Estimating the Nitrogen Delivery of Soil from the Organic Matter Determination as Reflected by Sanborn Field

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The purpose of this article is to evaluate the rate at which nitrogen is delivered to crops from the organic matter supplies of the soil. From such an evaluation the quantity of nitrogenous fertilizer required to obtain a desired yield may be calculated where nitrogen is the limiting element controlling yield.

The results from Sanborn Field (4), which provide the basis for this evaluation should be of general applicability even though type of soil and climate may modify the values to some extent. The factors considered in this evaluation include the amount of organic matter in the soil, the kind that are grown, and the effects of barnyard manure rotation. Changes in the nitrogen content of the soil are considered.

Sanborn Field at Columbia, Mo., dates back to 1915. Nitrogen determinations on the soil were made in 1938, and 1948. The virgin condition has been established by soil samples taken from border areas in bluegrass rotations. All results and conclusions in this article are with reference to changes occurring in an acre plow depth of 2,000,000 pounds of soil. The delivery of nitrogen to crops has been calculated on the basis of yields of grain and forage. Yields of crops and

1 Contribution from the Department of Soils, Missouri Agricultural Experiment Station, Columbia, Mo. Journal Series.
2 Instructors in Soils.
3 Figures in parentheses refer to "Literature Cited", p. 212.