

## **TRADITIONAL USE AND CONSERVATION OF SOME SELECTED PLANTS USED IN FESTIVALS AND RITUALS IN APATANI PLATEAU OF ARUNACHAL PRADESH, INDIA**

Yakang BAMIN, Padma Raj GAJUREL\*

Department of Forestry, North Eastern Regional Institute of Science and Technology,  
NERIST (Deemed University), Nirjuli-791109, Arunachal Pradesh, India

### **Abstract**

*The Apatanis are one of the major tribes of the Eastern Himalayan state of Arunachal Pradesh and are ardent believers of nature. They use various plant species to perform their rituals, festivals, etc. for the well being of human, animals, plants and their surrounding environment as a whole. A study has been conducted to document the indigenous uses and beliefs of plants that are utilized in various rituals and festivals. The present paper discusses the major festivals and rituals of Apatanis with enumeration of uses of 20 selected plant species. Bamboos, canes and some species of Castanopsis, Magnolia, Pyrus etc. have been found well associated with the Apatani tradition without which the ritual and cultural performances cannot be completed. Since the Apatanis have put in such faith and ritualistic value to these plants and trees, they have taken the conservation and management practices of these species and other bio-resources as part of their natural life style.*

**Keywords:** Apatani tribe; Indigenous knowledge system; Festivals; Rituals; Plant species; Traditional use; Conservation.

### **Introduction**

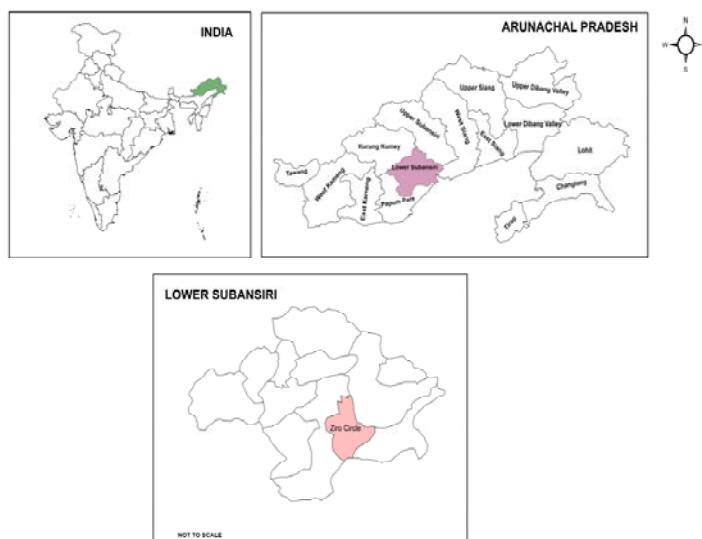
Plants have long been associated with mankind. Besides the common uses for materials, plants and animal are linked with culture and tradition. The Indigenous and tribal communities around the world are strong believers of nature and accordingly use, worship and conserving the natural resources, including biodiversity. The conservation of forest and its biodiversity can be attributed to the traditional knowledge evolved with time and spiritual respect of Indigenous communities [1]. The State of Arunachal Pradesh has rich culture and traditional practices inherited by diversified ethnic groups, comprising of 26 major tribes and 110 sub-tribes [2]. Among these traditional communities, the Apatanis are one of the major tribes that inhabit the central western part of the Arunachal Pradesh and are the descendent of legendary ancestor, Abotani [3]. Despite of intrusion of modern culture and technologies, Apatanis are still practicing their rituals, customs, cultures, etc. and are maintaining their traditional ecological knowledge on resource management. In recognition of these unique features, the Apatani cultural landscape has been tentatively enlisted as World Heritage Site by UNESCO during the year 2014. They are among the few tribes in the world who continue to worship nature. It is

