

The Plant Mordant Project **Bebali Foundation** Sustainable Livelihoods for Indigenous Peoples

The Plant Mordant Project offers natural dyers a unique opportunity to avoid mordants produced by industrial processes and make reliable colours 100% from plants. Powdered leaf from *Symplocos* trees can replace alum in conventional natural dye recipes and produce some exciting new colours. Natural dyers already chose plant dyes over synthetic dyes because they are aligned with their values, and the Plant Mordant Project offers an opportunity to extend the expression of these values by also using a plant-sourced mordant.

At its source, the Plant Mordant Project builds partnerships for sustainability with rainforest communities and indigenous textile artists in Indonesia. Through its sourcing and sales of Indonesia's traditional plant-sourced dye mordant, the Bebali Foundation (www.bebali.org) alleviates rural poverty and empowers women, saves rainforests, and supports the traditional textile arts. The Bebali Foundation brings to this project a decade of experience in the fields of conservation, indigenous culture, and rural livelihoods, while its partnerships with the Royal Botanical Gardens at Kew and the Indonesian Forestry Department, and its funding from the Ford Foundation bring world class scientific rigor and accountability.



RECIPES

1. EXPERIMENTAL VARIABLES

These are basic and reliable recipes for using Symplocos for mordanting. With experience, you will find that there are 4 main variables that affect this process:

- The amount of Symplocos used as a percentage of the dry weight of the fibre (% WOF).
- The amount of time the fiber is heated in a solution of the Symplocos.
- The temperature to which the Symplocos and fibre are heated together.
- The amount of dyestuff used.

You may find, as you become experienced with using Symplocos, that you can use less Symplocos with particular dyestuffs, that you can use a smaller amount of a particular dyestuff and still get good results, or that you can use a lower temperature if you keep the fibre in the bath for a longer amount of time, for example overnight.

In our experiments to develop these recipes we tried using the Symplocos at varying % WOF. We tried: 5%, 10%, 20%, 30%, 50%, 90% and 100%. We started to get good colours with 20% on silk and wool. As we increased the percentage of Symplocos, we continued to get better (darker, richer) colours. This was true with some dyestuffs more than others. For example, with cutch and pomegranate, which are both tannins, increasing the percentage of Symplocos beyond 20% made little difference. With cochineal, osage, weld and especially madder, it made a lot of difference. That is why we are recommending that you begin by using 50% WOF to ensure a good result. It is also true that if you use a large percentage of Symplocos, you can use less dyestuff. This is especially true with logwood.

We encourage you to experiment and to share your results with us!

2. THE QUALITY OF THE WATER IS IMPORTANT

Do not use calcareous water. Any soft water, rain water or distilled water, is appropriate. The calcium and magnesium bicarbonates in “hard” water may interact with the organic aluminum present in the Symplocos and partly neutralize it. By using soft water, the effect of Symplocos will be optimized. To neutralize the calcium present in hard tap water add 0.5g of cream of tartar per litre of water.

Printing with Symplocos Paste

Symplocos Powder can be made into a paste to be used for silkscreening, block printing, or painting. First, a concentrated solution is made with the powder and water, then it must be thickened. We recommend using guar gum as a thickener, though gum tragacanth would also work. The guar gum powder can be added directly to the Symplocos solution and then stirred. Alternatively, the guar gum can be made into a paste first and then this pudding-like substance can be added to the Symplocos. This dissolves much easier than the plain guar gum powder. Guar Gum is available at the grocery store in the baking section, or from dye suppliers. Prepare the thickener paste a few hours, or even the day, before you need to use it. This recipe will make 1 liter (1 quart) of thickener. (Reduce appropriately if you do not need the full amount).

- Measure 1000 ml (1 quart) of water at room temperature, 25°C (75°F).
- In a separate dry container measure 100 grams (1 cup) of guar gum.
- Using an electric hand mixer (you will not be able to mix this by hand), start blending just the water. Then gradually sprinkle in the guar gum. Continue blending until well mixed.
- Allow to stand for several hours or overnight for a smooth paste. NOTE: This thickener will keep for only three days. It is also possible to put the guar gum into several small containers to freeze for later use.

On Cotton

Symplocos paste recipe for printing on cotton

- Add 50 grams of Symplocos powder to 300 ml of water.
- Boil for 30 minutes. Add more water as necessary.
- Filter the liquid, squeezing all liquid from the Symplocos pulp.
- Add more water to the liquid until its volume is equal to 300 ml again.
- Add 3 grams of dry guar gum or about 1 tablespoon of guar gum paste and stir continuously until all the lumps are gone. Add more if it is not thick enough.

Preparing the cloth

- Using cloth that has been properly cleaned, determine the dry weight of the cloth. This is WOF.
- Soak the cloth in turkey red castor oil 10% WOF and enough water to cover the cloth at 60°C (140°F) for 1 hour.
- Dry the cloth.
- Soak the cloth in a preparation of 10% WOF tannin and enough water to cover the cloth at 60°C (140°F) for at least 1 hour or overnight.
- Dry the cloth again.
- Print with the prepared Symplocos paste and dry thoroughly.
- Rinse in a solution of hot tap water and a handful of wheat bran. The phosphates in the wheat bran will
- set the mordant on the cloth.
- Now the cloth is ready for dyeing, using the usual methods.

On Silk

Symplocos paste recipe for printing on silk

- Add 50 grams of Symplocos powder to 300 ml of water.
- Boil for 30 minutes. Add more water as necessary.
- Filter the liquid, squeezing all liquid from the Symplocos pulp.
- Add more water to the liquid until its volume is equal to 300 ml again.
- Add 3 grams of dry guar gum or about 1 tablespoon of guar gum paste and stir continuously until all the lumps are gone. Add more if it is not thick enough.

Preparing the cloth

- Start with clean/scoured silk fabric that has been washed in a warm soap solution.
- Print with the prepared Symplocos print paste and dry thoroughly.

Rinse in a solution of hot tap water and a handful of wheat bran. The phosphates in the wheat bran will set the mordant on the cloth. Now the cloth is ready for dyeing, using the usual methods.