

## **Application of Ecoprint for Ready to Wear Fashion Products**

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### **ABSTRACT**

Plants can produce natural dyes that can be used in the textile sector, be it the stems, skins, fruits and leaves of plants. The leaves of ferns (*Pteridophyta*) and the bark of mangroves are types of plants that can be used in natural coloring using the ecoprint technique. This study aims to apply fern leaves to textile materials using the ecoprint technique using two methods, namely the steam method and the tap method, designing 2 fashion product models for ecoprint, the tap method and the steam method and creating ready to wear fashion products in the form of outer products. This study used an applied experimental method with a qualitative approach and descriptive research type. The subjects used in this study were ferns which can be printed directly on cloth using the ecoprint technique. as well as alum and tunjung which are used as mordant substances. Data collection techniques in this study were applied experiments, observations, documentation and literature studies. This study used the ecoprint technique with the steam method and the boiled method with the research stages including fabric scouring, mordanting, ecoprint process, fixation and product manufacture. The results showed that the ecoprint using the steaming method used the leaves of a true fern (*Pterophyta*) and mordant alum plus tunjung, used a brown blanket extracted from mangrove bark, then fixed with alum to produce a green color on the true fern leaf motif. and the effect of cream color on the fabric produced from the blanket. Whereas the tapping method uses the leaves of a tree fern (*Cyatheales*) which produces a brownish green color and even becomes a golden brown color and there are parts of the color that fade after being fixed using alum. The resulting ready-to-wear fashion products are outer products.

**Keywords:** Plants, ecoprints, fern leaves, natural dyes, fashion, ready to wear.

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### **I. INTRODUCTION**

Natural dyes are textile dyes that have long been known to be produced from plants by extracting plant parts such as leaves, stems, seeds, fruit and plant roots, (Resturi, 2021). The use of natural dyes can add to creativity and innovation which has high artistic value because of the unique colors produced by natural dyes in textiles, natural dyes are unique, colors made from plants cannot emit the same color with each other (Martuti, et. al. 2019). In addition to natural dyes, plants in the form of leaves, stems, fruit, seeds and roots can also be used to produce textile motifs by directly transferring leaf surface shapes such as fern leaves or called ferns.

Ferns are plants that can actually be distinguished by their main parts, namely roots, stems and leaves. Ferns have different types depending on where they are distributed, ferns can be found in the lowlands and highlands. Ferns are a natural resource in the category of plants with many species (Sianturi, et al., 2020)

The ecoprint technique is a technique that can be used in the coloring process in the textile sector by utilizing plants as natural dyes. Ecoprint is the process of printing colors and shapes directly on the surface, Flint (2008). Ecoprint is a natural dyeing technique that uses plants in the form of leaves which transfer leaf shapes and motifs directly to the surface of the cloth that has been cleaned and undergoes several processes so that the motifs stick and seep into the fabric and give maximum results. The ecoprint technique has several methods that can be used, including the pounding method, the boiling method and the steaming method.

## II. RESEARCH METHODS

The approach taken in this study is a qualitative approach, using applied experimental methods, experiments are observations made under artificial conditions created and controlled by researchers (Nazir, 2011). The type of research used in this research is descriptive research, where the results of research conducted by researchers in the form of written words that are described descriptively about the results of experiments conducted by researchers. This research was conducted at the Fashion Design Laboratory, Family Welfare Education Department, Faculty of Teacher Training and Education, Universitas Syiah Kuala.

The subjects used are ferns which can be printed directly on cloth using the ecoprint technique, as well as alum and tunjung which are used as mordant substances. The object is something that is the focus of research, so the object of this research is the application of ecoprint which produces motifs and colors from experiments conducted by researchers. Data collection techniques namely applied experiment, observation, documentation and literature study.

## III. RESULTS AND DISCUSSION

### The ecoprint application process uses the steaming method

The stages of making ecoprint fabrics are as follows:

1. White rayon cloth that has been scoured is soaked with alum solution added with tunjung at the rate of 10 tablespoons of alum and 1 tablespoon of tunjung with 3 liters of water for 30 minutes.



Figure 1. Mordanting process

2. While waiting for the cloth to be soaked, choose the leaves that will be used in the ecoprint process, cut the leaves from the stems so that they become strands one by one so they can be arranged in a spread out manner.



