

***Chrysopogon zizanioides* (L.) Roberty– (*Katara Jhar*) could emerge as a significant tool for rural development in floodplains of Mithila (North Bihar), India**

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Abstract

Vetiver (*Chrysopogon zizanioides*) has since emerged as a multifaceted grass that could be used for conservation of degraded soils and is eulogized as a living fence since ancient times. In Mithila area of north Bihar it forms the basis of “Sikki Art”. A recent innovative practice of carving “wall hangings” is gaining ground. Progressive farmers are integrating the cultivation of Vetiver with SRI paddy, sweet flag, Eucalyptus, pulses and other legumes. Flood based economy of Mithila region could get a boost through its vigorous plantation in the sandy areas affected by Kosi, Kamla, Baghmata and other rivers.

Keywords: *Chrysopogon zizanioides*, Sikki Art

Introduction

Human beings and other animals on Earth owe their existence to the diverse groups of plants, of which grasses play a significant role. Development of agriculture is attributed to selection of plants of nutritional importance and their gradual domestication. Grasses mostly occupy the wilderness and do not require too much of human attention and endeavour for their sustenance, yet they serve the manifold livelihood purposes of providing base materials for human housing, medicine, cordage, food, fodder, etc.

Civilizations all over the world incorporate the use of plants in different cultural attributes of which grasses form a significant component. One such grass, Vetiver, having a strong root in Indian culture, has now attracted worldwide attention that is evidenced by five international

conferences held on this single grass. Botanically it is named as *Chrysopogon zizanioides*, belongs to the family Poaceae. Poaceous grasses belonging to *Sachharum*, *Desmostachya*, *Vetiveria* (*Chrysopogon*) and some other genera have a significant bearing on sustainable livelihood in different parts of India and abroad.

Vetiver occupies special significance in flood ridden areas in view of its deep penetrating roots which help check the process of soil erosion. *Katara jhar* (as it is called in north Bihar) is of singular importance in providing an evidence in case of disputes related with demarcation of land boundaries (Jha, 2004; Jha and Saha, 2006).

Vetiver has caught the fancy of ancient poets and litterateurs like Kalidas, Sri Harsha, Vidyapati and others in India that is evidenced by many Sanskrit synonyms like ‘*Usheera*’,

'Nalada', 'Amrinaala', 'Jalavaasa', 'Veerana' etc. Vetiver finds mention in the classical texts of 'Bhaagwata puraana', 'Bhavisya puraana', 'Shaakuntala', 'Naishadh Mahaakaavya', etc. Ayurvedic texts refer to its diverse medicinal uses. This multifaceted grass is formally eulogized in rural India and women could be seen singing folk songs while collecting its stalks in the flood plains that provide base material to the 'Sikki' art. Vetiver forming a component of a number of rituals in India clearly reflects its deep association with the Indian culture.

Mithila region in north Bihar is known for having a moderate to heavy rainfall of over 1200 mm and fine network of rivers mostly emanating from the Nepal Himalayas. As such a vast area remains water logged and provides habitat to a large number of wetland grasses of which *Chrysopogon zizanioides* is now well recognised for its carbon sequestration capacity. Wetlands serve as kidneys of nature and make up the loss caused by denudation of forests. Mithila wetlands comprising hundreds of *chours* (land depressions caused by changes in river courses over millennia), *moins* (ox bow lakes caused by river meanderings) and other natural and man-made water bodies provide ideal habitat to the growth of Vetiver as a multifaceted grass (Jha, 2012).

Katara roots (known generally as *Khus*) are known for being the base materials of cool and fragrant curtains which were in high demand till two to three decades back during summer months. Energy conservation needs could motivate people retrieving this old practice, which was made to give way to air coolers and conditioners a few decades back.

Materials & Methods

A survey was made and information were gathered on various practices related to Vetiver in districts of northern Bihar with reference to economical and cultural aspects.

Economic activities pertaining to (a) empowerment of rural women through their involvement with collection of Vetiver stalks and production of *Sikki* gadgets of traditional and modern hues and (b) cultivation of *Khus* as a crop in water logged areas and its integration with other crops like paddy, *Bach* (sweet flag), *Eucalyptus* and *Dhaincha* were investigated.

Cultural aspects were also looked into in relation to association of Vetiver with diverse aspects of Mithila culture. Personalities honored with national awards in the field of *Sikki* art were identified.

