

IMPORTANT USES OF LEPTADENIA PYROTECHNICA OF BIKANER

BHABOOTA RAM

Department Of Physics, Dungar College, Bikaner
E-mail: bhabootraichouhan@gmail.com

Abstract- Importance of composite materials is seen in all age of history and all ancient civilizations have used such materials. The main objective of this study is to prove the industrial use of local plants found in desert area. The study provides useful parameters for fiber industry so that material can be used properly for particular application and can competes the international market. By these parameters we try to develop understanding for usefulness of new natural fiber composite material with respect to exiting plastic material. The knowledge said parameters are useful for understanding the microscopic level study. The theory, models and equipment used are accepted under international standards. By the proposed work we investigate phase transformation, somr thermal properties of fiber reinforced phenol formaldehyde composites of Leptadenia pyrotechnica .

It is planned to investihate strength, phase transformation and some thermo physical properties of compoite materials in respect of polymer made by plastics.

Leptadenia pyrotechnica (Hindi : [khai) is the botanical name of a desert herb of the family Asclepiadaceae. It is known as himpin Hindi and Urdu, "Khipp". Being highly drought-resistant, leptadenia pyrotechnica has played an important role in the desert afforestation programs. The herb khimpis a strong soil- binder and as such is one of the pioneer species in sand dune fixation. Only a few workers have done work on composite of fibers of desert plant and since plants are able to survive under extreme whether conditions, their composites are expected to provided good result . fiber reinforcement plastics are commonly used by modern electronic industry, and, since the disposal is not easy for such fiber reinforced plastics, the development of fiber reinforced plastics that harmonized with environment ie demanded [1]. Form such a viewpoint, some researchers have been studying to use the natural fiber, which it has a moderate mechanical property and is a green material as a reinforcement of the conventional fiber reinforced plastic [2,3] However, since generally the strength of natural fiber is lower than that of the glass fiber etc. , it is necessary to produce a green composite with higher fiber content and longer fiber length in order to obtain a natural fiber reinforced composite material with high strength. Therefore, it is important to develop a new creative technology for the composite material that fills these demands [4]. Natural fiber composites are emerging as realistic alternatives to glass- reinforced composites in many applications. Natural fiber composites such as hemp foiber-epoxy, flax fiber-polypropylene (PP), and china reed fiber- PP are particularly attractive in automotive applications because of lower cost and lower density. [5]. Natural fibers traditionally have been used to fill and reinforce thermo-sets, natural fiber reinforced thermoplastics, especially polypropylene composites, have attracted greater attention duteto their added advantage of recyclability [6]. Natural fibers theoretically result in no net addition to CO2 emissions, Which natural fibers are obtained,appropriate atmospheric carbon dioxide during their growth,which is released during the combustion of natural fibers.hence incineration of natural fibers reinforced composites lead to positive carbon credits and lower global warming effect [7],the properties of natural fibers we want determine,keep in mind that one is dealing with natural producat with properties that are strongly influenced by their growing environment.temperature, humidity, the composition of the soil and the air all affect the height of the plant,strength of its fibers density, etc.and the way by which palnts, are harvested and processed result in a variation of propertied [8].'' Crotalaria burhia' is found in desert of western rajasthan the fibers obtained in these have many advantages like eco-friendly, easy process-able, low cost,non toxic,abundance in nature, low density high srength etc.

Leptadenia comprises 4 species occurring from Africa to India. Leptadenia pyrotechnica is most of the time leafless, whereas the other 3 species, Leptadenia hastata (Pers.) Decne., Leptadenia arborea (Forssk.) Schweinf. (synonym: Leptadenia heterophylla (Del.) Decne.) and Leptadenia reticulata (Retz.) Wight & Arn. (synonym: Leptadenia madagascariensis Decne.) are leafy, twining shrubs. These 3 species form a species complex, and further taxonomic research might reveal that they should be considered as a single species.

Leptadenia arborea occurs from West Africa east to Arabia. In Sudan a root decoction is drunk to treat gonorrhoea, constipation and colic. The roots are given to cattle and horses to treat flatulence. The plant is considered excellent forage for all livestock. Children eat the ripe fruits. The plant can be cultivated as an ornamental by training it as a vine over a pergola or wall. From the leaves, stems and fruits β -amyirin, α -amyirin, a mixture of campesterol and stigmasterol, pinoresinol, syringaresinol, leucanthemitol and ferulaldehyde were isolated. Syringaresinol has shown an inhibitory effect against acetylcholinesterase. The IC50 of syringaresinol was 200 μ g/ml.

