

EXPLORING THE POSSIBILITY OF USING ANTITRANSPIRANTS TO MINIMIZE THE EFFECT OF MOISTURE STRESS ON GROWTH OF MAIZE

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Abstract

Maize is a prominent cash crop among the Sri Lankan farmers in the dry zone. However, its productivity has decreased mainly due to the effects of climate variability. Intermittent dry spells during the cropping period negatively affect its growth. Therefore, exploring alternative measures to mitigate the impact of drought is important to expand maize production in Sri Lanka. Thus, a study was undertaken to optimize the maize growth and yield using anti-transpirants under moisture stress conditions. The experiment was conducted using a factorial split-plot design assigning moisture stress in the main plots and anti-transpirants with different concentrations in the subplots. The main factor (moisture stress) consisted of four levels in different durations of maize crop growth (No moisture stress throughout the crop growth, from germination to tasseling, from tasseling to harvesting, germination to harvesting). The sub plot factor consisted of 5 levels where 2 anti-transpirants (Salicylic acid and Kaolin) were applied in 2 concentrations (100, 200 ppm of Salicylic and 5, 10% of Kaolin) and water as the control. The results showed that the interaction effects of moisture stress and anti-transpirant application were not significant in all measured parameters. Spraying the anti-transpirant had no significant effect on all measured parameters. Moisture stress had a significant effect on plant height, chlorophyll content, leaf area, dry weight, number of days to 50% tasseling, and root length. Plant height has decreased by moisture stress when imposed from germination to harvest. Root length significantly increased with increasing moisture stress. It was also observed that the moisture stress had not positively or negatively influenced root area and root diameter. However, it is suggested to test other anti-transpirants to explore possible effects on the crop under moisture stress.

Keywords: Antitranspirant, Kaolin, Moisture stress, Salicylic acid, *Zea mays*

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