

Manufacturing of union fabric by using Himalayan nettle (*Giraridnia diversifolia*) with other yarns

■ Neha Garg and Harinder Kaur Saggu

Received: 09.10.2020; Revised: 07.11.2020; Accepted: 28.11.2020

See end of the paper for authors' affiliations

Neha Garg
Department of Apparel and
Textile Science, College of
Home Science, Punjab
Agricultural Sciences, Ludhiana
(Punjab) India
Email : nehagarg.trapti@gmail.
com

■ **ABSTRACT** : In this study union fabric was manufactured using Himalayan nettle obtained from Uttarakhand. Eighteen union fabric samples were woven by using three selected yarns viz., cotton, acrylic and polypropylene as warp along with nettle yarn in weft direction. Three different weaves like plain, basket, and twill were selected for preparing these samples. Two suitable yarn counts were used for the development of handloom woven union fabric. The findings of the present study revealed that union fabric is suitable for making handloom textile products which have been considered successful in various end uses.

■ **KEY WORDS**: Nettle, Cotton, Acrylic, Polypropylene

■ **HOW TO CITE THIS PAPER** : Garg, Neha and Saggu, Harinder Kaur (2020). Manufacturing of union fabric by using Himalayan nettle (*Giraridnia diversifolia*) with other yarns. *Asian J. Home Sci.*, **15** (2) : 353-356, DOI: 10.15740/HAS/AJHS/15.2/353-356. Copyright@ 2020: Hind Agri-Horticultural Society.

The handloom industry is facing acute competition from imported machinery and other machine made textiles which are cost effective, better in quality and commercially produce able. This industry being household based not only preserves the cultural heritage of the country but also has immense potential to provide employment to a large number of rural people with low investment input. People are becoming more conscious about their cultural heritage and take pride in possessing such textile items (Kaur, 2003). Thus the study on manufacturing of union fabric by using Himalayan nettle was carried out.

Objectives:

- To select yarns along with Himalayan nettle to manufacture union fabrics.
- To select weaves for designing samples of union

fabrics.

■ RESEARCH METHODS

Cotton yarn (2/20, 2/24 count) and acrylic yarn (2/24, 2/32 count) were obtained from Ludhiana. Polypropylene (2/120, single ply count) was taken from Bhiwadi and nettle (6 Nm) yarns were taken from Chamoli district of Uttarakhand.

A total of eighteen samples using nettle yarn along with three selected yarns viz., cotton, acrylic, polypropylenes were prepared in three different weaves plain, basket, and twill. Two suitable yarn counts were used for development of handloom union fabric.

■ RESEARCH FINDINGS AND DISCUSSION

The results obtained from the present investigation

as well as relevant discussion have been summarized under following heads :

Selection of yarn for warping:

Different yarns namely cotton, acrylic and polypropylene were selected for manufacturing union fabrics. Cotton yarn of 2/20 and 2/24 cotton were used in warping. It was soft fluffy staple fibre. It has high lustre, low resiliency, good dimensional stability with no harmful effects because mildew and rot- producing bacteria damage fibres. It decomposes after prolonged exposure to temperature of 150C or over. Acrylic yarn of 2/24 and 2/32 count were used in warping. It was selected as a substitute of wool fibre. It is soft, warm, lightweight, resilient, and easy to care for because of their low specific gravity and high bulk properties, the acrylic is called the “warmth without weight” fibres. Polypropylene is also known as thermoplastic polymer used in a wide variety having lower density, mouldings parts with lower weight. Polypropylene is normally tough and flexible, especially when copolymerized with ethylene. It is thus used among third selected yarns for warping in manufacturing of union fabric. This yarn was used in 2/ 120 count and single ply count as per the availability of yarn in the market.

Selection of weaves for designing samples of union fabric:

The threading and lifting plan for Plain, Twill and Basket weaves have been shown graphically as under:

