



# DESIGN AND DEVELOPMENT OF CROCHET NECK SCARF USING COTTON YARN DYED WITH EUCALYPTUS LEAVES

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**Abstract:** The purpose of this project is to look into the creation of a crochet neck scarf coloured with eucalyptus leaves. This study's objective is to investigate and grasp the aesthetic, useful, and practical characteristics of the scarf as well as the potential use of eucalyptus leaves as a dyeing agent. Also, this project will consider the viability of designing and creating a crochet neck scarf into a consumer good. In order to create a product that is both aesthetically pleasing and functional, as well as to better understand the potential of a natural dyeing approach, this study is essential.

The project's materials were initially decided upon. Eucalyptus leaves, thread, and crochet hooks were all within. Next, using boiling water and eucalyptus leaves, the yarn was coloured. To get the best possible colour absorption, the yarn was left in the pot for a very long time. The yarn was coloured and then made ready for crocheting. The yarn was used to make a simple neck scarf style. Blocking, tucking in the ends, and adding a fringe were the final finishing touches for the neck scarf.

A highly stylish and eye-catching accessory that is sure to draw attention is the end result of the design and creation of a crochet neck scarf using eucalyptus leaf colouring. The eucalyptus leaves will give the scarf a lovely, earthy tone, making it stand out. The intricate and delicate crochet design ensures that the item will become a classic addition to any wardrobe. The natural colouring process and the crocheted pattern will make this scarf a one-of-a-kind masterpiece.

**Keywords:** *Crochet, Neck Scarf, Dyeing, Eucalyptus Leaves, Yarn.*

## I. INTRODUCTION

This project's goal is to create a crochet neck scarf that will be dyed with eucalyptus leaves. The goal of this project is to learn more about natural dyeing while also producing a one-of-a-kind handcrafted item. The antibacterial and antifungal qualities of eucalyptus leaves make them ideal for use in fabric dyeing. Eucalyptus leaves will be collected for the project, their natural colour will be extracted, and then it will be applied to a crochet scarf. Due to the advantages to the environment of avoiding the use of hazardous chemicals and synthetic dyes, the use of natural dyes has gained popularity recently. This project will show how eucalyptus dyes are manufactured and give an example of how to make a distinctive handcrafted item.

The Apatani tribe of Arunachal Pradesh uses the stem and root bark of the *M. napaulensis* plant to extract, process, and prepare colours (Mahanta and Tiwari, 2005; Usher, 1974; Vankar et al., 2008a). Modern technical techniques can be used to further the use of traditional ways for making dyes and dyeing processes <sup>[1]</sup>.

Natural sources including plants, animals, and minerals can be used to create natural colours. For the extraction of coloured compounds, several plants, shrubs, trees, insects, animals, microorganisms, and minerals have been identified. Natural dyes may be used to create the colours orange, red, yellow, brown, blue, black, green, and many others<sup>[2]</sup>. The ancient people only employed dyestuffs that were conveniently accessible in their immediate surroundings and were derived from plants, minerals, and animals. It was frequently used in India to colour textiles and other things. Dyeing is the process of applying dyes or pigments to fibres, yarns, and fabrics in order to get the desired colour and colour fastness. Usually, dyeing is done in a specially formulated solution that combines dyes and a particular chemical. The key influencing factors for whether dye molecules link, diffuse, or absorb onto the fibre are temperature and time. The bond between the dye molecule and the fibre might be strong or weak depending on the dye used. In contrast to one another, applications like dyeing and printing involve the local application of colour in predetermined patterns. Throughout the procedure, the cloth gets dyed from top to bottom.

**Yarn dyeing:** Before the fabric manufacturing step, the yarns are dyed in this process. The yarn is dyed either in hanks or in packages. Yarns are coiled on perforated cones and put in a dye vessel while package dyeing. Next, alternately pushing the dye solution from the inside out and vice versa. Several striped, patterned (checks), and jacquard-designed textiles are examples.

A single hook is used in the craft of crocheting to make cloth out of yarn or thread. An item that can be crocheted may be made using a set of instructions called a crochet pattern. Many products, including apparel, accessories, home décor, and even toys, may be made with crochet. The art of crochet has been practiced for thousands of years, making it a very old skill. The Middle East is where it is said to have started, ultimately making its way to Europe and other areas of the world. People of all ages and ability levels appreciate the hobby of crocheting today. A terrific method to express creativity and experiment with new techniques is through crochet. It may be used to construct complex patterns and designs as well as basic goods like scarves, caps, and blankets. Another excellent method to unwind and feel accomplished is to crochet.

