

Enterprise with natural products (colourant)

■ MINTI GOGOI AND BULBUL BARUAH

Received: 08.12.2014; Revised: 30.03.2015; Accepted: 15.04.2015

See end of the paper for authors' affiliations →

MINTI GOGOI

Department of Textiles and
Apparel Designs, College of
Home Science, Assam Agricultural
University, JORHAT (ASSAM)
INDIA
Email : mintigogoi@gmail.com

■ **ABSTRACT** : Entrepreneurship is a key driver of our economy and majority of job or wealth are created only by enterprises, which is commonly seen as an innovator of a generation of new idea and business processes. It is the participation in the formation and development of growth of a new enterprise. Both man and women of working age constitute the main strength of economic development of nation, in India woman constitute 60 per cent of rural unemployment they can have engaged themselves on entrepreneurship development through natural dye production, and it utilization on different creative products such as cloth, food products, cosmetic, pottery printing, screen printing etc. The availability of abundant natural resources and growing demands of natural products specially in European country may serve as a platform for entrepreneurship development and training programme through natural dyes.

■ **KEY WORDS**: Entrepreneurship, Microfinance, Fastness, Colourant

■ **HOW TO CITE THIS PAPER** : Gogoi, Minti and Baruah, Bulbul (2015). Enterprise with natural products (colorant). *Asian J. Home Sci.*, **10** (1) : 93-97.

Economic development and maintaining ecological balance of a country to a large extent depends mostly on human resources. But human resources alone is not enough for economic development. It needs some other non-human resources such as industrial organization, available raw material and its utilization processes, some well defined improved technologies for wage earning activities and a conducive environment. As it has been said that trade is the key of richness, establishing enterprise is a powerful means of initiating, promoting and maintaining economic activities to generate income by production and distribution of our national wealth and services. The origin word “Entrepreneurship” as derived from the French verb “Entreprendre”, Entre means to ‘entre’, Prendre means to ‘take’. Entrepreneur means the introducer of innovations and creator of job according to new encyclopedia of britannica –

“Entrepreneurship” is an individual who bears the risks of operating a business in the face of uncertainty about the future condition. Involvement of both men as well as women in entrepreneurship activities are the key driver of economic growth of a country. As our country India has rich plants bio-diversity there is an ample scope for plant base entrepreneurship development.

To become a successful entrepreneur is not an easy task, it is a highly risk taking activity. Each letter of the word Entrepreneur denote different qualities :

- E = Enthusiastic to achieve.
- N = Need for accomplishment
- T = Target oriented
- R = Risk taking
- E = Endeavour
- P = Planning
- R = Resourcefulness

- E = Energetic
- N = Newness
- E = Endurance
- U = Uniqueness
- R = Resoluteness.

The selection, used, promotion of small scale enterprise has been widely recommended as one of the most appropriate means of developing industry in over populated country like India. On the present context, to save the earth and our life, new types of entrepreneurship can be developed with the best and essential Product idea including training about how to make a system work correctly. As north-east India is the treasure house of natural resources, mainly the herbs and plants, a woman can established enterprise on the basis of those useful and easily available materials. The extraction of plants or vegetables dye and pigments, organic food products, herbal medicines, cosmetics, production of mulberry, eri, muga and mulberry silk and Bt cotton fabric production unit from renewable sources is now becoming more demandable. The government is encouraging self-employment, many microfinance schemes have started gaining ground in the state, a women entrepreneur can avail that facility with minimum amount of risk.

Keeping view on the ample scope and opportunity of establishing new enterprises from natural products related to the second basic need of human being (textiles) this study was designed with the following objectives:

- To extract natural dye from indogenous plant.
- To dye mulberry silk yarn with extracted dye.
- To analyze the fastness properties and the cost effectiveness of the natural dye.

■ RESEARCH METHODS

The materials and methods followed in the study are described in following heading.

Materials :

Selection of yarn :

The yarn selected for the study was mulberry silk because natural colour give more better result in natural dye.

