Time and Method of Supplying Calcium as Factors Affecting Production of Peanuts

J. Fielding Reed and N. C. Brady

The calcium supply of the soil is a most important factor in the production of peanuts. This has been emphasized in studies reported previously (2, 3, 4, 5, 9). It has been established that large-seeded type peanuts require an adequate supply of calcium in the soil zone in which the developing fruits are produced. Without an adequate supply of calcium in this soil zone, unfilled fruits or "pops" result and yields are low (3).

Most of the work on the specific effects of calcium on peanut fruit filling was carried out under controlled conditions which permitted separation of the zone of peanut fruit formation from the zone in which root growth occurred. These studies included the effect of the period of supplying calcium on the filling of peanut fruit (1). The most critical period in fruit development from the standpoint of a supply of calcium to the fruiting zone was found to be 15 to 35 days after the gynophores reached the soil. Furthermore, calcium supplied to one side of peanut plants did not improve the quality of fruit on the opposite side of the same plants. This indicated that the required level of calcium must be present in the immediate soil zone in which the fruits are forming.

The present investigation was undertaken to determine the time of supplying and the source of calcium under field conditions. These studies involved the comparison of calcium supplied by means of (a) broadcasting dolomitic limestone, (b) applying smaller amounts of limestone in the row at planting or as an early topdresser, and (c) the use of calcium sulfate as an early topdressing or as a later topdressing applied to the foliage. Potassium and phosphorus variables were also included so as to determine the effects of these constituents when calcium needs were met. The effectiveness of the various means of supplying calcium was evaluated by means of peanut yields, plant heights, and fruit characteristics.

PROCEDURE

LOCATION

Field experiments were located on three soils in the Coastal Plain area of North Carolina in 1945 and 1946. Soils relatively low in calcium but with considerable variation in exchangeable calcium were selected. The three soils upon which these experiments were located were a Bradley sandy loam (PF-9), a Craven fine sandy loam (PF-10), and a Norfolk loamy sand (PF-13). Some of the chemical characteristics of these soils are listed in Table 1. They had all been in cultivation for a long time, and recently a rotation of cotton and peanuts had been followed.