A COMPARISON OF WINTER LEGUME GREEN MANURE
AND NITRATE OF SODA FOR FERTILIZING COTTON

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In recent years, farmers in the southeastern part of the United States have been increasing their acreage in vetches, Austrian peas, crimson clover, and other winter-growing legumes for use as green manure in fertilizing cotton and other spring-planted crops. This part of the cotton belt uses more commercial fertilizers than any other area in the United States, especially nitrogenous fertilizers. The experiment reported here was conducted to compare the value of vetch and Austrian peas with nitrate of soda for fertilizing cotton where cotton is grown continuously on the same land as is the custom on many cotton farms.

MATERIALS AND METHODS

Hairy vetch was planted on the winter legume plats during 1927 to 1931 and Austrian winter peas from 1931 to 1935, inclusive. The winter legume seeds were sown about the middle of October and a good growth, at least 1 ton of air-dry material per acre, was turned under 2 weeks before applying the fertilizers and planting the cotton the latter part of April each spring.

All the plats were fertilized with 600 pounds per acre of 16% superphosphate in the fall of 1927 when the experiment was started. Beginning in the spring of 1928, an annual application of 600 pounds per acre of superphosphate and 64 pounds per acre of muriate of potash was made when the cotton was planted. The nitrate of soda was applied with the other materials and bedded on at planting time. The experiment was conducted on a rather poor phase of Cecil sandy loam soil which is typical of a large area of the Piedmont Soil Province.

Seven series of systematically replicated six-row plats 90 feet long were used for each treatment. Only the four inside plat rows, or 1/34.6 acre, was harvested for yields. The total numbers of plants and hills were counted on the inside rows at picking time.

EXPERIMENTAL RESULTS

The 8-year average yield results in Table 1 show that vetch or Austrian peas turned under produced 93 more pounds of seed cotton per acre than 100 pounds of nitrate of soda per acre. The average yields of the green manure plats were better than those of the plats receiving 100 pounds of nitrate of soda, but not as good as those receiving 200 pounds of nitrate of soda. The green manure plats out-yielded the 100-pound nitrate of soda plats every year except one.

Nitrate of soda used at the rate of 200 pounds per acre gave an acre yield increase of 110 pounds of seed cotton over the green manure treatment for the 8-year period, but approximately two-thirds of this