\* Corresponding author: prgajurel@gmail.com

their relation with nature that regulates their cultural practices. Since immemorial times, the Apatani tribes have developed unique Indigenous Knowledge System (IKS), while inhabiting in the remote forested areas of Ziro valley closely linked with nature, and such developed IKS are still being traditionally practiced by the people of the region. The specific faiths and beliefs of Apatanis are well known among the tribes of the state [4]. The Apatanis are known for their rich culture and tradition and have preserved this knowledge and wisdom for generations and conserve the bio-resources for the fulfillment of various cultural and traditional practices. With time and modernization although the indigenous knowledge, traditional institutions and different customary laws and practices are disappearing [5], the Apatanis are still observant of their rituals and festivals and their belief on these rites and rituals is deeply connected with their everyday life. Besides, the common tradition that are being observed in Apatani society like birth ceremony, marriage ceremony, death etc. the Apatanis have some special festivals that are being celebrated in the region and reflect the unique and rich culture of the Apatanis. Such traditional knowledge developed has been found very useful in utilization and conservation of many forest species. Social aspects of tradition and culture of the Apatanis have been studied by some scholars [6, 7] which have been found well associated with management of forest and agricultural resources. The traditional agriculture practice of paddy cum pisciculture and management of forest resources in community forests are unique management practices adopted by the Apatanis. Some important contribution have been made by various scholars on resource utilization pattern of Apatanis time to time [8-12] and highlighted the traditional ecological and ethnobotanical knowledge of the communities. However, the traditional knowledge associated with utilization of plant species in rituals and festivals has not been documented and there is a risk of this knowledge eroding with the coming of modern education and technology. Therefore, an attempt has been made in this paper to highlight the uses of various plant species associated with traditional rituals and festivals of Apatanis, which will help in strengthening the conservation practices among the younger generation of the community.

### **Study Site**

The study area is located in Ziro valley, Lower Subansiri District of the Indian Himalayan state Arunachal Pradesh which lies between  $26^{\circ}55'$  and  $28^{\circ}21'$  North and  $92^{\circ}40'$  and  $94^{\circ}21'$  East in the Central-Western part of Arunachal Pradesh (Fig. 1).



**Fig. 1.** Map showing the study area in Arunachal Pradesh

The Ziro valley (often called the Apatani Plateau) is situated between the Panior and Kamla (Kuru) rivers at an altitude of 1,524 to 2,738 m with a total geographical area of 3460 sq km, of which 277.94 sq km is under forest cover. It exhibits mostly the subtropical and temperate vegetation. The Apatani is the major tribe inhabiting in the area. The Apatanis belong to the Tibeto-Mongoloid stock [3]. Literally the word Apatani is derived from *Apa*, which means addressing someone out of affection and *Tani* means the descendants of *Abotani*, who is considered as the ancestral forefather of the Apatanis. The Apatanis live in a close knit society and were initially concentrated in seven villages namely Bulla, Dutta, Hari, Bamin-Michi, Hong, Mudang-Tage and Hija. However, with the growing population, the settlements have spread across the plateau. Apatanis are basically dependent on agriculture and are considered as one of the most skilled and hard working farmers. They follow the paddy cum pisciculture cultivation and do not practice the Jhum cultivation as practiced by other tribes of Arunachal Pradesh. Besides agricultural activities, forest is the integral part of Apatanis not only for ritual and festival but also for their livelihood sustenance.

## Methods

The study was carried out in the Zero valley of Lower Subansiri district of the state Arunachal Pradesh during the year 2011-13. The field survey was conducted in some selected villages namely Bamin-Michi, Hija, Hari, Bulla, and Hong of Apatani tribe for collection of information through observations of the various festivals and rituals that are followed and celebrated time to time in different months of the year and in different occasions. Collections of data were made as per standard ethnobotanical methodology [13, 14] and thorough discussion and interview with the village elders, priests (*Nyibus*), village head etc. Pre-structured questionnaire were used for collection of the needful data. All the plant species which were found useful and linked with the rituals and festivals were collected and identified through consultation with the experts and taxonomic literature.

