

# THE GREAT TURNSOLE QUEST

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Turnsole is a plant native to coastal Mediterranean countries, from which a purple dye was extracted and used as an illuminators pigment and a food colouring during the Middle Ages. The pigment was also called 'Folium' perhaps because the long tailed 's' in Latin *Torna-ad-soleum* has been confused with an 'f' by later writers<sup>1</sup>. Turnsole or folium pigment is more correctly a range of colours from blue through purple to red depending on the PH of the solution.

The History of Druggs by Monsieur Pomet, published in 1709 gives a fine description:

This Plant which we call Turnsole, the Greeks call Heliotropion, the Sun Follower, because its

Flower always turn to the Sun. It bears Beries always three set together, not much unlike the

Palma christi; whence it is call'd by Pliny, Heliotropium Tricocum, the Turnsole with three

Berries which when they are at their full Maturity, have within them, between the outward

Skin and the Kernel or Seed, a certain Juice, or Moisture, which being rubbed upon Paper or

Cloth, at first appears of a fresh and lively green colour, but presently changes into a kind of

bluith Purple upon the Paper or Cloth; and the same Cloth afterwards wet in Water or white

Wine and wrung forth, will strike the said Water or wine into a red or Claret-wine Colour.

In other words the juice was extracted from the turnsole fruit, soaked into cloth rags and later extracted for use, in this case, as a food colouring. This process allowed the seasonal dyestuff to be preserved and stored or exported to countries where the plant did not grow. As early as the 7<sup>th</sup> century turnsole rags were being

shipped as far as Northern England and were used by the illuminators of the Lindisfarne Gospels and the Book of Kells<sup>2</sup>. Medieval pigment recipes instruct the artist to soak a piece of turnsole (rag) in gum-water or glair (beaten egg white) and wring it out to release the dye<sup>3</sup>.

Turnsole apparently became a generic term for any rags of blue-red dye used in this way, whether they were made with the herb turnsole, or from grape juice, mulberry juice, brazil wood, woad, cochineal, lichen or anything else<sup>4</sup>.

## THE ONE TRUE TURNSOLE

Finding the turnsole plant is not as easy at it may, at first, seem. Unfortunately the name has been applied to several plants whose flowers or leaves "follow the sun". There are at least two other plants commonly known as Turnsole and several others with related names. Additionally our quarry has been given several different botanical names at one time or another, and had at least one change of botanical genus. (*Croton to Euphorbiaceae*) No nursery or seed merchant I contacted had any idea what I was talking about and several tried fobbing me off with one of the false turnsoles.

The plant we are seeking is not the Greater Turnsole or Heliotrope<sup>5</sup> (also called Potato weed) described by the herbalist Nicholas Culpepper<sup>6</sup>. That plant is *Heliotropium europaeum*, from the family Boraginaceae, a relative of the herb Borage. Although it is a low growing weedy annual like the true Turnsole, it does not bear tri-lobed berries and has no dye properties.

Nor is it Litmus<sup>7</sup>, also called Turnsole or Orchil. This is the lichen, *Rocella tinctoria*, that also produces a dye used for illumination during the Middle Ages. It too ranges from blue through purple to red depending on PH levels, as do many other vegetable dyes, including the juice of red cabbage. Litmus was used to make the original Litmus paper and the word derives from the Old Norse *litmosi*, (*litr* = color or dye + *mosi* = bog or moss).

# WANTED



# ALIVE

## Chrozophora Tinctoria

Common name **Turnsole**, source of the medieval illuminators pigment 'Folium'.

An annual weedy herb native to coastal areas of the Mediterranean. Known to grow in the lower Flinders Ranges and Yorke Peninsula of S.A, the wheat belt of W.A. and drier parts of Victoria and New South Wales.

It is not Heliotrope<sup>8</sup>, also called Turnsole or Cherry Pie. This is *Heliotropium Peruviana* or *Heliotropium arborescens*, a garden plant popular with the Victorians. It is a native of Peru, and was introduced to Europe in 1735. It grows up to 4 feet tall and has purplish-blue (turnsole coloured) flowers that give off a sweet almond/vanilla fragrance reminiscent of Cherry pie. It is some times used in perfume but has no dye properties.

Nor is our plant the common Sunflower from which we get sunflower seeds and sunflower oil. This plant is *Helianthus annuus* and is a native of western North America, which was introduced into Europe in the 16<sup>th</sup> century.

