CHAPTER-VI
SUMMARY AND CONCLUSION

The present study entitled “Identification of Suitable Date of Sowing and Variety of Wheat (Triticum aestivum L.) for South Saurashtra, Gujarat under Changing Climatic Conditions” was carried out during rabi 2015-16 at Instructional Farm, College of Agriculture, Junagadh Agricultural University, Junagadh. The experimental findings in detail, and their “cause and effect relation” description has been given in the previous IV and V chapters. The salient findings are summarized on the basis of results as under:

6.1 EFFECT OF DATES OF SOWING

6.1.1 Significantly maximum germination percentage was observed with sowing on 15\textsuperscript{th} November which remained at par with 25\textsuperscript{th} November sowing.

6.1.2 Initial plant population per square meter was significantly higher with sowing on 15\textsuperscript{th} November which remained at par with 25\textsuperscript{th} November sowing.

6.1.3 Plant height at 30, 60 DAS and at harvest was significantly higher with sowing on 15\textsuperscript{th} November, being at par with 05\textsuperscript{th} November and 25\textsuperscript{th} November sowing.

6.1.4 Significantly maximum dry matter accumulation at 30, 60 DAS and at harvest was found with sowing on 15\textsuperscript{th} November which was statistically at par with 05\textsuperscript{th} November and 25\textsuperscript{th} November sowing.

6.1.5 Crop Growth Rate from 30 to 60 DAS was significantly higher with sowing on 15\textsuperscript{th} November and was at par with 25\textsuperscript{th} November sowing while from 60 DAS to harvest Crop Growth Rate was recorded highest with sowing on 05\textsuperscript{th} December.

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

6.1.7 Helio Thermal Units were found highest with sowing on 15\textsuperscript{th} November at emergence and soft dough stage, 05\textsuperscript{th} November at CRI, tillering, jointing and physiological maturity, and 25\textsuperscript{th} November at anthesis and milking stage.

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

6.1.9 Significantly maximum root dry weight, root length, and root volume at 30, 60 DAS and at harvest was observed with 15th November sowing, being at par with 25th November sowing.

6.1.10 Soil temperature, at emergence, at 7.5 cm and 15 cm soil depth, and canopy temperature at 60 DAS was recorded significantly highest with sowing on 05th November.

6.1.11 The occurrence of CRI, tillering, jointing, anthesis, milking, soft dough and physiological maturity took maximum number of days with sowing on 05th November. The occurrence of soft dough and physiological maturity was statistically at par with 05th November and 15th November sowing.

6.1.12 Significantly maximum number of effective tillers/plant, effective tillers/meter row length and total tillers/meter row length was recorded with sowing on 15th November, being at par with 25th November sowing.

6.1.13 Length of spike, weight/spike and test weight was recorded highest with sowing on 15th November and was at par with 25th November sowing.

6.1.14 Grain yield, straw yield and biological yield was significantly higher with sowing on 15th November, being was at par with 25th November sowing. Harvest index was found to be non-significant at different dates of sowing.

6.1.15 Number of irrigations applied and water use efficiency was significantly highest with 05th November sowing. The WUE was statistically at par with sowing on 05th November and 25th November.

6.1.16 Significantly maximum protein content of grain was recorded with sowing on 15th November which remained at par with 05th November sowing.

6.1.17 Nitrogen content in grain and straw was significantly higher at 15th November sowing, being at par with 05th November and 25th November sowing. Phosphorus content in grain was found significantly higher with sowing on 15th November and was statistically at par with 05th November sowing while P content in straw was found to be non-significant. Potassium content in grain and straw was significantly higher at 15th November sowing, being at par with 05th November sowing.
6.1.18 Significantly maximum nitrogen uptake by grain and straw was recorded with sowing on 15\textsuperscript{th} November. The nitrogen uptake by straw was statistically at par with sowing on 05\textsuperscript{th} November and 15\textsuperscript{th} November.

6.1.19 Phosphorus uptake by grain was found statistically highest with sowing on 15\textsuperscript{th} November. While P uptake by straw was found to be non-significant.

6.1.20 Significantly maximum potassium uptake by grain and straw was found with sowing on 15\textsuperscript{th} November.

6.1.21 Significantly maximum available N, P\textsubscript{2}O\textsubscript{5} and K\textsubscript{2}O in soil after harvest was observed with sowing on 05\textsuperscript{th} December.

