VEGETABLE PRODUCTS USED FOR THE EXTRACTION OF NATURAL DYES

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ABSTRACT: The paper shows how natural dyes can be extracted from different species of plants and shrubs. It presents the plant species, the harvesting period, the vegetative organs with content of natural dyes, the method of harvesting, transport and extraction of dyes.

KEY WORDS: *Plants, shrubs, dyes, natural*

1. INTRODUCTION

This category includes all forest products that have coloring substances in their constitution.

The operations that coloring plants go through, starting with their harvest and until they become usable materials in painting, are:
- harvesting,
- drying,
- conservation,
- packaging and transport.

2. SPECIES OF PLANTS AND SHRUBS SUITABLE FOR THE EXTRACTION OF NATURAL DYES

1. White alder and black alder

The bark of young and middle-aged trees is harvested from black and white alder.

Both fresh and dried bark can be used in painting. By boiling it in water, a black solution is obtained, with which wool and cotton fabrics can be dyed. In order to fix the color, iron sulfate is used (Figure 1)

Fig. 1. White alder

2. White wormwood

This species contains coloring substances throughout the plant, except the root. Harvesting is done by cutting the plant with scissors from the ground before flowering. The plant can be used fresh or dried.

By boiling in water, a solution is obtained that colors the wool green. (Figure 2)

Fig. 2. White wormwood

3. Wild saffron

From this plant the mature petals are harvested during flowering, in July and August. A red dye is extracted from this plant.

Harvesting consists in cutting the flowers with scissors and separating the petals, from which the safflower is prepared, which is a dry product.

Thus, the mature petals are dried directly or previously soaked in salted water and pressed to remove the saffron yellow (auxiliary dye). After drying, the safflower is packed in small bales and stored in ventilated and dry places.

Safflower is used in painters in the form of concentrated solutions. He paints cotton and natural silk in an alkaline bath without fixing the color. Activation is done with citric acid, abstaining from beautiful colors of red and pink. It is not used for dyeing wool.

Dry natural flowers, confetti, liqueurs and cosmetics are dyed with safflower. (Figure 3)

4. Edible chestnut

The bark of young trees can be extracted from this tree. The peeling of the bark on the trunk is done during the sap circulation season (April - May). In order to paint, the chestnut bark or wood is boiled with water until a solid mass called chestnut extract is obtained by evaporating the liquid.

It, dissolved in water and in the presence of iron salts, give a solution colored in intense black, which is used to dye natural silk.

Fig. 3. Wild saffron

5. Hops

From the hops are harvested, for coloring substances, the female inflorescences in the form of yellow-green cones. Harvesting consists in cutting these cones with scissors, as required, they are placed in baskets or boxes in a loose state. Their drying is done slowly in ventilated rooms, where they are laid in thin layers. The fresh or dried hop inflorescences are boiled in water and this decoction is concentrated, giving a yellow liquid, with which the fabrics can be colored. (Figure 4)

Fig. 4. Hops

6. Pastel

From this plant are used in dyeing freshly picked leaves, fully developed, but not passed. The leaves are harvested without petiole in June-July.

The substance obtained is indan, which by boiling gives a beautiful blue color, known as pastel blue. (Figure 5)

Fig. 5. *Pastel*

7. Common walnut

The green pericarp on the fruit is harvested from the walnut in September. To prepare the juglon (extract from the pericarp), the fresh pericarps are placed in wooden barrels, where they are crushed and water is poured over them. It is left to soak for even a few years.

The fresh extract has the amber yellow color, which in contact with the air, darkens to brown. On the surface of the liquid, a dark crust is formed, which on drying gives a glassy, black and brittle substance, soluble in alkaline solvents and which acids precipitate. By dissolving in solvents, followed by successive crystallizations, the juglon is isolated.

Walnut extract is used for dyeing woolen fabrics. It can be painted directly or with color fasteners (mordants). You get a range of colors from yellow to dark brown and even brown. Vegetable fibers, including cotton, do not develop strong colors, but wool fabrics dyed with walnut pericarp are resistant to washing and ironing.

8. Chamomile

From this plant the flowers are harvested without the stalk, in May - June. The flowers are harvested manually or with special combs, in dry weather, after the dew has risen. After harvesting, the flowers are spread in the shade to cool, then by blowing away foreign bodies and dust. Drying is done in artificial dryers or in ventilated rooms, where they are spread on paper in very thin layers. From time to time the flowers must be turned very carefully so as not to crumble. Preservation is done in wooden crates lined with paper. The flowers boiled in water and the concentrated decoction give a solution with which the wool can be colored yellow.

9. The shroud

For use in painting, the plant is harvested without roots, during flowering in June - August. Harvesting consists in cutting the plant from the ground with the help of scissors. After harvest, the plant can be used immediately in painting. For use in dyeing, the plant is boiled in water, fresh or dried and the stew is concentrated to obtain a solution that can color the wool into dark blue. (Figure 6)

Fig. 6. Shroud

10. Smeurica

This plant is harvested entirely without roots, after flowering, in June-August. Harvesting is done by cutting in front of the ground or by uprooting, after which the roots

are cut. After harvesting, it is dried in the shade and then stored in dry and ventilated places. However, it dyes the wool, requiring different mordants, thus obtaining different shades of yellow. With tin-based mordants, a yellow-green, olive-green is obtained. Rezeda is also used to dye natural silk, which is bitten beforehand. After dyeing, the silk is passed into a soap bath and then into a dilute acetic acid bath. The colors obtained with residence can be tinted by adding expensive wood. In the presence of blue dyes gives lemon yellow, dragon green, glass green and various shades of olive. (Figure 7)

Fig. 7. Smeurica

11. The wedding ring

Unripe fruit is harvested from this shrub in July-August. Harvesting is done manually when they are green. After harvesting, it is dried in semi-shade, packed in paper or cloth bags and stored in dry and ventilated warehouses. Use in dyeing is done in the form of an extract, which is prepared by boiling green beans and evaporating the solution in vacuo. With this extract the bubmac is painted, using mordants, as follows: with aluminum and tin salts in yellow and with iron, chromium and copper salts in olive. Light-resistant, washable and iron-resistant colors are obtained. It is used for printing cotton fabrics as well as for dyeing paper, leather, sweets and varnishes. (Figure 8)

Fig. 8. The wedding ring

3. CONCLUSIONS

1. A diverse range of natural dyes can be obtained from extracts obtained from different plant species.
2. The natural dyes obtained are not toxic to the natural environment and to human health.
3. The disadvantage of using natural dyes in the textile industry is that sufficient quantities cannot be made available.
4. Natural dyes have been widely used in the past and are currently used only in traditional folk weaving workshops.

4. REFERENCES

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