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Modelling intrinsic and potential growth of *Acacia*  
*Senegal* under varying nutrient conditions //

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A project submitted in partial fulfillment for a degree of Master of science in Biometry  
in the Department of Mathematics.

Date: November 28, 2004

NAIROBI-KENYA

## DECLARATION

I, *Raymond Musyoka*, declare that this project report is my work and has never been presented in any university for the award of a degree. All sources that I have used or quoted have been indicated and acknowledged by means of complete references.

Raymond Musyoka

*I/56/P/7071/02*

  
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Signature

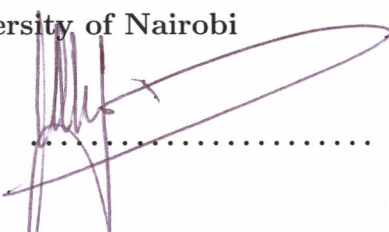
*28<sup>th</sup> NOV 2004*  
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Date

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University of Nairobi

Sign: .....

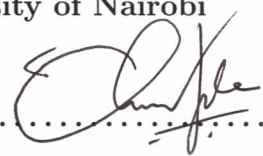


Date: November 28, 2004

Supervisor

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Date: November 28, 2004

## Abstract

This study uses a logistic model to a repeated measures data and models the intrinsic growth, time of maximum growth rate and potential growth of *Acacia Senegal* tree seedlings. Various factors such as the silvicultural treatments and three different sites from which the seedlings were extracted from, were evaluated to ascertain whether they significantly explained the response variables. Predictions were made to ascertain the time when the maximum yield of sap of the *Acacia Senegal* tree could be extracted. It was found out that the inflection point differed among treatments and sites. By using designed experiment, we were able to get valuable information about the responses to various silvicultural treatments in the environment where other disturbing variation was being removed. Information from the designed experiment helped to understand interaction between the factors that affected tree and stand growth, and how these relationships changed due to silvicultural treatments.