



Botanical Dyeing

*A beginners guide to
natural plant dyes*

epilo
living colour



Introduction

Working with plant colour is one of the easiest and most enjoyable ways of taking notice of the flora around you and reconnecting with nature. You can begin with the wayward white wool sweater in the back of your closet that you haven't worn and the leftover by-products of your favourite meal before they hit your compost pile.

Making natural colour from scratch is much like cooking - it's the same process of using recipes, finding the right ingredients, experimenting, and timing. Successful results often stem from knowing the elements you are working with and making sure that these elements synthesize. There are also other more nuanced aspects of working with natural dyes- the alchemy of plant material, the materials you choose to use, the water quality where you live, the fertility of the soil, and the time of year the materials are gathered all contribute to the beautiful colours that you can conjure in your dye pot.

Overview of Botanical Dyeing Process

1. Forage, harvest, or gather your dye-plant materials.
2. Set up a workstation that is properly equipped for dyeing
3. Select a natural fibre or fabric that is compatible to your dye and project. Always start with small samples and tests and take great notes on the process before beginning large projects)
4. Calculate your dry weight of fibre (WOF) so you can carefully measure proper ratios of dye material mordants, and modifiers.
5. Wash and scour your fibre.
6. Pre-mordant your fibre and fabric
7. Dye your material as per your chosen technique and recipe
8. Care for your naturally dyed fabric by washing with a pH-neutral soap and dry out of direct sunlight.



Equipment

Many of the utensils and equipment used for making plant-based colour are the same ones you use for cooking food, although these should always be kept separate. I recommend using stainless steel pots and utensils because the metal will not affect or modify your dye colour and is easier to clean.

- Food scale that measures both ml and grams
- Stainless steel pots and bowls of different sizes
- Sharp knives, kitchen shears, and pruners
- Mortar and pestle for crushing plant materials by hand
- Stainless steel strainer
- Stainless steel or bamboo steamer
- Glass measuring cups of various sizes
- Designated sink or plastic buckets for soaking, washing, and rinsing fibres
- Clothespins and a sturdy drying line or rack for hanging your fabrics to dry
- Nonreactive glass storage jars
- Wooden stir sticks or stainless steel tongs
- Dust mask for respiratory protection when mixing mordants and modifiers

OPTIONAL:

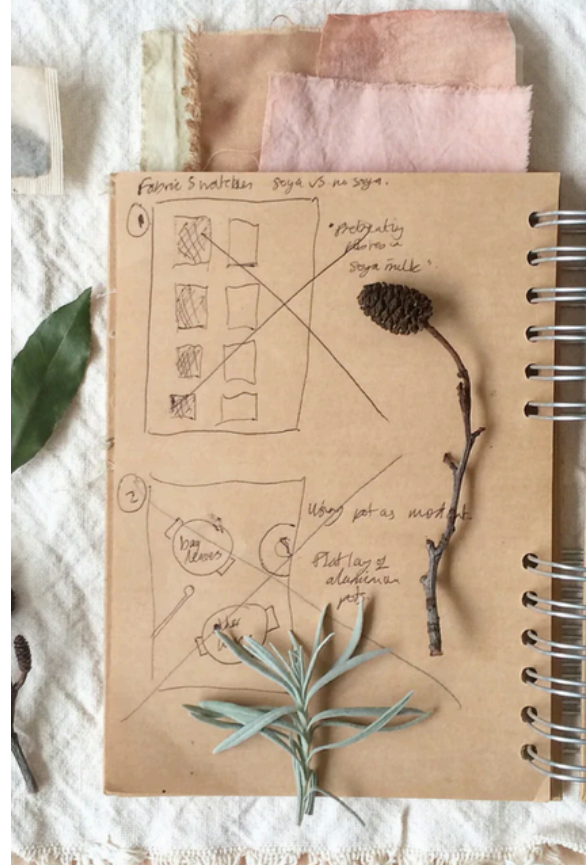
- Blender, food processor, and coffee grinder for making pastes and powders
- pH paper strips for checking the pH of your water and dye baths

Keep a swatch book

Because there is so much variability in the natural dyeing process, it is much harder than with commercial synthetic dye processes to accurately repeat a colour. Successful colour results with plant-based dyes depend on the length of time in the dye, heating, parts of the plant used and its freshness, type of water, dyeing method, type of mordant, type of fibre, and the overall alchemy of these combined factors. I record each of my plant colour experiments by keeping careful notes, taking dye samples, photographing the colour and processes, and collecting swatches.

