



## Traditional Dye Yielding Plants of Firozabad, U.P., India

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**Abstract:** District Firozabad is a city of glass work and Bangles. It is also a rich source of ethnobotanical studies. Local weavers and ethnic communities use plant dyes for imparting different shades to their clothes, hands, hairs and food items. About 19 plant species belonging to 17 families of Dicots, mostly trees and herbs have been identified as traditional dye yielding plants.

**Keywords:** Ethnobotanical studies, Dye, Firozabad.

### 1. Introduction

The district Firozabad is a rich source of herbal vegetation as well as dye yielding plants. The natural dyes were obtained from plants and have been used by weavers for imparting different shades of color to different clothes, flower pots etc. Vegetable dyes have been reported to be used by confectioners and weavers. Dyeing is done in the yarn stage in order to get the desired color. Due to the easy communication system, better education and more influx of tourists the synthetic dyes were also brought in and slowly the indigenous system of dyeing is replaced by synthetic dyes. Earlier work on natural dyes has been done by Dev (1961); Devi (1995); Sharma & Manat (2000); Singh & Mondel (2000); Sinha (1987); Ghosh (2003); Kala (2002) and Sharma *et al.*, (2005). They have also emphasized that different parts of the plants are used in extraction of dyes. Some of these dyes are used as mordants for dyeing different textiles, handloom products and in inks and also for painting.

The dyes are colored compounds capable of being fixed to fabrics and which do not wash out with soap and water or fade on exposure to light. Natural dyes and stains obtained from the root, leaves, bark, fruit or wood of plants have been used since ancient times. About 2000 species of plants have been identified to secrete different pigments. About 150 dyes yielding plants have been able to compete with artificial dyes.

Firozabad lies between 27° 00' and 27° 24' north latitude and 77° 66' and 70° 04' east longitude. It is bounded in the north by Etah district, in the east by Etawah and Mainpuri, in the south by Yamuna River and in the west by Agra district. The climate of Firozabad is characterized by hot summer, pleasant winter and general dryness except during rainy season.

### 2. Methodology

The present work is based on information collected from different weavers/dyers through interviews and informal discussions concerning the traditional/indigenous dyeing techniques. Field trips were conducted in various parts of Firozabad during different seasons of the year. The plant specimens were collected during the survey and were identified with local weavers/dyers and consulting related books and floras. In this enumeration, the plant species are arranged alphabetically with the names of the family in parenthesis followed by plant status. The vernacular names, if any are also given. The indigenous mode of preparation of the dye and its uses is presented given.

- ***Acacia catechu* Willd.**

**Family** - Mimosaceae

**Local name** – Kattha (Tree)

A middle sized tree with brown bark. A fast reddish black dye is obtained from the Heartwood of the plant by boiling in water for about one hour. Then

the dye is concentrated by evaporation in iron vessels. The dye is used in the preparation of local inks and dyeing cotton fabrics.

- ***Achyranthes aspera* Linn.**

**Family** – Amaranthaceae

**Local name** – Latzeera (Herb)

The whole plant is first dried, burnt to ashes and is mixed with water. This dye is used as adhesive for various colors and making the color brighter.

- ***Butea monosperma* (Lamk.) Taub.**

**Family** – Papilionaceae

**Local name** – Palas (Tree)

It is deciduous trees. The bark is rough nearly black. Young shoots clothed with brownish black pubescence. Yellow color dye is also prepared from dried petals.

- ***Celosia argentea* Linn.**

**Family** – Amaranthaceae

**Local name** – Sugwa sag (Herb)

An erect glabrous annual, commonly cultivated in the gardens throughout the state. A pink red dye is obtained from the flowers. The dye is used for painting.

- ***Curcuma domestica* Valetton Sync. Longa Linn.**

**Family** – Zingiberaceae

**Local name** – Haldi (Herb)

The plant gives the yellowish color. Fresh rhizomes are crushed into pieces and allowed to soak in water. Clothes or threads are soaked overnight and dried to give the desired color.

- ***Cuscuta reflexa* Roxb.**

**Family** – Cuscutaceae

**Local name** – Amarbel (Parasite)

A leafless, twinning parasite, commonly found in Firozabad. A yellow dye is obtained from the whole plant by crushing in cold water is used for dyeing of cotton clothes and in painting.

