

AGRICULTURAL EXPERIMENT STATION
OREGON STATE AGRICULTURAL COLLEGE
Wm. A. Schoenfeld, Director
Corvallis

Circular of Information No. 196

February, 1939

THE USE OF BORON ON WESTERN OREGON SOILS
As Reported by
The Boron Committee, Oregon Agricultural Experiment Station

Boron is now recognized as essential to the nutrition of plants.

Lack of available boron in some Western Oregon soils and waters appears to be associated with the malnutrition disorders known as "yellow top" of alfalfa, "canker" of beets, and "crack" of celery.

W. L. Powers reports that these disorders have appeared on the sandy or leachy types of soil and some of the older formations, including Newberg, Sifton, Salkum, Carlton, Willamette, Salem, Amity, peat, Sauvie, and to a smaller degree, the Chehalis Series.

Crops

Recommendations for the use of boron are made specifically for three crops, alfalfa, celery, and beets.

Additional crops under study or soon to be studied by various workers of the Experiment Station include Boysenberries, youngberries, raspberries, blackberries, strawberries, narcissus, lilly, aster, cauliflower, broccoli, clover, potatoes, tomatoes, canning peas, vetch, barley, oats, wheat, sunflower, walnuts, filberts, prunes, apricots, peaches, and cherries. No recommendation relative to the use of boron on the above crops can be made at the present time.

Forms of Boron

Both borax and boric acid have been used as a source of boron with equal success in Western Oregon. Borax carries about 11.5 per cent and boric acid 17.7 per cent of boron. Approximately two-thirds as much boric acid as borax is required to supply the equivalent amount of boron. Borax is cheaper and recommendations are for the use of the powdered form, which has good sowability.

Rate of Treatments

W. L. Powers recommends 20 to 30 pounds of borax an acre for "alfalfa yellows."

A. G. B. Bouquet and W. L. Powers recommend 15 to 30 pounds of borax for both beet "canker" and celery "crack."

Methods of Application

Alfalfa:

1. Borax may be mixed with superphosphate and applied broadcast to alfalfa in the spring before renovating by tillage.
2. When fertilizer is not used the borax may be mixed with moist soil for spreading.
3. Borax may be dissolved at the rate of one pound to three gallons or more of water and sprinkled on the soil.

Beets and Celery:

1. Borax may be mixed with the fertilizer and applied to the soil before planting.
2. The mixture of fertilizer or soil and borax may be applied as a side dressing two or three inches to the side of the row while the plants are small.
3. The solution of one pound of borax in three gallons or more of water may be applied to the soil.

Time and Frequency of Application

Borax and fertilizer must be applied to moist soil to become effective. Early application before rains stop is necessary except where irrigation is practiced.

It is necessary to apply the material before planting or while the plants are young in order to obtain the most benefit.

One application may be expected to last two or three seasons.

Warning

Boron in too high concentrations is toxic to plants and may cause serious injury if carelessly used. Concentrated solutions will burn the foliage of plants. Thorough mixing of the powdered borax with fertilizer or moist soil is important. Uniform distribution is necessary to get best results. Lumps should be pulverized before application.

Some fertilizers contain boron, either as an impurity or as an addition for the purpose of supplying boron. Care is necessary in using additional boron when the fertilizer may contain a sufficient amount. An overdose may have as disastrous effects on crops as a deficiency.

Other things than boron deficiency may cause yellowing of alfalfa or other symptoms of malnutrition. Care in the diagnosis of symptoms may save unnecessary expenditure.

Use of boron in Western Oregon is in the experimental stage and there is yet much to learn before its limitations and possibilities may be adequately evaluated.

Source and Cost of Borax

The powdered borax may be obtained from wholesale chemical supply houses from drug supply houses, or from fertilizer dealers in Portland. The cost is about \$48.00 for ton lots, or \$3.25 for 100-pound bags. The treatment will cost fifty cents to one dollar an acre for materials used at the rate of 15 to 30 pounds of borax an acre.

EXPERIMENT STATION BORON COMMITTEE:

W. L. Powers, Chairman
A. G. B. Bouquet
O. T. McWhorter
F. P. McWhorter
S. M. Zeller
R. E. Stephenson, Secretary