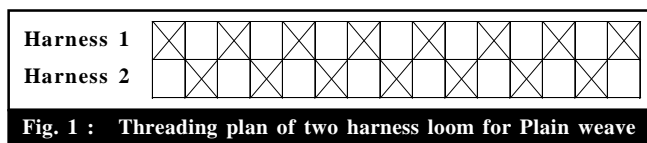


Fig. 1 : Threading plan of two harness loom for Plain weave

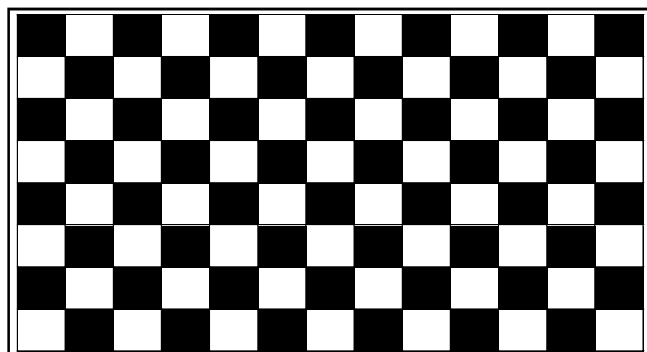


Fig. 2 : Lifting plan of Plain weave pattern: *1, 2, 1, 2, 1, 2 repeat from*

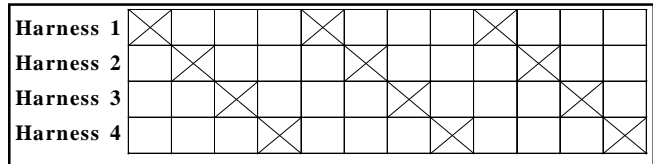


Fig. 3 : Threading plan for Twill weaves

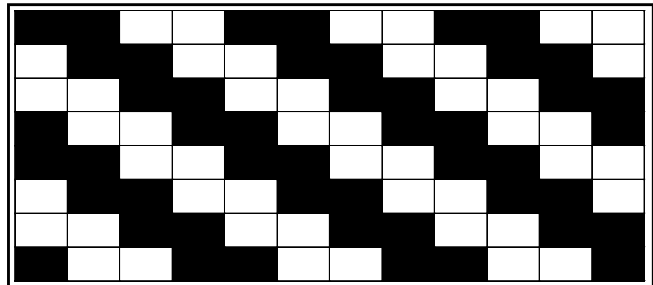


Fig. 4 : Lifting plan of Twill weaves pattern 3/1: *1-3, 2-4, 3-1, 2-4, repeats from*

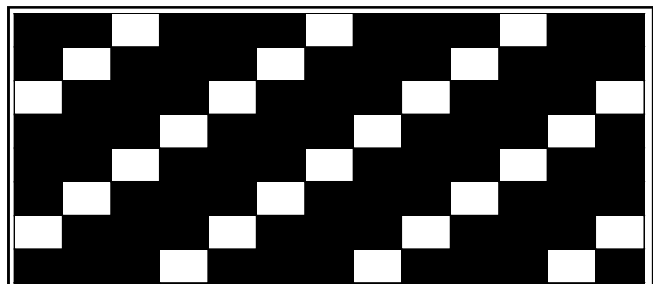


Fig. 5 : Lifting plan of Twill weaves pattern 3/1: *1-3, 2-4, 3-1, 2-4, repeats from*

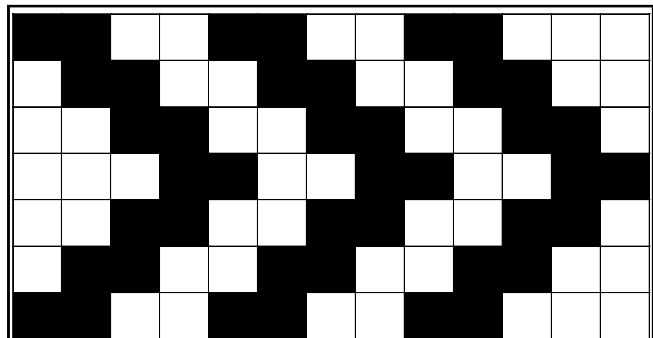


Fig. 6 : Lifting plan of herring bone Twill weaves pattern: *1-2, 2-3, 3-4, 4-1,4-3, 3-2, 2-1, 1-4 repeat from*

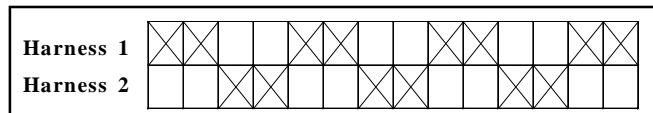


Fig. 7 : Threading plan of two harness loom for Basket weaves

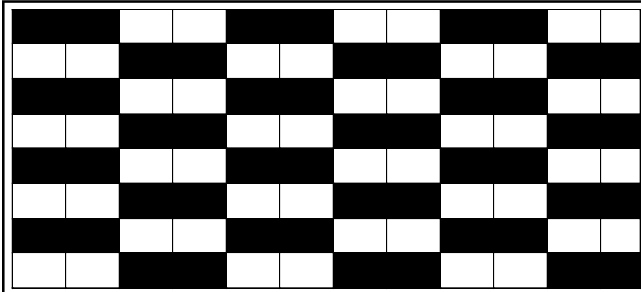


Fig. 8 : Lifting plan of Basket weave pattern: *1-2, 1-2, 1-2 repeat from*

Development of union fabrics:

Union fabrics were woven using different yarns in various counts. Union fabrics had pure cotton (2/20, 2/24 count), acrylic (2/24, 2/32 count) and polypropylene (2/120, single ply count) in warp wise direction with nettle yarn of 6 Nm in crosswise direction. The count of nettle was kept constant in all the samples of union fabric. All the fabrics were woven on a handloom by using fly shuttle loom and frame loom (Table 1). Different codes assigned to yarns of two different counts. CN₁, CN₂, CN₃ codes were assigned to cotton yarn of 2/20 count and CN₄, CN₅ and CN₆ codes were assigned to 2/24 count of cotton yarn. 2/24 and 2/32 counts of acrylic yarn for manufacturing union fabric were used AN₁, AN₂, AN₃ codes were assigned to count 2/24 and AN₄, AN₅, AN₆

Table 1 : Development of union fabrics using different yarns, composition and weaves			
Code assigned	Composition	Types of weaves	Images
CN ₁	Cotton + Nettle 2/20 count + 6 Nm	Plain	
CN ₂	Cotton + Nettle 2/20 count + 6 Nm	Twill	
CN ₃	Cotton + Nettle 2/20 count + 6 Nm	Basket	
CN ₄	Cotton + Nettle 2/24 count + 6 Nm	Plain	



Table 1 contd...

Contd.... Table 1

CN ₅	Cotton + Nettle 2/24 count + 6 Nm	Twill	
CN ₆	Cotton + Nettle 2/24 count + 6 Nm	Basket	
AN ₁	Acrylic + Nettle 2/24 count + 6 Nm	Plain	
AN ₂	Acrylic + Nettle 2/24 count + 6 Nm	Twill	
AN ₃	Acrylic + Nettle 2/24 count + 6 Nm	Basket	
AN ₄	Acrylic + Nettle 2/32 count + 6 Nm	Plain	
AN ₅	Acrylic + Nettle 2/32 count + 6 Nm	Twill	
AN ₆	Acrylic + Nettle 2/32 count + 6 Nm	Basket	
PN ₁	Polypropylene + Nettle 2/120 count + 6 Nm	Plain	
PN ₂	Polypropylene + Nettle 2/120 count + 6 Nm	Twill	
PN ₃	Polypropylene + Nettle 2/120 count + 6 Nm	Basket	

Table 1 contd....

Contd.... Table 1

PN ₅	Polypropylene + Nettle	Twill	
	Single ply + 6 Nm		
PN ₆	Polypropylene + Nettle	Basket	
	Single ply + 6 Nm		

codes were assigned to count 2/32. Similarly polypropylene yarn in 2/120 and single ply counts were used for making union fabric. Thus PN₁, PN₂ and PN₃ codes were assigned to count 2/120 and PN₄, PN₅ and PN₆ codes were assigned to single ply. Nettle yarn of 6 Nm was used in all the samples of union fabric.

Conclusion:

The findings of the present study revealed that union fabric was found to be comfortable for handloom products. Using of manmade along with natural yarn is affordable. Cotton, Acrylic, Polypropylene, have been found suitable in various end uses as handloom textile products. It is concluded that nettle fibre is renewable, biodegradable, lighter but is more delicate-looking and environment friendly too. Keeping in view the above

points and to promote handloom weaving, union fabrics in combination with different yarns along with nettle were used for manufacturing.

Authors' affiliations:

Harinder Kaur Saggu, Department of Apparel and Textile Science, College of Home Science, Punjab Agricultural Sciences, Ludhiana (Punjab) India

REFERENCES

Barua, N.B. and Gogoi, A. (1999). A study on handloom fabrics. *J. Ind. Tex.*, **107** : 30-31.

Gupta, S. (2001). A study on weaving of acrylic fabric (Cashmilon) industry of Meerut. M.Sc. Thesis, Kurukshetra University, Kurukshetra, India.

Kaur, H. (2003). Documentation of rural textile micro enterprises of Punjab. Ph.D. Dissertation, Punjab Agricultural University, Ludhiana India.

Sood, S. (1983). A study of handloom weaving in rural Ludhiana. M.Sc. Thesis, Punjab Agricultural University, Ludhiana, India.

UBFDB (2011). *Himalayan Nettle*. Uttarakhand Bamboo and Fibre Development Board. Uttarakhand, India

WEBLIOGRAPHY

Anonymous (2011). National Handloom Development Corporation Ltd. www.nhdcltd.co.in/careers.pdf (retrieved on July 6, 2014). <http://www.nhdcltd.co.in/>

15th
Year
★ ★ ★ ★ ★ of Excellence ★ ★ ★ ★ ★