- ***Emblica officinalis* Gaertn.**

**Family** – Euphorbiaceae

**Local name** – Ambla (Tree)

Crushed fruits or bark or both are soaked in water for 4 to 5 days or boiled adhesive for dyeing dark color.

- ***Ficus religiosa* Linn.**

**Family** – Moraceae

**Local name** – Peepal tree (Tree)

A large tree, found in most states of India. The bark yields to boiling water a reddish pale-brown coloring substance which by the employment of various processes given to Tasar, mulberry silk, and woolen fabrics, faint reddish fawn color. The amount of coloring matter in the bark is small, but it might prove

dye where faint shades are required or for modifying the colors produced by other dyestuff. The bark is said to be sometimes used in tanning.

- ***Helianthus annuus* Linn.**

**Family** – Compositae

**Local name** – Surajmukhi (Herb)

An ornamental annual herb introduced from Canada it bears large, flat, circular flower heads chiefly grown in gardens in the plains flowering occurs in cold seasons, whereas in the hills it flowers during summer days. The blossoms yield a brilliant lasting useful dye. The petals are quite rich in the amorphous resinous substance xanthin the base of the yellow pigment from which the color is derived the seeds contain helionthic acid, which when treated with hydrochloric acid in a current of hydrogen, is resolved into glucose and a violet dye.

- ***Hibiscus rosa-sinensis* Linn.**

**Family** – Malvaceae

**Local name** – Gurhal (Shrub)

Commonly cultivated in the gardens throughout the state. A red dye is obtained from the fresh flowers. The petals are rubbed on the pages of handwritten books to protect them from insects.

- ***Indigofera tinctoria* Linn.**

**Family** – Papilionaceae

**Local name** – Neel (Shrub)

A small shrub, formerly cultivated in India for its famous dye 'Neel' found throughout the tropical belt of India. Leaves imparipinnate bearing laterally attached hairs; stamens diadelphous; pods round, dehiscent, not jointed. For a very long time indigo (Nil) was known as the most important dye. Now, it has almost entirely been replaced by a synthetic product. The indigo industry was formerly widespread in India and other countries.

However, the dye is not present in the plant itself. The leaves contain a soluble colorless glucoside, the Indican, which oxidizes in water to form the insoluble indigo. Indigo has been used as a dyestuff in India from the earliest times.

- ***Lawsonia inermis* Linn.**

**Family** – Lythraceae

**Local name** – Mehandi (Shrub)

A small, elegant and sweetly scented bush, cultivated common throughout India; as a commercial dye crop. The plant may be grown in any type of soil, but it thrives best on heavy soils which are retentive of moisture. Propagation is done by seeds and cutting. Once established, the plants continue to flourish and yield successive crops of leaves for several years.

Henna has long been used in India and Middle East countries for coloring palms of hands, soles of feet and fingernails. It is also used for dyeing hair, beard and

eyebrows. Tails and manes of horses are sometimes dyed with henna. For use as dyeing material, henna powder is pasted with water and applied to the part to be dyed. For dyeing hair it is applied as a pack; it imparts an orange-red color. Mixture of henna with indigo gives compound henna and, henna-rang as it is called, imparts a brown tint, while henna-rang containing 1 part of henna and 3 parts of indigo gives a dark brown color. Henna was once extensively used for dyeing silk and wool. The use of henna as a textile dye has declined since the advent of synthetic dyestuffs.

- ***Mimusops elengi* Linn.**

**Family** – Sapotaceae

**Local name** – Maulshree (Tree)

It cultivated in India. The bark is used for dyeing shades of brown. The bark contains the small amount of brownish-red coloring matter. With cotton, a light gray color is obtained and with silks various shades of reddish-drap and fawn. The bark is also employed as a tan. The bark contains 3-7% tannin.

- ***Polygonum chinense* Linn.**

**Family** – Polygonaceae

**Local name** – Tear-thumb (Herb)

The crushed whole plant is soaked in water for 2-3 days and the liquid are used as dye. It is used as adhesive for dark colors.

- ***Psidium guajava* Linn.**

**Family** – Myrtaceae

**Local name** – Amrood (Tree)

Fresh mature fruits are collected, crushed and soaked in water for 2-3 days. It is used as adhesive for brown and black color.

