Forest-based Plants in Beautification and Their Medicinal Significance

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Contents

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1 Introduction

Trees are the silent ambassadors of life. Ironically, it was climate change that brought our focus on the trees. Ever since there has been a paradigm shift in the utilization and promotion of non-timber forest products (NTFPs). NTFPs have significantly affected the general well-being, conservation strategies, and livelihood of forest communities. Product commercialization, namely nuts, fruits, fibre, resins, oils, fats, medicines etc. has further contributed to an escalated market value of forest resources (Nautiyal et al. 2002; Marshall et al. 2003; Borai and Husen 2003; Joshi et al. 2003). The forest plant species have been well documented for their use as therapeutic agents (Nautiyal et al. 2002; Andel 2006). These products have been in use in the traditional systems of healing since time immemorial. Herbal renaissance, aided by a boom in the cosmetic and nutraceutical industry, has furthered the harvesting of forest resources for medicinal/cosmetic/nutraceutical product preparations. Most of the raw material is still collected from the wild leading to a potential threat to their existence. Besides, various ornamentally important plants are found in the forests. The floriculture industry has metamorphosed into one of the most prominent and fast-growing global enterprises. To cater to the industrial demand, there is an increased focus on exotic varieties and new hybrids while the natural plant's wealth is yet to be prudently harnessed for its ornamental and medicinal value.

India, with biodiversity hot spots in four phytogeographical regions, namely IHR (Indian Himalayan range), Western Ghats, North East India and Andaman and Nicobar Islands, represents about 12% of the global floral diversity. This diversity needs to be discreetly exploited for medicinal and ornamental use. Of the different plant species that can be utilized for the aforesaid purpose, seed pod plants need a special mention. In these plants, the fruit grows into a pod that contains the seeds of the plant. The flowers and distinctive fruits are characteristic features of the big plant family – Fabaceae. The seeds (legumes) are well known as sources of a wide range of phytochemicals accounting for their tremendous medicinal potential. The broad Orchidaceae family also includes the stunning orchid plants that occupy the top position in the global floriculture trade owing to their magnificent floral beauty, with some of the members also exhibiting medicinal properties. The present chapter is an attempt to highlight the significance of forest-based plant species for embellishment in native gardening and utilization in therapeutics.

2 Native Gardening and Landscaping

Indigenous flora of a region is the natural flora of a specific region (Joshi et al. 2019). A native garden or natural landscape is a creation where native plants are allowed to grow, primarily to conserve biodiversity. The focus is on the utilization of local and endemic plant species (trees, shrubs, herbs and grasses) that have been

growing in the wild for several years in a particular geographical zone. In native gardening and landscaping, these plants are selected for the decoration of public and private places. While in native gardening, the plants are grown in private and public gardens as potted plants, climbers, shrubs etc., in natural landscaping, these species are grown on a tract of land in a manner that a prolific scenic beauty is created (Thakur and Sharma 2005; Thakur et al. 2009).

2.1 Benefits of Native Gardening/Landscaping

Native plants (trees/herbs/shrubs) are home to the wildlife hence forming the backbone of the ecosystem. Native gardening aims at the aesthetic growing of native plants that serve several purposes. One important contribution of native gardening is the conservation of biodiversity. The endemic varieties of plants and pollinators flourish in these gardens/landscapes, helping in the conservation of biodiversity and strengthening the ecosystem. Native gardening or landscaping epitomizes beautification with minimal investments. Being native to the geographical zone, the plants require little or no maintenance creating an urban green zone with nominal expenditure. The hardiness, easy-to-care property, better tolerance and improved resistance of the native species make the gardens an overall profitable venture (Thakur 2012). Besides, they also help in creating public awareness for the biodiversity of the region and the need for conservation. Local populations become aware of the ornamental and medicinal values of the native plant species. Access and benefit-sharing further facilitate in commercial utilization of these species by the locals while still maintaining them in the gardens. Overall, native gardening assists in conservation, promotion of floriculture, sustainable development of local populations and value addition to the local flora.

