

## **ABSTRACT OF THE THESIS**

**Thesis title: EFFECT OF NITROGEN APPLICATION RATES ON MAIZE YIELDS AND YIELD COMPONENTS.**

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Maize is essential for human nutrition, livestock feeding, biofuels and industrial uses. Nitrogen's function in photosynthesis and other biochemical processes, including mineral and water uptake, vacuole storage, and xylem movement, make it a crucial factor in determining grain production. A field experiment was conducted at the experimental field of the Department of Agronomy of the Hungarian University of Agriculture and Life Sciences to identify and recommend optimal levels of N-fertilizers on maize to obtain better yields.

Four inspection layouts with Ammonium nitrate as the source of Nitrogen were set at levels of T1 (0 kg/ha), T2 (80 kg/ha), T3 (160 kg/ha), and T4 (240 kg/ha), each with a net area of 3M by 4M. Plant height, number of leaves, plant girth and leaf area index were measured in the field. Cob weight, the number of rows per cob, the number of grains per cob, and the grain yields per plot were computed. One-way ANOVA was used to analyze the data, and LSD was used to separate the means.

The results showed that different levels of Nitrogen significantly affected the yield and yield components of maize. We found that the best N application, between 80 and 160 kg/ha, out of the four used, may potentially boost the yield, showing that N treatment can generate better grain yields and higher protein and starch contents. To maximize the effects of N application on maize production and quality, more investigation and evaluation are required; the results will be helpful to both researchers and agricultural producers to increase yield while maintaining environmental sustainability.