

## Climate changes impact on maize yields dynamics in Central European conditions

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Temperature and soil moisture underlie and influence fundamental plant functions such as nutrient uptake, transpiration, photosynthesis, respiration. In complex of influences they affect phenological plant expressions and consecutive yields. Field polyfactor experiment was established in years 2003-2005 at Experimental basis of Slovak University of Agriculture in Nitra. In the experiment was used Zea mays Dentiformis hybrid LG 23.06 (FAO 310). Evaluation of climate changes impact on the maize yield was established at numerical simulations by agroecological model DAISY. Main processes of plant growth which model simulates are photosynthesis, respiration, accumulation of dry matter and nitrogen in different plant parts, leaves and roots decline, stress factors and vegetation structure. On the basis of results from the field polyfactor experiment in years 2003-2005 it is possible to formulate following conclusions: The highest difference in the corn yield influenced by soil tillage (151.4 %) was in year 2004 in which all monitored yield factors obtained higher values in conventional type of tillage. Due to climate change, variability of maize yield reached 267 %. Analyses of thermodynamic conditions impact on yield factors and maize production in years 2001-2003 has showed that cold weather with the soil moisture surplus negatively influence the uniform germination and emergence. Soil moisture deficit at the beginning of vegetation season positively affects the thermal regime and root system development thereby are made favourable conditions for nutrient uptake also from deeper layers of soil profile.

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### Biography

Assoc. Prof. Viliam Barek is the head of the Department of the Landscape Engineering at the Slovak University of Agriculture in Nitra, Slovakia for the 6th year. He has published more than 40 papers in scientific journals, books and contributions. He is member of the Slovak Union of the Landscape Engineers.

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