BIORESOURCE CONSERVATION: TRADITIONS IN INDIA

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KEYWORDS
Bioresource
Conservation
Traditional knowledge
India
Human welfare

Prof. P. C. Mishra Felicitation Volume

Paper presented in
National Seminar on Ecology, Environment & Development
25 - 27 January, 2013
organised by
Deptt. of Environmental Sciences,
Sambalpur University, Sambalpur
Guest Editors: S. K. Sahu, S. K. Pattanayak and M. R. Mahananda
ABSTRACT

The great geographical and ecological diversities in India nurture a rich diversity of plants and animals collaterally with diversity of indigenous communities and traditions. The traditions enshrine respect for nature and consider protection of nature as a sacred duty. Indigenous biodiversity concept which still survives in Indian traditions has considerable relevance to innovation of bioresources and their sustainable use. Over 167 species of cultivated plants originated in India where wild relatives of 320 species of crop plants are still sustained. It is considered homeland of 114 breeds of domesticated animals. Use of over 15,000 plants by the tribals are recorded which can generate and improve plant genetic resources. Many forests are conserved in different states as sacred groves where the species including threatened ones are protected by religious interdicts. Several animals are considered sacred and worshipped. Many of them being ecologically and economically important have been enjoying some kind of protection since ancient times. Religious practices, faith, taboos, motifs, indigenous art, tattoos and paintings concern biodiversity. Many plants, plant-parts, animals and their products are used in worship, rituals, festivals, ceremonies for aesthetic rejuvenation. So long cultural activities continue in India conservation of biodiversity would perpetuate. The discipline became popular as the matrix of genuine academic and research activities in the second half of the twentieth century because of its potential to ensure conservation and for being synthetic and liberal in understanding the scientific rationale lying cryptic in the culture and traditions particularly of indigenous societies living in the cradle of nature, feeling and sharing moments of pleasure and sorrow with biodiversity. The concept of sustainable use of bioresources can be comprehensively derived from the social and cultural attributes and knowledge of indigenous people of any region. Ethnobiology can resolve and assess human adaptive responses and human impact on biodiversity and vice versa. Once a species gets known as a resource in any cultural group the impact of this knowledge on expansion, distribution, threat to that species and in cases even its extinction, play great role (Alcorn 1984). It has been seen that ethnic groups live in harmony with nature domesticating and selecting wild plants and animals through ages for use as resources. Necessity based folk domestication and selections have been operating on different wild species in different geographical areas to generate different types of cultivable

INTRODUCTION

Sensible men all round the globe have started expressing grave concern over depleted natural resources in general and biodiversity in particular. It has also been a realization that biodiversity, which is a very important component of the life sustaining system of the Earth, must be protected lest we would all perish and the Earth would revert from the present state of dynamic equilibrium to the state of static equilibrium like the lifeless planets. Scientists working on biodiversity during the last few decades have dealt with three main aspects, viz. (i) the number of families, genera, species, subspecies and varieties of plants and animals occurring in an area, (ii) how these species can be utilized in commerce and as sources of useful genes in biotechnology and bioactive ingredients for use in the pharmaceuticals and nutraceuticals and (iii) how the germplasm of the bioresources can be conserved. There have been significant technical innovations for in situ and ex situ conservation of germplasm and insignificant attempts to conserve and apply indigenous knowledge in sustainable use and management of bioresources. The scientists have of late started realizing the values of perceptions and knowledge of the local folk or native men about biodiversity. It is rather wise to conceive the fact that there has been a wide gap between scientific strategies and success in sustainable use of bioresources. Even the ethnographers have not observed closely the biodiversity existing in the area of their study and have not analyzed the variations in perceptions of the folk (Jain, 2001).

