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USES OF COMMON FOREST TREE SPECIES ON FARM LAND

BY

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FOREWORD

Very commonly the farmers, general public and even the foresters ask about the utility of various tree species which they are advised to plant or they observe these growing somewhere. Generally a ready and complete answer to such questions was not available. Need was, therefore, felt to have a ready reference for such common and important queries.

The author has made a timely effort to compile this pamphlet which will be very useful for the foresters and other tree growers and interested persons. Her initiative and hard work is greatly appreciated.

(SAHIBZADA MUHAMMAD HAFEEZ)
Director

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PREFACE

Forest area in Pakistan is very small and consequently there is acute dearth of wood and other forest products. Scope for the increase of forests on government land is very limited. Therefore, top priority is being given to the increase of tree wealth in the country by motivating farmers to grow trees on their farm lands. Trees provide timber, firewood, forage, food and other minor products to the farmers. Similarly trees moderate climate, improve soils, prevent and control soil erosion.

Farmers and other public generally ask the uses of various tree species which they are advised to plant. For the convenience of tree planters and others, this pamphlet has been compiled giving uses of common forest tree species.

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USES OF COMMON FOREST TREE SPECIES ON FARM LANDS

Trees deserve full attention and sincere helping hand from each of us in view of immense benefits which these offer to mankind. In order to appreciate the impact and usefulness of trees on our life, the main uses of common forest tree species are given below :-

1) *Acacia nilotica*

Fuelwood: Its calorific value is 4900 Kcal/Kg.

Wood: Wood is used for agricultural implements, pit props and for sleeper and carts.

Bark: Important source of tannin, the tannin content of bark is 20 percent.

Leaves and Pods: Leaves and pods are used as fodder.

Lac Host Plants: Host plant of *Laccifer lacca*.

Others: Branches used to fense the agriculture fields, apiculture, gum, land stabilization, nitrogen fixing and medicinal(bark for diarrhoea and dysentery).

2) *Acacia auriculiformis*

Firewood: Very good source of energy as fuelwood or charcoal. The calorific value of wood is 4800-4900 Kcal per Kg.

Tannin: Tannin from bark is used in leather industry. The bark contains 13 percent water soluble tannin.

Pulp: It is source of high quality wood pulp.

Ornamental: This species is suitable for parks and for small home garden.

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3) Acacia modesta

Firewood: The calorific value of this wood is 5500 Kcal/Kg.

Wood: Wood for cart-wheel, ploughs, teeth of Harrow, etc.

Leaves: Leaves are used as fodder.

Others: Hedge, apiculture and gum. Use for reclamation of ravine land.

4) Acacia tortilis

Fuelwood: The dense, red heartwood of this species has high calorific value (4400 Kcal/Kg) and makes superior charcoal.

Wood: The wood is much used for packing cases, post, interior fitting of buildings.

Fodder: The foliage is palatable. Leaves are lopped for fodder.

Fence material: Farmer use small thorny branches as fence material.

Shifting sand-dunes stabilization: Rest species for sand-dune stabilization.

Others: Gum, Honey, nitrogen fixing and agricultural implements.

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5) Albizzia lebbek

Fuelwood: Its calorific value is 5200 Kcal/Kg of dry fuel.

Wood: The wood is excellent for high class furniture, interior decoration and panelling.

Fodder: The foliage is palatable. Albizia forage has about 20 percent protein.

Green manure: The foliage may be used as green manure or mulches in agroforestry system. The mulch reduce rain drop impact and prevent deterioration of the land.

Erosion control: Albizia lebbek is good soil binder.

Others: Apiculture, shade, nitrogen fixing & agricultural implements.

6) Albizia procera

Fuelwood: Its calorific value is 4800 Kcal/Kg.

Wood: Use for furniture, poles and construction, agriculture implements, bridges and house posts.

Bark: Bark is used for tannin.

Fodder: Its fodder is valuable suplement to pasture, sheep and goat.

Mulch and green manure: The foliage are good green manure. This tree is one of the important nitrogen fixing tree species.