A comparison has been made on the utilization pattern of Vetiver in north Bihar with those of other parts of India and abroad. Information gathered has been presented in the form of three tables and four plates containing twenty two figures.

Result and Discussion

Vetiver is a multifaceted grass which finds mention in Mithila folk tales, songs and proverbs and provides a basis to the 'Sikki' art in this region. Vetiver grows luxuriantly in the flood plains and to an extent helps combat the challenge of global warming. North Indian population of *C. zizanioides* spreads through seed propagation. People generally plant it on the bunds of crop fields to ensure protection against high floods. Keeping in view of its economic potentials, farmers have now started cultivating

improved varieties of *Khus* in the flood plains. A number of women *Sikki* artists in this region have earned national and international fame and this art has proved a significant tool in women empowerment, more particularly in the rural parts of Mithila.

Vetiver worship : An ancient message for land conservation

This ancient ritual finds its relevance even today. Farmers in remote rural areas still observe a practice of *Katara* (Vetiver) worship as a sequel to the ancient method of land conservation. This grass is formally eulogized on the first and last Sundays in the bright fortnight of the Indian calendar months of Agraahaayan (Nov-Dec.) and Baisaakh (April-May) (Plate-1). Women folk in the villages take holy bath in the nearby river/pond and move in a procession to the site of Vetiver grass where they offer flowers, fruits, vegetables etc. They refrain from taking salt on every Sunday between these two months. *Katarapuja* is a part of the ancient practice of “Sun worship” in the old civilizations. As a corollary to the process, cow-dung and clay

blocks (*Dhep*) are held as ‘witnesses’ and are also eulogized by offering rice, flower, betel leaves, etc. This is symbolic of cow-dung being significant in improving the soil fertility. Women also tie ‘knots’ on the Vetiver leaves asking for fulfillment of their worldly and trans-worldly desires. By observing this ritual, sustenance of Vetiver is ensured (Jha & Goel, 2006; Jha *et al.*, 2011).

Table-1 refers to the association of Vetiver with Mithila rituals and festivals. For example, there is a practice of planting Vetiver at the “ghats” (podiums) raised specially for performing the “Chhath Puja” (again a practice of “Sun worship” in eastern part of Mithila in Saharsa district. Devotees observing *Ekaadashi* (performing fast on 11th instant of every fortnight as per Indian calendar month), plant Vetiver in their courtyard on the occasion of “Karmaa Dharmaa Ekaadashi” and worship the same.

Sikki Art in Mithila

Villages like Raiyam and Rampur in Madhubani district, Sursand in Sitamarhi district

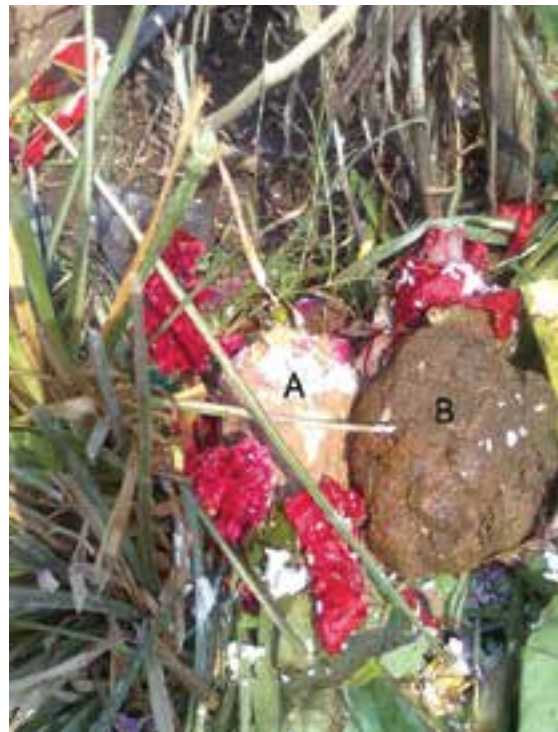
Table – 1 Use of Kataraghas (Vetiver) in Mithila Rituals/Festivals

