5. POTASH IN RELATION TO QUALITY OF CROP

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The pioneer efforts of agronomists in experimental work with crops were aimed toward increased acre production and means of cultivating greater areas. This attitude has persisted until recently and has only been changed by the fact that there has been an excess production of certain crops. These large surpluses have depressed the prices received by the grower and he cannot market his crops profitably. The increased yields in many instances have not been sufficient to pay for the additional cost of production. The demands for the lower grades of a product have diminished because there has been such a large quantity production, thus making the better qualities or grades stand out.

In recent years plant breeders have endeavored to produce a better product or one possessing an outstanding quality, such as increased protein content of wheat; variation in the oil or protein content of corn and oil in soybeans; increase in the sugar content of sugar beets; quality and length in fiber of cotton, flax, and hemp; improved quality of potatoes; and better quality in leaf, type, burn, etc., of tobacco. These have all called for extensive investigations and some valuable results have been obtained.

Walster (36) has classified these factors as internal factors controlling crop quality. There are also external factors that influence the quality of product. These may be divided into four headings, viz., (a) climate, (b) soil, (c) fertilizers, and (d) husbandry.

For a general discussion covering the external factors the reader is referred to the symposium on “Controlling the Quality of Crops” in Vol. 18, pages 618-703, of this Journal. It is the purpose of the writer to discuss at this time only fertilizers in relation to quality of crop with special reference to potash.

Potash is one of the essential elements for plant growth. It must perform certain vital functions in plant nutrition. The most important of these, it would appear, is its relation to the production of carbohydrates, starch, sugar, and cellulose within the plants. Hence crops that are rich in these constituents, such as mangels, sugar beets, potatoes, sunflowers, corn, fruits, and leguminous plants, would be expected to respond to potash fertilizers. Not all

1Paper read as a part of the symposium on “Potash” at the meeting of the Society held in Washington, D. C., November 19, 1926.
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3Reference by number is to “Literature Cited,” p. 515.