Others: Shade, apiculture and gum.

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7) Azadirachta indica

Fuelwood: Its calorific value is 4990 Kcal/Kg.

Wood: Wood is used for panels, furniture, boat building toys, agricultural implements and for construction.

Shelterbelts: Neem tree has been used successfully in Rajastan as shelterbelts. This tree has been recommended for central rows alongwith Albizia lebbek and Eucalyptus camaldulensis.

Soil improvement: Neem is a tree ideally suited for agroforestry system and wasteland plantation. Its leaves and twigs are used as mulch and green manures.

Fodder: Need foliage is a valuable suplement to grass, excellent fodder for goats.

Neem oil: Oil from seeds used for lamps and as lubricant for machinery, pulp around seed is used for generating machine gas. Neem oil is also used in roops,pharmaceutical soap and disinfectant industry.

Chew-sticks: The soft tender portion of branches are used as chew-sticks.

Repellent: Neem contains several aromatic and odorescent principle which repel insects.

Attractant: It also acts as attractant for many insect species.

Insecticides: Attri(1982) mentions that it is now amply clear that sereral neem products do have low to moderate toxicity particularly to soft bodied insects. Toxicity of water suspension of neem

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seed Kernal to Aphis gossypii, Urentius, enchinus and Saisetia nigra was reported by Cherian and Menon(1944). Non fatty alcohol extract of need seed cake was found to possess appreciable aphicidal activity, the LD_{50} value being 0.22% when tested against Rhopalosiphum nymphae L.

Ropes: The fibre of bark is used for rope making.

Gum: Its gum has medicinal value.

Medicinal value: Leaves as febrifuge extracts as a cure of typhoid.

Bark: Bark used for tannin.

Leaves and twigs: These are used as mulch and fertilizer.

8) Bombax ceiba

Fuelwood: The calorific value is 4900 Kcal/Kg.

Wood: Wood for planking, packing cases. toys, furniture and carving.

Cottons: Use to stuff quilts and pillows.

Ornamental: Ornamental tree.

Others: Canoes, medicinal (bark and roots), match sticks, calyx of the flower bud as vegetable and gum.

9) Casuarina equisetifolia

Fuelwood: Its calorific value is 4950 Kcal/Kg.

Wood: Wood is used for house posts, rafters, electric poles, mine props implements and wheels, spokes and axles.

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Erosion control: It is also soil binder.

Others: Windbreaks and Dye tanning.

10) Ceratonia siliqua

Fuelwood: Its calorific value is 4900 Kcal/Ig.

Wood: Not good for furniture.

Leaves and pods: Leaves and pods are used as fodder.

Others: Food, industrial gum, medicinal value, shade tree and in erosion control.

11) Cassia siamea

Fuelwood: As a fuelwood, it is excellent and is also made into charcoal.

Wood: Its pole and branches are used for temporary buildings, and agricultural implements.

Fodder: Leaves are good fodder for animals, goats and sheep. The pods and leaves contain an alkaloid, which is fatal to pigs.

Vegetables: The flowers are eaten as vegetables.

Tannin: The tannin content of pods, leaves and bark are 6%, 7% and 9% respectively.

As host: This tree is recommended as best host for Santalum album. It prevents spreading of sandal spike disease.

Ornamental: It is also planted as an ornamental tree in the garden.

Windbreak: It is often planted as a windbreak especially in places much exposed to strong winds.

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12) Dalbergia sissoo

Fuelwood: Sissoo is a good valuable firewood. Its calorific value is 4908 to 5181 Kcal/Kg.

Wood: The wood is extensively used in furniture industry, musical instruments, farm implements, cart carriage and wheel works industry of rural areas and also for carving by small artisans.

Fodder: During scaricity period the leaves may also be used as fodder. The chopped leaves when used as green manure improves fertility status of soil.

Drug properties: The bark is used to check cholera.

13) Dendrocalamus strictus

Wood: Wood due to strength and elasticity in all purposes of building, basket and mat work, walking stichs, furniture, agricultural and industrial implements.