Sl. No.	Rituals	Occasion (As per Indian Calendar)	Purpose
1	Katara Puja	Agraahaayan (October-November) and Baisaakh (April – May)	Worshipped for health and welfare of the entire family
2	Chhath Puja	Kaartik (October-November) (Shukla Sasthi)	Vetiver is planted at the “ghat” (earthen podium) alongside the water body (river/pond)
3	Karma Dharma Ekadashi	Bhaadra Shukla Ekaadashi (August – September)	Vetiver is planted in one’s courtyard and worshipped
4	Saamaa Chakebaa	Kaartik Shukla Paksa (November)	A character in the episode ‘Vrindaavan’ is made of Katarajhar

Plate 1 - Katara Puja (Vetiver Worship) in Mithila (North Bihar), India



Rural women worshipping Vetiver grass in Darbhanga village



(A) Clay Block and (B) Cow dung being worshiped along with Vetiver grass



Women tying knots on Vetiver leaves for fulfillment of their desires



Vetiver leaves with knots tied by rural women

and the Tharuhat area in West Champaran district are known as Vetiver hubs. Women mostly belonging to the weaker sections of the society engage themselves in the business of collection of *Sikki* stalks from the floodplains after the rainy season nears its end. They spend major hours of the day in the collection of Vetiver stalks which they retain in their houses for making brooms and container gadgets of various hues. They also make an income through the sale of these stalks as ‘*muthias*’ (fistfuls).

Table-2 provides a list of *Sikki* gadgets carved by Vetiver artists in Mithila region of Bihar. Plate-2 illustrates the *Sikki* art items. Exquisite domestic items of both conventional and modern hues are carved out from inflorescence stalks of Vetiver after their softening by pretreatment with warm water. The circular stalks with 2 to 3.5 mm diameter are cleaved into two, four, eight or even sixteen pieces depending upon the artist’s capacity to use the fineness. The partitioned strands are intricately woven around a grassy base made of other poaceous grasses with the help of a specific needle called *takua*. Using over two dozen designs various types of containers, fans, wall hangings, etc. are carved. Social Scientists are of the view that some of these designs resemble those found in the clay potteries and coins obtained in Harappa excavations. Some plant-based designs include those of the leaves of *Ipomoea aquatica*, flower of *Benincasa hispida*, fruit of *Trapa natans* etc. (Jha and Saha, 2006). Fast colours are applied to the *Sikki* items through hot water treatment with common salt also dissolved in it. Earlier a dye obtained from the bark of *Artocarpus lakoocha* was used to colour the *Sikki* gadgets.

Sikki gadgets are mostly the containers of different shapes and sizes used for storing household items like masticatories and marital items like fruits of *Bixa orellana* (Sitasindur) and *Semecarpus anacardium* (Bhela) etc., *Sikki* items are almost immune to pest attacks, which could be ascribed to the presence of pesticidal principles in the plant. Investigations are required to decipher the genetic diversity in its populations with a view to ascertaining the quantum of inherent pest resistance components as well as those of fragrant oils. Certain new initiatives in fashion designing have witnessed blending of *Sikki* with jute items.

Table – 2 Old and New *Sikki* Gadgets Carved by Vetiver Artists in Mithila Area (North Bihar), India

Old gadgets (Vernacular names)	Modern gadgets
<i>Mauni</i>	Casserole
<i>Pauti</i>	Soap-case
<i>Changeri</i>	Telephone box
<i>Phuldali</i>	Table mats
<i>Virahara</i>	Coaster feeder
<i>Kothi</i>	Pen holder/ Knife holder
<i>Mujela</i>	Trays & Bangles

Raiyam Village in Madhubani District – A Hub of *Sikki* Activities

Late Bindeshwari Devi of village Raiyam in Madhubani is known as an accomplished *Sikki* artist who was honoured by the late Prime Minister Indira Gandhi with the National Master Crafts Woman Award in 1969. She got widowed in early childhood and stayed back in her paternal village to devote herself to *Sikki* art. She had occasions to visit foreign countries

Plate 2 - Facets of Sikki Art in Mithila (North Bihar), India.



