The results secured in a fertilizer experiment with cotton on a Coastal Plain soil which was formed from Piedmont material transported and deposited by stream action show striking needs of the soil for certain plant food materials for cotton production and the influence of certain fertilizer elements on the character of the cotton plant and the fiber produced.

The experiment cited was made on the Wickham fine sandy loam near the Cape Fear River at Fayetteville, North Carolina, in 1923, was repeated in 1924, and is one of a large group of fertilizer experiments on the principal soil types in the cotton belt.

The soil consists of a light brown or yellowish brown fine sandy loam to a depth of 10 to 12 inches, while the surface 2 to 5 inches is a gray to yellowish gray. It is underlain by a yellowish brown to light brown fine sandy loam, extending from 12 to 15 inches in depth and this passes abruptly into a yellowish red, heavy, stiff, but friable sandy clay. The chemical analysis of a composite sample representing the Wickham fine sandy loam of this area shows the surface soil to contain 0.028% nitrogen, 0.033% phosphoric acid, 0.748% potash, and 0.432% calcium. The analysis of a composite sample of soil taken from the experiment area before the experiment was inaugurated showed the surface soil to contain 0.0736% phosphoric acid, 0.75% potash, and 0.35% calcium. The subsoil contained 0.062% phosphoric acid, 0.93% potash, and 0.29% calcium.

The experiment with cotton was made on a uniform field on plots 1/18 acre in size. Twenty-one fertilizers were used, the plan of the experiment being based on the triangle system of fertilizer experimentation. Acid phosphate, nitrogen, and potash were used singly and in combinations of two and of three of the fertilizer constituents. There were four mixtures of phosphoric acid and nitrogen, four of nitrogen and potash, four of phosphoric acid and potash, and six mixtures containing all three fertilizer ingredients, the ratio of

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