A note on safety

Just because it is natural doesn't necessarily mean that it is always safe or healthy for you. Although most natural dyes I work with are of the nontoxic variety, plants can be toxic in different quantities and to different people with individual allergies and sensitivities. A good rule of thumb is to wear heat- and water-resistant gloves, cover your skin when dyeing, and use only dedicated dye pots and equipment not to be used for cooking or eating.





Material & Fibres

Animal or plant based fibres

Animal-based fibres: Sheep wool of various kinds, angora, alpaca, cashmere, leather, and silk. Animal fibres, especially wool and silk, take most natural plant dyes extremely well - there are many different types of animal-based fibres you can enjoy dyeing with - these are just a few!

Plant-based fibres: Also called cellulose fibres, and include cotton, hemp, linen, muslin.

My chosen fabric is silk. The most common type of silk comes from the cocoon of the mulberry silkworm, but there are hundreds of types of silk both cultivated and wild. Silk takes plant dyes at their most saturated and is exceptionally easy to dye in a wide range of colours with little additional processing. I use habotai silk as it is kinder to the silk worms !

Preparing your fabric

Cleaning and scouring your fabric optimises the chances that the fibre and dye molecules will bind successfully, so it is a crucial step for obtaining stronger, long-lasting colours. Vintage garments, wool from your local farmer's market, and new store-bought fabrics all benefit from being properly washed, cleaned, and pre-scoured to remove chemicals, dirt, grime, and oils. You will want your fibres to be at their cleanest and most open to accept the dye and to bind evenly.

The first step for scouring fibres is to place them in a big pot of lukewarm water. I use 1 tablespoon of pH-neutral eco-friendly gentle dishwashing liquid or 1 tablespoon of pure natural olive oil soap with no additives. The fibre should be rinsed several times in cool or warm water until the water runs clear of any dirt or soap residue. After scouring and rinsing, soak the fibre overnight in clear water before dyeing it. This step will help the fibre to accept full, even dyeing.

Then it is time to mordant your fabric!

Mordants & Alternators

The term mordant comes from the present participle of French mordre, "to bite." When working with natural colour, we use mordants to help the plant materials "bite" into the fibre or fabric, chemically binding them together. This creates a more vibrant washfast dye. There are many different methods and materials you can use to mordant and some plants already have qualities that bind their colour to fibre without any additives - avocado pits, eucalyptus bark, and pomegranate rinds contain significant amounts of tannin to readily bind their dyes to fibre.



Alum Mordants

Aluminium Acetate & Aluminium Potassium Sulphate (or "Alum") are the mordant most frequently used by dyers. It improves light and washfastness of all natural dyes and keeps colours clear. It is inexpensive and safe to use. You can also add a tbs of Cream of Tartare for additional vibrancy. Regarding the amount of Alum to use, take 25% of the weight of dry fabric and add into your clean dye pot. Bring to the boil then remove from heat. Add your fabric and leave the pot sit for 24 hours for best results. Rinse before you dye - you can also dry and use your fabric later.

Soy Milk

If you would prefer to have all your ingredients plant based, soy milk is a great alternative for a mordant. The soy bean protein forms a physical bond between fibre and dye, (not a chemical bond like alum). The soy literally coats and "sticks" to the fibres, and the dye particles attach to this.. And yes, you can simply use pre made milk from the supermarket, just try to find one with as few additives as possible. When mordanting with soy, let your fabric sit in the milk for at least 12 hours.

Metallic, Alkaline, Acidic modifiers

.Acidic modifiers such as vinegar, lemon juice, lime juice or citric acid will shift reds towards orange or yellow and purples to pink.

Alkaline modifiers such as baking soda or powder, soda crystals & wood ash shift purples towards blues, yellows & reds to pink

Metallic modifiers such as Iron, Copper or Aluminium will shift colours differently. Iron tends to shift the colours from warm and light to cool and dark. Aluminium will brighten & copper makes colours greener in tone. Metallics will also work as mordants so if you are planning to use iron, you won't need to pre-mordant with alum, as the iron will create the same chemical bond.

However, if you plan to separate your dyes and only modify some, it is best to alum. mordant all fibres.

Make your own iron mix

You can easily create an iron solution by soaking rusty found objects like nails in white vinegar and water sealed in a jar and let time work its magic. The water will turn a rusty orange colour in 1 to 2 week and you can keep it stored indefinitely for your projects



Caring for Plant-dyed clothing

The most important way to preserve your natural colours is through correct preparation and technics. How you prepare your fabric before dyeing, proper mordanting, and choosing the best plants to give long-lasting colours will ultimately determine how well your colours will last.

