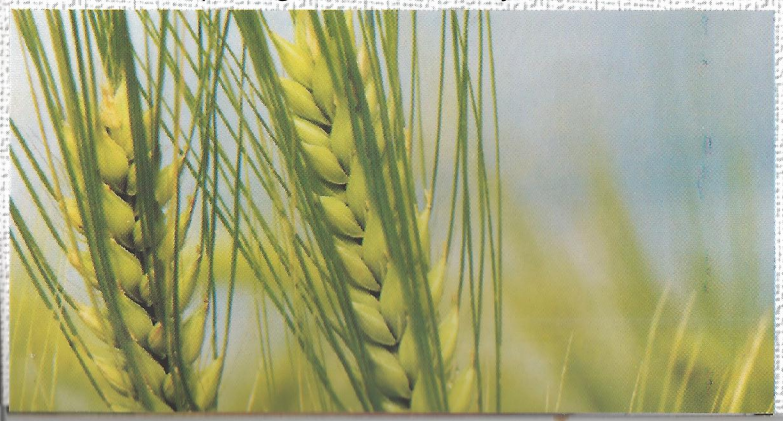
BACKGROUND & INTRODUCTION

Agriculture and its allied industry are considered as Pakistan's largest industry which accounts for 27 percent of its value-added production and 16 percent of the total employment. Unfortunately, Pakistan has not been doing well in agricultural growth in recent years and as a result poverty reduction has more or less ceased. There is not a clear strategy at the government level with priorities and sequences focusing on the quantitative acceleration of the agricultural growth. In the same era, the industrial developments enabled large scale processing of raw material from agricultural by-products. The reliance of the growth and development on research activities has led to increased responsibility for researchers in terms of innovation. However, the field experimentation is essential for agricultural research, but, now-a-days in many countries Decision Support System for Agro-Technology Transfer (DSSAT) has been successfully used to support research. But, in case of Pakistan no efforts have been materialized in this regard. Crop simulation models linked to decision support systems have been used successfully for a wide range of applications in many countries around the world to assess alternative crop management options. The Decision Support System for Agro-technology Transfer (DSSAT) and Agricultural Production Systems Simulator (APSIM) are widely used Cropping System Models. DSSAT and APSIM are process-oriented, dynamic crop simulation models that simulate crop growth, development and yield for agricultural crops. These models simulate growth and development from either sowing or transplanting to harvest maturity and are based on the physiological processes those describe the response of crops to local soil and weather conditions. Potential growth is dependent upon photosynthetically active radiation, light interception and light conversion efficiency, where as biomass production on any day is constrained by crop management, suboptimal temperature, soil water deficit, nitrogen deficiency and their respective interactions. The input data required to run the DSSAT and APSIM models include daily weather data, i.e., maximum and minimum temperature, rainfall, and solar radiation; soil characterization data, e.g., physical, chemical, and morphological properties for each soil horizon; genetic information through cultivar coefficients; and crop management information such as transplanting date, age of nursery-transplanted seedlings, row and plant spacing, rates, dates and amounts of fertilizer and irrigation application. These models calculate the soil water balance of the crops on a daily basis as a function of precipitation, irrigation, soil surface runoff and drainage from the bottom of the profile, and transpiration and soil evaporation. The models also calculate the soil nitrogen balance as a function of a range of soil nitrogen transformation processes as well as nitrogen uptake by the crop plants. These models are rarely applied in Pakistan. Hence present effort is going disseminate knowledge at least to the scientific community, which will provide further communication of the knowledge to the end users.



The most important objective of the workshop is to boost the knowledge of students and participants about crop growth modeling as a tool in agricultural research. For highlighting the importance of crop growth models to the stakeholders, one session is designed to provide the statistical models being used for these above mentioned models (DSSAT and APSIM). The concepts of animal modeling for enhanced productivity through selection based on animal models will also be the limelight of the workshop.