

Evaluation of Maize (*Zea mays* L.) Hybrids Thermal Time Requirements of Different Soil Fertility in the Arid Climate of Kerman

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Abstract

In order to evaluate phenologic and thermal time response of three maize hybrids (KSC 704, Maxima and TWC 604) in different rates of nitrogen (0, 92, 220 and 368 kg ha⁻¹), a two-year experiment was laid out as a randomized complete block design with a factorial arrangement of treatments and three replications in 2014 and 2015. Results showed that nitrogen and genotype had a significant effect ($p < 0.01$) on leaf appearance rate, phenology and grain yield of maize hybrids. In both years, nitrogen stress postponed the tasseling, silking and physiological maturity occurrence in hybrids and increased their thermal time requirements, but this effect was more severe in the second year. The thermal time required for all of the phenological stages of hybrids showed significant increase only in control treatment, compared with other N rates and there was no significant difference among other N rates from this viewpoint. Significant yield benefits of KSC 704 and Maxima compared to TWC 604 was observed. Among the studied hybrids, Maxima is recommended due to the shorter growing season duration, lower thermal time requirement and faster germination rate under N stress

Keywords: Phenology, Maize, Growing degree days (GDD), Nitrogen.

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