

Sacred groves in conservation of plant biodiversity in Mahendergarh district of Haryana

Sanjay Yadav, J P Yadav*, Vedpriya Arya & Manju Panghal
Department of Genetics, Maharshi Dayanand University, Rohtak 124 001, Haryana
*E-mail: yadav1964@rediffmail.com

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The study deals with the role of sacred groves in conservation of plant biodiversity in Mahendergarh district of Haryana. Sacred groves are oasis of plant biodiversity protecting areas. These groves in general act as repositories and nurseries for many of the medicinally and economically important plants. Among the 20 sacred groves surveyed, over 50 different plant species are reported. In the sacred groves surveyed, only a few are well protected while most are partially threatened due to anthropogenic pressure. Degradation of sacred groves not only signifies loss of species rich vegetation, but also the rich cultural heritage of the region. Considering all the dimensions of sacred groves, it is clear that these need proper conservation and protection strategies in order to save them from the verge of further degradation.

Keywords: Plant biodiversity, Conservation, Sacred groves, Haryana

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The degradation of forests and destruction of habitat due to anthropogenic activities are the major causes of decline in the global biodiversity^{1,2}. Various indigenous communities all over the world lived in harmony with nature and thus conserved biodiversity³⁻⁶. Many traditional conservation practices of indigenous people in many parts of the world such as small forest patches by dedicating them to the local deity, contributed to the conservation and protection of biodiversity. Sacred Groves are a group of trees or a patch of vegetation protected by the local people through religious and cultural practices evolved to minimize destruction. Generally, Sacred Groves are believed to be a treasure house of medicinal, rare and endemic plants^{7,8}. Sacred Groves are found in Africa, Asia, Europe, Australia and America. In India, they have been reported from almost all states of the country.

The study area (Mahendergarh) is located at South Haryana near the border of Rajasthan. The district lies between North latitude 27° 47' to 28° 26' and East longitude 75° 56' to 76° 51'. It covers an area of

1,899 km² and comprises 4.3% of total area of Haryana. Xerophytic type of vegetation dominates the area. Tree species found are *Prosopis cineraria*, *Prosopis juliflora*, *Acacia nilotica*, *Tecomella undulata*, *Salvadora oleoides*, *Ziziphus jujuba*, *Ficus bengalensis*, *Ficus religiosa*, *Azadirachta indica*, *Butea monosperama*, etc. *Prosopis cineraria* and *Salvadora oleoides* are the dominant species. Shrubs found in the district are *Capparis aphylla*, *Achyranthes aspera*, *Justicia adhatoda*, *Cassia tora*, *Leptadenia pyrotechnica*, *Calotropis procera*, and *Cactus indicu*. *Cuscuta* sp is a common parasite climber. Medicinal plants found in the district are *Citrullus colocynthis*, *Withania somnifera*, *Sida acuta*, *Datura metel*, etc. Despite the vast and varied flora in the Southern Haryana of India, information on the biodiversity of the Sacred Groves is still limited and only a few studies have been made to understand the phytodiversity of the region⁹⁻¹¹. Unlike in many states, there is no generic name for Sacred Groves in Haryana. There are 248 Sacred Groves in Kurukshetra district⁴. The paper deals with the role of Sacred Groves in conservation of phytodiversity of Mahendergarh district.

*Corresponding author:

Methodology

During the study period (September 2008-March 2009), survey and questionnaire method were followed on the Sacred Groves and their role in biodiversity conservation. The district consists of around 20 miniature Sacred Groves (Fig. 1), where Mahendergarh tehsil has 11 and Narnaul tehsil 9 (Table 1). Out of the 20 groves studied *Mandir* groves account for 40%, *Samadhi* groves 25%, *Ashram* groves 25%, and *Tirath* and others for 10%. Information was collected from village headmen, local people, educated persons, and caretakers of Sacred Groves. These groves consist of patches of forest or even individual trees due to sacred belief of the villagers in nature. They also believe that these groves are the home of their holy deities and therefore not be damaged in any way. Identification of plants was done on the basis of spot identification method and further confirmation was made by comparing the herbarium available in the Genetics department.

