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## LIMESTONE AND BORON AMENDMENTS FOR ENHANCED CLOVER PRODUCTION

J. V. Davis, A. T. Leonard, and V. A. Haby

**Background.** Sandy type soils of East Texas are usually acid with low levels of fertility and organic matter, and are subject to high rates of nutrient leaching. Clovers can be used in cool season plantings to provide a grazable forage that can substitute for part of the winter feed needs of cattle. To realize optimum clover production levels, nutrients lacking in native soils must be provided. Boron (B), a nutrient which promotes root growth and functions in water absorption, is easily leached downward in acid sandy soils. Boron availability and utilization is affected by soil pH. Overliming acid soils inhibits B availability. To determine optimum B and lime rate combinations, rose clover 'Overton R18' was overseeded onto dormant Coastal bermudagrass sod Oct. 5, 1990. Boron rates of 0, 1, and 2 lb/ac were applied prior to planting. Two sources of limestone were applied at 0, 1, and 2 ton/ac in Nov., 1988. One source had an effective calcium carbonate efficiency (ECCE) of 62 and the other 100%. Treatments were harvested April 11 and May 30, 1991 and plot yields totaled for comparison.

**Research Findings.** Soil pH values in the 0-6 inch depth in April, 1991 were 4.96, 5.59, and 5.89 for the 0, 1, and 2 ton/ac lime rates, respectively, averaged over the two lime sources. Boron applied without lime had little effect on clover production (Fig. 1). The addition of 1 lb B/ac gave a slight yield increase. Yield was reduced at 2 lb B/ac. Liming without B significantly increased

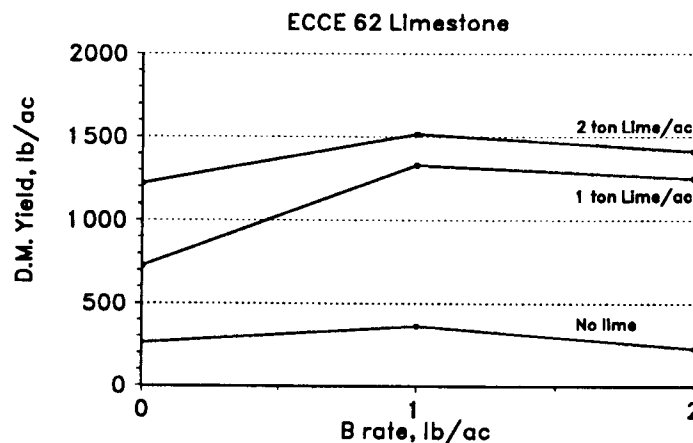


Fig. 1. Rose clover response to limestone and boron rates

production compared to no lime for both lime sources (Fig. 1 and 2). For both lime sources maximum yield was produced at the 1 lb B and 2 ton lime/ac rate. The 100 ECCE limestone

(Fig. 2) had the highest yield, but was not significantly different from the 62 ECCE source.

**Application.** The increase in clover production indicated by results of this study demonstrate liming is highly effective. The advantages of supplying B cannot be realized

unless soil pH values are adjusted for optimum B availability. Boron applied yearly at 1 lb/ac appears adequate. Higher rates produced B levels toxic to clover.

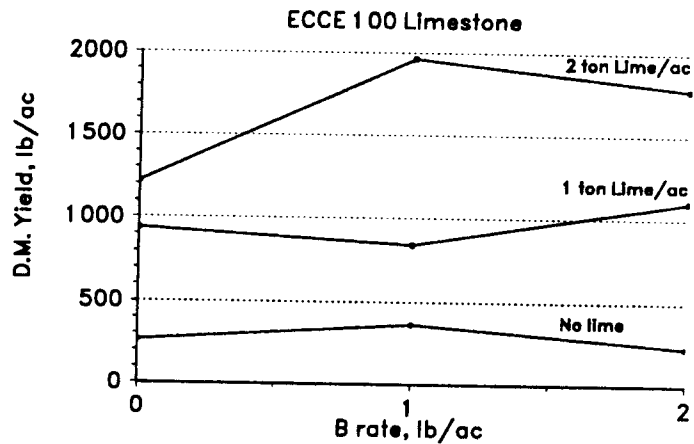


Fig. 2. Rose clover response to limestone and boron rates