- Hand wash all of your naturally dyed fabrics with warm water - never hot. 30° cycle.
- Use a PH neutral soap or washing liquid where possible
- Keep bright colours, lights and darks separate, because synthetic dyes can rinse out of fabric and tint your delicate plant hues. I wash my plant dyed clothes with other pale coloured items.
- Line dry in the shade, never full sun
- If you choose to use a drier, use the low heat setting. Some heat may even help set the dyes and improve colourfastness, just watch how the drier affects natural fabrics.
- Iron on a low temp to crisp up your natural fibres. Silk responds very well to an iron!
- They are susceptible to accidental staining from acidic food, such as lemon juice! It can be annoying at times, but all you need to do is wash your clothing in your usual way, and the stain will usually disappear. Occasionally, you may need to re-dye your fabric.

Dye vs Stain

There are some plants that will never dye fabric, no matter which mordant we choose to use or how well we try to dye the fibres. Red cabbage, beetroot and most berries are examples of plants that are stains, not dyes. We call these "fugitive colours". Tea and coffee can sometimes come under this banner, however when dyed with the correct pre-treatment they have a much stronger hold on the fabric.

It should be noted that one should not take a plant part as a plant whole. For example, berries and fruits are fugitive, but the leaves of many berry bushes create beautiful prints or dyes. Currants are a fantastic example of poor dye from the fruit and outstanding pigment from the leaves.

Techniques

Cold weather outside, particularly overnight, can be detrimental to our favourite indoor plants - most of which originate from tropical areas.

Steam/Bundle Dye

Bundle dyes work well for transferring colour and images more directly onto fabric and fibers than can be done with immersion dyeing; it can also imprint much darker versions of the plant dye on fabric. With steaming you can capture a plant or leaf print so directly that it looks like a photo image on the fabric. In choosing plants to try with this technique, it is best to work with those that you have properly identified as strong colour producers.



Dip Dyes

Creating an ombre or gradient effect by dip-dyeing fabric is one of my favourite ways to create simple and minimal surface design. I especially love this technique because it shows the gradient colour potential of the plants themselves, the base colour of the fabric, and how multiple shades can combine and contrast to really highlight the colour and its potential.

Dye Pot

Place the plant material in a stainless steel container with enough water to cover your fibre. The more dye material you have to weight of fibre (WOF), the more concentrated colour you will have. You can reuse your dye baths until your dye has been completely absorbed, or the dye bath is "exhausted." Your plant dye materials, especially if freshly picked where they are grown or foraged in an urban area, can also benefit greatly from being washed thoroughly to remove pollutants, dust, dirt, and other kinds of urban grime. The same goes for cleaning food by-products like avocado pits and pomegranate rinds well before use, as additional food and waste in the dye bath can interfere with the colour's ability to connect most directly. This helps prevent unwanted spotting and staining.

Shibori

Shibori is a Japanese technique of folding, wrapping, sewing, clamping, and tying fabric to resist dye thereby creating patterns. There are many ways of creating shibori patterns on textiles; here, I share two of my favourite methods. Because the process is so much about the variability of the dye used and the hand making of the patterns, there are infinite ways to create resist patterns with this method.

Botanical Ingredients

This is a non-exhaustive list of ingredients to forage, grow or find in your kitchen. Most I that have included below are common in QLD, with some native plants making the list.

There are many, many more options to explore, such as acorns, oak galls, hedge apple, birch trees and other flora which are not as common in SE QLD. The colours below are also set in stone, as small changes in PH levels, freshness of ingredients or additives of iron can change the tone or colour completely.

Forage

Eucalyptus

Mango Leaves

Bougainvillea

Dandelions

Sappanwood

Acacia Bark

Fustic
Mulberry

Camelia

Hibiscus

Persimmons

Wild Fennel

Cochineal

Grow

Dahlia

Tumeric

Mint

Lavender

Native Indigo

Madder

Calendula

Weld

Golden Rod

Roses

Violas

Fennel

Rosemary

Coreopsis

Zinnia

Hollyhock

Marigold

Indigo

Eat

Onion Skins

Pomegranate

Carrot tops

Tea

Coffee

Avocado

#1: Dye Pot with Rosemary

1. Prepare your fabric - mordant/scour as required.
2. Soak your fabric in water, keeping it wet until ready for the dye pot.
3. Put 1 large bunch (0.5kg) of rosemary into a large stainless steel pot two-thirds full of water, enough to fully submerge the fabric.
4. Bring the rosemary and water to a low boil and simmer on low for approximately 40 minutes, depending on the desired intensity of your colour.
5. Scoop or strain out the rosemary; then, add 2 tbl of iron water to the dye bath and mix well.
6. Add your fabric to the dye bath and simmer on low for approximately 30 minutes or until you are happy with the colour. Add more iron for a darker shade of green.
7. Let cool and rinse the fabric in pH-neutral soap. Hang or lay the fabric flat to dry out of direct sun.



