All You Need is Time
Solar Dyeing with Natural Dyes

Helen Melvin, Online and Abergele Guilds

Vibrantly coloured solar pots by Anne Campbell at Trefriw Woollen Mill, Conway, North Wales started in the summer of 2009 and left over the winter.
Photos: Helen Melvin

Over the last few years I have had great fun playing around with solar dyeing, using the power of the sun as the heat source to set the dyes. In this day and age dyeing without the added cost of heating is an attractive proposition and solar dyeing is a simple, trouble free process, ideal for someone who has limited space for dyeing. The final clincher, if you need one, is that the colours are gorgeous; bright and clear. All you need is an old glass jar with a lid, and a sunny spot. Children can be encouraged to do this in schools as well as at home and they can collect such easily obtainable dyes as onion skins, red cabbage, flower heads past their best, such as marigolds and buddleia, and dye fibres over the summer, starting in the summer term and coming back to rinse out in the autumn.

I can't remember when I first heard about solar dyeing although one of the techniques I use, bundling fabrics, was inspired by hearing reports of a workshop that Karen Casselman ran at *Colour Congress 2002*. However, I often heard fellow dyers tell me that they had filled old coffee jars with fibres, plant dyes and water and left them for months in a warm sunny place. Fellow dyers have also told me of the soft delicate colours obtained from herbs such as marjoram and sage, but as I have a dye garden and like bright colours I use the dye plants in the garden.

One of the features of solar dyeing is that you can get good colour from plants which when cut up and boiled give a poor, uninteresting colour or have poor light-fastness. For example, red cabbage gives a very dull grey if chopped and boiled and it also has a poor light-fastness. Dyeing with it like this over a long time and at a fairly low temperature on the other hand gives a blue that has a reasonable light-fastness. My fabrics partly dyed with red cabbage are still blue after three years.

Jar Mordant and Dye

You can use any jar, old coffee jars are fine, but if you want more than just a sample Kilner jars of up to 3 litres in size are fantastic. Weigh your fibres and dyes and then layer wool and dye material in the jar. Equal weights of dye to fibres work well, but see my article on page 6 of *Journal* 229 for more detail. To mordant, that is to fix the dyes, you will need 12 g of alum mordant or 8 g alum and 7 g cream of tartar for 100 g protein fibres such as wool and silk and 5% aluminium acetate for every 100 g of cellulose fibres such as cotton, linen and hemp. If you have not got scales to weigh out small amounts, work on 1 level teaspoon of alum/cream of tartar for an approximate 5 g and 2 level teaspoons of aluminium acetate for 5 g. Dissolve the mordant of your choice in a small amount of hot water, then add cold water to cool it before pouring it into the jar over the fibres and dye. Fill the jar to the brim with cold water and screw on the lid tightly.

If you want to solar dye without using the mordants above try adding leaves such as eucalpytus, purple loosetrife (*Lythrum salicaria*), sumac (*Rhus typhina*) or oak galls all of which contain high levels of tannin which will act as a mordant. Stuff in as many of the tannin-bearing leaves as you can and add a strong dye such as madder. You can also try putting a rusty piece of iron in the pot, adding a bit of vinegar and the resulting iron acetate will mordant the fibres. If you do this in combination with the tannin bearing plants you may achieve that most difficult of dyes for a natural dyer – black – but most probably you will get grey. Onions skins give a good colour with no mordant.

Place the jar in a sunny spot which can be a sunny window sill or a sunny spot in the garden and of course you can use a conservatory or greenhouse too. Leave for as long as you can! You can leave them for months, but remember to rinse them

outside as they can get a bit smelly. On a hot sunny day outside pots can easily reach 45-50°C (113-122°F) and feel hot to the hand.

Safety and Environmental Issues

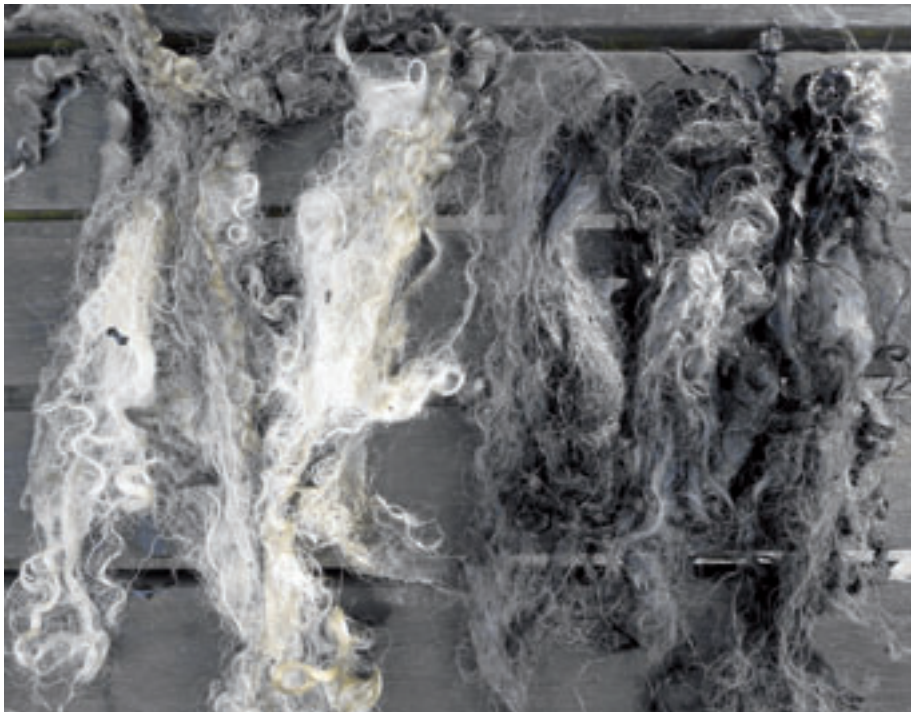
I am happy to use both alum (potassium aluminium sulphate) and aluminium acetate as mordants for protein and cellulose fibres respectively provided that recommended safety procedures are followed. These are principally a matter of common sense: use gloves (and dust mask when using aluminium acetate) and never use utensils for dyeing that you might want for cooking.