The plant we are looking for is in fact *Chrozophora tinctoria* (L) A. Juss. ex Spreng formerly *Croton tinctorium*, {Linné} *Tournefortia tinctoria*, {Baillon} or *Heliotropium Tricoccum* {Pliny}<sup>9</sup>. It should not be confused with *Chrozophora plicata*, a related but non-dye bearing species. From the Euphorbiaceae family it is, as Monsieur

it is a naturalised weed in Australia, particularly WA and SA and has been reported in the North American states of Alabama and Maryland.<sup>12</sup>

## TOENIFYING

### "*Chrozophora tinctoria*"

The plant is a low growing annual herb that flowers about November to March in the southern hemisphere or June to September in the northern hemisphere. The leaves are a uniform green, about the colour of a potato plant, with a grey/green woolly underside. They vary in shape and size, the smaller ones looking similar to basil, the larger ones being more like a heater shield.<sup>13</sup> On the back of the large leaves you may see a "crows foot" where the paler stem meets the leaf, then spreads into three prominent claw-like leaf veins. The flower spikes look rather like stumpy grey-green heads of wheat. The male buds are at the tip of the flower spike, while the female flowers show as a few bright yellow petals towards the base of the spike. The seed capsules or fruit are grey-green and knobbly like a miniature horse chestnut or a tiny

**In a dark damp place lay rich garden soil on a tray and get "a healthy man who has been drinking wine copiously to urinate on the earth". The turnsole rags are then placed on a drying rack in the fumes of the urine and left for several days.**

Pomet so cleverly guessed, distantly cousin to the Palma Christi or Castor Bean. Thankfully it is not poisonous like Castor Bean, source of the lethal ricin toxin.

Gerard's Herbal calls it *Heliotropium minus* or Small Torne-sole and says that "...with the small Tornsole they in France doe die linnen rags and clouts into a perfect purple colour, wherewith cookes and confectioners doe colour iellies, wines, meates, and sundry confectures..."<sup>10</sup>

Generally considered a weed, *Chrozophora tinctoria* has many common names including dyer's-croton (English) giradol (Spanish), maurelle (French) lackmuskraut (German), akbas (Turkish) and Faqqoos el-homaar (Arabic). In Turkey it has long been used as a source of dye for Turkish carpets and in Palestine is used, much like henna, to dye the fingernails. It grows on dry fallow land, amongst crops such as wheat or onions, and in vineyards. Found in most Mediterranean and Middle Eastern countries<sup>11</sup>,

mace head, except that they have three distinctive lobes. The juice squeezed from the ripe fruit will start out green or bluish green but will soon change to a deep inky blue and shift though purple to red as it dries.<sup>14</sup>

## HOW TO THEY MAKE TURNSOLE RAGS?

One of the most detailed medieval recipes, from the Neapolitan *De Arte Illuminandi* of the late fourteenth century, instructs that the tri-lobed seeds are to be picked carefully off their stems, without bruising, and squeezed in a linen cloth to extract the juice. Pieces of clean linen or muslin, having first been soaked in a lye of water and quicklime (calcium oxide) washed and dried, are then soaked in the turnsole juice for a day and a night. Now comes the fun part. In a dark damp place (like a basement) one lays rich garden soil on a tray and has "a healthy man who has been drinking wine copiously urinate on the earth". The juice soaked cloths are then placed on a drying rack in the fumes of the urine and left for several days. The object of this colourful

procedure is to expose the cloths to an alkaline environment so as to push up the PH level. (Adding an alkaline solution to the juice does not seem to work so well) This fixes the colour in the blue/purple tones, and if not done correctly means the cloths will spoil and become red. Finally the cloths are stored in a dry acid free environment or again they will tend to turn red<sup>15</sup>.

Turnsole-in-rags was still being produced for export in the south of France in the 19<sup>th</sup> century<sup>16</sup>. A detailed description of the industry at Grand-Gallargures in 1839 by the French writer N. Joly explains that at the turnsole fruits were squeezed in a press, the juice mixed with urine, and the cloths soaked, dried and then sandwiched in hay which was placed over deep beds of fermenting horse dung. They were re-soaked and dried over dung again to achieve the desired dark purple. This industry died out when chemists discovered easier ways to make food colouring.