Results and discussion

Of 20 Sacred Groves observed, around 50 plant species are identified with their conservation status (Table 2)¹². Among 50 plant species, 36% are trees, 30% shrubs, 26% herbs and 8% climbers (Fig. 2). The population is largely concentrated in four species, viz. *Azadiracta indica* (Fig. 5), *Salvadora oleoides* (Fig. 6), *Ficus bengalensis* and *Ficus religiosa*. Vegetation analysis indicates that the stand density of the sacred grove is around 250 stems present in

1,000 sq m area on average. A few rare and threatened plants are also found in these groves like *Salvadora oleoides*, *Calotropis gigantea*, *Datura innoxia*, *Tecomella undulate*, etc. All plant species found in these groves are economically important and almost 90% plants are used as medicine by indigenous people. Some groves are owned and managed by several families which protect the plants of the groves from one generation to other for their ritual believes. From all the 20 sacred groves, few are very important and play an important role in conservation of biodiversity such as in *Jairam Das Ashram* (Fig. 4) in Pali village, an area of about 3,000 sq m is conserved around the Ashram grove and plants like *Salvadora*, *Ficus religiosa*, *Ficus bengalensis*, *Prosopis* sp, etc. are protected. Human activities like grazing and cutting trees are prohibited in this grove. Around 35 km from Pali village, Bagot village also have a famous Lord *Shiv temple* (Fig. 8) where plants are conserved in a boundary near the pond. The main plants species that are conserved in the grove are *Butea monosperma*, *Ficus religiosa*, *Aegle marmelos*, etc. People wrap threads around the stems of these plants and worship Lord *Shiva*. Similarly, in *Dhoshi Tirth* situated near the Dhoshi hill of Narnaul sacred plants like *Capparis* (Fig. 7), *Ficus bengalensis*, *Salvadora*, etc. are worshiped by the local ladies. The most common plant species conserved is *Salvadora oleoides*. However, it is an endangered plant in Haryana but in Sacred Groves of Mohindergarh, it is predominantly preserved. In Sehamia village, a *Salvadora oleoides* plant of approximate 120 yrs, situated in the *Khetanath Mandir*, (Fig. 3) is well protected by the village people.

Village people living near these sacred groves are poor and less educated. They depend on these groves to meet their domestic needs, certain edible leaves and vegetables, medicinal plants, etc. These sacred groves acted as a repository for various medicines. Other uses involved a source of replenishable resources like fruits and honey. The groves are often associated with ponds and streams, and meet water requirements of local communities. In modern times, sacred groves have become biodiversity hotspots, as various species seek refuge in the areas due to progressive habitat destruction, and hunting. Sacred groves often contain plant and animal species that have become extinct in neighbouring areas. They therefore harbour great genetic diversity. In most sacred groves it was taboo

Table 1—Sacred groves in Mahendergarh district

Sacred grove (Name and location)	Symbol
<i>Rameshwar Das Ashram</i> (Bamanwas)	A
<i>Ram Mandir</i> (Kamania)	B
<i>Bhagwati Samadhi</i> (Aakoli village)	C
<i>Sati Samadhi</i> (Kanwi)	D
<i>Baba Heeramal Mandir</i> (Gadagoan)	E
<i>Modawala Mandir</i> (Narnaul)	F
<i>Chota bada talab</i> (Narnaul)	G
<i>Chavyan Ashram</i> (Doshi)	H
<i>Chamunda Devi Tirtha</i> (Doshi)	I
<i>Peer Mazar</i> (Dharshu village)	J
<i>Khetanath Mandir</i> (Sehama village)	K
<i>Khetanath Aashram</i> (Daroli Ahir)	L
<i>Baba kaseria Samadhi</i> (Mandola)	M
<i>Baba Jairam Das Ashram</i> (Pali village)	N
<i>Paladi Mandir</i> (Paladi)	O
<i>Mandir</i> (Sahlengh)	P
<i>Lord Shiva Mandir</i> (Bagoth)	Q
<i>Gosai Samadhi</i> (Bagoth)	R
<i>Jawala Devi Mandir</i> (Ghadi mahasher)	S
<i>Baba Narshing Das Ashram</i> (Kanti)	T