Sikki Tajmahal made by a local artist adorning the Darbhanga Museum



Broom of Katara (Vetiver)



Sikki gadget containing (A) Sita Sindur (*Bixa orellana*) and (B) Bhela (*Semecarpus anacardium*)



Sikki basket made of Vetiver



Traditional Sikki gadgets used as containers

Plate 3 - Award and recognition to late Bindeshwari Devi of Raiyam Village in Madhubani district - A hub of Sikki art

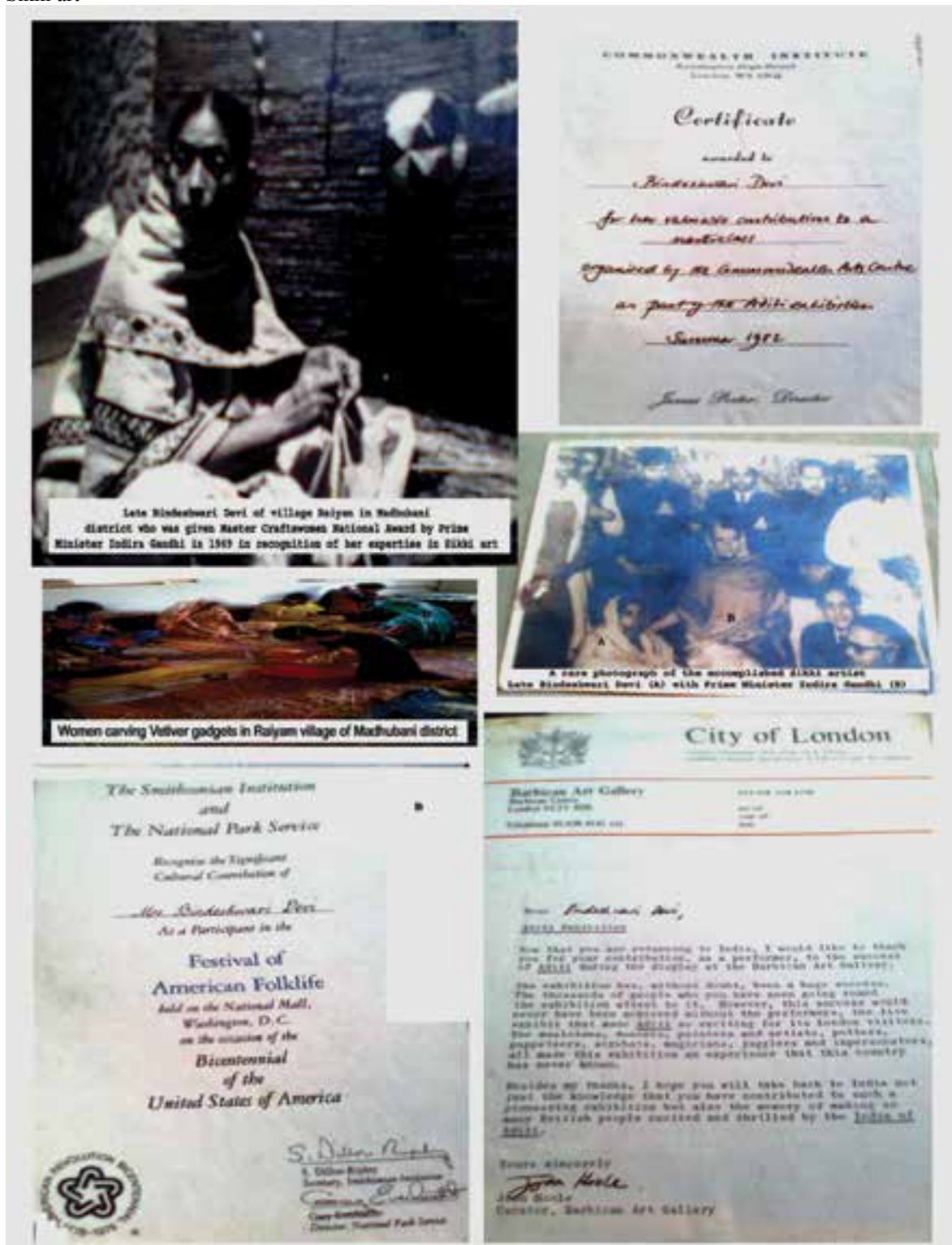


Plate 4 - Innovative Vetiver Wall Hangings



Young girls and women making Sikki wall hangings



Baans - Purain (Bamboo culm & Lotus leaves) an emblem of creativity as depicted through sikki art



Religious symbols as depicted through Sikki art



Artists of Rachna Sikki Hastkala Kendra, Rampur (Madhubani, Bihar), India

and win several other national and international awards. Figures in Plate-3 depict the awards and recognition to late Bindeshwari Devi by the Barbican Art Gallery of London, Commonwealth Institution of London and the Smithsonian Institution and National Park Service of U.S.A during its bicentennial year in 1976. Plate-3 further incorporates the *Sikki* activities going on at present in Raiyam village.