### Festivals and Rituals

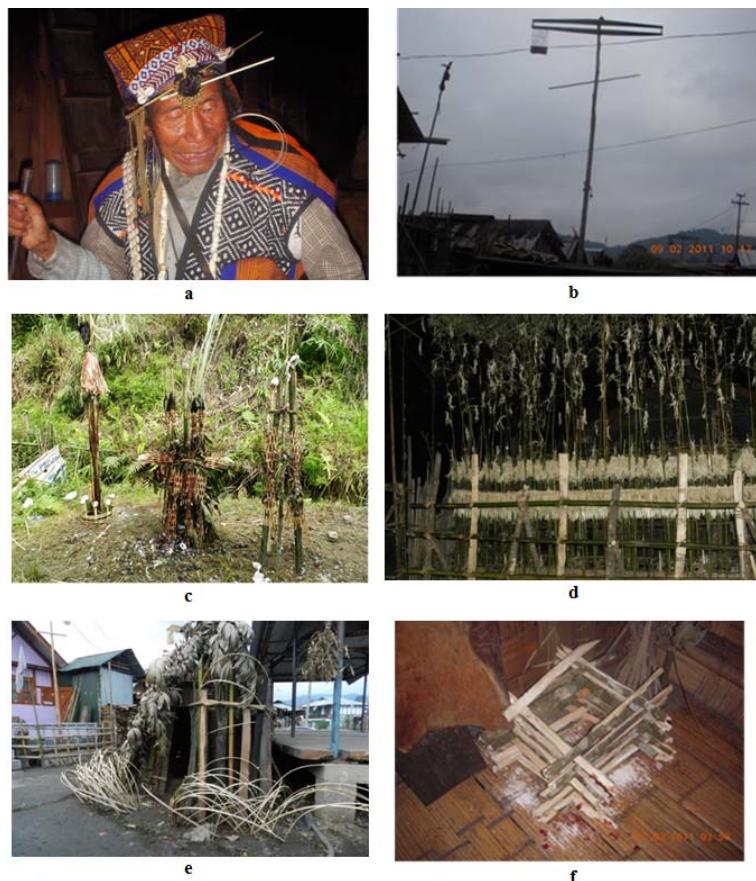
Apatanis have mainly 3 (three) major festivals called *Murung*, *Myoko* and *Dree* which are celebrated in the months of January, March and July respectively. *Murung* festival is mainly celebrated in the early and mid part of January. It is performed by individual persons and is done for the well being of the concerned family and lineage. It is normally performed to avoid any untoward incident in the family or lineage and also for a better future, prosperity and happiness. *Myoko* festival is celebrated in the month of March. It is celebrated to welcome the ancestors *Ato Dihu* and *Ato Raru* who were the first ancestors to perform this festival, for the welfare of the humankind. This is one such festival which is celebrated in alternate manner wherein villages are clubbed into 3 groups-zones and each year they celebrate the festivals in a zone on a rotational basis. The three groups are i) Hari-Bulla comprising of Hari, Kalung, Reru, Tajang, Lempia (Talyang Hao), ii) Bamin-Michi, Mudang-Tage, Dutta and Hija (Tiinii Diibo-Diire Hija) and iii) Hong (*Niichi Niitii*). The third major festival *Dree* is celebrated with great pomp and merry making in the month of July. It is celebrated for better cultivation, protection from storms, pests, natural calamities, bumper harvest and for the well being of all plants, animals and mankind. Besides these, other rituals like *Yapung*, *Myokung*, etc. are also performed collectively at village level. All these festivals are important for the well being of the human kind. The Apatanis make use of different types of plant species during these ritualistic performances. These plants are given due preferences and conserved because of such ritualistic importance placed on them.

Besides the major festivals like *Murung*, *Myoko* and *Dree* some other rituals like *Myokung*, *Danyi*, *Tamu*, *Tazer Hulii*, *Korlang*, *Kharung*, *Roppi*, *Udeh Tenii*, *Udeh Uii*, *Moreh eha*, *Aji eha*, etc. are also performed by the individuals. Among these the *Myokung* is

performed for the fertility of soil in the month of March. This is done after seeds are sown in the field or nursery and all God and Goddess are invoked together and sacrificial are offered. *Danyi* (Goddess Sun) is performed mainly for the well being of entire human beings, plants and animals as without the rays of sun no living beings can survive. *Yapung* (Goddess sky) is done in the month of September, to appease the Goddess for good weather and sufficient rain to enhance good growth of the plants and paddy. *Tamu* (God of insects and pests) is performed when crops are transplanted from nurseries to field in the month of April- May. The rituals related to agriculture are again of importance for the people as it is their main source of livelihood. In case of natural death, ritual called *Tazer Hulii* is performed wherein chicken is sacrificed. The chicken liver is seen and testifies whether the departed soul would rest in peace or not and accordingly rituals are performed. In case the chicken liver is good it indicates good sign for the family and peace of departed soul and if it is not good it indicates that the deceased soul is not at peace and its family members may not have a peaceful life and may further face troubles in days to come. In case of un-natural death, a ritual called *Ropii* (*Talii Gontii*) is performed. During this the priests and relatives or family members whoever takes part in the death procession puts a piece of *Cyclosorus glandulosus* (*Millo Tarih*) on their *Piiding* (hair-knot on the forehead), *lecha* (rucksack) so as to prevent themselves from the spirit of the souls who faced a unnatural death (Figs. 2 and 3).



