Scientific Research
Open Access

OPEN ACCESS

Search Keywords,Title,Author,ISBN,ISSN

Home | Journals | Books | Conferences | News | About Us | Jobs

Indexing   View Papers   Aims & Scope   Editorial Board   Guideline   Article Processing Charges

OPEN ACCESS

Agrometeorological wheat yield prediction in rainfed Potohar region of Pakistan

Author(s)

Dildar Hussain Kazmi, Ghulam Rasul

ABSTRACT

The reliable early estimates of production had always been the prime concerns of growers on one hand and planners as well as policy makers for import/export on the other hand. This study represents a linear regression model making use of meteorological parameters at critical stages of crop's life cycle to predict the wheat yield about two months earlier than the harvesting. A statistical based software "Statistical Package for Social Sciences" (SPSS) and MS-excel were employed as working tools. Decadal (ten days) agrometeorological data for Rabi season (for the period 1993-2011) being observed at Regional Agromet Centre, Rawalpindi have been utilized. The parameters studied for correlation were mainly rainfall (amount and days), air temperature (minimum, maximum, mean), heat units (on phenological basis), relative humidity, wind speed, sunshine duration, reference crop evapotran-spiration etc. Finally, minimum temperature, sunshine duration and rainfall amount in January (tillering and stem extension phase) proved to be the reliable predictors for the final yield. The correlation coefficients for these parameters on individual basis resulted within the acceptable range where as in aggregate it remained 0.87, an optimistic value.

KEYWORDS

Potohar Plateau; Wheat Yield Prediction; Agrometeorological Parameters; SPSS

Cite this paper

Kazmi, D. and Rasul, G. (2012) Agrometeorological wheat yield prediction in rainfed Potohar region of Pakistan. *Agricultural Sciences*, 3, 170-177. doi: 10.4236/as.2012.32019.

References

[1]   GoP. (2008) Economic Survey of Pakistan (2007-08), Ministry of Finance, Government of Pakistan, Islamabad.

[2]   Rasul, G., Dahe, Q. and Chaudhry, Q.Z. (2008) Global warming and melting glaciers along southern slopes of HKH range.Pakistan Journal of Meteorology, 5, 63-76.

[3]   Aslam, A., Asim, M., Meinke, H. and Kisana, N.S. (2004) Applying climate information to enhance wheat based farming in rain-fed areas of Pakistan, New directions for a diverse planet. Proceedings of the 4th International Crop Science Congress, Brisbane, 26 September-1 October 2004. www.cropscience.org.au

[4]   Chaudhry, Q.Z., Sheikh, M.M., Bari, A. and Hayat, A. (2001) History's Worst Drought Conditions Prevailed over Pakistan. http://www.pakmet.com.pk/journal/historworstdrought2001report.htm

[5]   IPCC. (2001) Climate Change 2001. The scientific basis: Third assessment report. Intergovernmental Panel on Climate Change, Geneva.

[6]   Dowswell, C. (1989) Wheat Research and Development in Pakistan. Collaboration Program, Pakistan Agriculture Research Council/CIMMYT, Islamabad.

[7]   Aggarwal, P.K., Talukdar, K.K. and Mall, R.K. (2000) Potential yields of rice-wheat system in the Indo-Gangetic plains of India. Rice-Wheat Consortium for the Indo-Gangetic Plains, New Delhi.

[8]   Howard, A. (1924) Crop production in India: A critical survey of its problems. Oxford University Press, Oxford.

[9]   Rasul, G. (1993) Water requirement of wheat crop in Pakistan. Journal of Energy and Applied Sciences, 12.

[10]   Rashid, M., Bashir, S. and Akhtar, K. (1998) Plant nutrient management under rainfed conditions. Proceedings of Symposium on Plant Nutrition Management for Sustainable Agricultural Growth, Islamabad, 8-10 December 1997.

[11]   Challinor, A.J., Slingo, J.M., Wheeler, T.R., Craufurd, P.Q. and Grimes, D.I.F. (2003) Toward a combined seasonal weather and crop productivity forecasting system: Determination of the working spatial scale. Journal of Applied Meteorology, 42, 175-192.

[12]   Sheikh, A.A., Ashraf, M. and Bahzad, A. (2007) Assessment of water resources and development of strategic water utilization plan in Region for its sustainable management. Pakistan Council of Research in Water Resources (PCRWR), Islamabad.

[13]   PARC. (1980) Agro-ecological regions of Pakistan, Pakistan Agricultural Research Council, Islamabad.

[14]   SPSS-13.0, (2004) Tutorial for SPSS-13.0 software.