Figure 2. The process of selecting leaves

3. Next, squeeze the cloth that has been soaked until the water content is reduced to half dry, then spread the cloth covered with clear plastic.



Figure 3. Fabric squeezing process

4. Then the leaves are arranged on the surface of the cloth as desired.



**Figure 4. The process of arranging leaves**

5. After all the leaves are arranged, cover the surface of the leaves with a blanket that has been colored by extracting the mangrove bark and squeezed until it is half dry.



**Figure 5. Quilt dyeing process**

6. Then cover it again with plastic and step on the top of the cloth so that the leaf motif sticks to the cloth.



**Figure 6. Trampling process**

7. Then the cloth is rolled up neatly and wrapped with slasiban while compacting it so that the motif is well formed.



**Figure 7. The process of tying the cloth**

8. When finished steaming, untie the roll and clean the leaves that are on the surface of the cloth
9. Leave the cloth in the sun in the room for 1 week so that the motif is absorbed properly, then fix the cloth with alum solution and rinse then dry. The result of the tap method ecoprint process is to produce green colors on the leaf motifs and cream-colored fabrics resulting from the effect of colored blankets by extracting

mangrove bark and brown blankets with only yellow leaf shadows and the green color does not change after fixation using alum, it's just that the brown blanket turns a little brighter.



**Figure 8. Ecoprint on the main fabric**



**Figure 9. Ecoprint on blanket fabric**

**The ecoprint application process uses the pounding method**

The stages of making ecoprint fabrics are as follows:

1. Prepare tools and materials, namely a hammer, discarding cotton cloth, and tree fern leaves
2. Then spread the cotton cloth covered with transparent plastic on a flat surface
3. Move the outer pattern on the fabric in a stretched way and place the selected tree nail leaves according to the planned motif design and cover the top of the leaf again with transparent plastic



**Figure 10. The process of laying the leaves according to the motif design**

4. Then tap the leaves with a hammer and try to knock the leaves perfectly on the surface of the cloth to get good results.



**Figure 11. The process of knocking leaves**

5. Next, let the leaves that have been tapped for 10 minutes so that the color on the leaves seeps into the cloth, then clean the remaining leaves from the surface of the cloth.



**Figure 1. Leaves and motifs after tapping**

6. Leave the fabric that has been processed by the ecoprint for 7-10 days and then fix it.

#### **Design of Two Outer Models as Ready to Wear Fashion Products**

Designing ready-to-wear fashion products, the first outer model design is an outer model with  $\frac{3}{4}$  sleeves with les on the ends of the sleeves and a single collar using brown material, the right front is varied with 3 patch pockets of different sizes, this design model is used for outer product which is applied with ecoprint method steaming.

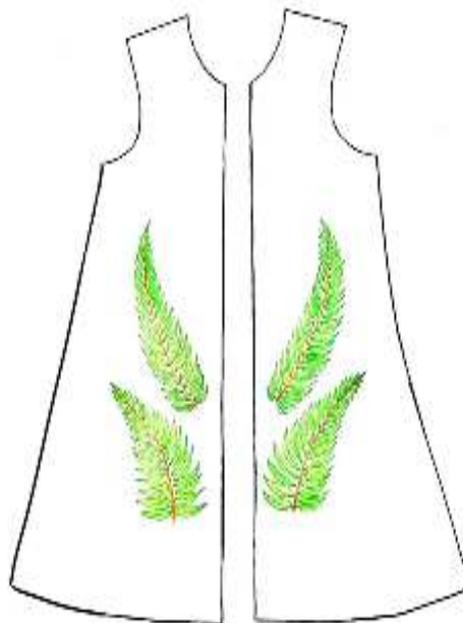


**Figure 2. Outer product design on application steam method ecoprint**

The second design is the product model design for the application of the pounding method of ecoprint. The design for this outer product is a sleeveless outer designed by applying ecoprint motifs to the front and back of the outer.



**Figure 3. Outer design on the application product tap method ecoprint**



**Figure 4. Pattern design on the front pattern**



**Figure 16. Pattern design on the back**

#### **Making Fashion Ready to Wear Products**

The steps for making ready-to-wear fashion products in the form of outer are as follows:

1. Make a pattern using standard adult women's sizes and the author chooses size M, according to the design of the outer product model.
2. The process of cutting cloth using a pattern according to a design that has been made and a pattern with a predetermined size.
3. Sewing is one of the processes of putting together parts of clothing that have been cut according to a predetermined pattern and size.