Fodder: Leaves are used as fodder.

Fuel: Dry culms and rhizomes are used as a fuel.

14) Eucalyptus camaldulensis

Fuelwood: Its calorific value is 4900 Kcal/Kg.

Wood: Wood is used for construction and furniture.

Shelterbelts: For planting shelterbelts in agroforestry system, also planting along roadsides and in farm woodlots.

Others: Apiculture, pulp, for fiber board & oil(leaves).

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15) Gleditsia triocanthos

Fuelwood: Use as firewood.

Wood: Timber for posts and supports, for furniture and structural works.

Fodder: Pods as feed of livestock. Pods are 29% sugar.

Erosion control: It is good for soil binder.

Others: Ornamental and shade tree, apiculture.

16) Gliricidia sepium

Fuelwood: Use as firewood.

Wood: Wood for furniture, agricultural implements and tool handle.

Fodder: Leaves for fodder.

Apiculture: Flowers are good source of nector for bees.

Others: As hedge, as ornamental, shade and green mahure.

17) Gmelina arborea

Fuelwood: The calorific value of sapwood is nearly 4800 Kcal/Kg.

Wood: Wood is favourable to local craftsmen for furniture, panelling, boxes, particle board, matches, and carpentry, construction.

Plywood: The wood is suitable for class I commercial plywood.

Pulp: Superior quality of papers are produced from its pulp.

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Honey: It produces ample quantity of nector. Farmers can start apiculture in the agroforestry farm.

Medicinal use: The juice of tender leaves is demulcent. Mixed with cow's milk and sugar, the juice is useful in gonorrhoea, catarrah of the bladder, cough etc. The root is bitter tonic, stomachic laxative, and galactogogue. It is used as a nerve tonic in insanity and epilepsy. The root and bark are used in snake bite.

Others: Pit props and fruit.

18) Grevillea robusta

Fuelwood: Use as fuelwood.

Wood: It is used for cabinet work, railroad, plywood paneling, air freight cases and furniture.

Honey: Flowers are good source of nector for bees.

Others: Ornamental and shade tree.

19) Grewia optiva

Fuelwood: Its calorific value is 4835 Kcal/Kg.

Wood: It is used for oar-shafts, axe handle, cot frames, banghy poles, bows.

Fodder: Its fodder has high nutrative value.

Fruit: Ripe fruit are edible.

Hedge formation: In hilly tracts this tree may be best utilized to form hedge under alley cropping system hedge on contour line will help in formation of natural terrace and soil erosion and water loss will be within permissible limit

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20) Leucaena leucocephala

Fuelwood: Its calorific value is 4200-4600 Kcal/Kg.

Leucaena wood: Wood is used for agricultural implements, poles and construction furniture and paper manufacture.

Soil improvement: It is a tree ideally suited for agroforestry system. In agroforestry system tree foliage are cut and utilized as green manure.

Fodder production: Leucaena foliage is a valuable supplement to grass pasture the foliage and pods of the plant are nutritions.

Others: Nitrogen fixing, apiculture, soil stabilization, for afforestation of marginal land and steep slopes.

21) Melia azedarach

Fuelwood: Its calorific value is 5100 Kcal/Kg.

Wood: The wood is extensively used for toys, small box, house building and ploughs, agricultural implements, sports equipments and furniture.

Soil improvement: Melia is ideally suited for agro-forestry system and wasteland reclamation. The foliage can be used as green manure or mulch to improve the fertility status of soil.

Fodder: The leaves and young shoots are lopped for cattle fodder. The fruit are consumed by goat, sheep and birds.

Shade tree: It has been introduced as shade tree in coffee and tea plantation.

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Repellent: Melia leaves contains several aromatic and odorescent compound which is uses as an insect repellent and insecticide. This is mainly used against attacks of insects on dry fruits, clothing etc.

Ornamental tree: It is often cultivated as an avenue tree but it is short lived.

