

Full Length Research Paper

Inventory of some exotic cultivated tree species of Doon valley and their ethnobotanical uses

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Indigenous flora of Doon valley in Northwest Himalaya in the Indian subcontinent, have been subjected to dramatic alteration due to the deliberate and incidental introduction of exotic species from various parts of the world. Human depend heavily on non-native species for food, fodder, timber, medicine etc. Thus, the present communication deals on some cultivated exotic tree species of Doon valley with their origin and ethno- botanical uses. During the study 18 exotic tree species belongs to 14 families was reported which are mostly cultivated as food, fodder timber and medicine purposes in Doon valley.

Key words: Invasive, medicinal, native, socio-economical.

INTRODUCTION

Exotic species are non native that occur outside their natural adapted ranges and dispersal potential. These species become invasive when they are introduced deliberately or intentionally outside their natural habitats into new areas where they express the capability to establish, invade and out compete native species (Randall, 1996). From an ecological perspective, any species introduced to an ecosystem beyond its home range that establishes, naturalizes and spread is said to be invasive (Williamson, 1996). Introduction of these species may occur accidentally or through their being imported for a limited purpose and subsequently escaping or deliberately on a large scale (Levine, 1989). Many people introduce non-native species into new habitats for economic reasons (Mc Neely, 2001) and most cases of invasiveness can be linked to the intended or unintended consequences of economic activities. At least 10% of the world's 300,000 vascular plants have the potential to invade other ecosystems and affect native biota in a direct or indirect way (Rajmanek et al., 2000). About 18% of the Indian flora constitutes aliens, of which 55% are American 30% Asian and Malaysian and 15%

European and Central Asian species (Nayar, 1997). Human depends heavily on these non-native species for food, shelter, medicine ecosystem services, aesthetic enjoyment and cultural identity. Intentionally introduced plants have priority over native species with respect to household economy and national economy. Although, native species fulfil some human requirements, non-native species play an integral role in the enormous and culture of most countries. Despite the many benefits provided by exotic species, deliberate and accidental introduction of these species poses a threat to native biodiversity and rural livelihoods. As the "exotics" become commonplace, due to the burgeoning interest in plants of all kinds, more people are becoming aware of our native flora. Indeed, as the natural habitats are destroyed by man's "progress" ever increasing numbers of our native species are more rare than the exotics which have been long used in landscaping. Many native species of trees and shrubs are not only as ornamental as the old standard exotics, but may have superior attributes when produced with good horticultural practices. Their absence from the market-places of horticulture is due in part to lack of knowledge of the native plants. Especially of how they grow (in cultivation) and how they may be used to best display their natural beauty (George, 1976). Keeping these facts in view, the inventory of exotic cultivated tree species was prepared.

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Table 1. List of cultivated exotic tree species with their ethno- botanical uses.

S/No.	Botanical name	Family	Vernacular name	Origin	Parts used	Ethnobotanical uses
1	<i>A. farnesiana</i>	Mimosaceae	Viliati babul	Australia	Bark and plant extract	Bark regarded as an astringent and effective medicine for gonorrhoea. Plant extract also used against snake bite, rabies and delirium. Flowers often used in perfumes. Plant is a good soil binder.
2	<i>B. variegata</i>	Caesalpinaceae	Kachnar	Southeastern Asia	Leaves	Leaves provide good quality fodder; fibre from bark variously used. Young flowers eaten as vegetable. Wood used for agricultural implements and construction. Ash of dried leaves taken in cough.
3	<i>B. malabaricum</i>	Malvaceae	Semal	Asia, Australia and Malaysia	Gum from stem	Flowers buds as vegetable; fibres of seeds (Kapok) used for stuffing cushions and pillow; wood light in weight used for packing cases, boats, match sticks etc. Gum exuded from stem medicinal, aphrodisiac, also to relieve digestive disorders.
4	<i>B. Papyrifera</i>	Urticaceae	Jungli Tut	Burma	Bark	Bark yields fibre, which is used in paper industry; wood soft and light made into packing cases.
5	<i>B. monospermea</i>	Papilionaceae	Dhak	Southern Asia	Leaves, flower and gum	Leaves used as fodder. Decoction of flowers regarded as blood purifier, seeds as antiseptic and anthelmintic. Gum excudes as tonic and indigestion. Timber is used in the construction of several articles; an important tree of social forestry.
6	<i>C. citrinus</i>	Myrtaceae	LalBottal bursh	Australia		An ornamental tree of garden.
7	<i>C. javanica</i>	Caesalpinaceae	Javaniki-Rani	Indonesia		Commonly cultivated in garden as an ornamental tree.
8	<i>C. campohra</i>	Lauraceae	Mushkapur	China	Leaves	Camphor oil obtained from the leaves which are used in perfumery.
9	<i>C. laurifolius</i>	Menispermaceae	Tilpharya	Japan and China	Leaves	Leaf juice used to kill lice and kilns of livestock. Leaves are supposed to be poisonous to livestock, but used for manuring; wood used for walking sticks and fuel.
10	<i>D. regia</i>	Caesalpinaceae	Gulmohur	Madagascar		An ornamental tree, useful for bee keeping.
11	<i>E. japonica</i>	Rosaceae	Lokat	Japan and China	Fruits	Useful for bee keeping, fruits are edible.
12	<i>E. tereticornis</i>	Myrtaceae	Safeda	Australia	Leaves and Wood	It is wood is used for rail road-ties fencing and building purposes. An important source of bee-forage in apiary, besides their use in paper, oil and medicinal industries.
13	<i>G. robusta</i>	Proteaceae	Silver oak	Australia	Wood and leaves	Wood used for cabinet work; leaves for manuring.
14	<i>L. speciosa</i>	Lythraceae	Zarul	North America	Seeds, bark and root	Seeds are reported to be narcotic, the bark purgative, root is used in the treatment of fever and dysentery; it has been reported that all parts of the tree are useful in the treatment of diabetes. Timber is used for the construction of boats.