Selection of dye plant :

The bark of Indian willow (*Salix tetrasparma*) (Fig. A) commonly known as bhe was selected and collected from the Jorhat district (26°4' N latitude and 94°12' E



Fig. A : Indian willowplant

longitude) of Assam, India.

Selection of mordant :

The natural dye require a substance which act as a colour intensifier and help in chemical bonding between dye and fibre, thus, help the fixing of colour to the material known as mordant. Eco-friendly mordant alum (Aluminum potassium sulphate) and mybrobalan (*Terminia chebula*) were used for the study.

Selection of chemicals :

The chemical used for the study were of Na_2CO_3 (Sodium carbonate) and a pinch of sodium chloride. Distilled water was used for dye extraction procedure and preparation of mordent solution, and the filtered water was used for dyeing and washing procedure.

Methods :

Preparation of yarn for dyeing :

Silk contains sericin which interfere the dye absorption, hence degumming of silk was done with mild soap and detergent (Deulkar, 1973).

Preparation of dye powder :

The bark of the Indian willow plant was air dried and grinded with an electrical grinder to make fine particle as the smaller particle gives better result in dyeing of silk textiles (Fig. B).



Fig. B : Bark of the plant and powdered dye



Fig. C : Extracted dye solution



Fig. D : Dye solution after dyeing

Measurement of particle size :

During dyeing process dye molecule has to be enter the inner molecular space of the yarn hence the size of grinded powder of willow bark samples were kept smaller but not <0.5 micron and also to improve the dyeing property on silk yarn and easy dispersion in dyeing process for better colour strength it was necessary to make the sample smaller.

Extraction of dye :

Dye was extracted by using 0.5 per cent of Na₂CO₃ (sodium carbonate), the material (dye) and water ratio (M:L) 1:20 at boiling temperature (100°C) for 45 minutes (Devi *et al.*, 2002, AICRP) The dye solution was passed through raw cotton and the residue were disposed off (Fig. C and D).

Dyeing of silk :

The wet silk samples were dyed in the standerized dye solutions for 40 minutes at 80°C. To obtain different colour shades mordanting with myrobalam and alum were done simultaneously mordanting methods.

Fastness properties :

The other criteria, the depth of colour, coloureveness and colour fastness to rubbing, washing, and sunlight were tested by standard test methods (ASTM,1968).

RESEARCH FINDINGS AND DISCUSSION

The dye from Indian willow bark gave a very pleasing reddish brown colouron silk yarn in presence of myrobalam and slightly light brown colour with alum.

Mordant concentration 5g/100ml was found to be optimum by visual observation of dye sample prepared in different conditions.

The percentage of dye absorption was recorded based on optical density of dye after and before dyeing. The colour strength value (K/S) indicated that the colour

Table 1 : Ratings for colour fastness properties of dyed samples

Sr. No.	Mordant used	Sunlight	Washing		Crocking			
			CC	CS	Dry		Wet	
					CC	CS	CC	CS
1.	Without mordant	3	4	5	5	5	4	4
2.	Alum	4	4	5	5	5	5	5
3.	myrobalam	5	5	5	5	5	5	5

CC :Colour change; CS : Colour staining; ; CC Ratings: 1 = very poor, 2 = poor, 3 = fair, 4 = very fair, 5 = good, 6 = very good
CS Ratings: 1= heavily stained, 2= considerably stained, 3= noticeable stained,4=slightly stained,5= negligible or no staining

yield is marginally increased with increased concentration of mordants.

The colour fastness of silk yarn to light fastness, washing, and crocking was found to be good, after series of assessment done by a comparison with International Gray Scale of grading sample from 1-5:1-very poor, 2-poor, 3-fair, 4-very fair, 5-good

Natural dye from Indian willow plant is found to be highly cost' effective for colouring of silk fabric. If we can collect the dye plant directly from the nature *i.e.* plant itself it cost only Rs. 80/- for the colouring of 1 kg of silk fabric.

