

## Introduction to Natural Dyes

### THE BEAUTY OF NATURAL DYES

Natural plant dyes can be used on any natural organic fibre. There are two general types of natural fibres:

1) **Cellulose or Plant fibres** such as cotton, linen, or hemp; and 2) **Protein or Animal fibres** such as wool or silk. Protein fibres generally take dyes better than cellulose fibres and will tend to have a stronger colour, but you can still get very satisfying colours on cellulose fibres.

Natural dye colours are more complex than those that are created with synthetic dyes. They tend to take on a deeper, more nuanced colour that almost shimmers in the light. Plant colours have been described as 'living colour'. They will evolve and wear over time as they are washed, worn, and loved creating colours and garments that are alive, telling the story of their use. While some natural dyes are 'fugitive' and will not last, many are lightfast (resist fading) and washfast (don't wash out) making them altogether quite colourfast. We have selected our lineup of natural dyes to be the most colourfast while offering the widest palette that can be grown locally.

Dyers sometimes marvel at the way the natural colours all seem to 'go together'. Each dye plant can create a wonderful range of colours depending on how strong the dye is, what mordant is used, what type of material is being dyed, and whether any modifiers are applied to shift the colour. The use of organic fibres like cotton, wool, silk, or linen further adds to the beauty, texture, and harmony of the colours and materials.

There is a wonderful natural cycle to plant dyes that is both beautiful and ecological. The plants grow, they are harvested by hand, steeped in a bath, bonded to a fibre, and, once the dye process is complete, all of the leftover water and plant materials can be returned to the garden where they came from. Because you are dyeing natural materials, they, too, can be composted at the end of their life. This creates a beautiful cycle of soil to soil that is part of the Fibreshed movement – a movement striving to create local fibre communities in a similar way to the local food movement.

### GETTING STARTED

Dyeing fibre with plants is a fairly simple process, but it does involve a number of steps, and requires slowing down to wait while things soak or steep. Generally, preparing a dye is much like making tea: the fresh or dried plant materials are steeped at a gentle simmer until their colour has been released to create the dye bath. Once the colour has been extracted, the plant materials are strained off and the dye bath is ready to use. It is typically brought back up to temperature and the fibre is added until it achieves the desired colour.

Fibres are prepared before dyeing by **scouring** (washing) and **mordanting**. Mordants are naturally occurring materials – generally, metal salts – that will help the dye to bind with the fibre. You can dye without a mordant, but the colour will be paler and not as lasting. All fibres benefit from being thoroughly wetted or pre-soaked so that they are best able to absorb the dye evenly.

One of the most important things you will need to know in order to dye fibres is the weight of the fibre you intend to dye. This is known as the '**WOF**' or sometimes 'WOG' which is the weight of (dry) fibre or goods. The amount of mordant and dye you need for your project will be based upon your WOF. You can use a kitchen scale to weigh your dry fibres before beginning your project.

The **water** source you are using will influence the dye colours and you can use well water, river water, rain water, and even ocean water to further create a dyed fibre that is truly of a particular place, season, and time.

Many dyes are **pH**-sensitive and their colour will dye differently depending on whether the dye bath is acidic or alkaline. This can be used to deliberately shift certain colours. Dyer's Coreopsis, for example, will be more yellow-orange when acidic and more coral-pink when alkaline.

To maximize your dye bath, consider dyeing multiple items successively. For example, you can dye one skein of wool a strong colour, and then another skein or more in ever paler colours by using the same dye bath until there is no colour left (also known as an exhausted dye bath). You can also use leftover dye baths to overdye something else that you dyed and maybe were not happy with – allowing you to mix and blend colours for any number of effects.

The final dye colour can be altered with a **modifier** such as iron. Dipping a dyed fibre in iron water will darken and shift the colour – sometimes quite dramatically. Keep in mind that iron can be harmful to delicate fibres and should be used in the lightest concentration needed to achieve the desired effect.

Taking notes as you go can be invaluable in giving you a reference for recreating colours and remembering quantities and details down the road. It can be helpful to approach natural dyeing with openness and curiosity. It is an often unpredictable medium and embracing surprises can help it to be a more enjoyable and magical process.

## **ESSENTIAL SUPPLIES**

Most supplies can be found second hand at a store like Value Village, or from the dollar store. Natural dyes are sensitive to metals which is why it is best to use non-reactive materials such as glass, plastic, or stainless steel. While most recommended dye chemicals/plants are fairly benign, it is still advisable to use common precautions. Keep your dye utensils and pots separate from your eating ones. Work in a well ventilated area. Handle any mordants with gloves, a mask, and eye protection. When mixing powders, always add dry to wet. Clean all surfaces after a project. If ever in doubt about a plant or material, look it up before using.

