



## Effect of Water Stress on Sugarloaf Pineapple (*Ananascomosus*)

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### Introduction

Pineapple (*Ananascomosus* L.) is a member of the bromeliaceae or bromeliad family and the family is of tropical American origin (Nakasone and Paull, 1998). The Bromeliaceae have adapted to a very wide range of habitats. They are monocots but are set apart from other monocots by several unique characters (Gilmartin and Brown, 1987).

It is a perennial plant that requires a functional root system to produce multiple fruiting (Duane et al, 2002). It is a large, juicy tropical fruit of aromatic, edible yellow flesh surrounded by a tough, segmented skin and topped with a tuft of stiff leaves. Moisture stress is a prevalent occurrence in this era of climate change, and it affects the overall physiology, growth and productivity of pineapple plants.

### Methodology

A nursery experiment was conducted to determine the amount of water required for optimum growth and development of sugar loaf pineapple (*Ananascomosus*). The experiment was carried out in the greenhouse of the College of Plant Science and Crop Production, Federal University of Agriculture, Abeokuta latitude 7° 14' 8.35" N, Longitude 3° 36' 19" E between the period of May 2018 to October 2018 using sugarloaf pineapple slips potted in 5kg of topsoil. The experiment was a single factor (Irrigation) laid out in a completely randomised design (CRD) with four replicates. The irrigation comprises of four different volumes of water to irrigate the growth of pineapple slips. A total of 48 slips were planted. Data were collected on growth variables, which include plant height, leaf area, canopy diameter and number of leaves at two-week interval as well as the nutrient contents of the pineapple. Data collected were subjected to analysis of variance using GENSTAT, and significant treatment means were separated using Least Significant Difference (LSD) at 5% level of probability. Pre-planting soil physico-chemical properties, which include nitrogen, phosphorus, potassium, calcium, sulphur, magnesium, micro nutrients, cation exchange capacity, base saturation, pH and textural class, were determined.

### Result and discussion

Results showed that the pineapple plants that received 500ml of water per week had significantly ( $p < 0.05$ ) taller plants, longer leaves, larger leaf area and wider canopy spread when compared to plants that received 125 ml and 250ml per week. Thus, the plant that received 1000 ml also had significantly ( $p < 0.05$ ) taller plants, longer leaves, larger leaf area and wider canopy spread, but the water rate was in excess for the plant. Chlorophyll contents, nitrogen, potassium and phosphorus decreased with decreasing irrigation. Therefore, the pineapple plant irrigated with 500 ml of water/plant/week had better growth performance.

### Conclusion

From the result obtained from the experiment, it was concluded that pineapple plants that received 500ml and 1000ml of water/plant/week exhibited significantly better growth performance than plants that received 125 or 250 ml of water/plant/week, respectively. It was concluded that the effect of 1000ml and 500ml water/plant/week did not differ significantly, therefore, irrigation with 500ml water/plant/week suffices for optimum growth.

Keywords: *Ananascomosus*, Water stress, Irrigation, plant growth.