2.2 National and International Scenario

Native gardening has gained much popularity in Western countries. An exemplary example has been set by Australia. The country has around 25,000 native plant taxa most of which occur naturally in the Western region of Australia. Many of these plants have exceptional ornamental and medicinal values. However, it was reported that only a limited number was being utilized for home gardening or landscaping. Consequently, they initiated domestication of their native wildflowers like Kangaroo Paw (*Anigozanthos*), Banksia, rice flower etc., resulting in a drastic escalation of annual sales (Growns and Webb 2012). Besides, concerted efforts were done to create novel native plants with improved traits and better adaptability to the Australian climate which would be used for landscaping and native gardening. In Brazilian Pampa, a detailed evaluation of local plant species was done for their use in floral art and landscaping (Stumpf et al. 2012). The study identified 250 ornamentally

important endemic species for the purpose. Other countries like the United Kingdom, South America, Sri Lanka, Ethiopia, and several European nations have kept their best foot forward in this direction. India is yet to embark on a full-fledged native plants movement. The Indian flora is rich with a variety of seed pod species of medicinal and ornamental significance. These species need encouragement, care and an approach like the Make in India and can be selected for dual purposes: landscaping features, which include flower beds, ground cover, hedges, shrubberies, avenue trees etc., and preparation of herbal drugs.

2.3 Challenges and Approach

With ever-increasing anthropogenic activities on natural forests, the plant wealth of the country is under severe pressure. Besides, illegal trading poses a potential risk to the plant species, particularly the ornamental varieties. The loss is completely irreparable. To add to the woes, even gardening and landscaping have been focussed on the usage of exotic species that becomes invasive, competing with and degrading the habitats of the native species. It has become the call of the hour to shift our focus to native plant species rather than exotic varieties of ornamentals. In this context, there is an urgent need for the following:

- documentation of native ornamental plant species with medicinal values
- ornamental plant characterization
- validation of medicinal/ therapeutic values of these species
- improvement of genetic characters
- adoption of latest propagation and production technologies
- domestication of the priority species
- species evaluation for commercialization
- public awareness and participation of local populations in species conservation and utilization

3 Plants with Medicinal and Beautification Value

In this chapter, some important seedpod-bearing plants are being discussed that have the potential to be utilized for decorative purposes (Table 1) as well as harnessed for curative properties.

Table 1 Role of plants in beautification

Species name	Use in beautification
Albizia lebbeck	Specimen tree, avenue tree plantation
Abrus precatorius	Decoration of trees, herbs and shrubs
Acacia spp. (*A. sinuata, A. ferrugenea, A. nilotica*)	Scenic artificial fencing or walls
Bauhinia spp. *(B. variegata* and *B. purpurea)*	Winter colour in garden, avenue plantation, specimen tree, group plantations
Butea monosperma	Specimen trees, rockeries, group plantation
Caesalpinia pulcherrima	Shrubbery borders, flower fencing
Cassia fistula	Specimen tree, avenue tree plantation
Clitoria ternatea	Potted plants, decoration of fences and walls
Crotolaria spp.	Border plantation, corner plantings
Dalbergia sissoo	Avenue plantation
Desmodium spp.	Specimen shrub, mass plantations
Erythrina spp. *(E. variegata, E. indica*)	Specimen tree, avenue plantation, hedges, rockeries, fencing/support for vines and climbers
Indigofera pulchella	Specimens, avenue shrubs, mass plantations
Peltophorum pterocarpum	Specimen tree, avenue plantation, street tree, cut flower/dry flower decoration
Pongamia pinnata	Avenue tree, street tree, plantation on banks of canals or streams
Saraca indica	Decoration of homes, parks
Tamarindus indica	Decoration of home gardens, parks, bonsai for indoor décor
Orchids	Potted plants, hanging baskets, over the tree branches plantations