Ethnobiological perspectives

The indigenous societies all over the world have traditionally developed their own knowledge about the plants and animals in their surroundings and have integrated the resources obtainable from them with their needs, cultural practices and mutually sustainable relationships. Studies on all aspects of direct man-plant and man-animal relationship compose an important subject known as ethnobiology. It is this subject which can guide us to the treasure house of bioresources, their optimum utilization and conservation under the regime of nature. The discipline became popular as the matrix of genuine academic and research activities in the second half of the twentieth century because of its potential to ensure conservation and for being synthetic and liberal in understanding the scientific rationale lying cryptic in the culture and traditions particularly of indigenous societies living in the cradle of nature, feeling and sharing moments of pleasure and sorrow with biodiversity. The concept of sustainable use of bioresources can be comprehensively derived from the social and cultural attributes and knowledge of indigenous people of any region. Ethnobiology can resolve and assess human adaptive responses and human impact on biodiversity and vice versa. Once a species gets known as a resource in any cultural group the impact of this knowledge on expansion, distribution, threat to that species and in cases even its extinction, play great role (Alcorn 1984). It has been seen that ethnic groups live in harmony with nature domesticating and selecting wild plants and animals through ages for use as resources. Necessity based folk domestication and selections have been operating on different wild species in different geographical areas to generate different types of cultivable
economic plants giving us vegetables, cereals, pulses, fruits, fibres, medicines etc. Various stages of evolution of the subjects of animal husbandry and agriculture from their incipient forms can still be visualized in certain ethnic localities. The ongoing process of selection since the dawn of agriculture has led to genesis of crops with superior traits, viz. larger size, greater palatability, higher yield, more vitality and vigour of plants etc. The wild genotypes still used presently by indigenous societies have immense potential in improving the cultivated crops through well-planned hybridization and other gene-manipulation programmes. Ethnontaxonomic survey and evaluation of the specific and infraspecific races of natural flora and fauna co-existing with ethnic populaces are necessary for laying the foundation of bioresource management in one hand and catering their useful genes through biotechnology on the other. Efforts should thus be made on war footing to preserve as wide a range as possible of genetic resources for prevention of perilous possibilities of genetic erosion, especially in the biotic entities of evolutionary flexibility and ensure conservation even of the plants and animals the economic potential and ecological functions of which are yet to be fully known (Mukherjee, 1997).

Diversity perspectives

India is an Asian country lying in the tropical belt between 6°45' and 37°6' N and 78°51' and 97°25'E. It is the seventh largest country in the world and Asia's second largest nation with an area of 3,287,263 km² (3029 million hectares). Although the area is only 2.4 % of the total land mass of the World, India encompasses a varied landscape rich in natural resources. Biogeographically India is located in the trijunction of Afro-tropical, Paleo-arctic and Indo-Malayan realms India is a great country which everyone desires to see and anyone who has a glimpse of it feels his life glorified. The Himalayas guard the north and the Bay of Bengal, Indian Ocean and Arabian Sea girdle the peninsular part with a coast line of 7500Km. There is a great diversity of environment ranging from the tropical rain forests of Andaman and Arunachal Pradesh to the cold- (Ladakh and Lahul Spiti at an altitude of 7500Km. There is a great diversity of environment ranging from the tropical rain forests of Andaman and Arunachal Pradesh to the cold- (Ladakh and Lahul Spiti at an altitude of 7500Km. There is a great diversity of environment ranging from the tropical rain forests of Andaman and Arunachal Pradesh to the cold-mountains of Ladakh and Lahul Spiti at an altitude of 7500m. India’s rich natural and biological resources go hand in hand with her cultural heritage where there are over 576 native or tribal communities belonging to 227 major ethnic groups. No less than 427 tribes of India still maintain close relationship with forests. It is because of their efforts that nearly 166 species of cultivated plants originated in India. As many as 326 species wild relatives of crop plants still occur in India. Biodiversity has gifted the indigenous societies in India with 521 species of leafy vegetables, 145 species of edible roots/tubers, 101 species of buds/flowers, 647 species of fruits and seeds and 110 species of nuts. There are 542 species of plants put into composition of 1675 medicines formulated by 170 Pharmaceuticals. About 850 species of plants are used in ethnobotanical practices (EVP) in India (Jain and Srivastava 1999). The use pattern of different plants by the tribals in India shows a highly appreciable diversity and commercial potential of wild plant species (Table 1).