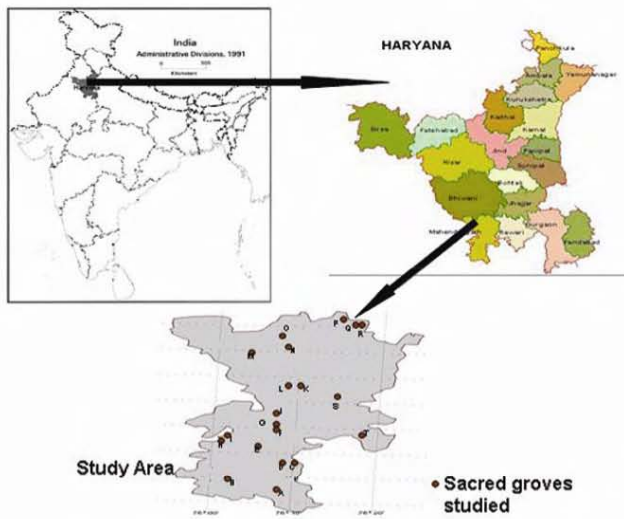


Fig. 1 Map of study area

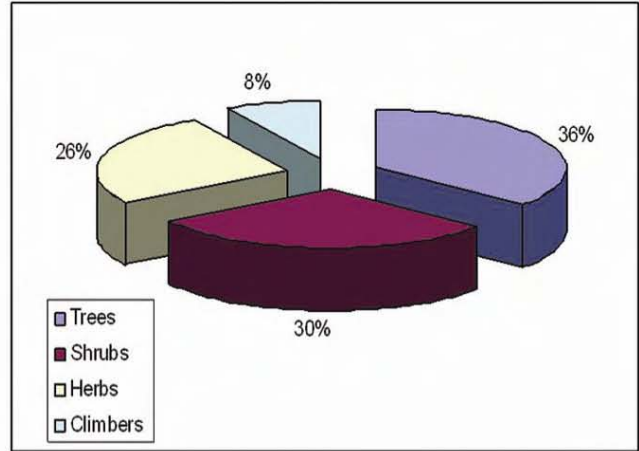


Fig. 2 Percent distribution of plant species



Fig. 3 *S. oleoides* in Khetanath mandir



Fig.4 *S. oleoides* in Jairamdas ashram



Fig.5 *A. indica* in Modawala mandir



Fig.6 *S. oleoides* in Bhagwati samadhi



Fig.7 *C. aphylla* in Gosai samadhi



Fig.8 *F. religiosa* in Lord Shiva mandir

Table 2—Plants found in the Sacred Groves of Mahendergarh district

Plant name / family / local name	Uses	Conservation status* ¹²
<i>Acacia arabica</i> (Lam.) Mimosaceae <i>Kikar</i>	Bark, gum, leaves are used to cure gum problems, wound healing and as tooth powder.	PS
<i>Abutilon indicum</i> (Link) Sweet. Malvaceae <i>Atibalaa</i>	Whole plant is used as demulcent, diuretic, aphrodisiac, laxative, sedative, astringent and in pulmonary diseases.	S
<i>Acacia catechu</i> (L.f.) Fabaceae <i>Katha</i>	Bark and leaves are used to treat sore throats and diarrhoea.	S
<i>Achyranthes aspera</i> L. Amaranthaceae <i>Uta kanta</i>	Roots and stem are used for the treatment of dropsy, rheumatism, stomach problems, cholera, skin diseases and rabies.	S
<i>Aegle marmelos</i> L. (Corr.) Rutaceae <i>Bel</i>	Fruit pulp is used in diarrhoea and dysentery.	PS
<i>Albezzia lebbeck</i> L. Mimosaceae <i>Sirash</i>	Leaves are used in <i>surma</i> .	S
<i>Aloe vera</i> L. Asphodelaceae <i>Gharit-kumari</i>	Whole plant is used to treat diabetics, inflammations and microbial diseases.	C
<i>Argemone mexicana</i> L. Papaveraceae <i>Satya-nasi</i>	Seeds and roots are used in the treatment of malaria, jaundice and skin diseases.	S
<i>Asparagus racemosus</i> Willd. Asparagaceae <i>Shata-vari</i>	Roots are used as an anodyne, aphrodisiac and galactagogue.	T
<i>Azadirachta indica</i> A. Juss Meliaceae <i>Neem</i>	Leaves and stem are used in skin boils and ring worms, and also in rheumatic joints pain.	S
<i>Boerhaavia diffusa</i> L. Nyctaginaceae <i>Saatthi</i>	Roots are used for fomentation to alleviate pain and swelling. Fresh root juice instilled into eyes, mitigates eye ailments like night blindness and conjunctivitis. Paste is applied on the wounds, dries up the oozing.	PS
<i>Butea monosperma</i> (Lamk.) Taub. Fabaceae <i>Dhak</i>	Leaves with oil is used in rheumatic pain and seeds are used as anthelmintic.	S
<i>Calotropis gigantea</i> L. Asclepiadaceae <i>Ak</i>	Powdered flower is used in cold and cough, also used in snakebite.	PS
<i>Cannabis sativa</i> L. Cannabinaceae <i>Bhang</i>	Leaves are used in asthma, tetanus and bladder inflammation.	PS