The natural dyeing are extremely good, and highly preferable from the stand point of bio-degradability, renewability and cost effectiveness and a green alternative to petrochemical based synthetic dyeing.

Human are close to clothing more than anything and certainly we carry it most than any other things so it is the natural necessity of human being to adorn our body with safe clothing. Colourants used in textiles are most important criteria which not only give us joy but protect our body from most harmful ultra violet (UV) ray of sun. Recently with the increasing national and international awareness about duplication of natural resources,

ecological imbalance, pollution problem and our disturbed environment due to the ample uses of hazardous environments chemical particularly synthetic dyes have forced us to think of safer alternatives and natural dyes from Indian Willow appear to be an ideal choice due to its property of eco-friendliness which does not create any environmental problem at the stage of production or use and it can maintain ecological balance. The world becoming more conscious towards ecology and advancement, there is need to revive the tradition of natural dye and dyeing techniques by the women as the alternative of hazardous synthetic dyes. It is noted that, in India, synthetic dye industries has been considered as one of the seventeen most polluting industry in the country, (Central Pollution Control Board of India) whereas, natural dye production unit is becoming more demandable day by day. There is increased orders on natural dyed garment from the western importing countries enforcing compromise on indigenous methods of natural dye extraction with modern scientific approaches. The total export of Indian textiles is close to 11 billion USD per year. If only one per cent of this is converted to natural dyed products the value of exports will be over one-hundred USD and there is value addition of 10 per cent

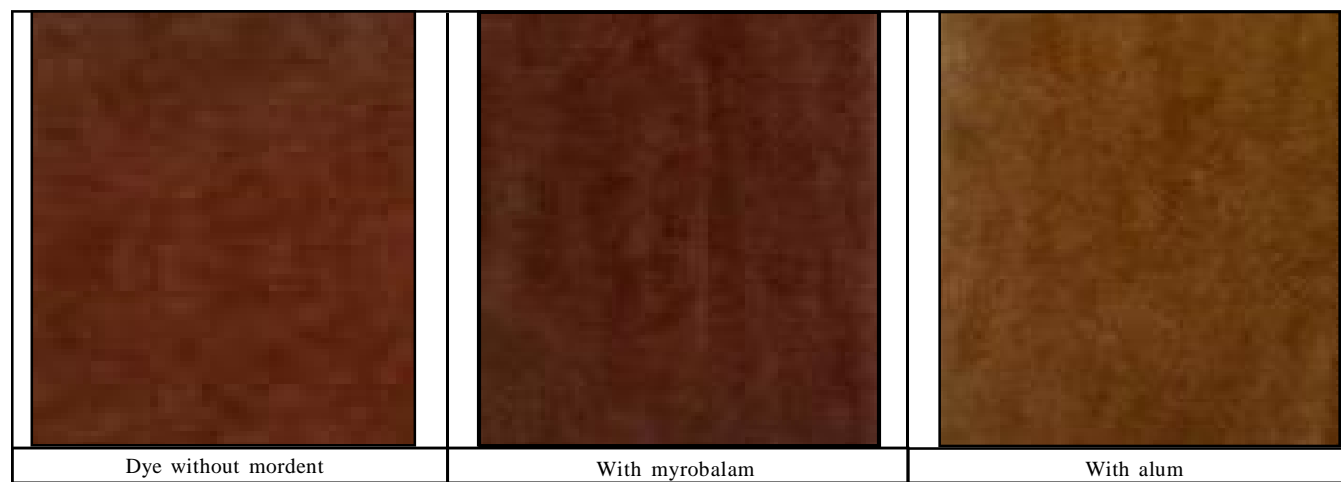


Fig. 1 : Indian willow with myrobalam and alum

Table 2 : Approximate cost of dyeing 1 (one) kg of silk yarn

Sr. No.	Ingredient used	Amount needed	Natural dye	Synthetic dye
1.	Dye	2.5 kg.	Rs. 75.00×2.5 = 187.50	Rs. 250.00/-
2.	Alum or myrobalam	30 g/	Rs. 6.66/ for alum no cost involved for myrobalam	Rs. 6.66/-
3.	Na ₂ CO ₃ (alkali)	50 g	Rs. 9.00/-	Rs. 9.00/-
Total			Rs. 202.00/-	Rs. 265.66/-

on account of the use of natural dye the country will earn extra 10 million USD apart from creating a niche products (Gulrajani, 2010).

