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The Effect of Meteorological Factors on Crop Yields and Statistical Model of Yield Forecasting

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Abstract: This article is focused on forecasting of wheat production in two zones with diverse climate conditions, Korça and Lushnja in Albania country. The effect of climatic conditions is seen as deviations of yield of a specific year from trend line. The model is based on the multiple regressions. The data used as independent variables are: daily rainfall; amplitude of temperature: average temperature; effective temperatures for different thresholds; maximum temperatures over some thresholds, evaporation, winter severity. The periods of the year with more significant impact on yield production are determinate using correlation analysis. The significant correlation coefficients are determined using the Student Test for a level of significance α = 0, 05. Wheat yield has: a negative correlation with atmospheric precipitation during the winter/spring period for both regions; a negative correlation with average temperature for Lushnja region and positive correlation for Korca region during March. Winter severity is significant only for Korca region. The multiple regressions are significant for both regions. The value of Fisher test is 7.5 for Lushnja and 4.3 for Korca.The validation of these equations is carried out with the wheat yield of 2002, 2003 and 2004. The highest value of forecasting error for Korça region is 1.3 qu/ha (4.5%) in year 2003, while for Lushnja region is 1.4 qu/ha (3.9%) in year 2004. The forecasting verification for 1992-2004 and experiments for 2005 and 2006 indicate that the accuracy of the ensemble model can meet the needs of operational service.These results show that this forecasting model can be used successfully in Albania**.**

Keywords*: Forecasting, yield product, meteorological factor, equations of regression, wheat.*

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