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Climate Monitoring and Recommendations on the Optimum Sowing Period for the Main Crops in the Transylvanian Plain, Romania

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The Transylvanian Plain (TP) is a geographical region located in north-central Romania and is bordered by large rivers to the north and south, the Somes and the Mures, respectively. TP with an area of approx. 395,616 ha, includes areas of three counties (Cluj - CJ, Mures -MS, Bistrita-Nasaud - BN), has a predominantly agricultural character, and is characterized by hilly climate floor with oceanic influences, 6-10 0C average annual temperatures and 500-700 mm/year average annual precipitations.
The presence of the Carpathian mountains ring and the arrangement, almost concentric, of the relief from Transylvanian Depression, determines the development of a zonal sequence of soil types, a horizontal zonality as a direct influence of lithology and indirect of the relief, by changing climate and vegetation. Diversity of the pedogenetical factors - highly fragmented relief, forest and herbaceous vegetation grafted on a lithological background predominantly acid in the north – west and predominantly basic in south – est, parent rock composition and especially their combination in the contact zones, have conditioned in this hilly area of TP a tessellated soil cover. During soil pedogenesis, soil properties and features developed in response to differential lithology and macro/microrelief. Evaluated soils were found to largely be a complex mix of Cernisols, Luvisols and Antrisols.
Zoning cultures and establishing the optimum sowing periods was made after the observations arising from practice and after the results obtained in the agricultural experimental research stations. Climate changes in recent years and climate monitoring from TP offers the possibility to check the calendar for the optimum sowing period. Monitorization of the thermal and water regime from TP was performed with twenty HOBO microstations which determine the temperature (to a height of 1 m) and rainfalls, same as temperature (at 10, 30, 50 cm depth in soil) and soil moisture (at 10 cm depth). Recorded data allow us to say that towards the optimal sowing period known from the literature, during 2008-2011, for all cultures were recorded minimum temperatures for germination with approx. 5-10 days earlier. The optimum sowing period was recorded 15 days earlier at soybeans, with 10-12 days earlier at corn and beans, 2-3 days earlier at potato, sunflower and sugar beet.

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