

Effect of different irrigation treatment on growth and yield of wheat crop varieties

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ABSTRACT

A field experiment was conducted at Agronomy farm, College of Agriculture, Latur, during *rabi* 2004-2005 with favorable soil and climatic condition to evaluate suitable irrigation schedule to wheat crop. The experiment was laid out in split plot design, with five levels of irrigations *viz.* CRI (I_1), CRI + tillering (I_2), CRI + tillering + jointing (I_3), CRI + tillering + jointing + flowering (I_4) and CRI + tillering + jointing + flowering + Milking stage (I_5) with four replications. As a sub-plot treatment three varieties *viz.* NIAW – 34 (V_1); NIAW-301 (V_2) and NIDW -295 (V_3) were also tested. The highest value of growth parameters were obtained with application of irrigation at I_5 level. Among different varieties, NIDW-295 (V_3) and NIAW-34 (V_1) were found significantly superior over NIAW-301 (V_2). Similar results were obtained in case of yield attributes, grain yield (qha^{-1}), biological yield (qha^{-1}) and harvest index (%) of wheat. The highest gross and net monetary returns were recorded with an application of irrigation at I_5 level. From the present investigation, it can be inferred that an application of irrigation at CRI + tillering + jointing + flowering + Milking stage (I_5) by using NIDW-295 variety observed to be beneficial in increasing growth and yield of wheat crop.

Key words : Irrigation, Varieties, Tillering, Jointing, Flowering and Economics.

INTRODUCTION

Wheat (*Triticum aestivum* L.) is one of the principal cereal crop grown in a wide range of environment around the world. Among the world's crops, wheat is well-known for food to mankind providing ample food calories and protein to the population. In India wheat is second important food crop being next to rice and contributes to the total food grain production of the country to the extent of about 25%. Wheat is considered as very important food grain in the world due to its bread making quality, widely adaptation to different soil and climatic condition and simple cultivation, easy to handle, transport and storage. It contains high proportion of carbohydrates, starch, Vitamins, minerals and essential nutrients. Its straw is good source of feed for cattle.

Wheat is cultivated on 266.9 lakh ha. throughout the world with production of 684.6 lakh tones. During 2000-2001 the area under Wheat crop in India was 25.07 mha with production of 68.76 M.T. and productivity 2743 kg/ha (Singhal, 2003). In Maharashtra, the area under wheat crop during 2000-2001 was 7.54 lakh ha. with productivity of 1256 kg/ha (Anonymous, 2002).

The low productivity of wheat in Maharashtra is due to the shorter growing period i.e. short cool spell and more fluctuation in temperatures, most area is under rainfed wheat, late sowing of wheat, insufficient irrigation

availability, use of insufficient fertilizers and inadequate plant population. The limited water supply condition resulted in low yield. To overcome such conditions the best stages for irrigation based on critical growth stages *viz.* CRI (Crown Root Initiation), tillering, jointing, flowering and milking stage are important (Agarwal and Yadav 1978).

In order to increase the food production and to meet increasing need of vast growing population in our country, the Indian farmers need to be trained to adopt modern technology in which water management plays a key role. With these considerations in point of view, the present experiment was to find out suitable irrigation schedules and suitable varieties for high yield to wheat crop.

MATERIALS AND METHODS

The experiment was carried out at the Agriculture College Farm, Latur during *rabi* season of the year 2004-2005. The topography of the experimental plot was fairly uniform. Soil of the site was medium black in colour, fairly leveled, good in drainage and samples from 0-25 cm. depth from random spots were taken for analysis to determine the various physical and chemical properties of soil. The soil of experimental plot was clayey in texture, medium in organic carbon and nitrogen status and low to medium in available phosphorus. The soil was slightly alkaline in

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