

Lantana

A Menace

or

Friend?

Reviled as a nuisance and a menace worldwide, Lantana can surprisingly be of great help to humans and animals.

HOW could a plant, well known as a menace worldwide, be even remotely thought of as being environment friendly? Even though *Lantana* spreads rapidly everywhere ruining the habitats of some plants and choking others, it does have a role to play in protecting our health, generating wealth and even conserving our environment.

Lantana Linn., a genus of herbs and undershrubs or shrubs, belongs to the family Verbenaceae. It has a characteristic aromatic smell and quadrangular, pale green, hairy stem. It bears small, 20-30 multi-coloured flowers on every branch throughout the year. The fruit of the shrub is a berry – green or blue-black in colour. About seven species, reported from India, have adapted to the harsh conditions in tropical and subtropical parts. *Lantana camara* Linn., a native to tropical and subtropical America, is the most common species in India where it is known as Lantana, Red or Wild sage, *Ghaneri* in Marathi and *Raimuniya* in Madhya Pradesh.

Lantana possesses several qualities that could be of immense benefit to humans and animals. It can provide shelter to wild organisms. As a source of wood it can fulfill our day-to-day requirements. It possesses healing properties that can fight and cure many ailments. It can provide raw material for paper pulp, biomass for electricity generation and also manure. It plays a significant role in crop protection as it has insecticidal properties.

The lantana flowers attract a wide variety of beautiful butterflies





Lantana attracts a large number of birds

This species has the quality to bear and to survive at high temperatures and hence could even adjust well to the ill effects of global warming. It also grows very rapidly.

Origin in India

Lantana (from the Latin *lento*, to bend) probably derived from the ancient Latin name of the genus *Viburnum*, resembling it in foliage and inflorescence. The genus has seven species in India including both herbaceous plants and shrubs with 0.5-2 m (1.6-6.6 ft) height and is said to be a native of Tropical America. In India, it was introduced in 1809 (Calcutta Botanical Garden), as an ornamental plant due to its beautiful aromatic flowers. It was then confined largely to hedges but now is wide spread, particularly in dry to moist deciduous forests.

Protector of Biodiversity

Environmentally, this plant acts as a saviour of many animal and insect species like butterflies that are at the verge of getting extinct. With its vivid colors and arrangement of nectar-filled flowers, it is attractive and serves as a primary food source for them. The major visitors to these plants are Painted lady (*Vanessa cardui*), Common buckeye (*Junonia coenia*), Western Tiger swallow tail (*Papilio rutuuis*), Gulf fritillary (*Agraulis vanilla*) and Pipevine swallow tail (*Battus philenor*). The majority of them can be seen wherever Lantana

is present, creating a pleasant scenic view.

The juicy pericarp of Lantana attracts a large number of dispersal agents such as birds. Around 18 species, including some common birds like Red-vented bulbul (*Pycnonotus cafer*), Magpie robin (*Copsychus saularis*), Common myna (*Acridotheres tristis*) and Indian cuckoo (*Cuculus micropterus*) have been identified.

It is reported that, the density of Bulbul increases with increase in Lantana in moist and dry deciduous forests and thus acts as an indicator of habitat change.

Lantana also helps to cope with one of the most troublesome weeds in the world, Water hyacinth (*Eichhornia crassipes* Solms), by suppressing the emergence of its leaf buds. A foliar extract spray of Lantana causes its leaf to decay. On the other hand, the crude aqueous extract of fresh fruits of Lantana on wheat plants at 100% concentration has shown a growth-promoting effect. It holds potential to be used as a substitute for growth-promoting synthetic chemicals.

It is a useful exotic as it provides shelter to many wild animals. It is used as a protective hedge to keep roaming animals out of one's property and is planted on rocky hillsides to prevent erosion. It also improves the fertility of rocky, hard laterite soils, serves to retain humus in deforested areas and can withstand major problems like infertile, alkaline soils due to its salt-

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Tigers and leopard taking rest in the Lantana bushes

Lantana helps keep water hyacinth under control



The Lantana plant has numerous and rare qualities, comparable to other plants, and hence must be harnessed and also explored for its revenue generation potential.

Lantana sticks being prepared for making products (right)

tolerant property. Due to this property, it has opened the doors for rejuvenation of exploited, deforested and barren lands and converting them into flourishing ones.

Treasure of Economic Values

Lantana is of great economic value too. Here's how.

Wood articles: Lantana has proved to be a good source of wood for making furniture that is as good as those of cane wood. It is thus of great value as it helps saving the valuable trees that are being recklessly cut down for this purpose. Villagers and tribals have come out with a galaxy of beautiful, useful, comfortable and durable household articles like sofa, chair, bee-keeping boxes, fish-catchers and many other items for domestic use as well as for selling them in the open market and thus earning their livelihood.

Hangers for clothes made from Lantana wood can easily replace those traditional iron and plastic ones and are comparatively durable. Various attractive art-pieces are also made and many can be designed, marking its presence in handicraft market.

Biofuel and Bioethanol: Lantana wood is an efficient fuel wood as it catches fire easily and has a good calorific value. Biomass works as a major raw material in electricity generation. Its leaf litter can be converted into charcoal using the carbonization process.