Table 2—Plants found in the Sacred Groves of Mahendergarh district — *Contd.*

Plant name / family / local name	Uses	Conservation status* ¹²
<i>Capparis aphylla</i> (Roth.) Capparaceae <i>Karir</i>	Whole plant decoction is used in scurvy, and for the treatment of paralysis.	D
<i>Cassia fistula</i> L. Caesalpinaceae <i>Amaltas</i>	Fruits, leaves and seeds are used in scabies and ring worms.	S
<i>Cassia tora</i> L. Caesalpinaceae <i>Puvad</i>	Seeds and leaves are used as a coffee substitute, as a maturant, anodyne, in treating skin diseases like ring worm, itch and psoriasis.	S
<i>Catharanthus roseus</i> L. (G.Don.) Apocyanaceae <i>Sadabahar</i>	Whole plant extract is given in blood cancer and diabetes.	S
<i>Chenopodium album</i> L. Chenopodiaceae <i>Bathua</i>	Whole plant is used in diarrhoea and wounds.	PS
<i>Citrullus colocynthis</i> L. Cucurbitaceae <i>Garmunda</i>	Fruit, roots and seeds are used in respiratory, intestinal and urinary problems.	C
<i>Cuscuta hyaline</i> (Heyne.) Cuscutaceae <i>Amerbel</i>	Whole plant decoction relieves chest pain.	D
<i>Cynodon dactylon</i> L. Poaceae <i>Dube</i>	Plant is used in religious ceremonies.	PS
<i>Cyperus rotundus</i> L. Cyperaceae <i>Mothia</i>	Whole plant is used to treat nausea, fever, inflammation, for pain reduction and muscle relaxation.	PS
<i>Dalbergia sissoo</i> Roxb. Fabaceae <i>Shisam</i>	Leaves are used in the treatment of skin diseases, stomach problems, dysentery, nausea and eye disorders.	C
<i>Datura innoxia</i> (Mill.) Solanaceae <i>Dhatura</i>	Leaves and seeds are used to treat ulcers, asthma and as good antiseptic.	PS
<i>Datura metel</i> L. Solanaceae <i>Kala Dhatura</i>	Leaves and fruits are used to treat asthma or wheezing like problems.	PS
<i>Eclipta alba</i> L. Asteraceae <i>Bharingraj</i>	Whole plant is used for the treatment of bleeding, haemoptysis, hepatitis haematuria, itching, , diphtheria and diarrhoea.	S
<i>Emblica officinalis</i> L. Euphorbiaceae <i>Amla</i>	Fruits and seeds are useful in anaemia, jaundice, dyspepsia, haemorrhage disorders, diabetes, asthma and bronchitis.	C