Table 1: Use pattern of wild plant species by the ethnic communities in India

<table>
<thead>
<tr>
<th>Utilitarian aspect</th>
<th>Number of Species (wild)</th>
<th>Number of sp. fit for commerce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicinal use</td>
<td>7500</td>
<td>950</td>
</tr>
<tr>
<td>Food</td>
<td>3900</td>
<td>250</td>
</tr>
<tr>
<td>Fiber</td>
<td>525</td>
<td>5</td>
</tr>
<tr>
<td>Fodder</td>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td>Pesticidal use</td>
<td>300</td>
<td>175</td>
</tr>
<tr>
<td>Gums, resins and dyes</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>Incense and perfumes</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Cultural use</td>
<td>700</td>
<td>-</td>
</tr>
</tbody>
</table>


Biodiversity and cultural perspectives

Biodiversity has always been a part and parcel of Indian culture and tradition which has resulted in conservation of nature and her creations. Since Vedic time the main motto of social life was to live in harmony with nature. The traditions enshrine respect for nature and to consider protection of nature and biota as a sacred duty. While reviewing the cultural relevance of Indian plants the present author and his collaborator (Mukherjee and Mukherjee, 1995) realized that a thorough perusal of religious and ceremonial practices as well as the ancient art and literature can bring into light many useful facets of wild plants relationship, the scientific rationale of which is certain to optimize human living and also guide bioresource conservation programmes. Biodiversity concern of culture, literature, art, traditions and faith in India can be revealed from:

i) Palaeobotanical data-sources: Archaeological investigations on Indus Valley Civilization (3000-2000 B.C.) have brought into light fossilized remains of wheat, barley, peas, rice, lentils, lathyrus etc.

ii) Literature: Great Epics like the Ramayana and Mahabharata, Bhagavat Geeta, Atharva Veda, Rig Veda, Matsyapurana, Kamasutra, Amarkasa, Bhagavat Purana, Garuda Purana, Vishnu Purana, Brihaddharma Purana, Agni Purana, Siva Purana, Somadeva’s Kathasarit Saga, Kalidas’s Meghadootam, Buddhists, Jataka, Parasarasa’s Vrikshayurveda, Charaka Samhita, Sushruta Samhita, Varahamihir’s Brihat Samhita etc. have pertinence to wide range of resource generating bio- and phyto-diversities.
iii) Idols, motifs and sculptures on temples, paintings etc. based on bio-themes. (iv) Traditions of offering flowers, fruits, seeds, twigs, fragrance etc. to the God or Supernatural powers. (v) Plants and animals worshipped as sacred ones and groves sustained as sacred. (vi) Plants used in ceremonies, festivals, rituals. (vii) Magico-religious practices using plants. (Viii) Prohibitions, taboos etc. involving biota.

Plants and animals remain deeply ingrained in art, literature and every aspect of Indian culture and traditions. Flowers, fruits, seeds and fragrances are offered to God, used in ceremonies and festivals. Many plants are worshipped as Gods and Goddesses (Table 2) and many forests are protected by religious interdicts. Magico-religious practices, faith, taboos, motifs, indigenous art, tattooing and paintings concern nature and biodiversity Plants associated with magico-religious practices and taboos persist even today with a long history. Different types of animals have been associated with several Gods and Goddesses as their mounts and these animals together with many others are considered sacred and worshipped.

The harvest festivals occupy a significant position in the life of Indians since they depend mostly on agriculture. The time and name of the festival varies from state to state. It is called ‘Baisakhi’ in the north, ‘Nabanna’ in West Bengal, Bihu in Assam, Ganggaur in Rajasthan, Pondal in south India. In Ganggaur festival barley (Hordeum vulgare) is sown. When seedlings emerge the women join hands and dance around them evoking blessings of Goddesses Gouri or Parvati on their husbands. The harvested young corn is presented by women to men who put it on their turbans. Through such colourful festivals as Bohag or Rongali Bihu in Assam a large number of plant species are conserved.