3.1 Albizia spp.

The genus *Albizia* includes shrubs and tree species that are native to Asian and African regions (Parrotta 2002). Of the different species, *Albizia lebbeck* is a medicinally and ornamentally important species. Commonly known as Indian siris or East Indian walnut, the tree is distributed in most of the regions of the country. The tree attains a height of about 15 m and bears beautiful white aromatic flowers. The tree is also ecologically significant, as it is an efficient nitrogen fixer and soil binder helping in increasing soil fertility and preventing soil erosion (Gabhane et al. 1995). The leaves of the tree can also be used as green manure due to their nitrogen-rich composition (Tilander 1993). The seeds, leaves and bark of the tree are used in folk remedies to treat ophthalmic and dermal infections (Ganguli and Bhatt 1993). The pods and roots of the tree yield saponin that is reported to have spermicidal activity while leaves, seeds, pods and bark have anticancer activity (Desai and Joshi 2019). Besides, the tree also provides red-coloured resin (that can be substituted for gum-arabic), and the bark can be used to make soaps (Pal et al. 1995). The flowers are major bee attractants and play a significant role in pollination biology. The sweet-tasting flowers can also be used to make a variety of honey (Gupta 1993). *A. lebbeck*

trees are usually planted on roadsides and often in home gardens by landscaping enthusiasts, shade tree in tea and coffee plantations and as rapid growing cover for other plants in coastal areas. They can be effectively used in landscaping for specimens and avenue tree plantation, and plant parts can be utilized in herbal preparations.

3.2 Abrus precatorius

Commonly known as "Bead vine" (vernacular name: Gunja), *Abrus precatorius* (L.) is a perennial, woody climber that grows in abundance in the Indian subcontinent. The plant is well known for its therapeutic properties. In the traditional Indian system of medicine, *A. precatorius* leaf juice is used to cure ulcers; paste of seeds is used to treat stomach ache (application with ghee/ butter), joint pain (consumption with milk) and baldness (application with honey); leaf powder is used for urine infection treatment and root and leaf powder is used to cure eye infections. Besides, the seed tea leaves are used to treat common cold and cough, while oil is also known to have aphrodisiac property. The immunostimulatory, immunomodulatory, anti-inflammatory, antidiabetic, anti-malarial, antiviral and anti-epileptic properties of the plant are attributed to a wide range of active chemical ingredients, namely alkaloids, triterpenes and flavanoids (Garaniya and Bapodra 2014; Balachandran and Rajendiran 2015). The plant bears attractive pink flowers and can be used to decorate trees, herbs and shrubs in gardens and public places.

3.3 Acacia spp.

Acacia genus comprises plants mainly found in the warm and drier regions of the world. The native species of *Acacia* are thorny shrubs and trees. Acacias are well known for their usage as fuel, fodder, gum, tannins and timber. Native species like *A. sinuata* are also valued for their saponins in soap and detergent preparations. Flowers of *A. ferrugenea* emit a beautiful fragrance and are used in perfume making. The wood of Acacias is also used in preparing local agricultural implements due to its strength, besides being used for furniture making. The gum obtained from the tree is of special importance, as it is extensively used in preparing confectionery items, medicines, and in the paper and textile industry. Acacias have been well documented for their therapeutic uses. Active ingredients like steroids, kaempferol, niloticane, isoquercitin androstene, gallic acid, catechin etc. have been reported from different species (Mutai et al. 2004; Eldeen et al. 2010; Singh et al. 2010). *A. nilotica*, in particular, has been documented for its use in different home remedies for treating ulcers, dysentery, diarrhoea, tuberculosis and leprosy has been an important (Kumari 2013). The species has also been used in the development of bird sanctuaries in otherwise declared wastelands. Acacias can be employed for the

beautification of home gardens and landscaping as they have a picturesque effect. The thorny bark of the trees prevents unchecked barging in of animals and people. Consequently, *Acacia* species can be used as a cheaper, ecologically beneficial and appealing substitute for artificial fencing or walls.

