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**CONTEMPORARY ASPECTS OF THE APPLICATION OF  
NATURAL DYES IN THE MULTIDISCIPLINARY PROJECT  
“ALL THE COLORS OF MONTENEGRO – DYEING WOOL  
WITH VEGETABLE DYES“**

Professional paper  
DOI: 10.5937/CT\_ITI25006D

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**ABSTRACT:** *The multidisciplinary project "All colors of Montenegro - dyeing wool with vegetable dyes" combines science, tradition and art and contributes to the preservation and revival of the cultural heritage of wool as well as the use of wool in other areas such as agriculture, construction, etc. By taking up the ideas of the project, an important contribution can be made to reducing pollution and realising the principles of the circular economy, because wool that remains in nature is pollution. The use of indigenous waste or easily renewable plant sources is also insisted upon in the dyeing processes. For dyeing different plants can be used: madder root, black ash leaves, onion skins, walnut leaves. As part of the project, workshops in textile dyeing and traditional felting techniq are organised for students from various disciplines and interdisciplinary lectures are held in the fields of ethnology, philosophy and culture of fashion, biology and chemical textile technology. The focus is on pre-school education and encouraging design students to take an interdisciplinary approach to textiles.*

**Keywords:** *natural dyes, wool, felting, textile heritage, education, fashion design.*

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**SAVREMENI ASPEKTI PRIMENE PRIRODNIH BOJILA U  
OKVIRU MULTIDISCIPLINARNOG PROJEKTA „SVE BOJE  
CRNE GORE – BOJENJE VUNE BILJNIM BOJAMA“**

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**APSTRAKT:** Multidisciplinarni projekat "Sve boje Crne Gore - bojenje vune biljnim bojama" povezuje nauku, tradiciju i umetnost i doprinosi očuvanju i oživljavanju nematerijalne tekstilne kulturne baštine, kao i korišćenje vune u drugim područjima kao što su poljoprivreda, građevinarstvo itd. Prihvatanjem ideje projekta može se dati važan doprinos smanjenju zagađenja životne sredine i ostvarivanju principa održivog razvoja u privredi, jer vuna koja se odlaže u prirodi predstavlja ekološki problem. U procesima bojenja insistira se na korištenju autohtonog otpada ili lako obnovljivih biljnih izvora. Za bojenje se mogu koristiti različite biljke: koren broća, listovi crnog jasena, ljuske luka, lišće oraha i dr. U sklopu projekta organizuju se radionice bojenja tekstila i tradicionalne tehnike oblikovanja tekstila, kao što je filcanje vune, za studente različitih disciplina, a održavaju se i interdisciplinarna predavanja iz područja etnologije, filozofije i kulture mode, biologije i hemijske tekstilne tehnologije. Fokus je na predškolskom vaspitanju i podstcanju studenata dizajna na interdisciplinarni pristup tekstilu.

**Ključne reči:** prirodne boje, vuna, filcanje, tekstilna baština, edukacija, modni dizajn.

## 1. INTRODUCTION

Nowadays, a renewed interest in the use of natural dyes in textile colouring can be observed worldwide. The reason for this is the need to protect the environment and human health, as well as the increasingly frequent occurrence of allergic reactions caused by synthetic dyes. Colouring with vegetable dyes is an ecologically clean technology and the extracts of the plant pigments are obtained from renewable sources of plants from the environment [1-3]. Intuitive and plausible solutions in the application of materials available in rural households in combination with plant pigments (black ash, walnut, broc, onion, birch, quince leaf, St John's wort, sač, etc.) have, through centuries of practise, resulted in a durability of coloured material that cannot be surpassed even by modern technology [4-7]. Considering the importance and value of textile heritage and the need to preserve traditional recipes for dyeing with natural dyes, the project "All Colours of Montenegro - Dyeing Wool with Vegetable Dyes" is realised through the following activities: organisation of on-site workshops on dyeing wool with vegetable dyes using traditional textile techniques, including daily lectures; field research of the textile heritage of Montenegro and documentation of the knowledge of elderly women in the remote villages of the continental part of Montenegro through recording and taking interviews and photographs; collection of plants in the field in cooperation with the Natural History Museum of Montenegro and laboratory research in cooperation with the Faculty of Textile Technology of the University of Zagreb.

In addition, the project contributes to the preservation of the intangible textile heritage of Montenegro through the realisation of the following objectives and activities:

1. Technological procedures for dyeing wool with plant dyes in a traditional way; preservation and transfer of knowledge in the field of traditional textile techniques.
2. During the workshops, the participants dye the wool of domestic sheep of the Pramenka breed with natural dyes obtained exclusively from pigment plants from Montenegro.

3. Using the wool of domestic sheep and traditional techniques of knitting, weaving, dry and wet felting, with an innovative design approach, students and artists create objects of applied art, paintings, sculptures or installations of contemporary design using traditional materials and production techniques that are threatened with extinction.