I. INTRODUCTION

Leptadenia pyrotechnica (Hindi: खीप; Punjabi: ਖਿੱਪ) is the botanical name of a desert herb of the family Asclepiadaceae. It is widespread from Senegal to

India.[9] It is known as khimp in Hindi and Urdu,"Khipp" in Punjabi.[10]

Being highly drought-resistant, Leptadenia pyrotechnica has played an important role in the desert afforestation programs. The herb khimp is a strong soil-binder and as such is one of the pioneer species in sand dune fixation.[11]

This plant *Leptadenia pyrotechnica* is mostly found in Rajasthan, district Jaisalmer, Nagour, Jalore, Pali and mostly in Bikaner. It was also used in making huts and as camel food

Leptadenia pyrotechnica is a more or less leafless, erect shrub with straight stems; it can grow 1 - 3 metres tall

II. GROWTH AND DEVELOPMENT

Leptadenia pyrotechnica flowers in the late dry season. It can have flowers and fruits simultaneously. It occurs in a leafless state almost throughout the year, only young shoots have leaves for a short period of time.

III. ECOLOGY

Leptadenia pyrotechnica grows commonly and sometimes gregariously on sand-dunes, including coastal dunes and temporary river beds, on well-drained sandy soils, from sea-level up to 1000 m altitude. It is a characteristic of Acacia grassland, deciduous bush land and grassland in semi-arid areas. It is very drought-resistant, and can grow with 100–450 mm rain/year, but suitable for cultivation is 150–350 mm/year. It can tolerate high pH and high exchangeable sodium and potassium.

IV. USES

In the Sahel a seed maceration is used as eye lotion and eye bath. The plant sap is rubbed on the skin to treat smallpox and dermatitis. An infusion of the aerial parts is taken as a diuretic to treat kidney disorders, kidney stones and cough. In the Hoggar region the twigs are macerated and the liquid drunk to treat urinary retention. In Sudan a root decoction is taken to treat constipation and colic. The smoke of the burnt stems is inhaled to treat rheumatism.

In Yemen crushed stems are applied to wounds to stop bleeding. In Pakistan a stem decoction is taken as an antihistaminic and an expectorant. The roots are used for the same purposes, and are further used to treat stomach complaints, to prevent spontaneous abortion, to treat sterility and as a diuretic to treat venereal diseases. Smoke of burnt plant is inhaled to treat headache. In India a stem decoction is taken to treat gout and rheumatism. A root infusion is given to donkeys, horses and cattle to treat flatulence.

Leaves and young shoots are commonly used as condiment or eaten as a vegetable. Young, slimy fruits are eaten. In Niger the shepherds eat the flower nectar. The plant is an important fodder; it is browsed to some extent by all stock, but especially by camels. In Pakistan it is planted between trees in reforested areas, and regularly cut for livestock fodder. The wood is used for firewood. The pith in the stems is

used as tinder, and the twigs also make an inextinguishable slow-match.

Twigs are commonly used as chew sticks for dental care. The bark yields an excellent non-rotting fibre (in India called 'khip' or 'khip') good for cordage, fishing-lines and snares for catching small animals and birds. In Somalia the twigs are woven into wickerwork containers for milk and water, after which they are being coated with latex. In India carpets and containers are made from the stems; they are also used as thatch. The plant is a potential commercial fibre plant especially for ropes and textile mixtures with wool. It is also potentially useful in cellulose acetate and paper industries. The fibre is best extracted by retting, but as water is a limiting factor in the desert, branches are traditionally beaten to remove the pith. However, this method adversely affects the quality.

Leptadenia pyrotechnica has been widely used in trials for sand dune stabilization. It has also been planted as fencing and for shelterbelts. As it is less palatable than other species, it tends to spread in overgrazed rangelands.

V. AGROFORESTRY USES:

It is a sand-dune plant, and possibly has some value against shifting sand.

<u>Scientific classification</u>	
Kingdom:	Plantae
(unranked):	Angiosperms
(unranked):	Eudicots
(unranked):	Asterids
Order:	Gentianales
Family:	Apocynaceae
	Subfamily: Asclepiadoideae
Genus:	Leptadenia
Species:	<i>L. pyrotechnica</i>
<u>Binomial name</u>	
<i>Leptadenia pyrotechnica</i>	



Leptadenia pyrotechnica in BIKANER (Rajasthan)

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