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drought, the usual first cutting was omitted. Blossoming occurred with little or no difference in the growth of the alfalfa between the boron-treated plot and the check plot, except for yellows on the no-boron area. Later, it was observed that a good seed set was being obtained where the boron had been applied (Fig. 1).

Analyses of the soil for available boron and of alfalfa hay for total boron content are as follows:

**Untreated soil:**
- Top soil, 0-5 in. — 0.19 p.p.m. B
- Subsoil, 5-10 in. — 0.18 p.p.m. B

**Treated soil, 20 pounds borax per acre:**
- Top soil, 0-5 in. — 0.21 p.p.m. B
- Subsoil, 5-10 in. — 0.25 p.p.m. B

**Alfalfa:**
- Untreated hay 4.80 p.p.m. B
- Treated (20 pounds borax per acre) hay 14.40 p.p.m. B

Germination of alfalfa seed was observed in the field where the seed had shattered on the soil. A sample of seed from the boron treatment gave a germination count of 76%; hard seed, 24%.

The failure of alfalfa to seed in many sections of the country has been attributed to adverse climatic conditions. While this is a factor in many sections, in this instance, where the alfalfa on the boron and no boron treatments grew under the same climatic condition, it is tenable to attribute the cause of a good seed set to the boron treatment rather than to climatic reasons. Work reported by various investigators shows that boron affects the seed set of many plants.

These observations suggest the possibility of growing commercial seed stocks of alfalfa and other plants not commonly grown in North Carolina for seed stock, because of their low yields, provided that the boron requirements of the plants are satisfactorily met on soils low in available boron. — J. R. PILAND, and C. F. IRELAND, North Carolina Agricultural Experiment Station, Raleigh, N. C.

**THE ANCIENT HISTORY OF BORON DEFICIENCY SYMPTOMS**

Agricultural research of the past 10 years has added immensely to our knowledge of what nutrients the growing plant needs, of what nutrients soils are able to supply, and of what nutrients must occasionally be supplied to soils. The significance of the so-called "minor elements"—minor only because of the small quantity which plants need—is becoming generally appreciated. The cordial reception given to publication by The American Society of Agronomy and the National Fertilizer Association of "Hunger Signs in Crops" portrays this present general interest in the subject. Yet since our knowledge of how certain of these crop disturbances may be controlled by the use of boron, zinc, copper, manganese, or other elements, is new, it has been thought by some that these deficiency diseases are themselves new. Some workers even assume that present recognition of these deficiency symptoms is necessarily related to