

# SIMULATING THE SENSITIVITY OF MAIZE CROP PROPAGATION TO SEASONAL WEATHER CHANGE USING CROPWAT-8

by

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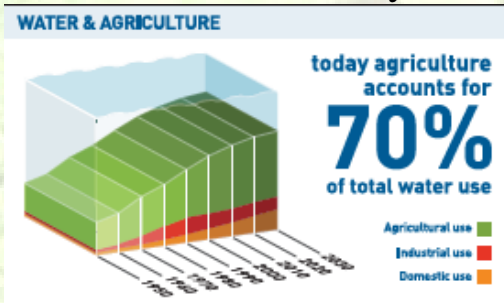
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## Introduction

- Weather influences crop yield and quality.
- Global warming has significant impact on agriculture.
- Maize production is low under steady temperature rise without rainfall or irrigation.
- CROPWAT was used to model crop yield response to weather change.

## Objectives

- To simulate temperature changes effects on maize crop yield.
- To predict the effects of rise in temperature on maize yield.
- To investigate appropriate irrigation schedule to minimize yield loss.



## Methods

- Study area: Ibadan, Nigeria.
- Data: Climatic, Soil and Crop.
- Irrigation Schedule: No Irrigation (NI), Critical Depletion (CD) and Definite Interval (DI).

- Statistics: Descriptive (Mean), Least Square Difference (LSD) and T test.

## Results

- Temperature rise has negative effect on maize yield.
- Yield reduction trends were not definite due to discrepancy in temperature variability.
- Yield reduction was low under DI and high for both CD and NI.
- No significant difference ( $p < 0.05$ ) between CD and DI.
- Significant differences existed, at  $p < 0.05$  between DI and NI, also between at CD and NI.
- Coefficient of determination ( $R^2$ ) is close to 1 therefore model is valid.
- Yield reduction was low between May and September, depicting better yield during rainy season.
- Moisture depletion increases with temperature and had a low value at DI irrigation schedule.

## Conclusion

- ✓ Weather change is not constant phenomenon, its ever changing.
- ✓ DI is most preferred under uncertainty in variability of weather change.