Thesis Title The Dyeing of Cotton and Giant Milkweed Fibers with Natural Dyes by Dye Auxiliaries.

Name Kamonnet Atiburanakul

Degree Master of Science (Technology of Environmental Management)

Thesis Supervisory Committee

Gritsanaruck Theeraraj, M.Sc.

Rungjarat Hutacharoen, M.Sc.

Suttinant Nantachit, M.S.

Nimit Visuthirungsiuri, Ph.D.

Date of Graduation 15 June B.E.2533 (1990)

## ABSTRACT

This thesis is studied about the using of natural dyes for dyeing cotton yarn and Rux yarns by using dye auxiliaries in order to comparing to the native method that the natives used to dye. Natural dyes which are used in this study are lac, Kae lae, and indigo. To dye cotton yarn and mixed yarns which are made from cotton and Rux fibers in various proportions by using the conditions that are composed of ash solution, soda ash, and caustic soda as dye auxiliaries in various concentrations.

This study is divided into 5 x 8 treatments for each dye and each treatment is composed of 3 replications. The experimental design is Factorial arrangement in Randomized Completely Block Design which is comprised of 5 textile

materials and 8 dyeing conditions. However, because of the restriction of spinning technique the mixed yarns are only 4 types, i.e. cotton yarn, 30% Rux, 50% Rux, and 60% Rux yarns. Finally, there are 4 x 8 treatments in this study.

Results of the preliminary experiment are shown that alkalis can not be used as dye auxiliaries in Kae lae dyeing. Therefore, results of the dyeing experiment in the next step are studied only lac dyeing and indigo dyeing.

Results of the dyeing experiment are denoted that in lac dyeing and indigo dyeing cotton yarn has more color intensity than Rux yarns. In lac dyeing, all conditions which used soda ash and caustic soda as dye auxiliaries would make the textile materials have more color intensity than the condition that used only lac dye and more color intensity than the native condition that used ash solution as a dye auxiliary. Light fastness property is classified as fairly good to good class and the conditions which used caustic soda would make the textile materials have more light fastness property than other conditions. Washing fastness of lac dyeing are very poor in all treatments. Rubbing fastness are classified as nearly fair to good class and all conditions which used soda ash and caustic soda are not different to each other.

In indigo dyeing, the three conditions that used soda ash and the condition that used 20% on fiber weight of caustic soda would make the textile materials have dark

shade and shown non-significant difference to each other. The condition that used only indigo dye and conditions that used 10 - 15% ofw.caustic soda would make textile materials have more lighter shade than the former group conditions. Light fastness of indigo dyeing are very poor in all treatments. Washing fastness property is classified as fairly good to good class and every treatment is not different to each other. Rubbing fastness property is classified as poor to good class and each condition is not difference to each other.

The results in this study are found that each natural dye has not so good in light fastness, washing fastness, and rubbing fastness property. Especially, lac dye has very poor washing fastness and indigo dye also has very poor light fastness. Therefore, for keeping textile materials that dyed with these natural dyes on prolong life, it should be avoided the inferior properties, i.e. lac dyed materials should be cleaned by dry cleaning liquid and should not be cleaned often, and indigo dyed materials should be kept indoors.