An eco-friendly and fashionable item that is wonderful for the environment is a sustainable crochet scarf. It is constructed of organic, regenerative materials like cotton, wool, hemp, or other fibres from plants. For individuals trying to lessen their carbon footprint and make thoughtful fashion decisions, these natural materials are a terrific option because they are biodegradable and contribute to waste reduction. Because it utilises fewer tools and generates less trash than conventional procedures, crocheting is also more energy efficient. Sustainable crochet scarves frequently have little to no embellishments and are simple yet fashionable in appearance. Because of this, they go well with both casual and formal attire. Also, they are frequently more breathable and comfortable than synthetic alternatives since they are constructed of natural materials. Moreover, they require little maintenance and may survive a long time with appropriate care. Sustainable crochet scarves are a great option if you want a warm winter scarf or a fashionable summer addition to your outfit. They are a fantastic option for anybody trying to have a good influence on their wardrobe and the environment because they are stylish, reasonably priced, and ecologically friendly.

Eucalyptus leaves were used to successfully design and produce a crochet neck scarf that turned out beautifully. The scarf is created from a thin cotton yarn and has a straightforward pattern. There are many different colours produced by the natural dye made from eucalyptus leaves, including green and yellow tones. The scarf is cosy to wear since it is supple and breathable. The scarf is a wonderful way to add a dash of flare and individuality to any ensemble, and the distinctive pattern and natural dyeing technique are also eco-friendly.

## **2. METHODOLOGY**

### **2.1 Dyeing of cotton yarn using Eucalyptus Leaves**

The first step is to create a mordant by combining alum and warm water. Soak the textile material in the solution, mix it for 20 to 25 minutes to ensure material mobility, and then soak the sample for 45 minutes. Instead of washing, drain the alcoholic beverage and gently compress the mordanted material. Pick eucalyptus leaves off the tree, wash them twice to clean them, then dry them under the sun to extract the dye. Make little bits out of the leaves. 45 minutes later, pour boiling water to the chopped leaves. Bring the solution's temperature up to 80 C. Place the cloth in the dye solution and swirl it continually in both clockwise and anticlockwise directions for 20 to 25 minutes. Next, stir it randomly every 15 minutes for the next two hours. Empty the alcohol, then give the coloured material a gentle squeeze. After washing the coloured material in plain water, it is treated at 60°C with 0.5 gpl of non-ionic detergent. Drain the solution, give the material a light squeeze, and then rinse it in plain water until all of the detergent has been removed. Dry in the shade.

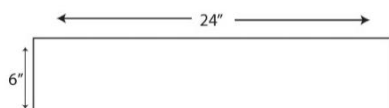


Figure 2.1: Stage-wise dyeing of cotton yarn using eucalyptus leaves.

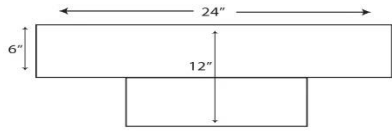
## 2.2 Concept Generation

2.2.1 Digitally 5 designs were developed on CLO 3D software and ethnography was conducted to know the design that need to be developed in crocheting.

