

EFFECT OF DIFFERENT LEVELS OF NITROGENOUS FERTILIZER AND STRAW ON BARLEY YIELD AND NITROGEN UPTAKE UNDER RAINFED CONDITIONS

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ABSTRACT

The experiment was conducted in metallic pots (25x25x25 cm), open at lower end, placed in trenches. Three application levels of ^{15}N labelled ($^{15}\text{NH}_4$), SO_4 and two levels of ^{15}N labelled straw were used to study their effect on yields, particularly in control, and available soil N. It was observed that 23 to 51 % N was used by barley from straw which decreased with increased straw application. Uptake of soil N by barley ranged between 67 to 86 %. Losses of fertilizers N amounted 12 to 34 %. Application of straw decreased the utilization of fertilizer N and decreased its availability to plants in soil.

INTRODUCTION

The rising cost of N fertilizers and potentially adverse environmental effects associated with their excessive use emphasize the need for efficient use of nitrogenous fertilizers. Organic fertilizers which comprise organic matter and contain most of essential nutrients bring the soil back to more natural state which sustains growth and improves physical conditions of the soil. It also has a large influence on the long term sustainability of

MATERIALS AND METHODS

The study was conducted under rainfed conditions. The sod-podzolic sandy soil having 1.80 % humus content was collected from the farm "Zeveddchka", Leningrad (Former USSR). The soil contained 21.1 mg P_2O_5 /100 g soil, 13.8 mg K_2O /100 g soil and had pH of 4.7. The micro-field experiment was conducted in bottomless metallic pots placed in the trenches in the experimental area at Government Agrarian University of Saintpetter's Burg during 1990-91.

Plan of the experiment comprised the following treatments.

Control	=	PK (562 mg P and 562 mg K/pot)
S ₁	=	25 gm straw/pot or 4 ton/ha
S ₂	=	37.5 gm straw/pot or 6 ton/ha
N ₁	=	375 mg N/pot or 60 kg/ha
N ₂	=	562 mg N/pot or 90 kg/ha
N ₃	=	750 mg N/pot or 120 kg/ha

The experiment was replicated five times. Thirty two seeds/pot of barley variety "Belagorski"