Lantana camara contains hemicelluloses (a group of complex carbohydrates), and hence, can serve as a low-cost feedstock for bioethanol production after saccharification and fermentation.

Paper pulp: Lantana is almost treated like bamboo and can provide raw material for paper pulp. The chemical composition of Lantana is 75.03% holocellulose, 8.461% extractive, 18.21% lignin and 2.31% silica, indicating its potential use as a material to provide strength in the preparation of polymer matrix composites.



Manure: Biomass from the Lantana plant is used in manuring coconut trees from its ash, which contains a good amount of potassium and manganese and the twigs as green mulch in crop fields. It has proved to be useful as an organic source for improving soil productivity under rice-

wheat cropping and saved chemical nitrogenous fertilizer by 50%. Lantana has been found to improve soil fertility and soil quality, accelerate N and P cycles, utilize carbon substrates more effectively, and has higher functional diversity.



The Lantana plant also displays pesticidal effect and has shown promise as a natural preservative without affecting the colour and odour of grain.

SOME MORE USES OF LANTANA

- Serves to nurse parasitic sandalwood seedlings and as a support for yam vines.
- The scabrous leaves can be used in place of sandpaper to polish wood.
- The easy availability of the withered leaves of this common weed can make it a cheaper enzyme (Alkaline protease) source and potential additive in detergents.
- Lantana leaves and fruits are edible. Its young leaves mixed with salt are eaten to stimulate digestion and ripe fruits are eaten in many remote and underdeveloped areas. The nutritional composition of its seeds suggested that they could be used to meet part of the nutritional requirements of animal feeds. Also, they could be regarded as good source of food ingredients and as new source of edible oils.
- Lantana flowers, abundantly available, have been used to extract an eco-friendly natural coloured dye for silk.
- One of the beneficial properties of Lantana is its acclimatization against harsh climatic conditions, pests and diseases. Its drought resistance and seed germinability even after exposure to 80°C has made this species the best woody species that has the potential for mitigation of salinity and global warming. Fast growing Lantana can be grown for land reclamation process due to its productivity and climate tolerance.

Medicinal value: Medically, this plant has shown marvelous results as it can be used in various ailments like cold, fever, influenza, stomachache, hypertension, rheumatism, asthma, high blood pressure and diarrhoea. If applied externally, it provides relief in measles, chicken pox, snakebites, cuts, eczema, bruises and is also used to remove worms from the stomach. It has been claimed that a steroid lancamarone extracted from the leaves exhibits cardiostimulant (strengthening the heart) properties.

An alkaloid, lantamine, present in the shrub can cure fever and prevents muscles from sudden contraction, comparable to quinine. The methanolic extract of *Lantana camara* leaves shows healing of gastric ulcers and also prevents development of duodenal ulcers in rats. The extract of the plants has shown excellent topical antifungal property for the cure of tinea and ringworm in rats. It has also been found effective in healing

excision wounds in experimental animal and could be evaluated as a therapeutic agent in tissue repair processes associated with skin injuries.

It is considered good for healing wounds, inducing perspiration and curing flatulence. It is also used in treatment of pustules, fistulae, tumors, tetanus, malaria and other abdominal problems. Chloroform and methanol extracts of the plant showed presence of active principles against *Mycobacteria tuberculosis*, which merits further research on applications of this invasive weed to cure tuberculosis. Recently, natural products from Lantana have been implicated in the prevention and cure of many serious diseases including cancers.

Antifungal, Insecticidal and Antibacterial: Lantana is also reported to show antifungal, antibacterial and antiaflatoxinigenic effects against various microorganisms like *Aspergillus flavus* (key storage fungi), *Pseudomonas aeruginosa*

(Gram-negative bacteria), *Staphylococcus aureus*, *Bacillus cereus*, *Cladosporium sphaerospermum*, *Fusarium solani*, *Rhizoctonia solani*, *Meloidogyne javanica* and *Mycobacterium* which causes tuberculosis.

An exciting and important feature of this plant is that in the Himalayas Lantana is formed into incense cakes that are used as mosquito repellent. Besides, it has been exploited as a potential insecticidal against *Aedes aegypti* and *Culex quinquefasciatus* IVth instar mosquito larvae, which points towards its use as an eco-friendly insecticide. The root extracts showed potential to kill mosquitoes. The leaf extract of *Lantana camara* significantly controlled *Bemisia tabaci* as compared to chemical insecticides.

In addition to all these properties, it also displays pesticidal effect and has shown promise as a natural preservative without affecting the colour and odour of grain. The plant also possesses termiticidal activity. Research reports have concluded that fresh-cut lantana leaves, stems and flowers could be used as additives to garden mulches against termites. An experimental study conducted on the nematocidal potential of the aerial parts against root-knot nematode *Meloidogyne incognita* revealed better activity than conventional nematicide furadan (100% mortality at 1 mg/ml concentration after 24 h).

Lantana is widely considered as a poisonous weed due to its rapid spread, disturbing the native vegetation, animal habitats and biodiversity, and is regularly eradicated because it is perceived to be useless. But the plant has numerous and rare qualities, comparable to other plants, and hence must be harnessed and also explored for its revenue generation potential.

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