secticidal properties against leafhoppers. The leafhopper population at Huttonsville in 1946, however, was light, and the materials should be tested under heavy infestations of leafhoppers to ascertain the extent of their insecticidal properties.

**SUMMARY**

1. In comparison with Bordeaux mixture plus DDT, in experimental plots in 4 tests in three different localities, Dithane plus DDT gave as good results in yield and protection against late blight.

2. In a large commercial planting in one year (1946) Dithane + DDT was inferior to Bordeaux + DDT in both blight protection and resulting yields.

3. Due to variation in climatic conditions, spray materials vary in their effectiveness in different localities in West Virginia.

4. The fixed copper (tribasic copper sulfate) and an exploratory chromate compound gave best protection and best yield results in a test of 12 different materials in 1946 in one locality.

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**THE INFLUENCE OF FERTILIZERS ON YIELD AND SPECIFIC GRAVITY OF POTATOES GROWN IN ALASKA**

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In Alaska, high yields of potatoes are obtained only with the application of commercial fertilizers which supply the nutrient elements, nitrogen, phosphorus and potassium. The yield and cooking quality of potatoes grown in the Matanuska Valley are not so high as might be expected under the favorable climatic and soil conditions which prevail. Potato fertilizer recommendations for Alaska, in general, and the Matanuska Valley, in particular, are based on preliminary studies (1) (2). The recommended rates of nitrogen, phosphorus and potassium are based to some extent on the length of the growing season, type of soil, and the level of fertility maintained from year to year by crop rotation practices. Marked variations in cooking quality occur and attempts to associate them with environmental conditions and fertilizer practices are made. Recent studies have shown that fairly good estimates of

*Research Agronomist.*
cooking quality from specific gravity readings are possible. To obtain information on the effect of different rates of nitrogen, phosphorus and potassium fertilizers on the yield and specific gravity of potatoes, the following study was made in 1945 at the University of Alaska Agricultural Experiment Station at Palmer, in the Matanuska Valley.

MATERIALS AND METHODS

The soil of the field in which the test plots were planted is classified as a Knik Sandy Loam, is of loessial origin, and has been cropped for twenty-five years. The plots were planted with the most commonly grown local variety of potato, Arctic Seedling (apparently a type or strain of Green Mountain).

Nitrogen, phosphorus and potassium were supplied in the form of the commercial fertilizers, ammonium nitrate, superphosphate, and potassium chloride. These fertilizers contained approximately 30.0, 42.5 and 60.0 per cent respectively of nitrogen, phosphorus and potassium. The fertilizer treatments tested consisted of 27 possible combinations of 3 rates of nitrogen, phosphorus and potassium. Nitrogen was tested at the rates of 15, 30, and 45 pounds per acre. Phosphorus and potassium were tested at the rates of 30, 45 and 60 pounds per acre. The fertilizer was spread in the open furrow by hand and worked in with a wheel hoe. The plots were 1/300 of an acre (3½x4½ feet) in size. The seed pieces weighing approximately 1/2 ounces were planted 18 inches apart. The plots were planted on the 21st of May and harvested on the 20th of September after the vines were killed by frost on the 6th of September.

The experiment was replicated four times and planted in randomized blocks. In addition to the 27 fertilizer treatment plots, each block contained 3 check plots (no fertilizer treatment).

Specific gravity readings were obtained by weighing at 25-30 pound sample of potatoes from each plot in air and in water, calculating the specific gravity from the formula:

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\text{Specific gravity} = \frac{\text{Weight in air}}{\text{Weight in air} - \text{Weight in water}}.
\]

Statistical analyses of the data were made by the analysis of variance method.

YIELDS

The mean yields of potatoes in bushels per acre of the 27 fertilizer treatments are given in table 1. A statistical analysis of these yields is