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ABSTRACTS OF ORAL PRESENTATIONS

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2.4.4-1.Dryland wheat yield prediction by precipitation and edaphic data: 1. Regression models

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Dryland wheat is highly dependent on climatic factors and therefore yields show high fluctuations. Since wheat plays an important role in food security, its yield prediction can help government decision-making. Possibility of predicting dryland wheat yield by precipitation and edaphic data was studied using regression models. Yield data during 1982-2003 were collected from Jehad-e-agriculture of Khorasan. Eight major wheat growing areas (Bojnourd, Shirvan, Farouj, Esfarayen, Dargaz, Quchan, Mane-Semelghan and Raz-Jargalan), that have highest average yields and cultivated area, were selected. The precipitation data was used in the forms of annual (beginning from October), monthly during growing season (November to June) and total growing season precipitation (8 months from November to June). In order to evaluate edaphic factors, soil samples were taken to determine soil texture, moisture content at field capacity (FC) and permanent wilting point (PWP) and available soil water.To obtain the regression models, some Excel, Minitab and Sigmastat software were used. The regression methods included simple regression, multiple linear regression followed by forward stepwise regression. The results obtained from 10 different regression models showed that the most important parameters for dryland wheat yield prediction were precipitation in April, May, November and March, soil moisture content at FC and PWP, and soil clay content. The best prediction was obtained with models which used (a) precipitation in April, June and November and soil moisture content at FC and PWP (R = 0.78, RMSE= 27.3) and (b) total precipitation during growing season, soil clay percentage and soil moisture content at FC and PWP (R = 0.71, RMSE= 33.9).