FIELD EXPERIMENTS WITH ALKYLATION-ACID SUPERPHOSPHATE

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In the preceding paper it was shown that superphosphates produced, respectively, with clear sulfuric acid and with spent sulfuric acid from the manufacture of high-octane gasoline by the alkylation process had practically identical effects on the growth of millet, lespedeza, and table beets under greenhouse conditions. The present paper gives the results of field experiments with these superphosphates on a wide variety of crops, principally in cooperation with the Division of Fruit and Vegetable Crops and Diseases, U. S. Dept. of Agriculture, and with the Connecticut, Iowa, Maine, Michigan, and New Jersey agricultural experiment stations. Also, experiments on barley were made by the Ohio Agricultural Experiment Station in 1942 and 1943, but the crop failed in both years. As the state of combination of the phosphorus is the same in both types of superphosphate, the purpose of the investigation was to determine whether the material produced with the spent acid contains impurities that may be harmful to plants. The characteristics and chemical compositions of the superphosphates are given in the preceding paper.

EXPERIMENTS IN CONNECTICUT

In Connecticut, experiments were made by the New Haven Station on alfalfa and sweet corn (variety Inbred C 31) and by the Storrs Station on potatoes (variety Green Mountain) and Sudan grass.

The alfalfa and sweet corn experiments were on 1/30th-acre plots of level, Cheshire fine sandy loam in the Maurice Rogers farm, Mt. Carmel, Hamden. The alfalfa land was in grass from 1920 to 1940 and had received little or no fertilizer. It was seeded to alfalfa in the spring of 1940, and in the spring of 1941 was treated with 3 tons of limestone and approximately 100 to 125 pounds of superphosphate per acre. The clear-acid and the spent-acid superphosphates, in mixtures with potassium chloride, were broadcast by hand on the alfalfa on April 22, 1942. The first cutting of alfalfa in 1942, which was delayed be-