Medicinal value: Poisonous fruits yield a medicinal oil The leaves and flowers are used as poultice and are said to cure the eruption of the scalp as well.

22) Morus alba

Fuelwood: Its calorific value is 5100 Kcal/Kg.

Wood: Its wood is used for hockey sticks, tennis, badminton and squash racquests, camp furniture, picker arms, carriage building, veneer and plywood etc.

Sericulture: Leaves for silk worm rearing and fodder.

Medicinal value: Bark is a vermifuge and purgative, fruit is a laxative.

Others: Shelterbelts, sticks for basket making, fruit.

23) Olea cuspidata

Fuel: It is also used as fuel.

Wood: Wood is used for construction, tool handles, for crooked timber of the indus boats and agricultural implements.

Fodder: Leaves are used as a fodder

Others: Fruit favourite food of cows, medicinal value, watershed protection and oil.

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24) Parkinsonia aculeata

Fuelwood: It is used as firewood.

Leaves: Leaves are used as fodder.

Erosion control: Good soil binder.

Others: Ornamental, living hedges, wind and shelterbelt breaks and charcoal.

25) Pinus roxburghii

Fuelwood: Its calorific value is 5015 Kcal/Kg.

Wood: Wood is used for construction, sleeper, roofing, flooring, transmission poles. Furniture making, match manufacture, packing cases, bedarms, foot boards of carriages, drawing boards and plane tables.

Others: Resin, erosion control, food, tar and tennin.

26) Pinus wallichiana

Fuelwood: Its calorific value is 4995 Kcal/Kg.

Wood: Wood is used for construction, joinery wood, house fitments, light furniture, packing cases, lamin boards, drawing boards, flush doors, plane tables and railway sleepers.

27) Pithecellobium dulce

Fuelwood: Its calorific value is 5600 Kcal/Kg.

Wood: Wood is used for construction purpose and for posts, agricultural implements and furniture.

Fodder: Leaves and pods are used as fodder.

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Others: For shade, as hedge, as ornamental, oil from seed, tanning, apiculture and soil stabilization

28) Pongamia glábra

Fuelwood: Its calorific value is 4839 Kcal/Kg.

Wood: It is used for farm implement, furniture and carts-wheel.

Oil: This plant profusely sets seeds which contains 35 percent fatly oil used in leather dressing, Soap making and lubrication industry. The seed cakes can be processed to develop biofertilizer industry.

Repellents: Dried leaves of Derris indica are used as insect repellents to protect the stored grains.

Green manure: The foliage are good green manure. This improve the fertility status of soil. It also reduce nematode infestations.

Medicine: The roots, barks and leaves have medicinal properties. The flesh of bark is used internally in bleeding piles. The juice of roots with coconut milk and lime is used for the cure of gonorr hoea.

Others: As a ornamental and shade tree.

29) Populus deltoides

Fuelwood: Its calorific value is 5900 Kcal/Kg.

Wood: Wood is used for packing cases and crates, match splints and boxes veneer and plywood, rural house construction and pulp and paper.

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Fodder: Leaves are used as fodder.

Others: Erosion control, reforestation and roadside trees.

30) Populus eupharatica

Fuelwood: Its calorific value is 5000 Kcal/Kg.

Wood: Wood is used for packing cases and crates, matches, planking, lacquer work, artificial limb, cricket bats, shoe heels.

Fodder: Leaves are used as fodder.

Others: Erosion control and reforestation, plywood, pulp, roadside tree, used to clean teeth and medicinal (bark is a vermifuge).

31) Prosopis tamarugo

Fuelwood: Use as a firewood.

Wood: Wood is used for furniture.

Fodder: Leaves and pods are used as fodder.

32) Prosopis juliflora

Fuelwood: Excellent firewood and superior charcoal. Its calorific value is 4500 Kcal/Kg.

Wood: It is used for fence, posts, door and window frames, agricultural implements, furniture.

Honey: Its flowers produces nectar for high quality honey. In agroforestry system farmers can also start apiculture in their farmland.