### **SUPPLIES FOR ALL DYE PROJECTS**

- **Dye pot(s)**, non-reactive material, ex. stainless steel. One stockpot-sized, one medium-sized, to start.
- **Wooden spoons (2 or 3)**
- **Measuring spoons**, non-reactive material like stainless or plastic
- **Measuring cup**, approx. 2-cup size in glass or plastic
- **Tupperware tub or plastic bucket**, large enough to soak your fibres
- **Stainless steel mixing bowls (2 or 3)**, to wash or soak your fibres
- **Kitchen scale**
- **Sieve or cheesecloth**, for straining out dye materials

### **SUPPLIES FOR DYEING CELLULOSE FIBRES**

- **Aluminum Acetate**, most common mordant for cellulose fibres.
- **Washing Soda**, old-fashioned powdered laundry detergent found at bulk or health food stores
- **Wheat Bran**, standard food item from the grocery or bulk store
- **Cheesecloth**, for containing or straining the bran

### **SUPPLIES FOR DYEING PROTEIN FIBRES**

- **Aluminum Potassium Sulphate**, most common mordant for protein fibres.
- **Mild detergent or dish soap**
- **Chopstick or small bamboo stick**, useful for scooping yarns out of the dye bath

## **ADDITIONAL HELPFUL SUPPLIES**

- **pH Strips**
- **Gloves**
- **Mask**
- **Safety glasses**
- **Common pH modifiers** – acids: vinegar, lemon juice, cream of tartar; alkalis: washing soda, wood ash, calcium hydroxide (hydrated lime)
- **Fabric pen/marker**, for labelling fibre swatches

## **THE DYE PROCESS**

The process you follow will be largely the same whether you intend to dye cellulose or protein fibres. It is the scouring and mordanting steps that will be different depending on the type of fibre you intend to dye.

### **1. WEIGH**

Calculate the weight of dry fibre that you intend to dye. This is typically referred to as WOF (weight of fibre) or WOG (weight of goods). You can process the fibre for several projects at the same time, in order to save time and effort later on. To find the WOF, weigh your dry fibre using a kitchen scale. This is a good time to label your fibre.

### **2. SCOUR**

For most purchased fabrics or yarns, it is advisable to pre-wash the fibre in order to remove any additives or build-up that may prevent the mordants and dyes from bonding properly to the fibre.

**Cellulose/Plant Fibres:** For more durable woven fabrics, you can scour them in your washing machine or on the stove-top using a mild detergent or washing soda (soda ash). When using the washing machine, a high-heat setting and long wash cycle is best. For yarns, threads, and more delicate materials, the stove-top method is best. Washing soda can be used at 5% WOF (or you can simply use 1tsp per 100g of fibre). Fill a measuring cup with about a ½ cup of warm water. Add the powder and mix until dissolved. Add to the pot or washing machine and mix thoroughly before adding your fibres.

**Protein/Animal Fibres:** It is advisable to pre-wash most purchased yarns and fibres. It is typically not necessary to scour farm yarns or fibres that you know have not been treated as long as they are clean. To scour protein fibres, use a few drops of a mild liquid dishwashing soap and the stove-top method, below.

**Stove-top method:** Fill a pot with enough water to cover your fibres and allow them to move freely. Add the required amount of detergent based on your WOF and type of fibre (cellulose or protein, see above) and mix it thoroughly. Add your fibres and slowly bring the water to just below a simmer, rotating your fibres every 10-minutes or so. Hold at temperature for 30-minutes. Allow to cool. Rinse and squeeze.

Once your fibres have been scoured, you can store them in a bag or covered bucket for a few days until you are ready to mordant them. You can also allow them to air dry fully and store them for later use. It will not harm them if you scour them multiple times.

### **3. MORDANT**

If the fibres you are mordanting are dry, you will want to pre-soak them until they are thoroughly wet through. This can take anywhere from 30-minutes to overnight. Once your fibres have been mordanted, you can store them in a bag or covered bucket for a few days until you are ready to dye them. You can also allow them to air

dry fully and store them for later use. Be sure to label your mordanted fibres so that you don't inadvertently mordant them twice which can cause them to become permanently sticky.

**Cellulose/Plant Fibres:** The most commonly used mordant is Aluminum Acetate. It can be used at 5-8% WOF. In other words, if you have 100g fibre, you will need 5-8g of mordant. Fill a measuring cup with about a ½ cup of warm water. Measure out the mordant powder and add it to the water. Mix thoroughly. Fill a tub or bucket with enough warm water to cover your fibres and allow them to float freely. Mix in the mordant water and add your fibres. Let soak in a cool shady spot for 12-24hrs, turning the fibres every so often. Remove the fibres from the bath and squeeze out any excess water.

