



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE AND GINNING ENGINEERING

**ASSESSMENT OF KNITTED SILK AND COTTON FABRICS DYED WITH
HIBISCUS ROSA-SINENSIS (CHINA ROSE PLANT) EXTRACT**

BY

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF TEXTILE AND
GINNING ENGINEERING IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE AWARD OF A DEGREE OF BACHELOR OF SCIENCE IN TEXTILE
ENGINEERING OF BUSITEMA UNIVERSITY**

DECLARATION

I AINEMBABAZI INNOCENT hereby declare that this research project is my original work and has never been submitted to any higher institute of learning.

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APPROVAL

I hereby submit in this research report with permission from the following supervisors;

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ACKNOWLEDGEMENT

I am so much indebted to God for the success of this project; His sufficient grace carried me on in the darkest moments.

I would like to express my deep gratitude to Mr. Musinguzi Alex and Mr. Wandera George for serving as my supervisors and for providing encouragement and guidance throughout my work on this paper.

Appreciation is extended to my dearest mother Mrs. Amumpaire Elivaidah and my dear friend Kevin Babb who constantly provided me with advice and financial support.

Thanks are also due to Mrs. Katwijukye Hope of the Uganda National Sericulture Centre for her help and guidance towards my research.

Finally, am grateful to acknowledge my colleagues in Faculty of Engineering Busitema University for their co-operation during this four year's programme. In a special way, I thank all my course mates and roommates for the knowledge, ideas shared and good company throughout my course of study at the mighty University of Busitema.

God bless you all

DEDICATION

I dedicate this project report to my dear mother Amumpaire Elivaidah and my friend Mr. Kevin Babb for their devotion toward my growth. May God continually bless you.

ABSTRACT

The study investigated the effects of different methods of application of selected mordants on dyeing knitted cotton and silk fabric samples with the dye extract from the leaves of hibiscus rosa-sinensis. The methods of application of mordants used included; pre-mordanting, simultaneous mordanting and post-mordanting. The effects on cotton and silk analyzed were color fastness to; light, washing, wet and dry rubbing.

Aqueous extraction method was used to extract the dye. Some selected mordants were used for dyeing viz; alum, ferrous sulphate and iron water. In the control dyeing without the use of mordants, very good fastness were registered with the following fastness ratings; for washing (4-5), dry rubbing (5), wet rubbing (5) and light (4). The natural dye is a substantive dye since it registered very good fastness grades without the use of mordants. The use of mordants improved color fastness to washing from ratings of (1-2) to (4-5) for cotton dyed fabric samples. Post-mordanting method registered the best overall fastness results.

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Chapter-1**INTRODUCTION****1.1 Background**

Natural dyes are known for their use in colouring of food substrate, leather, wood as well as natural fibers like wool, silk, cotton and flax as major areas of application since ancient times. Natural dyes may have a wide range of shades, and can be obtained from various parts of plants including roots, bark, leaves, flowers, and fruit. Since the advent of widely available and cheaper synthetic dyes in 1856 having moderate to excellent colour fastness properties, the use of natural dyes having poor to moderate wash and light fastness has declined to a great extent. However, recently there has been revival of the growing interest on the application of natural dyes on natural fibers due to worldwide environmental consciousness(Saravanan, Chandramohan, Saivaraj, & Deepa, 2013)

Uganda has a rich biodiversity and harbours a wealth of useful resources thus no doubt that the plant kingdom is a treasure-house of diverse natural products. One such product from nature is dyes. A few publications on dyes from Uganda have generated a fresh interest on this aspect. Recently, over forty (40) plants with potential of yielding dyes of good characteristics for application in the textile industry were identified in Uganda(Wanyama, Kiremire, Ogwok, & Murumu, 2011). Another recent study shows that dyes from the leaves of coffee and mulberry can effectively be used for dyeing silk fabric(Fabrics, Mordants, Janani, & Winifred, 2013)

Natural dyes are related with cultural practices, rituals, arts and crafts, fabrics and for the satisfaction of personal embodiment. However, dye yielding plants have not received significant attention. Recently, interest in the use of natural dyes has been growing rapidly due to the result of stringent environmental standards imposed by many countries in response to toxic and allergic reactions associated with synthetic dyes.

Natural dyes are preferred in developed countries, because they are non-allergic, non-carcinogenic and have lower toxicity and better biodegradability than the synthetic dyes(M. Macieira1 & 1, 2013).

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