

## SUMMARY

**Thesis title:** EFFECT OF DIFFERENT LEVELS OF IRRIGATION ON GROWTH AND YIELD OF MAIZE

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An important stressor affecting rainfed agriculture at the moment is climate change. Available evidence has demonstrated that climate change is a major contributor to the persistent irregular rainfall pattern that occur during the growing season. Maize is a vital crop in both Nigeria and Hungary, serving as a source of food and income for millions of people. In Nigeria, maize is a staple crop, while in Hungary it is grown for human consumption, animal feed, ethanol production, and as a raw material for various industries. However, the current climate change reality has led to the decline in the production of maize in both countries as a result of dependence on rainfall for maize production.

In this study, varying irrigation levels was investigated for their impact on development and yield of maize in an open field setting. An important factor in enhancing food security for the global population and a topic of ongoing research is understanding how maize might react to climate change effects.

This research was conducted at the Hungarian University of Agriculture and Life Sciences research farm between May and August 2022. The experiment which was set in a Randomize complete block design (RCBD), having a factor (irrigation) with three irrigation levels (100 litres, 50 litres, 0 litre). A maize variety known as margitta was used as the test crop. This treatment was replicated two times.

The results showed that moderate irrigation (50 litres) application was favorable in terms of growth and yield of maize in contrast to the rainfed and to the higher amount of irrigation application (100 litres). Furthermore, significant effects of irrigation were seen on the number of leaves per plant,

plant girth, and number of seed rows per cob. The non-irrigated treatments were found to have the highest Chlorophyll content. Also, Irrigation positively influenced plant height, highlighting the crucial role of water in enhancing maize productivity. It was observed that with excess irrigation beyond 50 litres the average maize line and the weight of cobs will reach a plateau state where further irrigation will not lead to any positive increase i.e. (100 litres).

It was concluded that increasing environmental stresses associated with climate change would adversely affect the global productivity, particularly maize production, but effective management of irrigation will help to boost food production in the face of climate change realities. Therefore, an irrigation level of 50 litres was concluded as optimum for maize production.