Table 1. Contd.

15	<i>L. chinensis</i>	Sapindaceae	Litchi	China	Fruits and flower	Edible fruits of commerce; flowers useful in apiculture as an important source of bee forage.
16	<i>M. azedarch</i>	Meliaceae	Dainkan	Iran	Leaves, fruit and seeds	Leaves fruits and seeds are useful in skin disease as well as in rheumatic pains. Fruits and leaves as antiseptic and wormicides; leaves as fodder, wood useful for household and agricultural implements; flowers useful source of bee forage in apiary; important tree of social Forestry.
17	<i>P. persica</i>	Rosaceae	Aaru	China	Fruit, leaves and bark	Fruits edible, seeds yield edible oil; infusion of leaves and bark used to relive cough and cold; infusion of bark also given in suppressed urination; flowers useful in apiculture as bee forage.
18	<i>S. robusta</i>	Dipterocarpaceae	Sal	Nepal	Leaves	High class timber yielding plant, used for various purposes; oleoresin in medicine and minor industries; leaves used as plate, aromatic resin useful in diarrhoea, dysentery and in gonorrhoea; also used as incense in religious rites.

MATERIAL AND METHODS

Location and physiography

Doon valley is situated on the Northeast corner of Uttarkhand between 78° 5' East longitude and 30° 24' North latitude. It is a canal shaped valley surrounded by the outer Himalayan ranges on the North and low Shiwalik hills on the South. The East and West boundaries are limited by the rivers Ganga and Yamuna, respectively. Botanically the Doon valley is of great interest because it has suitable climatic conditions both temperate and tropical, therefore, many exotics are naturalised and propagated luxuriantly as permanent denizens.

Methodology

The present study was conducted on the exotic tree species of Doon valley. During the study the specimen of tree species was collected from road side, forest, along river, Praks, Orchards etc. Specimen collected were identified in the herbaria of botanical survey of India (Northern circle), DehraDun and deposited in botany

department DAV (PG) college DehraDun. The description of plants has been examined with the help of available literature (Gaur, 1999; Babu, 1977). Nativity of the tree species was recorded from the published literature (Singh et al., 2010). The local peoples were consulted to find out if any of these tree species has anthropogenic use.

RESULTS AND DISCUSSION

During the study a total number of 18 exotic tree species distributed in 14 families were recorded as exotic cultivated tree species in Doon valley (Table 1). Out of 18 tree species 5 tree species viz *Acacia farnesiana*, *Cinnamomum camphora*, *Eucalyptus tereticornis*, *Lagerstromia speciosa*, *Shorea robusta* used for medicinal purposes to cure the various disease like cough and cold, rheumatism pain, urine trouble, fever, dysentery, antiseptics and wormicides. The part used for medicine of these exotic trees with their medicinal

properties given in Table 1. Tree species *Bauhinia variegata*, *Bombax malabaricum*, *Butea monospermea*, *Melia azidarch* and *Prunus persica* are used as food, fodder and in medicine also. Tree species *Callistemon citrinus* *Cassia javanica*, *Grevillea robusta* and *Delonix regia* are cultivated as ornamental tree species on road sides, orchards and gardens for the aesthetic beauty of Doon valley. Fruits of exotic tree species *Litchi chinensis* commonly known as *Litchi* have become popular at the local national and international level from Doon valley is the native of China and is the source of the economy of rural people of valley. Sustainable exploitation of these species may help in socio-economic amelioration. A search in the literature and consultation with local people indicated that several of the invasive species are also being used for different purposes; for example Fibre obtained from the bark of *Broussonetia papyrifera* is being used in

paper industries and wood in packing cases. Nativity of these species is shown that most of the tree species are native from South Eastern Asia, Australia and China. The American continents contributed majority of noxious invasive plants in China (Huang et al., 2009). The effects of invasion include colonizing species becoming pests and or leading to disappearance of native species, and their importance needs to be measured by evaluating their impact on human population, health and biodiversity, causing losses both in terms of social impacts and to the economy. Singh et al. (2010) reported the state level inventory of invasive alien plants and their use potential. They found out that people have been using a large number of these alien species for various purposes like food, fodder, timber, medicine etc. Conclusively these woody taxa which were introduced from the different part of the world now are important contributors to the exotic flora of Doon valley.

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