STUDIES ON THE EFFECT OF NITROGEN APPLIED TO OATS AT DIFFERENT PERIODS OF GROWTH.¹

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Is the stage of growth of plants, or their age, when nutrients are applied a factor that affects the quantity and quality of product obtained from a given unit application of nutrient? To secure data on this subject was the purpose of series of experiments with a number of agronomic plants (cereals and non-cereals) carried out in pot cultures under greenhouse conditions. Results from experiments with oats where nitrogen was supplied and made available to the plant at different periods of growth is the subject matter of this paper.

It was conceived to be probable, that if the different growth phases, or ages, of the plants when nitrogen is applied plays an important role in determining the magnitude of growth obtained from the treatment, that the differences would be greater if the tests were carried out with a soil that was deficient in nitrogen rather than one not lacking in this constituent. A very satisfactory soil was found in one known locally as Oakley sand. It was not only low in nitrogen, but had proved itself by many tests to be a soil that responded very quickly in increased crop production upon receiving even a moderate amount of either nitrate of soda or ammonium sulfate. The optimum water contents for plant growth in this soil was equal to approximately 18 percent of its dry weight. The containers used for the tests were glazed stone jars of cylindrical shape, of one-gallon capacity. The jars were filled to hold 5.5 kilograms of soil. The soil was seeded with a select strain of Texas Red oats. When the seedlings were about two inches high, they were thinned out to seven plants per jar.

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