**Fig. 2.** Important features of Apatani culture and traditions: a. view of Apatani Plateau, b. traditional paddy field of Apatanis, c. a home garden with bamboos and *Castanopsis* sp., d. bamboo plantation in community forest, e. women folks performing rituals around the alter during Myoko festival, f. the traditional procession with cane leaves in Myoko festival



**Fig. 3.** Important features of Apatani culture and traditions: a. a priest-Nyibu wearing traditional attire, b. traditional Babo made up of *Castanopsis* tree, c. altar for *Dree* festival, d. altar made of bamboo in *Murung* festival, e. *Takho benii* performed at the end of *Myoko* and f. woods being readied for *Myoko*

#### **Plant species used**

It has been recorded that the Apatani community has been using and conserving selected plant species, which are associated with traditional rituals and festivals. The plants that are used for festivals like *Myoko*, *Murung*, *Dree* etc. are also used for all other rituals and ceremonies where making of *Agyang* (altar) and chanting are performed. More particularly the species of Bamboo, (*Phyllostachys bambusoides*), Cane (*Calamus acanthospathus*) and *Castanopsis* spp., are the main plants used for making altar for any rituals, whether it is to be performed at individual level or a clan for their well being, for chanting in marriage, birth or death ceremonies, besides the animals that are used for sacrificial in such rituals or ceremonies. Bamboo and Cane species are also used during death rituals for making the burial place. Depending on their richness or their popularity, their grave is decorated with bamboo beds in a step by step manner like a square tower called *Dui Khating*. In case of the renowned and rich person and of renowned priests it is made in “A” shape structure depending on their popularity known as *Lyalo*. The bamboo species called *Tapyu* is used as a flute in the death of well known person or renowned priests or elders as a mark of respect to the departed soul and as a sign of last tribute. *Saccharum arundinaceum* (*Peji Pelo*) is another important plant used for all the agriculture related rituals be it *Tamu* or *Dree*. This plant is believed to keep away the harmful insects from the plants. They make a fold on the leaves of this plant and place one each at the

entrance of every village so as to keep away the god of insects from entering the village and destroy the agricultural fields.

The details of the traditional knowledge and taboos' associated with these forest species is presented in the following paragraphs. The botanical name of the species, its family, followed by the local name in parenthesis has been provided for each species. The words indicating the local name of the plants and their products, rituals and ceremonies, etc. are given in Italics.

a. *Angiopteris evecta* (G. Forster) Hoffmann; Family: Marattiaceae; (*Chanyu*).

It is a tree fern, growing about 2-3m height. The trunk of this plant is used for performing rituals during extreme conditions such as outbreak of epidemics like measles, chicken pox etc. or for some specific rituals depending on the omen.

b. *Calamus acantospathus* Griffith; Family- Arecaceae; (*Tisser Yasso*).

It is a climbing cane species which is preferred for ritualistic purposes. The stem and leaves are used for preparation of altar and other decorative items used in the altar during *Myoko*, *Murung* festivals and other rituals etc. During *Subu* and *Murung* ceremony where *Bos frontalis* (*Mithun*, a semi domesticated animal) are sacrificed; the canes are used for tying the *Mithun* by making plaited cane (*Subu saha*). The leaves are also used during a social procession (*Tiiper liining*) in the village where all the male members, young and old take part shouting a slogan as *Ho-Ho* holding the leafy branches of cane. This is important part of *Myoko* festivals which is performed on the third day. In the meantime, the priests chants inside the sacred altar called *Nago* (small house made of wood and bamboo, now a days it is also made up of cement and bricks) keeping a monkey skull with the *Tiiper* leaves on its nostrils. The leaves on the nostrils of the monkey vibrates and signifies the arrival of the *Myoko* god called *Ato Siiki*. After the procession is over all the males taking part in the procession puts those leaves in the main altar called *Nago*, *Lapang* and *Babos*.

The other types of *Yassos* are mainly used during house construction, for decoration etc. *Tisser yasso* has been used since immemorial time and is believed that the deity (*Uii*) accepts the altars that are mainly made of this *Tisser yasso* only. It is also used for making household and handicraft items like *Supung liiha*, *Yagii*, *Kaji yagii*, *Yakkhang*, *Ekkho liiha* (different baskets) used for carrying *Yatang* (rice powder), *Yoh* (meat), *Embi Habii nanii* (basket for weighing rice) etc. that are used in festivals and other rituals besides being used for daily purpose. The stems are used for decorating or covering the *Pinta* (a jar) that is used for carrying *O* (local rice bear) and also for making the handle of the *Pinta*.

c. *Castanopsis hystrix* Hooker f. & Thomson ex A. DC; Family-Fagaceae; (*Rihing Kiira*).