Kumudini Devi of Sursand in Sitamarhi district of Bihar was another woman *Sikki* artist who earned a big name in this field. *Sikki* art has earned prosperity to a good number of women artists and has evolved as a tool for their economic empowerment. The cases of Nuna Khatoon of Sarisab Pahi and Gulesha Khatoon of Sapta in Madhubani district could be cited as other examples of the same.

Vetiver Wall Hangings: An Exclusive Contribution of Rachna *Sikki* Hastakala Kendra

An innovative practice of making exquisite wall hangings has been devised by Rachna *Sikki* Hastakala Kendra in Rampur village near Sarisab Pahi in Madhubani district of the state of Bihar. This art form is based on the process of bending and pasting of the *Sikki* stalks and giving them a desired shape. Quite a good number of these wall hangings are based on the episodes mentioned in ancient scriptures (Plate-4). This centre was started in 1994 by Mr. Dharendra Kumar, an accomplished *Sikki* artist in his own right. The Kendra provides training to young girls and women from all sections of society and that way it constitutes a significant tool for creation of social harmony. The names of Rinku Kumari, Rama Kumari, Sindhu Jha, Babita Kumari and Ganita Devi

could be cited as the emerging *Sikki* artists of repute. The school going girls earn a hefty sum through this art by working in their spare hours. Getting impressed by the development of this innovative art form, the district administration of Madhubani has set up an Art Gallery at a cost of Rs.25 lakhs in the premises of the local primary school. The main source of inspiration for this exclusive art form has been Mrs. Madhu Devi, the sister of Mr. Dharendra Kumar. Mr. Kumar drew moral support from his father Mr. Jagat Narayan Das, a retired government employee. Mr. Kumar is now supported by Mr. Jitendra Kumar Roy in his endeavor. The team had to struggle hard to make this art form popular.

Efforts made by voluntary bodies like Sewa Mithila, Adithi, Gramin Vikas Samiti helped *Sikki* art earn a global acclaim. Majority of women artists in the field of Madhubani Painting are well versed in the field of '*Sikki* art' as well.

***Khus* Cultivation: Now a Popular Endeavour**

About a dozen farmers in different C.D. blocks of Madhubani district have taken up *Khus* cultivation for production of aromatic oil. Sri Lal Bahadur Singh, a progressive farmer of Yogiya village near Jainagar has taken a lead in this direction. This has motivated farmers in other adjoining districts to take up this venture.

There is a need of undertaking a more vigorous *Khus* plantation in the flood plains of Bihar. Large tract of land made infertile by the deposit of sand, more particularly in between the embankments of rivers like Kosi, Kamala, Baghmata and others need to be put under Vetiver plantation. Vetiver could also contribute to restore soil fertility by acting as a "living mulch" and help contain soil erosion by the gushing flood water. The success

achieved in controlling flood based erosion in Brahmaputra valley of Assam could be cited as an example. This endeavour could also help achieve aims of agricultural diversification as the medicinal-aromatic plant has already been included for providing incentive to farmers under the priorities of National Horticultural Mission.

The state of Bihar is fast emerging as an epicenter of second green revolution which lays much stress on agricultural diversification. This incorporates putting the chronically inundated areas under integrated agricultural pattern. A progressive farmer in Yogiya village near Jainagar in Madhubani district near Nepal border has recently started the cultivation of Vetiver in a lowlying field which remained water logged for a longer period in the inner core area. He has adopted an innovative practice of integrating Vetiver with at least four other crops (Table-3). The water logged area otherwise used to remain without a crop earlier.

Vetiver is an 18-month crop which was planted in July 2011 and is likely to be harvested by Dec. 2012. To facilitate a quick economic gain he has integrated Vetiver with that of paddy under the System of Root/Rice Intensification (SRI) method. He obtained a good yield of paddy (a 5-month crop). In another portion of the plot he has planted *Bach* (*Acorus calamus*) with that of Vetiver and SRI paddy. In another portion of the plot he has integrated Vetiver with that of lentil (*Lens culinaris*).