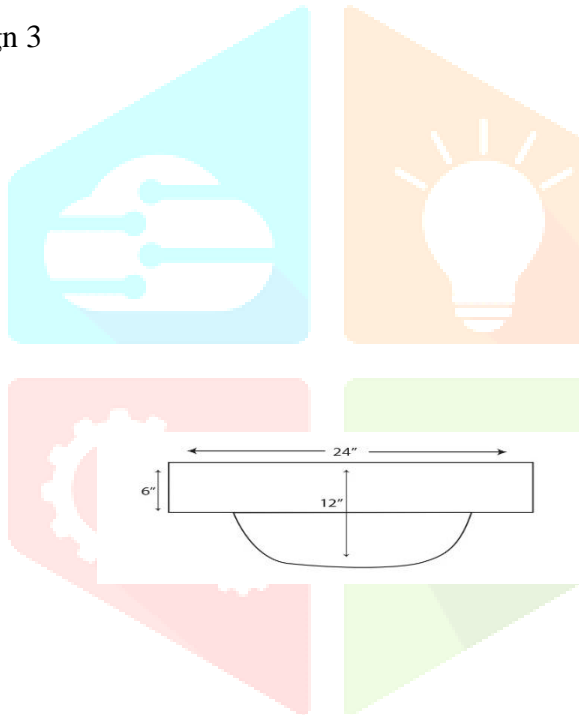
Design 1



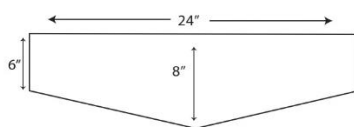
Design 2



Design 3



Design 4



## Design 5

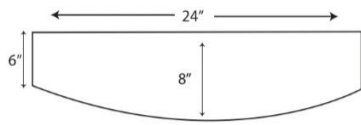


Figure 2.2: Designs digitally developed.

## 2.2.3 Selected design through ethnography study.

## Design 1

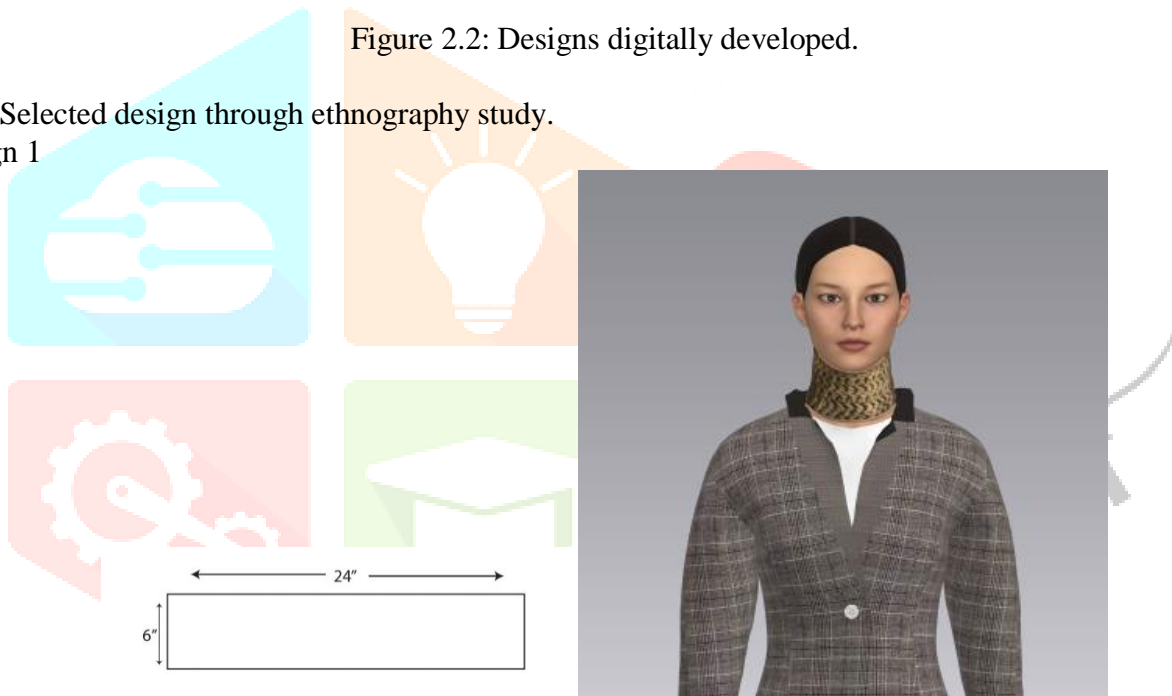


Figure 2.3: Selected design for product development.

