

Water use and crop coefficient for maize hybrid DKB 390

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ABSTRACT

The work aims to characterise the water use of maize hybrid DKB 390 under suitable conditions of irrigation for both enough and below-optimal situations of nitrogen supply associated with fungicide application. According to statistical analysis of variance, there was no difference among fungicide treatments, but only nitrogen was capable to promote differences in maize grain yield. Crop coefficient values for different stages are also presented as a result, in order to provide basis for crop water budget and management throughout cycle. In Piracicaba (São Paulo State), Brazil, a field experiment was carried out during the main season, in which biomass, soil moisture, leaf area, climate data and light transmittance were evaluated. The soil water content measurements (i.e. weekly in 20, 30, 40, 50 and 60 cm profile by using neutron probe) in 32 plots have allowed deriving water balance, use and efficiency. The mentioned genotype required around 600 mm for high yield targets, being less efficient when led under below-optimal nitrogen fertilisation. A more refined approach would include spatial variation of soil water content throughout the crop length so that is very important to develop studies in Geostatistics, as well as the possibility of including Richard's partial differential equation in order to estimate the soil water content in 70 cm profile.

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