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Effect of high temperature on growth and yield parameters of wheat variety

Research Paper

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ABSTRACT : An experiment was conducted during *Rabi*, 2006-2007 and 2007-2008 at Student Instructional Farm of Narendra Deva University of Agriculture and Technology, Narendra Nagar (Kumarganj), Faizabad. The experiment was planned under split plot design with three replications. The treatment consisted of three dates of sowing *viz*., 10th December (NS), 25th December (LS₁) and 10th January (LS₂) and fifteen varieties *viz*., Halna, Raj 3765, NW 1014, PBW 343, HD 2643, HP 1744, NW 2036, DBW 14, NW 1076, Sonalika, HD 2285, HD 2307, K 8962, UP 2425, and HP 1633. Result of the experiment revealed that growth character like plant biomass, RGR of all varieties showed and initial increase (at 30 DAS) due to late sowing, however, at later stage (90 DAS) reduced drastically number of ear plant⁻¹, ear length, number of seed ear⁻¹, test weight and biological yield were reduced drastically due to late sowing, which result is server grain yield reduction.

Key Words : RGR, Biomass, Grain yield

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ate planting of wheat in India is very common due to the wide spread intensive cropping system, which so often delays the sowing of wheat up to the middle of January, particularly in North-West India, where it is generally sown after harvest of paddy, sugarcane, pigeonpea etc. As a result a portion of maturity period of the crop is pushed forward and thus, has to phase higher temperature of the summer as well as hot spells often occurring at that time. This high temperature at the time of grain development limits the yield and quality of wheat (Alkhatib and Paulsen, 1984).

Dispite the long standing evidences for the harmful effects of high temperature on wheat yield, concerted attempts to analyse the parameters contributing yield under normal and late sown condition are meagre (Reynold *et al.*, 1994; Porter and Gawith, 1999).

RESEARCH **P**ROCEDURE

The experiment was conducted Student Instructional Farm, NDUA&T, Kumarganj, Faizabad. Three showing dates, 15^{th} December (NS), 25^{th} December (LS₁) and 10^{th} January (LS₂) were used during the two seasons early sowing subjects wheat to heat stress during the early growth stage of the crop, which effect the establishment of the crop and the development of plant biomass, RGR and yield parameters. This permits

differentiation of varieties according to their reaction to the early heat stress. The late sowing allows the crop to grow and mature under high temperature and the response of different genotypes to late heat stress can be assessed. Normal cultural practices were followed to raise the experiments. Irrigation was given as per the schedule to avoid any water stress. The experiment was arranged in a split plot design with three replications. Date on growth characters and yield parameters were subjected to stress related parameters *viz.*, plant biomass, RGR (Radford, 1962), number of ear plant⁻¹, ear length, number of seeds ear⁻¹, test weight, biological yield and grain yield. Pooled data were statistical analysed by the method of Fisher and Yates (1963).

RESEARCH ANALYSIS AND **R**EASONING

Data recorded on plant biomass as influenced by late sowing have been presented in Table 1. In general, late sowing resulted in increase in plant biomass of almost all varieties at 30 DAS and 60 DAS. However, at 90 DAS, all the varieties exhibited decrease in plant biomass under both 15 days and 30 days late sowing as compared to normal sowing. At 30 days, under 15 days late sowing significant increase in plant biomass was over normal sowing was observed in PBW 343, Sonalika and K 8962. Rest of the varieties showed non-significant