The following are the results of the outer product with the application of ecoprint using the steam method on the first model and the tap method on the second model.



**Figure 5. Outer model product result (first look at the front)**



**Figure 6. Outer model product results (first look back)**



**Figure 7. Outer model product results (first side view)**

The results of the product using the tap method produce a color that is brownish green, even after fixation the color changes to golden brown and there are parts that fade.



**Figure 8. Outer model product results (both side view)**



**Figure 9. Outer model product results (both front view)**



**Figure 10. Outer model product results (both rear view)**

Textile dyeing using the ecoprint technique cannot always produce the same colors and motifs as the previous results, even though it uses the same method and dosage. Widyasti, et. al. (2017) stated that the colors produced in natural coloring are inconsistent and not standardized. Inconsistent colors can be caused by non-standardized raw materials such as the age of the leaves used, the parts of the leaves used, and the origins of the leaves used.

The researcher applied the steamed ecoprint method by utilizing the leaves of the fern plant, a true fern and using rayon and mordant alum cloth mixed with a small amount of tunjung with a ratio of 10:1 with a plain base cloth and a blanket that has been colored with natural coloring extracted from mangrove plants which produces a brown color. . This experiment resulted in a cream color on the main fabric influenced by the dyes present in the blanket fabric which was colored with natural dyes which were absorbed in the steaming process, and the colors and motifs transferred from the leaves of true ferns in the ecoprint process could be well absorbed by the fabric that produced green color.

The application of ecoprint with the tap method uses the leaves of a tree fern type of fern, the colors produced by the tap method in the ecoprint application process are dominated by brownish green on the leaf motifs and brown on the veins of the leaves. However, the results of knocking leaves do not always produce the same color and color density, this is due to the different age of the leaves used and the water content in the leaves decreases when the leaves are too dry which affects the amount of chlorophyll pigment in the leaves. Chlorophyll is a green pigment found in higher plants, chloroplasts are mainly found in palisade parenchyma and leaf spongy parenchyma (Maulid & Ainun, 2015). The tap method ecoprint process produces a color that is before fixation the results of the tap are brownish green and after fixation using alum, the color changes to golden brown and fades a bit. This is in accordance with the results of Fazruza's research (2018) which said coloring using the ecoprint technique with the steam and boil method after fixation using alum showed the best color retention.

The product design in this study is in the form of outer products as ready-to-wear fashion products. The first outer model design is an outer with a  $\frac{3}{4}$  sleeve model with les on the ends of the sleeves and a tie collar using brown material, the right front is varied with 3 patch pockets of different sizes on ecoprint fabric using the steam method. The design of the second outer model is a sleeveless outer with facing leaf motifs on the front right and left and leaf motifs on the back of the outer, this model is used for ecoprint products using the tap method. Products in the form of outer are made by carrying out several stages of the sewing process according to the model that has been designed.

#### IV. CONCLUSION

1. The author uses a type of fern (Pterodophyta) as a source of natural coloring in the ecoprint technique with the steam method using true fern leaves (Pterophyta) and the tap method using tree ferns (Cyatheales) leaves for ecoprint application on ready-to-wear fashion products. The color produced in the dimordanting steam method uses tunjung and alum solution and then is fixed using alum solution to produce a green color. The color produced in the tap method is brownish green, even after fixation the color changes to golden brown and there

- are parts that fade. After fixing the ecoprint results using the steam and tap method using alum solution, the ecoprint results using the steam method have better color retention than the tap method.
2. The product design in this study is in the form of outer products as ready-to-wear fashion products. The first outer model design is an outer with a  $\frac{3}{4}$  sleeve model with les on the ends of the sleeves and a tie collar using brown material, the right front is varied with 3 patch pockets of different sizes on ecoprint fabric using the steam method. The design of the second outer model is a sleeveless outer with facing leaf motifs on the front right and left and leaf motifs on the back of the outer, this model is used for ecoprint products using the tap method.
  3. The fabric that has been processed by the ecoprint process is then sewn into a ready to wear fashion product in the form of an outer according to the design of the product model.

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