

UNIVERSITÄT HOHENHEIM

**INSTITUT FÜR AGRARTECHNIK
IN DEN TROPEN UND SUBTROPEN**

Prof. Dr. sc. agr. K. Köller

Masterarbeit

Allgemeine Agrarwissenschaften

Fachrichtung Agrartechnik

Sheila Owusu-Senyah, B. Sc.

**Effect of Different Irrigation Regimes on Yield in Mango
Production in Thailand**

SUMMARY

Irrigation is fundamental for giving good physical conditions to the soil for plant water uptake and transpiration as well as helpful in attaining full fruit size, good quality as well as minimizing fruit drop.

Three irrigation regimes and their effect on yield in mango was determined and evaluated. The irrigation regimes representing the treatments were: 100% irrigation, 50% irrigation and Partial Root Zone Drying (PRD) irrigation technique.

A 7-year old Chok Anan mango orchard in Mae Jo close to Chiang Mai, Thailand was used as the experimental field. The field was subdivided into various blocks which served as replications of the treatments.

The PRD treatments were fitted with polyethylene pipes bearing emitters whilst the others were serviced with micro-sprinklers. The CROPWAT code, an FAO software was used in calculating the amount of water required.

The stomatal resistance was measured with a porometer and soil moisture was monitored by TDR-probes.

Yield assessment was based on total and average yields per tree and treatment. Total fruit weight, edible flesh weight and fruit sizes for the various treatments were considered.

Water use efficiency, fruit to flesh ratio and fruit marketability of the various treatments were compared.

Yield was highest in the 100% treatment followed by the PRD and then the 50% treatments respectively. However statistics showed an insignificant difference in fruit yield between the PRD and 100% treatments. the control without irrigation recorded the lowest yields.

Water-use efficiency was highest in PRD, so it was concluded as the most efficient in terms of water consumption.

High leaf stomatal resistance was recorded for non-irrigated trees and had an influence on yields.

The marketability of the PRD fruits were comparable to those of the 100% treatment.

Fruits from irrigated trees were perceived to be of better quality than those from the non-irrigated trees.