

## Nitric Phosphate Processes Evaluated Technically and Economically

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• Another step in the work done by Tennessee Valley Authority on phosphate fertilizers made with nitric acid is described by Nielsson, Yates, Roy, and Heil. The product is made from phosphate rock, nitric acid, ammonia, and potassium chloride, with carbon dioxide in combination with ammonia used to convert the calcium nitrate formed to calcium carbonate and ammonium nitrate. The process has five steps: acidulation of rock, ammoniation, addition of carbon dioxide and ammonia, mixing in potassium chloride, and drying. Reversion of phosphorus pentoxide to a citrate insoluble form during ammoniation is inhibited by addition of a small amount of soluble sulfate or gypsum early in the process. The fertilizer product is 14-11-11 grade. Omission of potassium chloride gives 17-13-0. Replacement of a small amount of nitric acid with sulfuric gives 12-12-12. The products are satisfactory agronomically and withstand storage well. Estimates indicate the costs of 12-12-12 and 14-11-11 compare favorably with other TVA processes for nitric phosphates and should be especially favorable for ammonia producers as they have their own carbon dioxide source. • Economics of nitric phosphate process developed by TVA are evaluated by Stanfield. The evaluations are based on current market conditions and TVA pilot plant work. They involve preparation of estimates of investments, production costs, and wholesale selling prices in a given market area for nitric phosphates and comparison with similar values derived for mixed fertilizer of comparable grade. Results were favorable to nitric phosphates for an annual sales volume of 50,000 tons with position improving at larger volumes.

## Optimum Conditions Suggested for Protein Synthesis by Rumen Microorganisms

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• The "artificial rumen" technique was used by Hudman, Kunkel, and Hood in studies designed to evaluate factors influencing synthesis of protein from nonprotein nitrogen by rumen bacteria in vitro. They report that maximum protein synthesis appeared evident within 9 hours of incubation and often much earlier. Other conditions suggested as optimum for in vitro synthesis: (1) inoculum level 200 ml. per liter incubation media, (2) nonprotein nitrogen level of 0.3%, (3) anaerobic conditions during incubation, (4) 3 grams glucose plus 9 to 15 grams cellulose per liter media.

## White Potatoes Are Source of Useful Enzymes

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• In a review of knowledge of enzyme systems of the white potato, Schwimmer discusses positive evidence for the presence of enzymes involved in glycolytic, tricarboxylic, and cytochrome terminal oxidation systems. Starch-transforming, sucrose-transforming, and phosphate ester-hydrolyzing enzymes are discussed. The author declares that studies of the relationship of enzyme systems to problems of both enzymatic and nonenzymatic browning are in a formative but promising stage.

## Early Steps of Starter Preparation for Alcoholic Fermentation Easily Controlled

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• Borzani and Falcone, in the interest of finding an easy but sound method for controlling the early steps in starting alcoholic fermentation, have approached the problem through measurement of weight variation. This, they report, is satisfactory. Equations and nomographs describing the basis and application of the method are presented.