There are a large number of very useful plants integrated firmly with Indian customs which on scientific evaluation can hand over active principles of medicines, useful genes for crop improvement and imparting resistance to diseases and pest infestations. In the wedding ceremonies in many parts of India plants are offered to Gods and Goddesses (Table 2) and many forests are protected by religious interdicts. Magico-religious practices, faith, taboos, motifs, indigenous art, tattooing and paintings concern nature and biodiversity Plants associated with magico-religious practices and taboos persist even today with a long history. Different types of animals have been associated with several Gods and Goddesses as their mounts and these animals together with many others are considered sacred and worshipped.

Celestial perspectives

A large number of plants are believed in India to be linked astronomically with planets and stars and have profound influence on human affairs and other “earthly” matters. Such celestial plants have been enjoining conservation through ages in different parts of India. Incidentally these plants are very useful especially for their medicinal values. Some such celestial plants associated with Navagras or nine seizers or nine influencers are cited in the following:


<table>
<thead>
<tr>
<th>Plant name</th>
<th>Gods/Goddess worshipped or as their emblems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulsi leaves (Ocimum sanctum, Labiatae)</td>
<td>Vishnu (as the emblem of Lakshmi)</td>
</tr>
<tr>
<td>Lotus flowers (Nelumbo nucifera, Nymphaeaceae)</td>
<td>Laxmi, the Goddess of wealth and prosperity who sits on lotus.</td>
</tr>
<tr>
<td>White lotus flowers (Nymphaea alba, Nymphaeaceae)</td>
<td>Saraswati, the Goddess of learning, knowledge.</td>
</tr>
<tr>
<td>Vat twigs (Ficus bengalensis, Moraceae)</td>
<td>Brahma, the creator of the Universe.</td>
</tr>
<tr>
<td>Palash flower (Butea monosperma, Leguminosae)</td>
<td>Saraswati (as the emblem of Brahma).</td>
</tr>
<tr>
<td>Neem leaves (Azadirachta indica, Moraceae)</td>
<td>Sitala, the Goddess who protects us from infectious diseases and Manasa, the snake Goddess.</td>
</tr>
<tr>
<td>Fig (Ficus hispida, Moraceae)</td>
<td>Rudra/Shiva and Vishnu /Krishna/Narayana.</td>
</tr>
<tr>
<td>Mango (Mangifera indica, Anacardiaceae)</td>
<td>Govardhan /Krishna in the role of a cowherd.</td>
</tr>
<tr>
<td>Pipal/Asathwa (Ficus religiosa, Moraceae)</td>
<td>Vishnu/Krishna/Narayana.</td>
</tr>
</tbody>
</table>
Kohlapur

In Maharashtra there are many sacred groves covering about 7268 km² in this district have been maintaining 42 sacred groves spread over several regions. Particularly in these sacred groves the threatened species of plants conserved only in sacred groves of India along with the places of their occurrence are enumerated in the following:

<table>
<thead>
<tr>
<th>Plant Species</th>
<th>Location</th>
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<tr>
<td>Antiaris toxicaria</td>
<td>Tivri village of Ratnagiri District of Maharashtra.</td>
</tr>
<tr>
<td>Kunstleria keralensis</td>
<td>Groves of Kerala.</td>
</tr>
<tr>
<td>Syzygium travancorium</td>
<td>Talassery in South Kerala.</td>
</tr>
<tr>
<td>Nervilia priniana</td>
<td>Orchidaceae — Groves of Kerala.</td>
</tr>
</tbody>
</table>

Sacred grove perspectives

In India, many virgin forests, amid rural and even urban settings, have been preserved in their pristine forms by ethnic communities considering them as sacred. Each of such forests is associated with a presiding deity or supernatural power and referred to by ethnic name(s). Since in these patches of forests hunting and logging are strictly prohibited, many species of plants and animals still live in them comfortably which have either disappeared from respective natural ecosystems or are perceiving enormous threat from overexploitation. While most of these sacred deities are autochthonous, sacred groves of many of these patches of forests to some deity (Gadgil and Vartak, 1981).

