Status of Boron in Oregon Soils and Plant Nutrition

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The need of boron as a fertilizer for certain Oregon soils was indicated in plant house experiments two decades ago. Its economic value in improving yields and quality of alfalfa (2, 4), beets (3), celery (1), and other crops in Oregon was established approximately 10 years ago.

Subsequent exploratory field trials and several hundred laboratory determinations of boron in Oregon soils and in the various parts of indicator plants grown thereon have developed information as to boron needs of Oregon soils. A preliminary boron availability map of the state has been prepared (Fig. 1). Information has been accumulated concerning optimum and critical levels of boron in soils and plants, methods and rates of application, and means of controlling available boron toxicity of the present paper is to summarize information as to boron needs of Oregon soils and regulation of the supply as an aid to soil fertility and plant nutrition.

CRITICAL AND OPTIMUM CONCENTRATIONS OF BORON IN SOILS OF OREGON

Preliminary studies (Table 1) have shown the difficulties involved in establishing optimum concentrations and critical limits in soils. These limits are necessarily varied for different soil types and indicator crops. Medium textured soils have been divided into zones of concentration on the basis of greenhouse trials, using Bountiful beans as the indicator crop.

AVAILABLE BORON IN OREGON SOILS

Fig. 1.—Available boron in Oregon soils.

Values represent ppm of available boron in surface soil. Zones: low < 0.25; 0.25-0.50; optimum 0.50-0.75; high > 0.75.

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3 Figures in parenthesis refer to "Literature Cited", p. 331.