## THE TURNSOLE QUEST

Since poor old turnsole has been all but forgotten and is not available through your average nursery or seed catalogue your mission, should you accept it, is to find this plant in the wild and help restore it to it's proper place as a dye herb. Many of the scribes I talked to in researching this article responded with "I don't know where you get it, but can you get me some too" so I suspect there is a small market for a revived turnsole industry. Please read over the description again and if you are roaming in out of the way places keep your eyes open. Should you find what you think is *Chrozophora tinctoria*, make careful note of exactly where and when you found it, and if possible get photographs. Contact me, Mistress Rowena Le Sarjent (Belinda Sibly) at the address below or let your local Illuminators or Herbalists Guild know about it. If you have permission from the landowner you could dig up a plant and take it home to grow in a pot or in your garden. (Make sure you dig up the whole root ball or the plant may not survive) Otherwise you can gather the seeds for growing or the fruit to attempt making turnsole rags.<sup>17</sup>

The re-creationist trying to produce turnsole rags might want to experiment

with more hygienic variations of the traditional recipes, perhaps adding a little dyers alum to the juice or drying the cloths (in a dark place) over paper towels soaked in an ammonia based cleaning product. Make notes of what you do and the amounts of everything you use so that, if successful, you can pass your recipes on to others. Be sure to store your rags in a dry alkaline environment e.g. a glass jar with a little baking soda in the bottom, or between sheets of acid free blotting paper.<sup>18</sup>

I would be most grateful for any samples you can send, as alas I am not allowed to grow the plant in New Zealand due to this countries strict quarantine restrictions. I would also like to pass the details of your experiments and any samples on to Dr John Friedman, an expert in medieval manuscripts and folium in particular, to whom I am indebted for much of this information on Turnsole. You can e-mail me at bsibly@paradise.net.nz Please do not send any live plant samples or include any baking soda with your turnsole rags. I don't want to be the cause of a quarantine incident or anthrax scare.

Happy questing,

Rowena

1/ Friedman, John B. Northern English Books. Appendix A, The Pigment Folium.

2/ Freidman pg 235

3/ Singman J.L. and Jennings D. Some recipes for Colors, T. I. Issue 112

4/ Monsieur Pomet [http://bookofherbs.org/t/Turnsole\\_In\\_Rags\\_1286.htm](http://bookofherbs.org/t/Turnsole_In_Rags_1286.htm)

5/ Pictures at <http://www.vsap.uq.edu.au/Student/toxicol/Pages/Page20.htm>

6/ Culpepper <http://www.bibliomania.com/2/1/66/113/21225/1/frameset.html>

7/ Litmus <http://www.botanical.com/botanical/mgmh/1/litmus35.html>

8/ Pictures at <http://www.dulley.com/plant/a056.shtml>

## NOTES

9/ Maisch, John M. [http://chili.rt66.com/hrbmoore/AJP/AJP\\_1885\\_No\\_12.pdf](http://chili.rt66.com/hrbmoore/AJP/AJP_1885_No_12.pdf). and Pomet

10/ Gerard, John. Gerard's Herball <http://members.aol.com/renfrowcm/gerardp1.html>

11/ GRIN Taxonomy <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?400209>, Tackholm, V., Baplar S, and Pomet.

12/ Black, J.M. and The National Plants Database <http://plants.usda.gov/>

13/ Pictures at <http://www.ujf-grenoble.fr/JAL/bota/frambota.htm> and at [http://www.agro.bayer.gr/zizaniainfo.asp?zizania\\_id=23&ziz\\_category\\_id=6](http://www.agro.bayer.gr/zizaniainfo.asp?zizania_id=23&ziz_category_id=6), Download the second one for a proper view.

14/ Freidman, J. See comments by Wallert A. pg 232-233

15/ Thompson and also Freidman.

16/ Freidman, J. Appendix A

17/ Please don't transport seeds or pants across State lines without checking if there are quarantine regulation for *Chrozophora tinctoria*.

18/ Friedman Appendix A for notes on other attempt to produce folium.

Baplar S. An Investigation on *Chrozophora tinctoria* (L.) Rafin. Distributed in West Anatolia, Turkish Journal of Botany Volume 24, Issue 2, (2000) <http://mistug.tetm.tubitak.gov.tr/~bdyim/toc.php3?dergi=bot&yilsayi=2000/2>

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