Pods: Its pods has high nutritive value. The pods are edible.

Others: Nitrogen fixing and soil stabilization.

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33) Prosopis cineraria

Fuelwood: Excellent fuelwood and high quality charcoal. Its calorific value is 5000 Kcal/Kg.

Wood: Wood is used for house building, posts, tool handles, agricultural implements and furniture.

Fodder: Leaves and pods are used as fodder.

Others: Nitrogen fixing, apiculture, soil stabilization and for afforestation in arid and semi arid zones.

34) Quercus incana

Fuelwood: Its calorific value is 4600 Kcal/Kg.

Wood: Wood is used for furniture, handles and agricultural implements.

Fodder: Leaves are used as fodder.

Bark: Bark for tanning.

Others: Erosion control.

35) Robinia pseudoacacia

Fuelwood: Its calorific value is 4800 Kcal/Kg.

Wood: The wood is used for agricultural implements, fence-posts, shoke of cart wheel and furniture, railroad ties and also for mine props.

Fodder: The leaves are palatable and are considered good fodder. It contains crude protein 20.45 to 25.5 percent and total ash 6.09 percent. Seed are also good cattle feed.

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Honey: During spring Robinia flowers provide nectar.

Soil conservation: In hill-area this tree is considered best species because its superficial and deep root system make this species suitable for soil conservation. This tree is suitable for agroforestry in temperate zone of middle and western Himalayas.

Others: As ornamental, shelterbelts, erosion control and sand dune stabilization.

36) Salix tetrasperma

Fuelwood: It is used as firewood.

Wood: The wood is used for posts, planks and sports goods, basket making, crates and match sticks.

Fodder: Leaves are used as cattle fodder.

Bark: Bark for tannin.

37) Sesbania grandiflora

Fuelwood: It is used as firewood.

Green manure: The foliage is excellent green manure.

Food: The tender leaves and pods are good vegetables. The flowers and tender leaves are fried.

Support and shade: It is good support plant for paper and betel vines and is also planted in coconut nursery to provide shade to seedling.

Gum and tannin: The bark contain tannin. The gum produced by agastya may be a good substitute of gum arabic.

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38) Syzgium cumini

Fuelwood: Its calorific value is 4800 Kcal/Kg.

Wood: The wood is used for beams and rafters and for posts, agricultural implements, boats, oars, mast furniture and construction.

Bark: Bark contain tannin.

Others: Fruit as food, as hedges, windbreaks and as ornamental, shade, pulp roadside planting apiculture and medicinal (fruit is a caminative, seed for treatment of diabetes).

39) Tamarix articulata

Fuelwood: It is used as firewood.

Wood: Wood is used for ploughs, persion wheels.

Bark: Bark for tanning.

40) Tamarix aphylla

Fuelwood: Its calorific value is 4835 Kcal/Kg.

Wood: Wood is used for carpentry, agricultural implements.

Bark: Bark for tanning.

Others: Erosion control, and sand dune stabilization.

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41) Terminalia arjuna

Fuelwood: Its calorific value is 5000 Kcal/Kg.

Wood: Wood is used for construction of furniture, agricultural implements, for carts, boats.

Intercropping: In the interspace of plants of arjun the cultivation of brinjal, tomato, lady's finger, gingar, gora paddy are very common.

Medicinal: The bark has medicinal properties. It is used as tonic and astringent and is said to be useful in hypertension, fractures and ulcers. The fruit is used as tonic and deobstruent.

42) Zizyphus mauritiana

Fuelwood: Its calorific value is 5900 Kcal/Kg.

Wood: The wood is used for rural house construction, agricultural implements, tent pegs, golf club etc.

Fruit: Ber fruit contain protein 0.8%, fat 0.1%, carbohydrates 12.8%, calcium 0.03%, phosphorus 0.03% and iron 0.8%.

Intercropping: The intercrop can be grown in ber orchard.

Bark: Bark for tanning.

Leaves: Leaves for silkworms, for lac insects and as fodder also.

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