#2: Shibori with Avocado

1. Prepare your fabric - mordant/scour as required.
2. Bind the fabric tightly with string or rubber bands. Folding in certain patterns can also change the end result..
3. Soak the bound fabric in water for at least 10 minutes.
4. Add the bound fabric to a dye bath of avocado: Use a 1:1 ratio of avocado skins & pits to weight of fabric (WOF), then fill pot two-thirds full, enough to submerge all the fabric.
5. Let the fabric simmer in the dye bath for at least 20 minutes, or long enough to completely saturate the fabric.
6. Remove the bound fabric from the dye bath. While it is still folded and bound, rinse in clear water then untie the fabric
7. Wash the fabric with pH-neutral soap, rinse thoroughly, and hang to dry.

*Adding iron to avocado will bring out lavender and grey/purple tones



#3: Dip-Dyed Marigold

1. Scour your fibre and mordant as needed.
2. Soak the part of your fibre that you wish to dip-dye in lukewarm water.
3. Take 300g of marigold and add to your dye pot, fill 3/4 full of water (or enough to cover your fabric). Add more flowers or freshly picked for increased vibrancy. Simmer for 30 minutes.
4. Dip the fibre into the dye bath. Each successive lowering of the fibre into the bath will create deeper colour on the section submerged longest.
5. Each layer benefits from a dip of at least 15 to 20 minutes. These dip times ensure that the dye and fiber molecules have had enough time to bond securely.
6. Wash the dip-dyed section of the material in temperate water with pH-neutral soap, rinse, and dry it out of direct sunlight.



Bundle Dye with Camelia Flowers

1. Prepare your fabric - mordant/scour as required.
2. Lay your fabric out onto a table and arrange your flowers as you like - amount of flowers is to be determined by your creative style and size of your fabric
3. Tightly roll the fabric into a long sausage, then fold in on itself again and again to make a small bundle.
4. Tightly secure together with rubber bands or string.
5. Fill dye pot with water and boil to create steam. Place bundle into bamboo steamer and sit above your dye pot - the steam will imprint your botanicals onto the fabric.
6. After 30min to 1 hour, unroll your bundle and remove steamed flowers - these can be discarded.
7. Rinse and hang to dry in the shade



Key terms

FUGITIVE: Plant dyes known to wash out and are not long-lasting

IRON MIX: the use of iron sulfate as a common mordant material to affect the colour of natural dyes.

LIGHTFASTNESS: a measure of how resistant a material is to fading caused by exposure to light.

MORDANT: a chemical that aids attachment by bonding to both the fibre and the dye, and affects the hue produced with certain dye-stuffs. Mordants are necessary for dyes that have very low or no natural affinity for the fibre. Mordants can be applied before (pre-mordant), with, or after (after-mordant) the dye, depending on the nature of the dye, the fibre, and the mordant.

NATURAL FIBRE: a fibre obtained from a plant, animal, or mineral. Also referred to as fabric.

OVERDYE: to dye a naturally coloured fibre, or to dye a fabric that has already been dyed.

PH: a measure of the concentration of hydronium in a solution. Acid solutions have a pH less than 7; alkaline solutions have a pH greater than 7. A pH of 7 is neutral. The normal pH range is 0 to 14.

SCOUR: to thoroughly wash fibre or fabric to remove contaminants before the dyeing process.

SHIBORI: a Japanese tie-dyeing technique. In shibori, fabric is folded, twisted, tied, or wrapped, and then dyed. When unfolded, patterns emerge.

WASHFASTNESS: a measure of the resistance of a dye to washing out of the fibre.

WOF: Weight of Fabric





Thank you

We are always a call or email away. If you have any questions, queries or concerns, please don't hesitate to contact us.

We hope you love your new plants and all the living colour in your home!

Harleigh Reimer
Director / Owner

Lauren Reimer
Head Planter

hello.epilo@gmail.com
www.epilo.com.au

epilo
living colour