Determination of Phosphorus, Potassium, Calcium, and Magnesium Simultaneously in North Carolina, Ammonium Acetate, and Bray P₁ Soil Extracts by AutoAnalyzer¹

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For more than a century, soil and plant scientists have sought more rapid and accurate analytical methods for the quantitative estimation of essential plant nutrients in soil extracts.

Chemical procedures and instrumentation for measuring ions in soil extracts have been vastly improved and, in some instances, automated. The AutoAnalyzer³ shows promise as an effective means of reducing error, ensuring uniformity of results, and increasing the speed at which routine analytical determinations of ions in soil extracts may be made. (Technicon AutoAnalyzer manufactured by Technicon Corp., Tarrytown, N. Y. 10591)

Many chemical extraction procedures have been developed to provide a reliable estimate of the soil's supply of nutrients available to plants. Three of these methods that are gaining in prominence in the East, South, and Midwestern USA are the North Carolina (4) and Bray P₁ (1) methods for P and the North Carolina and NH₄OAc (3) methods for K, Ca, and Mg.

The objectives of this paper are (i) to present the chemistry and flow diagrams for determining K, Ca, and Mg in North Carolina and NH₄OAc soil extracts, and P in North Carolina and Bray P₁ soil extracts, using the Technicon AutoAnalyzer; (ii) to compare

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³ Trade names and company names used throughout this paper are included for the benefit of the reader and do not imply any endorsement or preferential treatment of the product listed by Rutgers University.