

Agro-Climatic Analysis in the Northern Areas of Khyber Pakhtunkhwa, Pakistan

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Abstract : A research study was conducted in four locations (Swat, Dir, Kakul and Balakot) of Khyber Pakhtunkhwa, to find agro-climatic classes by using aridity index, Growing Degree Days of wheat and maize, crop growth index and Spatio-temporal analysis of rainfall by using long term climatic data (1970-2010). The climatic data used for research was acquired from Pakistan Meteorological Department (PMD) Islamabad, Agriculture Research Institute, Weather Station Peshawar and Tarnab Peshawar. Agro-climatic classes of each location were determined using three criteria mean temperature of the coldest month, mean temperature of the warmest month and aridity index. The agro-climatic classes of Dir, Swat, Kakul and Balakot were classified as Humid, Cold and very Warm (H-K-VW). Average aridity index of wheat for Dir, Swat, Kakul, and Balakot was 2.23, 2.67, 1.94 and 2.34 and for Maize was 1.31, 1.26, 1.97, and 2.83 respectively. The overall and decade-wise trend of GDD of Wheat and Maize was declined in Swat and Kakul while increased in Dir and Balakot. The average maximum CGI (1.26) and (0.73) of Wheat and Maize was observed for Balakot and Dir, while the minimum (1.09) and (0.62) was observed for Swat and Kakul. Spatio-temporal analysis of rainfall shows that the trend has increased in Swat while decreased in Dir, Kakul and Balakot. From the relation between rainfalls with altitude showed that there was an increasing trend between rainfalls with altitude. The maximum average rainfall was in Swat (2703mm) on altitude 2000m while the minimum average rainfall was observed in Kakul (1410mm) on altitude of 1255m.

Keywords : agro-climatic zones, aridity index, GDD, rainfall

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