**Bran bath:** Before dyeing your cellulose fibres, you will need to rinse out excess mordant with a bran bath. Measure out ½ to 1 cup of bran, wrap it in cheesecloth and tie it, making a sort of teabag. Fill a pot or bucket with enough hot water to swish your fibres around in. Add the bran teabag for about 10-minutes, squeeze gently, and then remove. Immerse each of your mordanted fibres into this bath. Rinse. Your fibre is ready to dye.

**Protein/Animal Fibres:** The most commonly used mordant is Aluminum Potassium Sulfate. It can be used at 12-15% WOF. In other words, if you have 100g fibre, you will need 12-15g of mordant. Fill a measuring cup with about a ½ cup of warm water. Measure out the mordant powder and add it to the water. Mix thoroughly. Fill a pot with enough water to cover your fibres and allow them to float freely. Mix in the mordant water. Bring the pot to below a simmer. Add your fibres and hold at temperature for 1hr, rotating them gently every 10-minutes or so. Allow them to cool in the pot. Rinse and squeeze. Your fibre is ready to dye.

Whenever working with protein fibres, be aware that extreme temperature changes from hot to cold coupled with agitation or ringing can cause them to felt. As much as possible gradually increase or decrease water temperatures and avoid agitation.

#### **4. DYE**

**Fill a pot with enough water to cover your fibre and allow it to move freely within the dye bath.** The main factor determining how strong the colour will be is the amount of dye plant material relative to the amount of fibre being dyed. Generally, the fibre will absorb as much dye as is possible for it to absorb and this is not affected (diluted) by the amount of water in the dye bath. Too little water can cause your fibre to dye unevenly as it will not be properly submerged.

**Add the dye plant materials.** With the exception of indigo/woad and certain coarse materials such as barks, most whole material plant dyes (petals, flowers, leaves) are extracted following a simple steeping process that is much like making a tea.

**The amount of dye plant material you will need is based on WOF.** As a general rule you can use 50-100% WOF of fresh plant material for a satisfying colour. Much less plant material will be required if the material has been dried. All of our dyes list the recommended WOF for a rich medium shade. If you would like a strong shade, add more; for a paler shade, use less.

**Bring the pot to a gentle simmer to extract the dye colour** (boiling or getting too hot can turn certain dyes brown). Plant matter can be kept at a very gentle simmer, or just below, for anywhere from 15-minutes to 1hr until the desired colour is reached. If desired, you can also turn off the heat and leave the plants to sit in the water for longer to continue extracting any remaining colour.

**Your fibre should be pre-soaked.** If it was kept damp after souring and mordanting, it can be added to the dye pot right away. If it was dried in between steps, it should be re-soaked thoroughly before adding to the dye bath. For wool, it is best to not shock it by going from cold to hot or vice versa. As much as possible, try to gradually increase and decrease the temperatures and agitate as little as possible to reduce risk of felting.

**Add your fibre to the dye bath and bring back up to a low simmer.** Hold at this temperature for 15-minutes to an hour. The longer your fibre is in the dye bath, the more thoroughly it will absorb the dye. Remove the fibre when it reaches the desired colour. You can turn the bath off and leave your fibres to sit overnight, if desired.

## **5. RINSE/WASH**

**Rinse your dyed fibre in a bowl or tub until the water runs clear.** This will remove any excess dye that has not bonded to your fibre and ensure that your textile will not run when next washed. To be extra safe, you can also handwash with a mild detergent.

## **CARING FOR YOUR NATURALLY DYED GOODS**

Gentleness is best when caring for natural fibres. Wash your dyed goods in a mild, preferably pH-neutral, detergent. Never use bleach. Avoid long exposure to direct sunlight (hang to dry in the shade). Enjoy their evolution as they are washed, worn, and loved creating colours and garments that are alive and tell a story.

## **COMMON ITEM WEIGHTS (AS A STARTING POINT)**

- **Cotton t-shirt** 140g
- **Pillowcase** 150g
- **Queen bedsheets** 1700g
- **Duvet cover** 1300-1600g
- **Hand towel** 150g
- **Bath towel** 550g
- **Tea towel** 50-150g
- **Decorative scarf** 80-120g
- **Dress shirt** 250-350g
- **Toque** 90g

## **ADDITIONAL RESOURCES**

There are many excellent books and resources available online. A few books that we value and refer to often:

- ***The Modern Natural Dyer* by Kristine Vejar.** An excellent overview of key dyes, principles, and step-by-step recipes and processes. Also contains sewing/knitting projects to make with your dyed goods and an introduction to indigo dyeing.
- ***Wild Color* by Jenny Dean.** A thorough resource of various dye plants, colours, and their properties. Also contains detailed step-by-step processes for all aspects of natural dyeing as well as introductions to indigo and woad.
- ***Natural Color* by Sasha Duerr.** An inspiring introduction to natural dyeing and to the concepts of local and seasonal colour. Contains step-by-step recipes and processes for natural dyeing and an overview of key dye plants and colours.

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