3.4 Bauhinia spp.

The *Bauhinia* group has more than 200 species (liana, shrubs and trees) that are found in the tropical and temperate regions (Connor 2001; Wang et al. 2014). *Bauhinia* spp. have been acknowledged for their large, flashy blooms, foliage and medicinal value in different parts of the world (Connor 2001). In India, *Bauhinia* spp. are distributed in most of the regions from north to south. *Bauhinia variegata* and *B. purpurea* are two important species that have varied usage. *B. variegata* bears differently hued flowers ranging from white to shades of pink and purple. *B. purpurea* flowers are more of purplish shade (light pink to bright pink-purplish) leading to it is commonly called 'The Purple Orchid Tree'. The flowers in both cases are extremely prolific in appearance with an enchanting fragrance. *B. variegata* (commonly known as kachnar in India) has been popular in Ayurvedic, Homeopathic and Unani system of medicine. Chemical constituents like octacosanol, hentriacontane, β-sitasterol, lupeol stigmasterol and many amino acids account for its antimicrobial, anticancer, antidiabetic, antigoitre, haemagglutination and hepatoprotective activities (Singh et al. 2012; Shahana et al. 2017; Khare et al. 2017). *B. purpurea* is also known to be used for its antidysenteric, antidiarrhoeal, febrifugal properties, preparation of dyes (Contu 2012), equipment used in agriculture and as fuelwood (Connor 2001; Orwa et al. 2009). Both species can be used for native gardening and landscaping as winter colour in the garden, avenue plantation, specimen tree and group plantations.

3.5 Butea monosperma

Butea monosperma, also known as Bastard teak and 'Flame of the forest', is a slow-growing, medium-sized multipurpose tree. The tree is widely distributed in the Indian subcontinent where it is known by vernacular names dhak, palash and tesu. The tree is considered sacred in Hindu mythology. The medicinal and therapeutic properties of the tree are well known in the traditional medicine system (Jhade et al. 2009; Tiwari et al. 2019). Stem juice and leaves have excellent astringent properties. The leaves are also known to have diuretic, astringent and aphrodisiac properties (Gupta et al. 1970). The gum obtained from the bark (butea gum) is known as 'kamarkas' and commonly used as a food ingredient and in the leather industry. The flowers are used to prepare red/orange dye which also has insecticidal activity. The species is associated with a wide range of pharmacological properties like

hepatoprotective, anti-inflammatroy, antimicrobial, antidiabetic, antigiardiasis, anti-infertility, antidiarrhoeal etc. (Burli and Khade 2007). The tree has resplendent orange-coloured blooms accounting for its ornamental value for beautification as specimen trees and also for rockeries and group plantation in large landscaping.

3.6 Caesalpinia pulcherrima

Caesalpinia pulcherrima (L.) is a small shrub that attains an average height of around 3 m. Commonly known as Peacock flower or Red bird of paradise, it bears strikingly radiant flowers in racemes that are around 20 m long with brilliant red, orange or yellow petals. *C. pulcherrima* has been in cultivation for long as an ornamental specimen and in avenue plantation. Flashy flowers are excellent pollinator attractants. The prickly branches assist in its usage as shrubbery borders and 'flower fencing'. Besides being popular as an ornamental, *C. pulcherrima* is also used for treating gastrointestinal infections, dysentery, diarrhoea and other stomach and uterine-related ailments. It is also reported to have antipyrexic, antioxidant, anti-asthmatic, antiviral, antibacterial, antimalarial, insecticidal, anticatarrhic and immunomodulatory properties (Chiang et al. 2003; Patel et al. 2010; Chew et al. 2011; Sharma and Rajani 2011; Vivek et al. 2013; Khan et al. 2018). The species needs to be judiciously utilized for its ornamental and medicinal properties.

3.7 Cassia fistula

Cassia fistula (L.) is an evergreen tree known for its dazzling yellow flowers, aroma and medicinal use. In India, it is commonly known as 'Amaltas' and grows in the regions of Himalayan and sub-Himalayan tracts, Eastern states, Deccan plateau and Southern India. In folk remedies, the plant parts are used in treating abdominal and throat tumours, carcinomas and uterine abscesses (Duke 1983). Studies have confirmed their antimicrobial and laxative properties (Kumar et al. 2006; Senthilkumar et al. 2006; Danish et al. 2011; Kamath and Kizhedath 2019). The wood is also used in making agricultural implements. Owing to their attractive appearance, *C. fistula* trees can be used as a specimen and avenue tree plantation for beautification of available areas.