Sacred groves are common in tribal dominated Purulia district of West Bengal (Basu, 2000). The indigenous communities (viz. Bhumijs, Kurmis, Loharas, Mahalis, Sabars and Santhals) in this district have been maintaining 42 sacred groves spread over 72,68 km² in a sound state on cultural and religious beliefs (Basu, 2007). The native men offer goat, sheep, swine, calf and fowl in year round religious occasions to their deity believed to reside in these sacred groves. Sacred groves provide shelter to many rare and threatened species whose eviction is forbidden by religious interdicts or taboos. Some of the threatened species of plants conserved only in sacred groves of India along with the places of their occurrence are enumerated in the following:

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The Mizo tribes like Hmar, Lushai, Pui, Lai, Mara etc. protect small sacred groves adjacent to village woodlands in Mizoram. They aptly mark the sacred groves as ‘safety forest’ and woodlands as ‘supply forest’. The tribal peoples of Mawphlang and Cherrapunji of Meghalaya preserve excellent patches of natural forests as sacred (Rao 1989). Sacred groves are known by different names in Meghalaya (Rodgers 1994) such as Ki Law Lyndoh (forests under traditional religious leaders), Ki Law Kytang (forests of great sacred value), Ki Law Niam (religious forest), Ki Law Adong (prohibited forest) and Ki Law Shnong (forest for village use). The ‘Ki Law Kytang’, located in Mawphlang of East Khasi Hills District of Meghalaya, is the most celebrated forest-grove held sacred by Jaintias, which gives a deep insight into Khasi history and religious beliefs. The people consider the sacred grove at Mawphlang as the abode of the God named “U Basa” or “U Ringkew” (the keeper of the land). Sir J. D. Hooker, a dozen of plant taxonomy, was overwhelmed with astonishment and joy after having seen its rich flora. Surrounded by trees called Castanopsis kurzii, this grove forms the nature’s museum of a unique flora rich in both diversity and density to attract botanists and naturalists from all over the world. N. L. Bor, a very eminent forest officer and a botanist who studied this grove with two others including that of Shillong peak pleaded strongly for the preservation of these primeval forests in an undisturbed state (Mukherjee and Mukherjee, 1995). Excellent patches of sacred groves are also sustained by tribes in Garo Hills (Brandis, 1897). The sacred groves in Khais Hills, also maintained through religious faith, are also natural treasure houses of plants. The Nagas generally keep some natural forests defined for grazing their cattle. The sacred blue orchid, Vanda coerulea, although very rare, has not become extinct since they are sustained by Vanchoo tribe in Tirap district of Arunachal Pradesh for use in worship and festivals. The plant Kunstleria keralensis would have become untraceable had the tribals not protected it in a sacred grove in coastal Kerala (Mukherjee, 1997).

The sacred groves are of different physiognomic types in India, e.g. Elaeocarpus sphaericus, Strychnos nuxvomica, Emblica officinalis, Syzygium spp., Diospyros spp., Dalbergia sissoo, Mesua ferrea, Sapindus trifoliatus, Terminalia spp., Flacourtia spp., Mimusops elengi, Pinus spp., Shorea robusta, Salix babylonica, Salix tetrasperma, Artocarpus heterophyllus, Artocarpus communis, Prosopis julifera, Antiaris toxicaria, Anthocephalus chinensis, Mangifera indica, Azadirachta indica, Madhuca indica, Desmostachya bipinnata, Bambusa spp. etc.

Kunstleria keralensis (Fabaceae) — Groves of Kerala.

Antiaris toxicaria (Urticaceae) – Tivri village of Ratnagiri District of Maharashtra.

Krama attenuata (Myristicaceae) – Tivri village of Ratnagiri District of Maharashtra.