It is a medium-large sized tree of about 20-30 ft. height. During *Myoko* festival it is used as the main *Babo* (ritual pole with a T-shaped structure) to represent a clan or a family. The *Babo* mainly symbolizes the presence of male members in a family. Hence, the male members including young and old together brings the tree trunk or branche and erect it near *Lapang* (common platform) of each clan or family as an indication of *Myoko* being celebrated at that village. It is believed that the tree hardly produce any fruit. As such no taboos are associated with its use but due to its erect stem and anti-insecticidal properties it is being preferred. *Rihing* is also one of the most preferred species for house building especially for the post and pillar.

d. *Castanopsis tribuloides* (Smith) A. DC. Family- Fagaceae; (*Korbing Kiira*.)

It is an evergreen middle sized tree. It is also used as *Babo* erected in every house. Additionally the leaves are used during preparation of *Agyang* (Altar) for different rituals at household level or community level like *Tamu agyang*, *Kharung agyang* etc.

No specific belief is found for uses of *Korbing yasang* as *Babo*. It has been used since immemorial time, because of its easy accessibility and erectness of the tree stumps.

e. *Castanopsis indica* (Roxb. Ex Lindl.) A.DC; Family- Fagaceae; (*Rahu Kiira*).

A much branched tall growing tree. The leaves are mostly preferred during preparation of *Agyang* (Altar) for different rituals and ceremonies like *Tamu agyang*, *Kharung agyang* etc.

or for any rituals to be performed at individual homes or community. It is believed that the plant is mostly preferred by the *Uii* (deity) and is harmless to mankind.

f. *Chephalostachyum manii* (Gamble) Stapleton; Family- Poaceae; (*Tazer*).

It's a climbing bamboo of about 10m high with branching. During *Myoko* festival *Tazer* is used as *Byokhos* (comb shaped splitted bamboo) of the main priest. The priest puts the well decorated *Byokhos* on the forehead called *Piiding* so that it protects him from evils. The species is commonly used for making many decorative items like *Liiha* (baskets) and *Pinta pubyung* (outer cover decoration of jar used for storing local rice beer) for *Supung pinta* (Jar used for storing rice beer). It is also used as fiber/rope for house construction as provide more strength compared to other canes.

g. *Cyclosorus glandulosus*; Family: Thelypteridaceae; (*Millo Tarih, Millo Riji*).

It is a common fern species used during *Myoko* festival for performing rituals called as *Methii* done for the well being of all family members from malevolent evils and souls. It is also used during rituals performed after hunting of Tiger (*Pattii Roppi*) and Leopard (*Hogya Roppi*), so that the soul of animals that have been hunted rests in peace and does not harm or revenge the person who killed them unintentionally. *Roppi* meaning carries deep relation with oral version of begging pardon or excuses of its unintentional killing thereof. It is a belief that hunting of tiger (*Abang Patii*) is a bad omen as they are believed to be ancestors of human being.

h. *Eremocaulon capitatum* (Trinius) Londono ; Family: Poaceae; (*Yabing*).

It is a bamboo species grows upto 6 m tall. The culm of this species is used as *Aha pornanii* (blade) for *Aha porko* (cutting out of the heart of the sacrificed animals like pig) in festivals like *Myoko, Murung, etc* and also as *Yoh alyo Khapa nanii* (for cleaning the hairs) of the sacrificed animal. *Yabing* is not only used as sacred bamboo but also considered for medicinal and sterile tool in medical parlance. Only some selected elders are chosen for doing this custom. It's also preferred for cutting the umbilical cord of a new born baby when delivered at home during olden days.

i. *Exbucklandia populnea* (R. Br. ex Griff.) R. W. Br; Family-Lauraceae; (*Tapo/Dolo Sanii*).

A middle sized tree species, 15 - 20m tall. The trunks are used for making *Lapang* (common platform) in respective villages. It is also used for many other purposes like firewood, timber, etc.

j. *Kavalama urens* (Roxburgh) Rafinesque; Family- Sterculiaceae; (*Niji Yanii*).

The leaves of this plant are mostly used during *Myoko* and *Murung* festivals as well as in other rituals. It is used for covering the local rice beer "O" prepared for the festivals and for offering to the priests and the *Myoko Uii* (Goddess *Myoko*). It is also used for wrapping the powdered rice that is applied on the animals before sacrificial and also on the altar. Any offering to the God or food served to the priests like meat, local salt and other eatables are also wrapped on *Niji Yanii* as traditional way of presentation or offering.

Besides, these leaves are also used for wrapping meat for the guests and the bride-groom during different ceremonies of marriage like *Eli-baniing* (formal sending off of the bride to her in-laws by the parents), *Mida* (final sending off of the parents to with her husband along with blessings to prosper and lead happy life with their kit and kins), *Mabo inchi* (Formal invitation of the groom by the brides's parents) etc. It is preferred and used since long by the Ancestors and is considered to be pure and free from insects and other harmful things that could affect human health.

k. *Lageneria siceraria* (Molina) Standl.; Family- Cucurbitaceae; (*Yaju/Pinta*).

