FERTILIZED CHECK PLOTS

Fertilizer tests conducted in an area of commercial production present some problems not ordinarily encountered in the usual field plot work. It is well known to the growers of the early white potato in Maryland that the crop cannot be produced successfully without fertilizers, and that soil treatment of some sort is always necessary. Hence, the old practice of using "untreated" check plots holds little or no interest for these producers. It is essential that the plots be sufficiently large to command the respect of the growers. But large plots, and even medium size plots reduce to a minimum the number of replications that may be used. Furthermore, the large plots may expand the area covered by the ranges to a point where several soil types are involved. This may, in some cases, bring into the situation a soil variability that would seriously affect the records and conclusions. Growers in areas of commercial importance are inclined to standardize their production practices. This fact applies perhaps more definitely to fertilization programs than to cultural practices. In choosing a treatment for the checks, there is an advantage in using an analysis and formula similar to that of the general practice in the area served. It not only provides a standard that will be understood readily by the growers, but it enables the investigator to make direct use of the long-time production records also. The plan here reported takes into account all of these factors. It was not planned originally as a study of the use of treated check plots. But as such, it represents a combination of a limited number of replicated plots to be compared with a series of treated check plots for the more accurate determination of the yield response of the former.

Plan of Work

The main objective of the tests was the determination of the influence of the reaction of the soil and of certain acidic fertilizer treatments upon the yield of the white potato. The tendency at the time the work was started was to use high acid fertilizers, and the effect of these fertilizers was very much under discussion in the southeastern part of the State. The test plans provided for including a number of the plots as near as possible to a pH of 5.0. In other instances, pulverized limestone, calcic and dolomitic, was used in varying amounts both as a filler in the fertilizer and as a direct application to the soil. In the limed plots, the nitrogen was derived entirely from sulphate of ammonia. In general, throughout the area, 80 to 85 per cent of the nitrogen of the commercial mixtures used was derived from ammonium sulphate. This was augmented, usually, by nitrogen from organic sources to the extent of 20 per cent.

The most usual fertilizer used in this early potato area is a 6-6-5. This analysis was used in the check plots. In formulating the check plot fertilizer, 20 per cent of the nitrogen was derived from fish meal; 20 per cent from nitrate of soda; and 60 per cent from ammonium sulphate. The phosphorus was secured partly from the fish meal and mostly from 16 per cent superphosphate. All the potash was from muriate of potash. Inert material was used for filler.

Each fifth plot in the series was treated with the check fertilizer of the other treatments were made. A detailed survey of the soil ranges indicated that it varied from a loam to a sandy loam. One small

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