Vateria indica (Dipterocarpaceae) — Tivri village of Ratnagiri District of Maharashtra.

Proboscin cineraria (Mimosaceae) – Rajasthan.

Vanda coerulea (Orchidaceae) – Tirap District in Arunachal Pradesh.

Nepenthes khasiana (Nepenthaceae) – Meghalaya. Mappia foetida (Oleaceae) – Maharashtra.

The sacred groves are at present perceiving severe threats from expanding urbanization, rapid developmental work, over-exploitation of resources, and pressure from overcrowding during religious functions. Many of the groves, in the recent past, have been partially cleared for construction of lodges, hotels and restaurants etc. All out efforts to conserve these groves are necessary since these ecosystems assure fearless abodes to a large number of species, convene biological evolution, compose excellent models of in situ conservation.
of biodiversity and act as the gene-pool of a variety of important species. The sacred groves spread all over the country need to be documented and protected with care, legislation, fiscal and moral sponsorship. It must be realized that these primeval forests have the potential to satisfy our aesthetic, recreational, cultural and scientific necessities and alleviate our sufferings.

Environmental movement perspectives
The ethnic communities in different parts of India are also known to have struggled for protection of nature, plants and animals. Of the various such efforts the environmental concern of Bishnoi community in Rajasthan (Gottlieb, 1996, 159) would be remembered with respect in all the days to come. Bishnois are known to be the first environmentalists in the world as they are known to be adopting protection and conservation of environment and wildlife since 1485 when environmentalist saint Guru Jambheshwar made it religiously compulsory for them ‘not to cut green trees’ and ‘to be compassionate to all living beings.’ On 13th September in 1730 at Khejarli or Khejdi, a village with name based on the Khejri tree- Prosopis cineraria and located in Jodhpur district of Rajasthan State, Amrita Devi (Beniwal), five of her family members and 357 people of her village were axed to death for having hugged the Khejri (Prosopis cineraria) and other trees of the forest to save them from the men of Maharaj Abhay Sing, the ruler of Marwar who came to fetch wood for use in construction of the royal palace. These women of the first Chipko andolan (the tree hugging movement) would be remembered for their compassion to and concern with livingbeing (Shiva 1988, 67). With a deep sense of regards and gratitude 13th September is celebrated every year in Rajasthan as Khejarli Diwas.

Taboos, Faith, Belief perspectives
The sparrow enjoys the right to take as much paddy as it wants from the fields in Mishmi-occupied areas of North East India since they believe that sparrows taught them the art of cultivation. Tortoise is not killed by communities in U.P., Rajasthan and other parts of India for considering it as a form of avatar of Lord Vishnu. Snakes are considered the Goddess Manasa in many parts of Eastern India. Snakes being sacred are worshipped as Nagaraj in ‘Nagapanchami’ and always associated with Lord Shiva. Tigers are worshipped by communities in Sundarbans. The members of Ramo tribe of Arunachal Pradesh do not kill tigers considering them as their own brothers. Deer and doe are not killed during pre-monsoon period (March to May) in many parts of India since it is their mating season. Crows, owl, vultures, elephants and some snakes are not killed by several tribes in North East India. Parrot, monkey, owl and jackal are not killed by communities of Barak valley. In Darjeeling Himalayan region the local people celebrate kak tiar (crows are fed with good food), Kukur tiar (dogs are bathed, decorated, served with delicious food), Gai tiar (cows are bathed, beautified, fed with fruits, vegetables, fodder and grains and worshipped), Bhai tiar (brothers are felicitated by sisters) on four consecutive days in the autumn, thus reflecting the sense of love, affection and oneness for nature’s creations in the culture of the indigenous people. The dwellers of Kokre-Bellur, a village in the proximity of Bangalore city, have been protecting with great difficulty the abode of pelicans and storks since time immemorial. A permanent interest of people lies in the collection of faecal matter accumulating in the forest floor as this is an excellent manure.