It is a large climber used for making *Yaju* (ladle used for serving rice beer) and *Pinta* (small jar or pot used for storing rice beer) which are one of the most important products used in all the festivals important rituals or ceremonies for offering and storing the rice beer to the god and goddess and also for offering to the *Nyibus* (local priest) and other guests. It also has significance as *Mabo Yaju* (ladle offered to the son-in-law) in the *Mabo inchi* (a part of the

marriage ceremony). Best of the ladle is chosen and offered to the groom or son-in-law by the bride's family as a token of love and acceptance.

1. *Loropetalum chinense* (R.Br.) Oliv.; Family- Hamamelidaceae; (*Mari/Mari Ripu*).

It is an evergreen shrub or small tree bearing white-yellowish flowers. The Leaf branches of this plant is put in the corner of the *Nesu* (granary) on the day of *Aji eha* (performed after 15 days at the end part of *Myoko*) to keep away from evil spirits or the avoid returning of *Myoko* god. This ritual is performed only by those who sacrifices pig during the month long festival.

m. *Magnolia champaca* (L.) Baill. ex Pierre; Family-Magnoliaceae; (*Salyo Sanii*).

It is a tall evergreen tree with ash-grey wood having fragrant flowers and edible fruits. The fruits are mostly used as medicine, for preparing local dishes like *Pikey*, *Pilla* etc. The woods of bigger trees believed to be insecticidal are used as *Lapang* (community platform). This community platform are repaired or replaced during every *Myoko* festival. Only the male members are allowed to stand or use this platform called *Lapang*. It is used during festivals and *Bulyangs* (individual rituals and festivals that are performed for the well being of mankind). No taboos are associated as such with the making of *Lapangs* but it is often believed a disgrace when women members climb the *Lapang* which is meant for the male members in the community.

n. *Mahonia napaulensis* DC; Family: Berberidaceae; (*Taaming*).

It is a shrub or small tree with spiny leaves and bluish-black fruits. The plant is used in different religious rituals for protection from various evil spirits. The bark of the tree along with its leaves is kept around the corner of the house to keep evil spirits away during bad health conditions. Fruits are edible and its bark is also used as dye for obtaining *Pyaming* (Deep yellow colour).

o. *Molineria capitulata* (Lour.) Herb., Family: Hypoxidaceae; (*Loli*).

It is a tall herb, with tuberous rootstocks and yellow flowers. The leaves of this plant are especially used during chanting of ritual when a pregnant lady even after the labor pain starts, suffer from delayed delivery. It is called as *Hiibi hagi* (delivery/child birth). After chanting of this, it is said to facilitate easy delivery and relief from labor pain. The leaves are also used for tying the animals mostly the hens that are to be sacrificed during the festivals like *Myoko*, *Murung*, *Dree* etc. The leaves of *Castanopsis* spp. are used in non availability of the leaves of *Molineria* for the same.

p. *Machilus villosa* (Roxb.) Hook. F; Family: Lauraceae; (*Sampe Yasang*)

It is a tree species with fruits called as *Sampe ahi*. The stem is used during *Myoko* festival as *Sama yasang* (stacks of firewood). The word *Sama* is a kind of process in which unification amongst the clan members are counted on the first day of *Myoko*. At least two sticks each of *Sampe yasang* (firewood) is counted against each household and kept at the sacred chanting place called *Myoko yugyang* (The main alter where all the rituals and sacrifice takes place). These are then distributed amongst the members of every family of a particular clan after 15 days of the festival and are used in cooking of fish *Ngyi Beha* and *Ngilyang ngyi* (*Schizothorax* spp.) and also for frying rice (*Empi khedu*) at the very end of the celebration which are later distributed to one and all as a last feast offer. This is done to break the long taboos of *Myoko* festival with a view to get relief from the various restrictions followed during the month long festival and also to please the God of harvest for blessings and prosperity among mankind.

The community beliefs that the fruits of this tree are eaten by birds which makes hunting of birds easier and help the survival of the forest dwellers in jungle. The fruits are also considered to have anti-poisonous properties. Although the wood of the plant does not have any aroma but it is believed to be the most purified wood for pleasing *Myoko Uii* (Goddess *Myoko*). As per the tradition only *Sampee* trees are used for *Myoko*

q. *Phyllostachys bambusoides* Gamble; Family- Poaceae; (*Bije*).