The outer fringe area of his agricultural complex is a upland on which he has planted Vetiver alongwith *Eucalyptus* sp. This is with the view of meeting the gap in the demand of timber

which has become a scarce commodity in view of loss of mango orchards and trees like *Dalbergia sissoo* that faced epiphytotic damage in the last two decades. *Eucalyptus* sp. is otherwise known to drain water at a high speed but here water is in abundant supply.

An additional gain is made through plantation of *Dhaincha* (*Sesbania aculeata*) in the inner waterlogged area alongwith Vetiver. *Dhaincha* is a nodulating legume that performs biological nitrogen fixation and supplies abundant fuel wood. Its seeds are sold to other needy farmers. Recently the Government of Bihar has launched a campaign of organic farming and intensification of *Dhaincha* plantation is a significant component of this endeavour.

Vetiver is a source of perfumed oil and is widely used as a cold beverage. *Ayurveda* holds it as a remedy for skin infections including that of leprosy. It provides an antidote to snake bite and also helps check the tendency of abortion. The slender leaves emerging after decapitating the older portions of the plant are fed to the cattle in combination with other fodder species. Vetiver as a potential agent of phyto-remediation is being utilized for amelioration of heavy metal pollutants from the industrial water in several countries of the globe. The grass could also be utilized to contain the menace of arsenic contamination of drinking water that has cropped up in several districts of Bihar in recent years.

There stands a clear diversity in the usage of Vetiver parts for carving the exquisite art items in two parts of India as well as outside the country. In Mithila area it is the peduncle that forms

Table – 3 Integration of *Khus* Cultivation with Other Crops in Yogiya Village of Madhubani District, Bihar, India

Sl. No.	Component	Duration of crop	Time of Plantation
1	<i>Khus</i> (Main crop)	18 months	June/July
2	SRI Paddy	5 months	July
3	Legumes (Masur/Khesari)	4 months	December
4	Medicinal plant Bach (Sweetflag)	18 months	June/July
5	Timber plant Safeda (<i>Eucalyptus</i> sp.)	5 years	Round the year

a base material for Sikki art. In South India, it is the fragrant roots from which art forms are made. Outside India, it is generally the long narrow leaves from which art items are carved. A number of such items were displayed during the 5th International Conference on Vetiver held at CSIR- CIMAP during 2010. Training in Vetiver weaving was provided to willing Indians by the delegates from western countries.

Marketability and Economic Aspects

Sikki items are getting popular day by day and are being marketed in different parts of India as well as foreign countries. Some of these items are now sold at a cost exceeding eleven lakh rupees. Big business houses and institutions are decorating their premises with exquisite Sikki art.

Upendra Maharathi Shilp Anusandhan Sansthan, Patna is providing training to the Sikki art lovers since 2013. Mahila Vikas Nigam, Bihar under its skill development scheme is engaging the artists of Rachana Sikki Hastakala Kendra, Rampur (Madhubani). Till date, about 400 persons have been trained in this art. The Kendra is regularly supplying wall hangings, files and pads to the state tourism department and other institutions. L.N. Mithila University,

Darbhanga has been presenting Sikki mementos to its distinguished guests. These include the dignitaries like Sri Pranab Mukherjee, the President of India, Mrs. Meera Kumar, the then Speaker of Lok Sabha, Sri Ram Nath Kovind, the Governor of Bihar, Sri Nitish Kumar, the Chief Minister of Bihar and noted scholar Dr. J.S. Rajput who graced the convocations hosted by the University in recent years. Founder of Sulabh movement, Dr. Bindeshwar Pathak was honoured with Sikki memento at M.R.M. College, Darbhanga during the recently held National Seminar in Sociology. LNMU Proctor Dr. Ajay Nath Jha has contributed significantly to the diversification of Sikki art through his innovative ideas.

In order to promote Vetiver art, Rural Development Department of the Govt. of Bihar has established an art gallery in 2012 at Rampur village in Madhubani district under its Mahatma Gandhi National Rural Employment Scheme. Exhibitions for raising awareness in Sikki art and also for promoting its sale have been organized at Pragati Maidan (New Delhi), Delhi Haat and in several cities of India including Kolkata, Chennai, Pune, Tatanagar, Bangalore, Bhagalpur, Katihar etc.

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