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EFFECT OF LIMITING N SUPPLY AT VARIOUS GROWTH STAGES ON TILLER PRODUCTION AND SURVIVAL IN SPRING WHEAT (*TRITICUM AESTIVUM L)*

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ABSTRACT

A primary determinant of wheat yield is matured tillers per plant. Tiller production and survival are influenced by the N supply. In this study, wheat plants were grown with optimum N (12 mM) until specific growth sages in a controlled environment. The limited N supply (2 mM) was established at Zadok's scale GS 21, GS 31, GS 37, and GS 49. By the 45th day of sowing when plants were at GS 49, limited N supply established at GS 21 and GS 31 resulted 60 and 30% less number of tillers per plant respectively relative to control. At maturity, tillers per plant in GS 21 and GS 31 were 70 and 46% less respectively relative to control. Tiller abortion process was initiated about a week after main stem visible stage and supply of limited N at GS 37 did not show a significant difference in matured tillers per plant compared to control.

INTRODUCTION

A primary determinant of wheat yield is the number of tillers bearing ears per unit land area. Nitrogen application increased production and survival of tillers (Frederick and Marshal, 1985; Miceli, et al. 1992 and Mosseddaq 1991). it has been known from the previous work on wheat that N deficiency during tillering decreased the production of tillers and after

MATERIALS AND METHODS

The procedure to grow wheat plants, to drain nutrients from plant sleeves and to establish limited N supply at the specific growth stages is given in detail in the companion paper (Ashraf, 1995). In control, 12 mM N supply was maintained throughout plant life and the limited N (2 mM) supply was initiated at the following Zadok's scale growth stages (Zadok, et al. 1974):

Control: Zero N deficiency throughout the plant life.

GS 21: Main shoot and 1 tiller visible.

GS 31: First main stem node detectable.

GS 37: Flag leaf just visible.

GS 49: First awn visible.

When 50% of the plant reached the growth stages under study, number of tiller per plant were counted irrespective of effective or ineffective tiller and data were analyzed using analysis of variance procedure (STATGRAPHICS Statistical Graphics System, 1991). F-statistic was based on residual mean square error. The LSD at P = 0.05 level was