West Bengal perspectives
In the districts of Purulia, Birbhum, Bankura, West Burdwan etc. in West Bengal ‘Bhadu’ festival is mainly observed by women throughout the Bhadra, i.e. the fifth month in Bengali calendar (August-September), to get the blessings from the Goddess Bhadreswari on the occasion of planting of crops, mainly rice. The festival is based on the story of the princess of Panchakote named Bhadrawati (Bhadreswari) who committed suicide. Bhadrawati’s devotees make an image of her, worship, sing and dance before it throughout the month. On the last day of Bhadra, they immerse the image in the water after a colourful procession with the image. Songs and dances form the main attraction of the festival.

Tusu is another folk-festival associated with the event of harvesting in West Bengal which is observed on the last day of the month of Paus (December-January). ‘Tusu’ is worshipped as the Goddess of prosperity very much likes Lakshmi, and is offered songs improvised by women folk. At the end of the festival the image of Tusu is immersed in a holy water body with melancholic songs.

Religious ceremonies and seasonal festivals of indigenous communities in West Bengal and other states often reflect their way of living and their social needs. Oraons worship trees, flowers and fruits for increased crop production and protection. Fertility of land and women are given the same status in their religious prayers. Their religious ceremonies and seasonal festivals include the Basundhara in the month of Baishakh, Bhadri in Bhadra, Jejuti in Agrahayan and Sarhul in Chaitra which reflect their adhesion to and interest in agriculture.

Among other festivals in West Bengal having immense conservation values Baha, Karam, Saharai or Nagardola, Paus parvan deserve special mention. Karma or Karam observed in autumn (in Aswin i.e. September- October) involves worshipping of the tree Mitragyna parvillora which is familiar as Kelikadam or Khelkadam in West Bengal. Alternatively Haldina cordiformia (Haldau), Anthocephalus chinensis (Kadam) are also worshipped in Karam festival. Baha, observed in the spring (in March), is concerned with worshipping of Sarjam or Sal (Shorea robusta) and Matkorn or Mohul (Madhuca indica), the species ruling the dry deciduous forests in the state and elsewhere in the adjoining states. Saharai festival well spread during the winter months in the Santhal (Mandal and Mukherjee, 2003) and Munda inhabited areas of the districts of Bankura and Purulia take all the care to protect the livestock and associated plants.

Summing Up
The depletion of biodiversity matters primarily to the people living close to the earth who mainly depend on bioresources of their locality for their livelihood. The biodiversity has always been a bank to such ecosystem men who as prudent customers show obligatory involvement to maintain a substantial balance of bioresources in their account through optimum sustainable utilization in harmony with the laws of nature. As such, it is very much essential to implement schemes of People’s Participatory Programmes with the indigenous people in conservation of forests and sustainable use of their
bioresources. The first and foremost necessity in all programmes of bioresource conservation must be the development of environmental ethics to promote sympathy and empathy between Humans and Nature and between Humans and Humans.

Strategies for conservation of bioresources must include
i. Identification of tribal areas with high density of tribal population collaterally existing with high floristic density and sacred groves. ii. Thorough ethnobiological survey in these areas to record the indigenous conservational strategies in vogue and reveal the cultural relevance of biodiversity. iii. Sieving out of out the scientific rationale cryptic in ancient folk-wisdom and ritualistic attitude towards nature and to prepare a data-base accordingly. iv. Distillation of values from cross-cultural interactions for generating certain ethics to protect biodiversity. v. Documentation of incipient agricultural and silvicultural practices. vi. Identification and documentation of the wild relatives of present day economic plants and collections of germplasm for ex situ conservation and cryopreservation.

In conclusion it may be said that the present day scientists must give priority and adequate importance to utilization of knowledge of indigenous people in identification and sustainable use of diverse bioresources. The scientific endeavours must be aimed towards ‘living in harmony with nature’, the fulfillment of which is certain to give mankind a brighter, peaceful and heavenly nature in all generations to come.

REFERENCES
