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## **CHARACTERIZATION OF AGRICULTURAL DROUGHTS USING STANDARDIZED PRECIPITATION INDEX (SPI) AND BHALME-MOOLEY DROUGHT INDEX (BMDI)**

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### **Abstract**

In order to verify the possibility of agricultural drought forecasting and prediction of agricultural yields in a given region, two climatic indices were used to monitor drought: Standardized Precipitation Index (SPI) and Bhalme - Mooley Drought Index (BMDI). For the case study were taken into account conditions in Oradea, from Crișurilor Plain, which is located in the Western Romania. Evolution of dry periods determined by the two indices is similar but there are differences in their length and frequency, BMDI indicating higher frequencies of dry periods than SPI. In the majority of time periods analyzed, the future evolution trend indicated by the two climate indices is toward positive values, which means an increasing trend in the frequency of wet periods. Findings on the risk to drought using the drought magnitude calculated for monthly periods of different lengths and their frequencies indicate that the risk of drought according to SPI is reduced, while for BMDI it is indicated a medium risk of occurrence of droughts, appreciation closer to those shown in similar studies conducted in this area. The second-degree polynomial correlations established between the yields of winter wheat and maize, respectively BMDI and SPI values calculated for different time periods (hydrological year, cold season, warm season and vegetation period) demonstrate the possibility of predicting the crop yields, their accuracy being greater for smaller calculation periods, as close as possible to vegetation period of the analyzed culture. The results obtained for the case study performed confirm the above.

*Key words:* agricultural drought monitoring, Bhalme-Mooley Drought Index (BMDI), climatic indices, Standardized Precipitation Index (SPI), yields prediction

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