As dyeing of textile was creative and lucrative art patronized through century, it is only the entrepreneur who can bring back the glorious past of natural dyeing practice in India. The majority of population in India has been dependent on agriculture and the problem of unemployment became severe among educated rural youth. There is no other means of developing economic opportunities rather than entrepreneurship development with new agricultural product. Raising dye yielding plant Nurseries and supply of plants to the farmers at a reasonable price, entrepreneur can take up monopoly of natural dyes export to other foreign countries. An enterprise can establish in wanton collection and cultivation of dye yielding plant as a part of alternative farming and can open up a new vista to meet the aspiration and need of the country. Similar work related to the present topic was also done by Preethi and Balakrishnamurthy (2011); Gogoi (2009) and Devi *et al.* (2002).

Conclusion :

In the vast field of fashionable dressing among the youth as well as ecological concern, it is only the entrepreneur who can make different value added diversified products with natural dye and can bring back the glorious past of natural dyeing practice in India. In this field, raising dye yielding plant nurseries and supply of plants to the farmer at a reasonable price, will be a good effect. The whole world is deeply concerned about the global warming which may cause severe disaster in earth, the noble vision of today, is to establish an organization or industry by keeping an eye to their products, which should not affect the green house effect. Today's consumers understand the value of money, therefore, the organic, non-toxic products in every field have created a new icon. It is our duty to encourage the youth and women of the country of establish enterprise by natural products and enjoy the charms of new

innovation as well as to earn livelihood and to develop the economy of the country.

Authors' affiliations:

BULBUL BARUAH, Department of Textiles and Apparel Designs, College of Home Science, Assam Agricultural University, JORHAT (ASSAM) INDIA

■ REFERENCES

- A.A.T.C.C. (1968). AATCC technical manual, American association of textile chemist and colourist. New York, **25**: 690-639.
- Annual Report (2004): All India Co-ordinated Research Project in Home Science. Assam Agricultural University, Jorhat (ASSAM) INDIA.
- ASTM (1968). Standard method of test for aromatics in light naphthas and aviation gasolines by gas chromatography. American National Standard ZLL 209pp.
- Chavan, R.B. (1995)**. Revival of natural dyes. A word of caution of environment. *Colourage*, **42**(4) : 27-30.
- Deulkar, D. (1973)**. Household textiles and laundry work, NEW DELHI, INDIA.
- Devi, A.S., Katyayini, V.K.L.T. and Samanthy, B.S. (2002)**. Annatto – bright natural colourant for cotton. *Tex. Trends*, **45** (1): 29-33.
- Devi, S., Sumanthy, B.S. and Katyayini, A. (2002)**. A bright natural colour source for dye. *Indian Silk*, **39**(12) : 20.
- Gogoi, Nabaneeta (2009)**. Value addition of eri silk with annatto – a natural colourant. *Asian J. Home Sci.*, **4** (2) : 327-332.
- Gulrajani, M.L. (2010)**. Convention Proceeding Natural Dyes, December 2001. IIT NEW DELHI, INDIA.
- Preethi, P. and Balakrishnamurthy, G. (2011)**. Assessment of banana cultivars for pigment extraction from bracts, its suitability and stability as food colourant. *Internat. J. Proc. & Post Harvest Technol.*, **2** (2) : 98-101.
- Saikia, S. (2000)**. Entrepreneurship: concept and definition, apparel designing for higher marketability. Completion of Lacture Notes. ICAR, NEW DELHI. INDIA.

10th
Year
★★★★★ of Excellence ★★★★★