THE EFFECTS OF INOCULATION AND FERTILIZATION
OF SPANISH PEANUTS ON ROOT NODULE NUMBERS

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EXAMINATION of Spanish peanut plants growing on a number of farms in the eastern and central parts of Alabama showed a surprisingly small number of root nodules. Hence experiments were made in 1930, 1931, and 1932 with Spanish peanuts to ascertain whether such scant nodulation would continue under known conditions and whether it would be corrected by artificial inoculation of seed or by the application of certain well-known fertilizers. The main objectives have been to determine to what extent inoculation and fertilization would affect the number of nodules per plant and to ascertain to what extent an increase in nodule numbers through inoculation or fertilization would influence yields of Spanish peanuts.

METHODS AND CONDITIONS

In the experiments here reported unhulled Spanish peanuts were planted on Norfolk soils about 2 miles south of Auburn, Ala. Artificial inoculation was effected by soaking the unhulled seeds for about an hour in a suspension of pure cultures made from peanut nodules. The fertilizer was drilled about 3 inches deep; and, unless otherwise stated, it was carefully mixed with the soil to avoid immediate contact with the planted peanuts. Counts of nodules were made at intervals on many plants, which were collected from a number of scattered locations on each plat.

In the counts made in the latter part of the growing season it was practicable to determine, in addition to the number of total nodules, also the number of large nodules. The latter were arbitrarily taken as those nodules having a maximum diameter equal to or greater than that of an average matured seed of hairy vetch.

In the summer of 1932 the rainfall was ample, but in 1930 and 1931 periods of severe drought occurred.

RESULTS

EFFECTS OF ARTIFICIAL INOCULATION

Table 1 shows the number of nodules, both total and large, on unfertilized Spanish peanut plants at successive dates in 1930, 1931, and 1932.

Nodules of all sizes were relatively much more abundant on the plants grown from inoculated than on those from untreated seed. This held true for at least 18 out of the 19 comparisons shown in the above table. Without artificial inoculation, unfertilized, nearly mature Spanish peanut plants averaged scarcely eight total nodules and fewer than three large nodules. That such few nodules were insufficient for optimum growth of the plant is indicated by generally low yields of both mature nuts and entire dry plants.