IDENTIFICATION OF SUITABLE DATE OF SOWING AND VARIETY OF WHEAT (*Triticum aestivum* L.) FOR SOUTH SAURASHTRA, GUJARAT UNDER CHANGING CLIMATIC CONDITIONS

**A B S T R A C T**

*Key words:* Date of sowing, Variety, Climate change, South Saurashtra

A field experiment entitled “Identification of suitable date of sowing and variety of wheat (*Triticum aestivum* L.) for South Saurashtra, Gujarat under changing climatic conditions” was conducted during *rabi* 2015-16 at Instructional Farm, Department of Agronomy, College of Agriculture JAU, Junagadh. The experiment consisting of 12 treatment combinations of four dates of sowing in main plots (05th November, 15th November, 25th November and 05th December) and three varieties in sub plots (GW 322, GW 366 and GW 173) was carried out in split plot design with three replications. Results of the experiment revealed that growth attributes, yield attributes, yield, quality, water use, nutrient content and their uptake by grain and straw, available nutrient status in soil after harvest and economics was significantly influenced by the date of sowing and variety.

Germination percentage, plant population per square meter, plant height, dry matter accumulation, root dry weight, root length and root volume and crop growth rate from 30 to 60 DAS was significantly higher with sowing on 15th November. Crop growth rate from 60 DAS to harvest was recorded significantly highest with 05th December sowing.

Growing Degree Days at different phenological stages viz., emergence, CRI, tillering, jointing, anthesis, milking, soft dough and at physiological maturity was observed higher with sowing on 05th November.

Helio Thermal Unit was found highest with sowing on 15th November at emergence and soft dough stage, 05th November at CRI, tillering, jointing and physiological maturity, and 25th November at anthesis and milking stage.

Maximum total Growing Degree Days, Helio Thermal Unit and Photo Thermal Unit from sowing to maturity was recorded with sowing on 05th November. Similarly, heat use efficiency was found significantly higher with sowing on 15th November.

Canopy temperature at 60 DAS and soil temperature, at emergence, at 7.5 and 15 cm depth was observed significantly higher with sowing on 05th November.
Occurrence of phenological stages *viz.*, CRI, tillering, jointing, anthesis, milking, soft dough and physiological maturity took significantly maximum number of days with sowing on 05\(^{th}\) November. Significantly, maximum number of tillers/plant, effective tillers/meter, total tillers/meter, length of spike, number of grains/spike, weight of spike, test weight, grain yield, straw yield and biological yield was recorded with sowing on 15\(^{th}\) November. Number of irrigations applied were significantly higher at 05\(^{th}\) November sowing. Water use efficiency was significantly higher with sowing on 15\(^{th}\) November.

Significantly, maximum protein content in grain, and nitrogen, phosphorus and potassium content in grain and straw as well as their uptake by grain and straw was recorded with sowing on 15\(^{th}\) November.

Germination percentage and plant population per square meter were found statistically similar in different varieties. Plant height, dry matter accumulation, root length, root volume and root dry weight at 30, 60 DAS and at harvest and crop growth rate from 30 to 60 DAS and from 60 DAS to harvest was significantly higher with GW 366.

Occurrence of phenological stages *viz.*, CRI, tillering, jointing, anthesis, milking, soft dough and physiological maturity took maximum number of days in GW 366.

Significantly, maximum number of effective tillers/plant, effective tillers/meter, total tillers/meter, length of spike, number of grains/spike, weight of spike, test weight, grain yield, straw yield, biological yield, harvest index and water use efficiency was found with GW 366.

Similarly protein content of grain, and nitrogen, phosphorus and potassium content in grain and straw as well as their uptake by grain and straw was recorded significantly higher with GW 366.

Maximum net returns and B:C ratio was found with sowing of GW 366 on 15\(^{th}\) November.

The interaction effect of different dates of sowing and varieties on crop growth rate from 30 to 60 DAS, heat use efficiency, grain yield, biological yield and water use efficiency was found to be significant. The crop growth rate from 30 to 60 DAS, heat use efficiency, grain yield, biological yield and water use efficiency was found significantly higher with sowing of GW 366 on 15\(^{th}\) November.

Thus, to get higher grain yield and net returns wheat variety GW 366 should be sown on 15\(^{th}\) November in South Saurashtra, Gujarat under changing climatic conditions.

Further, under conditions of high temperature during sowing and reproductive stages, higher yield can be obtained by sowing wheat varieties GW 322 and GW 366, respectively.