



Crop water balance variability

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Climate changes have had a great impact on agricultural production in recent decades. Increasing inter-annual variability of crop yields in Slovenia is expected due to climate change, especially because of the impact of drought during growing seasons.

Water balance models are commonly used in agrometeorology due to the lack of in-situ soil moisture measurements. These models combine meteorological, phenological and pedological data to monitor real-time conditions. Water balance monitoring makes important contribution to the optimisation of agricultural management. These models can detect drought stress intervals. Irrigation water needs and yield production can be estimated using weather forecast. Moreover, the captured information can be used also for irrigation scheduling. On the other hand, there is also the possibility of employing climatological analyses.

Variability of water balance for maize and grass sward was analysed in the period from 1961 to 2015 at three locations in Slovenia, where sub-Mediterranean, continental and sub-Pannonic climate are represented. The study was conducted by the use of water balance model WinISAREG. Crop water balance was analysed with time series and moving averages. The negative trend is observed mainly in the sub-Mediterranean and sub-Pannonic climate, especially after year 2000, when there were observed even record of minimal values. Meanwhile, in central Slovenia the trend was not noticeable.

The overall conclusion made on the basis of the study is, that inter-annual variability of water balance for maize and grass sword is changing. Changes are noticed in a wider range of analysed variables in the latest decades. Therefore, some relevant technological measures, such as irrigation, need to be introduced in order to reduce the impacts of the drought.

The results of the study will be presented at a conference in Trieste.