- ***Punica granatum* Linn.**

**Family** – Punicaceae

**Local name** – Anar (Tree)

Bark or fruit skin is cut into pieces and soaked in water for 2-3 days. It is used as adhesive for the black and brown color.

- ***Tamarindus indica* Linn.**

**Family** – Caesalpiniaceae

**Local name** – Imli (Tree)

A large evergreen tree, which grows to a height of 80 feet, with a circumference of 25 feet. Cultivated throughout India.

An infusion of the leaves yields a red dye and imparts a yellow shade to cloth already dyed with indigo.

The leaves, flowers and fruit contain a large proportion of acid and are much employed as auxiliaries in dyeing, especially along with safflower. They act as mordant's in silk dyeing.

- ***Tectona grandis* Linn. f.**

**Family** – Verbenaceae

**Local name** – Teak, Saagaon (Tree)

Leaves or barks are cut into pieces and soaked for about 2-3 days in water clothes or yarn threads which are dipped into this dye gives somewhat reddish color.

- ***Terminalia arjuna* (Roxb.ex DC.)**

**Family** – Combretaceae

A large deciduous tree, commonly found in India. The bark in various localities is used in dyeing. In south India, the inner bark is broken into chips and the dye is extracted by boiling in water. The tint produced is a dirty brown or khaki color. In Bengal, it is used to dye cotton a light brown.

**Table 1. Plant species and their part used to produce color shades.**

S. No.	Name of plants	Family	Dicot/ Monocot	Herb/Shrub/ Tree/ Parasite	Part used	Color
1.	<i>Acacia catechu</i> Willd.	Mimosaceae	Dicot	Tree	Bark	Reddish black
2.	<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Dicot	Herb	Whole plant	Brighter
3.	<i>Butea monosperma</i> (Lamk.) Taub.	Papilionaceae	Dicot	Tree	Flowers	Yellow Dye
4.	<i>Celosia argentea</i> Linn.	Amaranthaceae	Dicot	Herb	Flowers	Pink/Red
5.	<i>Curcuma domestica</i> Valetton Sync. <i>Longa</i> Linn.	Zingiberaceae	Dicot	Herb	Rhizomes	Yellow
6.	<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	Dicot	Parasite	Whole plant	Yellow
7.	<i>Embllica officinalis</i> Gaertn.	Euphorbiaceae	Dicot	Tree	Fruits/Bark	Dark
8.	<i>Ficus religiosa</i> Linn.	Moraceae	Dicot	Tree	Bark	Reddish pale brown
9.	<i>Helianthus annuus</i> Linn.	Compositae	Dicot	Herb	Flowers	Yellow
10.	<i>Hibiscus rosa-sinensis</i> Linn.	Malvaceae	Dicot	Shrub	Flowers	Red
11.	<i>Indigofera tinctoria</i> Linn.	Papilionaceae	Dicot	Shrub	Leaves	Blue
12.	<i>Lawsonia inermis</i> Linn.	Lythraceae	Dicot	Shrub	Leaves	Orange-red
13.	<i>Mimusops elengi</i> Linn.	Sapotaceae	Dicot	Tree	Bark	Brown/Grey
14.	<i>Polygonum chinense</i> Linn.	Polygonaceae	Dicot	Herb	Whole plant	Dark
15.	<i>Psidium guajava</i> Linn.	Myrtaceae	Dicot	Tree	Fruit	Brown/Black
16.	<i>Punica granatum</i> Linn.	Punicaceae	Dicot	Tree	Bark/Fruits	Brown/Black
17.	<i>Tamarindus indica</i> Linn.	Caesalpiniaceae	Dicot	Tree	Leaves	Red
18.	<i>Tectona grandis</i> Linn. f.	Verbenaceae	Dicot	Tree	Leaves/Bark	Red
19	<i>Terminalia arjuna</i> (Roxb.ex DC.)	Combretaceae	Dicot	Tree	Bark	Khaki

### 3. Discussion

The present investigation has revealed that 19 plant species belonging to 17 families are commonly used as dye by different ethnic communities of Firozabad. Out of the total of 19 species, 10 are trees, 5 are herb, 3 species are shrubs, and one species are parasitic. Different plants give different shades of color (Table – 1). 14 species are used as main dye and 05 species are used as adhesive for the main dye. The present study emphasizes importance of traditional knowledge in herbal dyeing technology.

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