Please refer to page 12 of this issue or page 7 of *Journal* 229, Spring 2009 for more details.

Dispose of used mordant baths responsibly. If you have a garden then spent alum baths can be poured around plants, and the minute amounts of copper sulphate or ferrous sulphate that you might use can also be disposed of in the same way. If not, dispose of spent baths down the foul drain with plenty of water.

Above: *Longwool curls solar-dyed using natural dyes (note the very bright blue from logwood) by Anne Campbell*

Below and right: *Tannin-bearing leaves with iron added. You can see the leaves going black around the edges as the iron bonds with the tannin, making a black dye.*



Above and left: *Silk caps and cotton bouclé yarn and Teeswater fleece layered with red cabbage, Anthemis tinctoria and madder. The pot was left for about three months in a warm sunny space.*

Below: *Satin chiffon dyed with red cabbage, logwood, madder roots and dyers chamomile.*

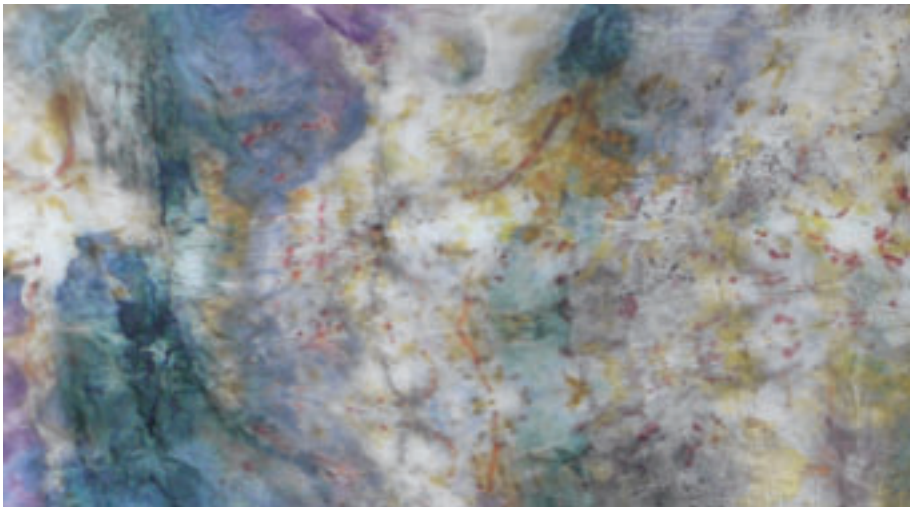
Multicoloured Pots

I am fond of multicoloured multi-fibre pots and for this reason I mordant the fibres beforehand, before layering a variety of fibres with different dyes and then topping up with water. I have had beautiful multicoloured results with a piece of fine silk crumpled into the pot and the long wools such as Wensleydale and Teeswater.

Bundling Fabrics

For this you need silk fabric. I have tried cottons and muslins, but the results are less inspiring as the colours do not diffuse through the fabric as easily as they do with silk. I have used satin chiffon, chiffon, silk organza and a fine habutai silk.

Lay the damp mordanted silk out on a piece of cling film and scatter thickly with assorted fresh dye plants such as dyer's chamomile (*Anthermis tinctoria*), weld leaves (*Reseda luteola*), madder root (*Rubia tinctoria*) or whatever you fancy. Woad leaves can leave a soft delicate imprint of its shape in purple, *Eucalyptus cinerea* will give an orange-red imprint, weld leaves a delicate narrow leaf shape in yellow. Fold the silk with the dye fibres in situ and then wrap well in several layers of cling film. Roll the fabric firmly with a rolling pin. This starts to break down the fibres and release the dye; then put the package in a warm sunny place. I put the bundle in a warm sunny spot outside. Every week I trample over it like someone treading grapes. (This is why the bundle needs to be securely wrapped). You see dye spreading slowly into the fabric. I find the bundles need to be left for about three months or so for the best effect. One of the interesting things is that having unwrapped your now fairly smelly package and shaken off the dye material you will find on rinsing there is almost no colour run off.



Slow dyeing using the power of the sun is another tool for the dyer and creates subtly different colours from the normal methods. I hope you will enjoy experimenting as much as I have.

Helen Melvin is a textile artist who makes landscapes in naturally dyed felt and machine stitch, teaches throughout the UK and abroad and gives talks on her love affair with natural dyes and how to paint with fibres, the technique she uses for her landscapes. In between time she loves playing with the dyes she grows in her dye garden. Visit: www.fieryfelts.co.uk or telephone 01745 710507.