3.8 Clitoria ternatea

Clitoria ternatea (L.) (common name Butterfly Bean) is a legume that has been widely used as a livestock feed. It is grown as a crop for ground cover, green manure and hay production (Gomez and Kalamani 2003). The significant features of this

species are rapid rate of regeneration, tolerance to drought, adaptability to heavy clay soil, increasing soil fertility and high-quality palatability, leading to it being identified as species capable of natural grassland improvement (Staples 1992). The species is also used for culinary purposes in different parts of the world. *C. ternatea* has been used in the Siddha medicines to cure fever, eye infections, leucorrhoea and worm infestations. *C. ternatea* has been reported to possess antibacterial, insecticidal, antipyretic and muscle-relaxing properties (Mukherjee et al. 2008). The roots of the plants are also known to have antiasthmatic activity (Chauhan et al. 2012). The extract from the flower is reported to act as an antioxidant, anti-inflammatory and antidepressant agent (Karel et al. 2018). *C. ternatea* can be grown to screen unpleasant areas, as potted plants, over fences, walls and trellis.

3.9 Crotolaria spp.

The *Crotolaria* genus is spread across the tropical and sub-tropical regions of the globe. In India, it is majorly concentrated in the Western Ghats region with around 50% of the total *Crotolaria* species in the country being endemic to Peninsular India (Rather et al. 2018). The genus includes herbs and shrubs and rarely trees. The *Crotolaria* species are a known source of manure, fodder and fibre. *C. retusa* has been reported to have ethnomedicinal use in treating syphilis and malaria (Rouamba et al. 2018). The species with showy flowers can be used for ornamental purposes in native gardens, along borders, and in corner plantings.

3.10 Dalbergia sissoo

Dalbergia sissoo L. (Indian rosewood, Sheesham) is a horticulturally important perennial tree that is primarily valued for its timber. The tree is also used as fuelwood, fodder and ornamental tree. The wood is highly priced for its durability, smoothness and finishing and is widely used for furniture making (Lowry and Seebeck 1997) and its fibres in paper making. The sawdust from wood is employed in heavy metal remediation (Habib-ur-Rehman et al. 2006). Folk medicines have been utilizing *D. sissoo* in treating skin, blood, stomach, eye and inhalational diseases. It is also known to have anti-inflammatory, analgesic, antihelmintic, antipyretic, antioxidant, antidiabetic, expectorant, aphrodisiac and insecticidal properties (Asif and Kumar 2009; Kaur et al. 2011; Kharkwal et al. 2012; Pund et al. 2012; Bharath et al. 2013; Bhattacharya et al. 2014). The tree is usually planted as a shelterbelt, shade tree and windbreak. It bears fragrant flowers and can be used for landscaping as an avenue plantation

3.11 *Desmodium spp.*

Desmodium genus includes more than 250 species growing in the tropical and subtropical regions. Several species of the group are used as forages and in forestry as shade plants and to check weed growth (Khan et al. 2001; Gu et al. 2007). They have been used in traditional medicines to treat liver, kidney and stomach diseases, ulcers, eye infections, abscesses, acne and general pains in body parts (Allen and Allen 1981; Ngondya et al. 2016). India is home to about 60 *Desmodium species,* which are commonly called as the 'Indian telegraph'. The beauty of pink/purple-coloured flower accounts for its usage as a specimen shrub and mass plantations.

3.12 *Erythrina spp.*

Erythrina is a pantropical genus of Fabaceae. *E. variegata* (Indian coral tree) and *E. indica* are two common Indian species that can be exploited as ornamental trees (Adema 1996). These are thorny deciduous trees with an average height ranging from 80 to 90 ft. Thick clusters of rich red or crimson-coloured flowers are a characteristic feature of the species. The striking red blooms present an enthralling image when they appear on the leafless dry branches (Thakur 2012). Some cultivars also have white flowers and known as 'Alba'. The flowers attract the avian fauna and insects like wasps, butterflies and bees. The trees can be used for specimen, avenue plantations, rockeries, fencing and support for vines and climbers. They can also be planted as hedges around gardens. Besides, the tree species have been used to prepare medicines for stomach, liver infections, in antiabortion and malaria treatment (Baidya et al. 1995).

