45 or elemental sulphur as sources of sulphur. Each significantly increased uptake of sulphur in the pasture ($P < 0.05$). Figure 3 indicates that for this field site there was very little sulphur loss, and there was a considerable residual effect with both gypsum and elemental sulphur.

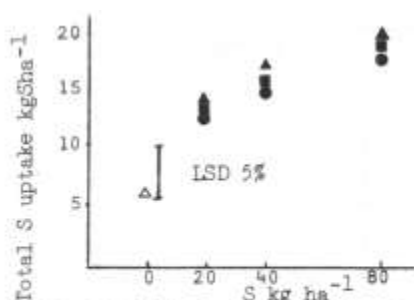


Fig.1. Effect of form and rate of S on S uptake.
△Nil, ●gypsum, ■elemental S, ▲SF45.

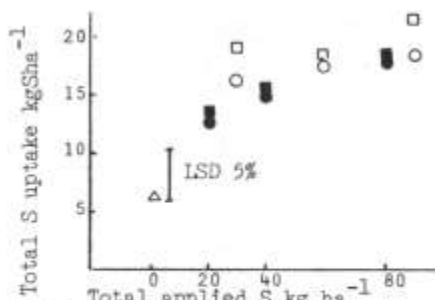


Fig.2. Effect of annual and triennial applications of S on S uptake.
△Nil, ○annual & ●triennial gypsum, □annual & ■triennial elemental S.

It is concluded that in areas where sulphur is the major nutrient limiting pasture growth, fertilizers of elemental sulphur are an efficient and cheap means of overcoming the deficiency. In areas of low sulphur loss, a triennial application of 30-40 kg S ha⁻¹ is as effective as an annual application of 30 kg S ha⁻¹.

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Weir, R.G., Barkus, B., Atkinson, W.T. (1963). *Aust. J. Exp. Ag. An. Husb.* 3:314.