



Improving the agronomic performance of maize: differential responses to precision irrigation

Akasairi Ocwa¹, Brian Ssemugenze², Ronald Kuunya², Costa Gumisiriya¹, Ibtissem Balaout¹, Csaba Bojtor¹, Árpád Illés¹, Endre Harsányi¹

¹ Institute of Land Use, Engineering and Precision Farming Technology, Faculty of Agricultural and Food Sciences and Environmental Management, University of Debrecen, 4032 Debrecen, Hungary

² Institute of Land Use, Engineering and Precision Farming Technology, Faculty of Agricultural and Food Sciences and Environmental Management, University of Debrecen, 138 Bőszörményi street, 4032, Debrecen, Hungary

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Abstract:

Climate change is making the utilization of precision irrigation techniques inevitable to reverse the deleterious effects of drought stress on maize production. As such, amidst water scarcity, the synchronized supply of agricultural irrigation water has become useful. Therefore, this study explored the differential response of maize to precision irrigation. The experiment was set up at the experimental area of the University of Debrecen in the 2022 growing season, with precision drip irrigation and drought stress used as treatments. Data on different growth parameters at different maize phenophases and yield were collected and analyzed using a t-test. Precision drip irrigation significantly ($p < 0.01$) enhanced plant height, stem diameter, NDVI, SPAD, and grain yield. Conspicuously, precision drip irrigation at the VT growth stage improved plant height, stem diameter, NDVI, and SPAD by 194.7%, 11.6%, 25.8%, and 54.3%, respectively. Interconnectedly, precision drip irrigation improved grain yield by 250% compared to drought conditions. From this, it can be concluded that precision drip irrigation was a potentate of high agronomic maize productivity.

Keywords: maize; irrigation; drought; production

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Authors

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