It is a monopodial bamboo and is the most preferred bamboo among Apatanis known as *Tanii Bije* or *Bije*. It is used for preparation of the altar during different rituals and festivals. It is also used for *Takho benii* (part of *Myoko* festival performed on the fifteenth day). The bamboos are split into thin strips and put around the houses, granaries, *Lapang*, *Babo*, etc. symbolizing the end part of *Myoko*. Besides the bamboo is used in construction of house, making decorative items, handicrafts, household items like spoon (*Punyu*), tongs (*Migey*), mug (*O turla*) etc. As it has become mandatory to use bamboos and its products during rituals festivals and common household need, they are extensively cultivated and managed by all the people. Other species of bamboos like *Dendrocalamus hamiltonii* (*Yayii*) is also used sometimes.

It is believed that the ancestors preferred this species due to its strength and easy availability, and hence is highly used and found in the Apatani plateau. It is also used as *Takutam panyi* (decorated bamboo stick) used by the young boys during the *Murung* festivals procession.

r. *Prunus persica* (L.) Batsch; Family-Rosaceae; (*Takung sanii*).

It is a shrub or medium sized tree with edible fruits. The flowering of this tree gives indication of right time for the festival to begin and accordingly people starts preparing for *Myoko*, the month long festival in the month of March. It is honored as a sacred tree, since it symbolizes the *Myoko Yuggyang* (main sacred altar), where the important rituals, chanting and sacrifices of the animals takes place to mark the celebration of *Myoko*. One tree in each altar and sacred groove of the villages are well preserved and is considered as main altar. It is believed that *Takung sanii* does not die as long as it gets destructed by insects there off. In case it dies, it is an indication of bad omens, epidemic, etc. It is believed that the survival of the plant nurtures human life and wellbeing and so people often apply or offer rice beer and rice powder on it during *Myoko* festival.

s. *Saccharum arundinaceum* Retzius, Family: Poaceae (*Peji-Pelo*).

It is a perennial herb about 2-6m. The upper branches and leaves of this plant called as *Peji-Pelo* is used by the *Nyibu* (Priest) during chanting of rituals in *Dree* festival. It is also used as *Nago piiding* for decorating the *Nago* (small house like structure used as sacred altar) where the main rituals are performed by the *nyibus* during *Myoko*. It is put to use in three rows of the *Nago* symbolizing protection from evil spirits. It is also used during the *Eli banii* (part of marriage ceremony) in which leaf of this plant is kept in the corner of the granary or on door of the granary to symbolize that no evil spirits are allowed to enter after the paddy is brought from the bride's parents home.

t. *Zingiber officinalis* Roscoe; Family- Zingiberaceae; (*Taki/Taki yanii*).

The ginger plant is mostly cultivated in home gardens for individual use and presently it is also cultivated in large scale for commercial purposes. It is considered as an important ingredient for daily consumption and especially during important festivals like *Myoko*, *Murung* etc. It is grinded and mixed along with the local rice powder or boiled rice before offering it to the *Myoko Uii*. Besides, it is used to cook *Myoko Kaji* (dish prepared during *Myoko*) and distributed to relatives and friends from other villages. The whole plant along with its leaves are used for decorating *Eli Yagii* (ceremonial basket) wherein the girl takes paddy from her parents home to her in-laws home as a sign of blessing from parents.

## Discussion

Performance of traditional rituals and rites during the festivals and also in the acts of propitiations and vindication are keeping intact the cultural heritage of the Apatani valley and have contributed remarkably in conservation of forest and landscape [15]. The north eastern region of India, particularly the state of Arunachal Pradesh is a home of rich tradition and culture of many tribal communities [16]. The communities of the region are closely associated

