

# SIMULATING THE IMPACT OF CLIMATE CHANGE ON YIELD REDUCTION OF VEGETABLE CROP PROPAGATION USING CROPWAT-8

by

EWEMOJE, T. A. and ASHAOLU, P. O.

Agricultural and Environmental Engineering Department, University of Ibadan, Ibadan, Nigeria.

## Introduction

- Man's activity such as deforestation has led to climate change.
- Climate change has both negative and positive impact on agriculture.
- This impact can be determined using sensitivity analysis.
- A simulation model is needed to carry out sensitivity analysis.
- CROPWAT model was used.

## Objectives

- Simulation of climate change impact on vegetable propagation using CROPWAT-8.
- Analyse weather forecasting for a 9-year period for vegetable crop yield in response to climate change.
- Model crop yield sensitivity to changes in weather data in a tropical environment.

## Methods

- Study area: Ibadan, Nigeria.
- Data: Climatic, Soil and Crop.
- Irrigation Schedule: No Irrigation, irrigation (NI) and Critical Depletion (CD) with Definite Interval (DI).
- Statistics: Descriptive (Mean), Least Square Difference (LSD) and T test.

## Results

- Inconsistent variability in climate change under CD, NI and DI.
- Yield reduction was low under CD and high for both DI and NI.
- No significant difference ( $p < 0.05$ ) between CD and NI.
- Significant differences existed, at  $p < 0.05$  between DI and CD, also between at DI and NI.
- Coefficient of determination ( $R^2$ ) is close to 1 therefore model is valid.
- Yield reduction was low between July and October, depicting better yield during rainy season.



Source: [www.fao.org/nr/water](http://www.fao.org/nr/water)

## Conclusion

- ✓ Climate change is not constant phenomenon, its ever changing.
- ✓ Critical depletion is most preferred under uncertainty in variability of climate change.
- ✓ Planting should be done between July and October; to reduce impacts of climate change on yield.