

# **THESIS**

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## ABSTRACT OF THESIS

**Thesis Title** : **Effects of Combined Temperature, Water, and Salinity Stresses on Maize (*Zea mays*) Seeds Germination and Development**

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Currently, the world's food production systems are threatened by climate change, which could make many areas less suitable for growing crops. Maize is one of those crops affected by climate change, as they tend to be vulnerable even when they can be adaptive to a wide range of soil and climatic conditions around the world. Specifically, it is a reality that agricultural regions around the world are commonly stricken by two or more stresses at once, hence, this study is conducted to determine the effects of combined temperature, water, and salinity stresses on maize seeds germination and development. Horse-tooth maize seeds were used with three replications of three combined abiotic stresses, totalling to twenty-seven (27) treatments.

The results showed that the variations in the treatments that were used in the study provide significant effects on the germination rate of maize seeds, as well as on the seedling, radicle, and shoot length of the germinated seeds. In addition, ideal combinations of temperature, water, and salinity levels can guarantee the high viability of maize seeds, however, this viability is not necessarily an indicator of high growth and development. It is therefore recommended that further variability in the treatments (temperature, water, and salinity) can be explored to provide a wider range of perspectives to those areas around the world with the same environmental conditions. A conduct of field-based experiments on the effect of abiotic stresses on maize germination is also possible for an anchored result to the setting in which the study was conducted.

*Keywords: maize germination, abiotic stress, viability, combined stress*