## 2.3 Crochet

Knitting and other more well-liked types of crafting frequently overshadow the handicraft art of crochet. It has been practiced as a craft for many years; the earliest records of it date to the early 19th century. The art of crocheting is very adaptable and may be used to make a variety of things, including apparel, blankets, and accessories. Fundamentally, crochet is a method of looping yarn to make cloth or lace. Hooks, which are available in a variety of sizes and shapes, and yarn or thread are the primary materials required for crocheting. The yarn or thread is first wrapped around the hook to form a single loop, and then the process is repeated. The loop is then expanded by pulling the hook through it. Once the necessary number of loops is produced, this process is repeated. From there, patterns and designs may be made using a variety of stitches. The versatility of crochet as a craft is one of its appeals. It may be used to create goods for a variety of purposes, like as clothing and home furnishings. Additionally, by mixing the crochet stitches, a multitude of patterns and textures may be created. For instance, a single crochet stitch may be used to make a plain textile, whilst more intricate stitches can be used to create magnificent lace. Moreover, crochet may be used to create a broad variety of accessories, including hats, scarves, wallets, and even jewelry. Crocheting is a terrific stress-relieving exercise in addition to being versatile. It can assist to concentrate the mind and provide a sense of calmness as a form of meditation. Moreover, it can aid in lowering anxiety and raising mood. In addition, crochet may be used to make personalized presents for loved ones and friends or even to collect money for a good cause. In conclusion, crochet is a very adaptable art that can be used to make a variety of things. It is a fantastic method to unwind and lower tension. No of your level of experience, crochet is a fun and gratifying activity that can be used to

create lovely and one-of-a-kind products. Few terminologies of crocheting are: Chain stitches (Abbreviation = ch) Chain stitches are the first crochet stitches you need to learn because they form the base for all other stitches. Double Crochet (Abbreviation = dc) Double crochet is the easiest crochet stitch to learn and one crocheter use most frequently, either on its own or in combination with other stitches<sup>[3]</sup>.



Figure 2.4: Stage-wise crocheting the naturally dyed yarn.

### 3. TEST AND RESULT

#### 3.1 Geometric properties tested both before and after dyeing the yarn.

Determination of yarn count, yarn twist, yarn evenness before and after dyeing as follows.

Table.3.1 Yarn count, yarn twist, yarn evenness before and after dyeing

	Before Dyeing	After Dyeing
Yarn Count	2/5	2/5
Yarn Twist	5	5
Yarn Evenness	Even	Even

The yarn count test conducted before dyeing the yarn and after dyeing the yarn did not affect the yarn count as shown in Table 3.1. The yarn twist test conducted before dyeing the yarn and after dyeing the yarn did not affect the twist of the yarn as shown in Table 3.1. The yarn evenness test conducted before dyeing the yarn and after dyeing the yarn did not affect the evenness of the yarn as shown in Table 3.1.

### 3.2 Color fastness test for dyed yarn.

Determination of color fastness to rubbing and washing for dyed yarn as follows.

Table.3.2 Color fastness to rubbing and washing for dyed yarn

<b>Colour fastness to rubbing</b>		
Staining on Cotton	Dry	Wet
Warp	5	4
Weft	5	4
<b>Colour fastness to washing</b>		
Change in color	4	
Staining on Cotton	4-5	

The color fastness test conducted on the dyed fabrics gave the results as shown in Table 3.2. The sample had excellent dry fastness to rubbing and good fastness to wet rubbing. The change in color of dyed sample to wash test was poor until 3 washes after which the dyed fabric had a fastness rating of 4.

#### 4. CONCLUSION

Eucalyptus leaves were used in the design and creation of a crochet neck scarf, which is a terrific way to support the environment while making a stylish statement. This scarf's design and structure were made from durable natural materials that may be worn over and over again. Any fashion-conscious person would find the scarf to be the perfect pick due to its distinctive appearance and texture. The scarf has a distinctive hue thanks to the use of eucalyptus leaves in the dyeing process, which is guaranteed to draw notice. This creative design and development method is a great approach to highlight sustainable fashion and is certain to be popular for years to come. Using eucalyptus leaves to colour a crochet neck scarf will result in a one-of-a-kind, handcrafted item that is both fashionable and environmentally responsible. The finished item will be a distinctive piece that is likely to draw attention. We'll employ the eucalyptus leaves' organic green hue to produce a striking and eye-catching colour scheme that will stand out. The scarf's crocheting will also give the entire pattern more depth and substance.

#### REFERENCE

1. Padma Shree Vankar (12 June 2017) Natural Dyes for Textiles. Elsevier Science
2. Aminoddin Haji, Luqman Jameel Rather, Mohd Shabbir (24 August 2021) Sustainable Practices in the Textile Industry. Wiley
3. Claire Montgomerie (6 August 2020) The Crochet Book. Dorling Kindersley Limited
4. <https://en.m.wikipedia.org/wiki/Dyeing#> accessed on 01-02-2023
5. <https://crochetcoach.com/lessons/types-of-crochet/> accessed on 01-02-2023