3.13 *Indigofera spp.*

Indigofera is a large genus that includes more than 700 species distributed in the tropical and subtropical regions of the world (du Puy et al. 2002). The genus is primarily valued for the dye 'indigo' sourced by the member species. Besides, pharmacological and phytochemical investigations have revealed that the genus is rich in several chemically active components that have potential therapeutic value (Rehman et al. 2017). *Indigofera tinctoria* is known to yield the 'true indigo dye'. However, plant-derived indigos have been widely replaced by commercial, synthetically manufactured indigo dyes. The species is reportedly used for the preparation of traditional medicines to treat epilepsy, neural disorders, bronchial asthma, liver ailments, urine infections, ulcers and sores (Lemmens and Wulijarni-Soetjipto 1991). The tree leaves are also used as herbal tea. *I. pulchella* is another medicinally important species that is used in folk medicines to treat lung and stomach infections (Khare

2007). The trees bear beautiful pink or violet blooms and can be used for beautification as specimens, avenue shrubs and for mass plantations.

3.14 Peltophorum pterocarpum

Peltophorum pterocarpum (DC.) Backer ex Heyne is a deciduous tree species that bears resplendent orangish-yellow flowers. It is also used as fodder, fuelwood and timber. The tannin from the tree is used as a dye for paintings and tanning leather. Folk remedies have been widely using the plants in treating muscular pains, worm infections, bruises, sores, intestinal infections and childbirth pain. It is also used as an astringent and tooth powder. The medicinal properties are due to the presence of a wide range of phytochemicals, namely terpenoids, flavonoids, phenolics, aliphatic alcohols, fatty acids, steroids and amino acids. The fast-growing tree also helps in land reclamation by being an efficient nitrogen fixer. The dense crown of the tree accounts for its usage as a shelterbelt. The flowers are brilliant yellow and are fragrant, presenting a prolific scenic beauty of the land (Thakur et al. 2011). They are major bee attractants hence playing a significant role in biodiversity conservation (Ramanujam et al. 1993). They are also employed as cut flowers and for dry-flower making (Jash et al. 2013). The tree can be used as a specimen for large landscaping, namely for the beautification of large parks, gardens, as an avenue tree and as street trees.

3.15 Pongamia pinnata

Also known as *Millettia pinnata* (L.), it is a medium-sized tree or glabrous shrub that is characterized either as evergreen or as briefly deciduous. The tree is found in tropical regions with a humid climate and is valued for its multipurpose benefits. Commonly known as 'Indian beech', *P. pinnata* flowers are rich in nectar and serve as a food source for honey bees. The tree is utilized as a source of fuelwood, fibre (for paper/rope making), wood for making furniture and agricultural equipments, tannins and oils. The seed oil is largely commercialized for use as varnish, pain-binder, lubricant and in making soaps. The plant parts are largely used for preparing drugs for the treatment of liver and stomach infection, skin diseases, bronchitis, rheumatoid arthritis, herpes infection, nematode infestation, diabetes, spleen enlargement, haemorrhoids, ulcers sores, cough and cold (Usharani et al. 2019). The tree can be used for plantation as an ornamental tree in homes and parks, avenue tree, plantation on roadsides, banks of canals or streams and as windbreaks.

3.16 *Saraca indica*

Saraca indica (common name Ashoka) is an evergreen tree species with an average height of 24 m and 35 cm width. The tree holds special importance in Hindu and Buddhist mythology. The bark plays a significant role in Ayurveda and is often associated with the treatment of reproductive system ailments in females, namely bleeding in uterine tissue, fibroids, haemorrhoids, menstrual cramps and stimulation of ovarian tissue. It is also shown to have antioxidant and anticancerous activity (Yadav et al. 2015). The bark extract also helps in the regulation of the circulatory system, renal flow and neural stimulations. The tree bears flowers in clusters of orange-yellow hues, becoming red before wilting and are a treat for the eyes (Baranwal and Devi 2016). Besides, they are known to be effective in the treatment of diabetes. Although the tree is often planted in places of worship, it can be judiciously used for the embellishment of homes, parks and gardens. Plantation at public places will ensure the cleanliness of the area, as the public would maintain sanitation near this revered tree.