with the forests and many ritual celebrations and festivals are directly attached to the forest species and their conservation. The present study clearly revealed that the Apatanis known for their rich culture and tradition are intermingled with the forest resources for fulfillment of not only economic needs, but also various cultural and traditional requirements. They are very observant of their rituals and festivals and their belief on these rites and rituals is very deeply entrenched in their everyday life. Among the various selected forest species used by the communities it has been found that *Calamus acanthospathus*, *Castanopsis hystrrix*, *Castanopsis tribuloides* and *Phyllostachys bambusoides* are mostly utilized ones and strongly attached to the culture and tradition of Apatanis. Because of the faiths and taboos they are being used in almost all the occasions, rituals or festivals whether at individual homes, or for common festivals like *Myoko*, *Murung*, *Dree* etc. which begins with the preparation of sacred altar where the main offering and sacrificial are done. Almost 90% requirements for making the sacred altar are fulfilled by these species. The other species which are selectively used in one or two specific occasions particularly in *Myoko* and *Murung* are *Prunus persica*, *Machilus vilosa*, *Molineria capitulata*, *Kavalama urens*, etc. *Saccharum arundinaceum* is a must use for *Dree* festival and have strong belief for protection of crop from insect. Although the uses of the species like *Saccharum arundinaceum*, *Prunus persica*, *Molineria recurvata*, *Neprolepsis* sp., *Exbucklandia populnea* are limited but are essential and cannot be avoided. On the other hand the two cultivated species namely *Lagenaria siceraria* and *Zingiber officinalis* are unavoidable to the Apatanis in every rituals, ceremonies and festivals. Though these plant species are mostly cultivated and found in home gardens but they have a lot of significance in carrying forward the rich culture and traditions of Apatanis. The study revealed that without all these species, it would be difficult to perform and continue the rich cultural practices of Apatanis. From importance and dependency point of view, forests of bamboos and *Castanopsis* spp. are most significant for Apatanis. The forests are maintained not only for meeting the requirements of fuel wood, wild edible fruits, fodder and timber but are also used for other socio-cultural activities and rituals [17].

As the Apatanis recognize the value of each plant, they also follow traditional conservation practices. The values attached to these plants from ritualistic point of view plays very important role in protection and conservation of natural heritage of the Apatani plateau. Plantation of all the useful species in home garden, community forests as well as appropriate harvesting of these species have been commonly practiced by the communities. Plantation of species of Bamboo, *Michelia*, *Pine*, *Castanopsis*, *Prunus*, etc., and caring and conserving species of *Calamus*, *Sachharum*, *Mahonia*, etc. in forests have got high priority because of their ritual and cultural value. On the other hand some forest species are marked as a sacred trees and are never being destroyed or fell down. For instances the species of *Ficus* (*Saro sancti*) is considered to be one of the most sacred trees by the Apatanis. There are certain restrictions in the felling of this tree for using as firewood or any other purposes. There is a belief that attending natures call or spitting in front of the *Saro sancti* is a bad omen and it may either bring bad health to the person concerned or bring bad luck and ill effects to any member in his family. They believe that evil spirits resides in such trees as a resting place.

Though no important taboos are associated with the use of some plant species for religious purposes but certain taboos known as *Anyodu* are followed along with every rituals or festivals where there is certain restrictions implied in the form of not consuming specific food items or not going to jungles, fields etc. depending on the type of rituals performed by the individual or community. Apart from the uses of plant species, animals like Hen, Dog, Mithun, Monkey etc., also play important role for the completion of rituals depending on the demands and types of festival or rituals being performed. Squirrel called as *Takhii* (*Dremomys lokriah*) is also one of the most important animal species that is used by Apatanis for various social ceremonies like *Murung*, *Myoko* etc. The flora and fauna associated with socio-cultural and

other ritualistic importance are protected by a mechanism called *Dapo*, a system managed by the *Builyang* (traditional councils) for protection and over extraction of forest resources [18].

Some of the earlier studies [11, 12, 19, 20] have also focused the rich Indigenous knowledge system of Apatani in relation to forest resource utilization and conservation practices. The community is also found very rich in ethnobotanical knowledge that helps them to selectively use many forest resources for fulfillment of various requirement and healthcare practices [9, 12]. Overall the rich traditional knowledge of the Apatanis particularly the fare and festivals are found very useful in conservation of forests. Apatanis are considered as efficient resource managers with rich traditional ecological knowledge and conservationists by nature, thereby attracting the attention of UNESCO for the Ziro valley being considered for declaration as World Heritage Site [17]. The spiritual and cultural values of indigenous communities would be of immense value in conserving biodiversity [21].

## Conclusion

The Apatani rituals and culture are truly harmonized with the forest and forest species. The Indigenous Knowledge System of Apatanis in relation to plant utilization has been found directly relevant to the conservation and management of forests species. All the species used in the rituals and cultures are taken care by the community in their natural habitat indicating the impacts of the tradition and culture in forest and plant conservation. All the species that are used in rituals and religious performances are not only protected in the vicinity but are also managed in their community forests and agroforestry systems. Majority of these species like *Calamus acantospathus*, *Castanopsis hystrix*, *Castanopsis indica*, *Eremocaulon capitatum*, *Magnolia champaca*, *Molineria capitulata*, *Phyllostachys manii* and *Prunus persica* used in the rituals are the valuable resources for the community providing the livelihood and economic support. Thus their ritual and traditional linkages support the management and conservation practices of these resources making the easy availability of these resources for continuous use. The traditional and cultural ethics linked with specific forest species not only found community supportive but also nature friendly.

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