6.2 \textbf{EFFECT OF VARIETIES}

6.2.1 Germination percentage was found statistically similar in different varieties.

6.2.2 Similarly, initial plant population per square meter also remained statistically similar in different varieties.

6.2.3 Significantly maximum plant height at 30, 60 DAS and at harvest was recorded in GW 366 and was statistically at par with GW 322.

6.2.4 Dry matter accumulation at 30 and 60 DAS and at harvest was significantly higher in GW 366. Dry matter accumulation at 30 and 60 DAS remained at par with GW 366 and GW 322.

6.2.5 Significantly maximum Crop Growth Rate from 30 to 60 DAS was recorded in GW 366, being at par with GW 322. While from 60 DAS to harvest Crop Growth Rate was found significantly higher with GW 366.

6.2.6 Growing Degree Days and Helio Thermal Unit at different phonological stages and total Growing Degree Days, Photo Thermal Unit, and total Helio Thermal Unit from sowing to maturity remained similar in different varieties. While heat use efficiency was found significantly higher in GW 366.

6.2.7 Significantly maximum root dry weight, root length and root volume at 30, 60 DAS and at harvest was found in GW 366.

6.2.8 Soil temperature, at emergence, at 7.5 and 15 cm soil depth and canopy temperature at 60 DAS was found to be non-significant in different varieties.

6.2.9 Days taken in emergence of seedlings were found to be non-significant among GW 322, GW 366 and GW 173. Occurrence of CRI, tillering, jointing, anthesis, milking, soft dough, and physiological maturity took significantly maximum
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number of days in GW 366. Occurrence of jointing, anthesis and soft dough was found statistically at par with GW 366 and GW 322.

6.2.10 Number of effective tillers/plant, effective tillers/meter row length and total tillers/meter row length was significantly higher in GW 366. Effective tillers/meter row length and total tillers/meter row length was at par in GW 366 and GW 322.

6.2.11 Significantly maximum length of spike, weight of spike, grains/spike and test weight was recorded with GW 366.

6.2.12 Grain yield, straw yield and biological yield was significantly higher in GW 366. Harvest index was significantly higher in GW 366, being at par with GW 322.

6.2.13 Number of irrigations applied in three varieties remained similar. Water use efficiency was significantly higher in GW 366 and was statistically at par with GW 322.

6.2.14 Significantly maximum protein content in grain was found in GW 366 which remained at par with GW 322.

6.2.15 Nitrogen content in grain and straw was significantly higher in GW 366 and was at par with GW 322.

6.2.16 Phosphorus content in grain was significantly higher in GW 366 while P content in straw was found to be non-significant.

6.2.17 Potassium content in grain and straw was significantly higher in GW 366. Potassium content in straw was at par in GW 366 and GW 322.

6.2.18 Significantly maximum nitrogen uptake by grain and straw was recorded in GW 366.

6.2.19 Phosphorus uptake by grain was significantly higher in GW 366. While P uptake by straw was found to be non-significant in different varieties.

6.2.20 Significantly maximum potassium uptake by grain and straw was recorded in GW 366.

6.2.21 Significantly maximum available N, P2O5 and K2O in soil after harvest was observed with GW 173. Available P2O5 and K2O in soil was statistically at par with GW 173 and GW 322.

6.2.22 Maximum net returns and B:C ratio was recorded with GW 366.
6.3 INTERACTION EFFECT OF DATES OF SOWING AND VARIETIES

6.3.1 The interaction effect of dates of sowing and varieties on crop growth rate from 30 to 60 DAS, total heat use efficiency, grain yield, biological yield, and water use efficiency was found to be significant.

6.3.2 The significantly maximum crop growth rate from 30 to 60 DAS, heat use efficiency, grain yield, biological yield, and water use efficiency was recorded with sowing of GW 366 on 15th November.

6.4 CONCLUSION

Based on one year experimental results it can be concluded that for getting higher crop yield and monetary returns wheat variety GW 366 should be sown on 15th November in South Saurashtra, Gujarat agro-climatic zone under changing climatic conditions. Further, under high temperature conditions during sowing and early vegetative growth, as simulated by early sowing on 05th November, GW 322 gave significantly higher grain yield. Similarly, under high temperature conditions during reproductive stage, as simulated by late sowing on 05th December, GW 366 being at par with GW 322 gave statistically superior grain yield other GW 173.