3. Lectures in the fields of ethnology, art psychology, colour theory, chemistry, mental ecology, textile technology and botany are just as much a part of the programme as the presentation of the artistic practise of domestic and foreign artists.

The following chapters present the activities in the project through the optimization of the dyeing process in the laboratory (fig. 1), workshops for school-age children (fig. 2), and realization in the field of fashion design (fig. 3).



**Figure 1:** Optimization of the dyeing process in the laboratory



**Figure 2:** Workshops for school-age children



**Figure 3:** Traditional technics in fashion desing

## 2. SHEEP'S WOOL DYED WITH NATURAL DYES

The demands of modern life and industry strive for environmentally friendly and sustainable processes in all areas of human activity, including the textile industry. In response to this demand, natural dyes, which had fallen into obscurity at the end of the 19th century, have gained popularity as an acceptable alternative to synthetic dyes that are petroleum origin. In addition to beautiful color, the modern use of these dyes is also about exploring their multifunctional properties: skin care, antimicrobial, antifungal, elimination of unpleasant body odours, protection against harmful UV radiation, etc. These properties represent a synergy of the benefits of wool and plants [1-7].

The research covers the field of application of natural plant dyes for dyeing sheep wool, with emphasis on the contribution to human health, research on textile heritage and modern fashion industry based on the principles of a circular economy and the idea of "zero waste", i.e. the use of plant waste, weeds or invasive species [4-7].

To ensure the "eco" requirement, care must be taken to ensure that the selection of plants does not endanger their habitat, that the technological processes do not cause pollution, that the choice of chemicals does not affect the quality of the textile and that the textile material produced is safe and beneficial to human health [4-7].

## 3. LOOP BY LOOP, STITCH BY STITCH

The project "Loop by loop, stitch by stitch" is conceived as a process of imparting knowledge and skills through workshops in which children and young people learn

traditional handicraft techniques: knitting, embroidery, weaving and needle felting from local sheep's wool. All these skills are suitable for primary and secondary school children of both genders aged 6-17 (Figure 4).



**Figure 4:** "Loop by loop, stitch by stitch"

Modern technology has certainly helped to improve the quality of life for each of us, but it has also limited the ability of children and young people to interact with others and use their own hands to create.

The need to use their hands seems to be a thing of the past!

Past practice has shown that children and young people, when faced with a creative task, create small works, applied art, with great attention, concentration, dedication and imagination using simple tools and equipment - a weaving frame, needles, a bobbin and a quantity of colorful wool yarn dyed with vegetable dyes.

As well as developing fine motor skills and the invaluable tactile experience of working with wool, the joy they feel during the creative process and the resulting object helps to boost their self-confidence and self-esteem. Through the creative process of working with wool, a "fabric" is created that can be seen as a physical representation of the thought process and we then speak of "threads of thought".

The hands are a powerful tool for self-knowledge and learning about the world, and children need to be able to use them from an early age and later throughout their lives.

#### **4. WARMERS FOR HEALTH AND BEAUTY**

It is generally known that wool is much more environmentally friendly and durable than its textile counterparts. But wool also clearly has many benefits in terms of health [8].

Will we be using wool to treat more serious health conditions in the future? Who knows for sure? But with more research being published every year on the positive effects on skin and joint pain, it seems increasingly likely.

Aside from treatment, I am a firm believer in self-care and the small changes we need to make to become happier and healthier. This will continue to be first choice when it comes to comfort and warmth.

Designed neck warmers made from wool from Montenegro, are the part of the Old Fashion Collection, which also includes various wool garments (Figure 5).

They are made of rough and raw wool, but are very soothing for the joints, bones and skin of the neck. The wool is dyed with vegetable dyes from the surrounding plants: onion, ash, pomegranate, birch, madder and walnut...



**Figure 5:** “Old Fashion Collection”

## 5. CONCLUSION

The multidisciplinary project "All the Colors of Montenegro - Dyeing Wool with Plant Dyes" represents an important contribution to the revival of the use of natural dyes for dyeing wool. The contribution is visible in ecology through the use of secondary raw materials (wool and plant sources), in the field of preservation of textile heritage, education of young people, development of sustainable design, etc.

By implementing the ideas set out in the project, it is possible to make a significant contribution to reducing pollution and implementing the principle of the circular economy, as wool left in nature constitutes pollution. The dyeing processes also emphasise the use of local waste or easily renewable plant sources, such as black ash leaves, onion skins and green walnut shells. Special emphasis is placed on multidisciplinarity, i.e. the collaboration of ethnologists, technologists, designers and psychologists, which ensures a contribution in all the above-mentioned areas. The themes of the project are a particular challenge for



freelance artists and students of textile design who use knitting, wet and dry felting techniques to produce wool products enhanced with natural dyes.

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