Contd.—

Table 2—Plants found in the Sacred Groves of Mahendergarh district — *Contd.*

Plant name / family / local name	Uses	Conservation status* ¹²
<i>Eucalyptus maculata</i> (Smith). Myrtaceae <i>Safeda</i>	Leaves yield strong pungent oil.	D
<i>Euphorbia hirta</i> L. Euphorbiaceae <i>Dhudhi</i>	Whole plant is used in bronchitic asthma and amoebic dysentery.	S
<i>Euphorbia nerifolia</i> L. Euphorbiaceae <i>Thor</i>	Whole plant is used in toothache, skin boils and pain.	D
<i>Ficus bengalensis</i> L. Moraceae <i>Barh</i>	Fruits, bark relive frequent painful micturition.	D
<i>Ficus religiosa</i> L. Moraceae <i>Pipal</i>	Leaves, fruits and bark are used to relieve vomiting and hiccup.	PS
<i>Justicia adhatoda</i> L. Acanthaceae <i>Bansa</i>	Boiled water with leaf used for bath to treat bodyache. Leaf decoction in cough and chronic bronchitis.	S
<i>Melia azadirach</i> L. Meliaceae <i>Bakain</i>	Fruits and leaves are used to treat malaria, leprosy and skin disease.	PS
<i>Mentha arvensis</i> L. Lamiaceae <i>Pudina</i>	Whole plant is used in the treatment of fever, headache and digestive problems.	C
<i>Musa paradisiaca</i> L. Musaceae <i>Kela</i>	Leaves are good in scabies, leprosy and inflammations.	D
<i>Ocimum sanctum</i> L. Lamiaceae <i>Tulsi</i>	Leaves juice is used in cold, fever and diabetes.	C
<i>Phyllanthus niruri</i> L. Euphorbiaceae <i>Bhui-amla</i>	Whole plant is used in the treatment of jaundice, diarrhoea and high blood pressure.	C
<i>Prosopis cineraria</i> L. Mimosaceae <i>Jatti</i>	Stem bark is used for treating intestinal worms and asthma.	PS
<i>Ricinus communis</i> L. Euphorbiaceae <i>Arand</i>	Oil used to increase stiffness in male organ.	PS
<i>Saccharum munja</i> (Roxb.) Gramineae <i>Sarkand</i>	Flower and leaves are used in renal stones and painful urination.	PS

Contd.—

Table 2—Plants found in the Sacred Groves of Mahendergarh district — *Contd.*

Plant name / family / local name	Uses	Conservation status* ¹²
<i>Salvadora oleoides</i> L. Salvadoraceae <i>Jal</i>	Bark, fruit and leaves are used to relieve pain in piles and skin diseases.	D
<i>Tamarindus indica</i> L. Caesalpinaceae <i>Imli</i>	Bark, fruits and seeds are used as blood purifier, in cholera and snakebite.	C
<i>Tecomella undulata</i> (Sm) Bignoniaceae <i>Ruhera</i>	Stem decoction is used in stomachache and skin disease.	D
<i>Tinospora cordifolia</i> (Thunb.) Miers Menispermaceae <i>Giloe</i>	Leaves and stem are used as hepatoprotectant and blood purifier.	T
<i>Tribulus terrestris</i> L. Zygophyllaceae <i>Gokhru</i>	Whole plant is used in the treatment of fever, sterility and skin diseases.	S
<i>Tridax procumbens</i> L. Asteraceae <i>Sada-hari</i>	Whole plant is used to stop bleeding from cut and pain relief.	PS
<i>Withania somnifera</i> L. Solanaceae <i>Asgandh</i>	Seeds and leaves are used to increase hardness of mammary.	S
<i>Ziziphus jujuba</i> L. Rhamnaceae <i>Beri</i>	Root decoction is used in fever and diarrhoea.	D

*(PS– Presently safe; S– Sporadic; D– Not known; T– Threatened; C – Cultivated)

to hunt or chop wood⁶. Among the 20 sacred groves surveyed in Mahendergarh district, only a few are well protected while most are partially threatened due to anthropogenic pressure such as developmental activities, urbanization and population explosion. In all the groves, besides their particular plants wealth, a few plant species like *Salvadora oleoides*, *Ficus bengalensis*, and *Ficus religiosa* are common. Degradation of sacred groves not only signifies loss of species rich vegetation, but also the rich cultural heritage of the region. Considering all the dimensions of sacred groves, it is clear that these need proper conservation and protection in order to save them from the verge of further degradation.

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