3.17 *Tamarindus indica*

Tamarindus indica, commonly called tamarind, is a tree growing in tropical and semi-arid regions. It is widely grown in different parts of India and valued for its fruit which is rich in minerals and vitamins. The tender pods are relished as vegetable/pickles. Ripe fruit is sweet and sour and enjoys an international market as syrup, sauce, processed food, and in preparations of confectionaries, condiments, beverages. Tamarinds have been acknowledged in the Ayurvedic system of medicine in treating liver ailments, throat infections, digestion-related issues and problems of male infertility. Tamarind is also used as a cosmetic preparation for improving hair quality on the scalp and treating acne. The leaves have been reported to be a source of several active metabolites like alkaloids, glycosides, flavanoids, steroids and tannins (Dhasade et al. 2018). It has been scientifically proven to have anti-inflammatory, antiobesity, antidiabetic antifungal and anticancer properties. The wood is used in preparing gunpowder and leaves, and fruits are employed for dye preparation (Van der Stege et al. 2011; Paull and Duarte 2012). The species can be widely used for ornamental plantation in gardens, homes and even as bonsai for indoor decoration.

3.18 *Orchids*

One of the largest plant families is Orchidaceae (around 800 genera) which includes the monocots-Orchids. Orchids may be epiphytic, lithophytic or saprophytic and their seeds are borne in pods (Jalal et al. 2008). Orchids are flowers of exceptional

splendor and priced heavily for their wide array of colours, patterns, beauty, fragrance and longevity. In India, congenial geographical location and appropriate climatic conditions have proven to be a boon for the growth of a variety of orchid species, and they have also shown several applications in the traditional system of medicine (Husen and Rahman 2003; Husen and Faisal 2005). Many of these orchids are also valued for their medicinal properties. They are rich in alkaloids, flavonoids, glycosides, carbohydrates and other phytochemical contents. Some indigenous people of eastern Himalaya extensively use the beautiful *Vanda coerulea* and *Dendrobium nobile* for eye disease, and the whole plant of *Paphiopedilum insigne* is said to be useful for stomach troubles such as amoebic dysentery. *Aerides multiflora* is known to have antibacterial property and is commonly used in treating cuts and wounds. *Rhyncostylis retusa* is another orchid that is used in folk remedies to cure rheumatism. Some orchids like *Cymbidium elegans*, *Cypripedium pubescens* and *Epipactis latifolia* are used in local medicine for the treatment of nervous disorders. Nevertheless, orchids are mostly valued as ornamentals. They occupy the top position in the global floriculture trade as potted plants and cut flowers which has been increasing by leaps and bounds. Countries like Thailand, Malaysia, Singapore, the Philippines, Sri Lanka and Indonesia have established their orchid industries. Indian orchid industry is still in its native stage. To aggravate the scenario, a majority of the orchid business depended on exotic hybrids. The native orchid species have taken a back seat when it comes to commercialization. The picture is grave in India where several ornamentally and medicinally active native orchid species, namely *Cattleya*, *Cymbidium, Dendrobium, Phalaenopsis, Paphiopedilium, Aerides, Habenaria*, *Rhyncostylis and Vanda* have fallen prey to ignorance (Lal et al. 2019). There is a need to identify and utilize these orchid species in native gardening as potted plants, hanging baskets and plantation as over the tree branches, adding an unparalleled mystique to the garden and parks. The flowers can be further used for cut flower decoration. This will aid in orchid conservation and its potential being harnessed by the local populations.

4 Conclusion

Despite unprecedented advancements in science and technology, the human race is still dependent on the forests to suffice its essential needs, be it food, timber, flowers or medicines. Over the centuries, man has focussed on the floral heritage to nurture for his common good. However, pandora's box has much more to offer. Several wild species are only marginally utilized, while many others are waiting to be explored for their medicinal and ornamental value. There is a tremendous scope of domestication and commercialization of these plant varieties. Thus, an intensive effort is suggested for sustainable utilization and management of native plant species for beautification and therapeutic purposes.

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