



УНИВЕРЗИТЕТ У НОВОМ САДУ
UNIVERSITY OF NOVI SAD

TOP ACHIEVEMENTS 2019

BIOSENSE INSTITUTE

Third place, Syngenta Crop Challenge 2019

International Competition

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For Syngenta Crop Challenge 2019 BioSense team used meteorological parameters and predictive modelling interpreted by model explanation to develop stress metrics that indicate the presence of drought and heat stress at the specific environment. Methodology included extreme temperature and precipitation indices with modifications and additional drought indices relevant to the analysis. Based on maize's sensitivity to stress, the growing season was divided into four stages. The features were calculated throughout the growing season and split in two groups, one for the drought and the other for heat stress. Generated meteorological features were combined with soil features and fed to random forest regression model for the yield prediction. Model explanation gave the contribution of features to yield decrease, from which was possible to estimate total amount of stress at the environments, representing the new environmental index. Using this index BioSense team ranked the environments according to the level of stress. More than 2400 hybrids were tested across the environments where they were grown and based on the yield stability they were marked as either tolerant or susceptible to heat, drought or combined heat and drought stress.

