

Edible Potential of Forest Trees Produces of South-East Rajasthan

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Abstract

South-east Rajasthan is rich in vegetation point of view. The present study was taken up to evaluate the edible potentiality of the common forest trees of south-east Rajasthan. Mostly trees of the area are deciduous in nature. Many of the wild forests tree products are edible and highly nutritious. Total seventeen wild trees are identified and described as the source of food in the present study. The objectives of this study are to evaluate the wealth of natural food resources from wild forest trees of the area.

Keywords: Angiosperm, Bioactive compounds, Deciduous, Flora, Nutritious, Topography

1. Introduction

The area is situated between 23°45' to 25°53' N latitude and 75°9' to 77°26' E longitude in the south-eastern corner of Rajasthan. The area includes Kota, Bundi, Jhalawar and Baran districts respectively. Hilly region, higher elevation, characteristic topography and forest cover makes important reasons for richness of angiosperms flora of the area. The climate of the area favours the growth of dry deciduous forests.

South-east Rajasthan has rich repository of genetic material of important medicinal and economic plant wealth. The dominant tree species of the area are *Terminalia pendula* (Edgew.) Gere & Boatwr. (Syn. *Anogeissus pendula* Edgew.), *Manilkara hexandra* (Roxb.) Dubard, *Holoptelea integrifolia* (Roxb.) Planch., *Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger (Syn. *Acacia leucophloea* (Roxb.) Willd.), *Butea monosperma* (Lam.) Kuntze, *Senegalia catechu* (L.f.) P.J.H.Hurter & Mabb. (Syn. *Acacia catechu* (L.f.) Willd.), *Phanera vahlii* (Wight & Arn.) Benth. (Syn. *Bauhinia racemose* Vahl), *Sterculia urens* Roxb., *Mitragyna parvifolia* (Roxb.) Korth., *Balanites aegyptiaca* (L.) Delile, *Phoenix sylvestris* (L.) Roxb., *Ziziphus mauritiana* Lam. and *Wrightia tinctoria* (Roxb.) R.Br. The important shrubs species of the area are *Grewia flavescens* Juss., *Ziziphus nummularia* (Burm.f.) Wight & Arn., *Justicia adhatoda* L., *Capparis sepiaria* L., and *Vitex negundo* L.

There are a large number of forest plants including trees, shrubs, herbs and climbers, which produced edible rhizome, stem, leaves, flower and fruits. Different types of edible parts are eaten in different forms. Due to climate changes, environmental degradation, deforestation, over exploitation of resources, invasive of exotic species and many biotic factors the number of indigenous plants are going under endangered condition. Edible potential of some common forest trees of south-east Rajasthan have been pointed out in this communication.

2. Related Research Work

Literature survey of related taxonomical work done in India was done by various researchers (Das and Bhimaya, 1964; Champion and Seth, 1968; Jain and Rao, 1977; Bansal and Sen, 1981; Majumdar, 1981; Singh and Singh, 1981; Shetty and Pandey, 1983; Ambasta, Ram Chandran, Kashyappa and Chand, 1992; Singh and Singh, 2002; Jain and Vairale, 2007; Sujana and Sivaperuman, 2008; Ali, Ziada and Blunden, 2009; Ghelot, 2013; Hegde and Bhat, 2012; Meena, 2012; Barooah and Ahmed, 2014; Koyama, Bunwong, Pornpongrueng and Hind, 2016; Balkrishna, 2018 and Sharma, 2020, 2021 and 2022). Edible forest tree produces of south-east Rajasthan was provided in this article.

3. Research Methods

The present study is based on field observations and collection tours. The forest area was visited during January 2020 to December 2023 in different season. Extensive surveys were conducted of whole area to assess the edible potentiality of forest trees produces. The information regarding the present works was noted.

Total 17 common wild trees are identified as the potential of food in the present study. In this communication, effective data related to wild edible forest trees of the area are provided in tabular form. List of the recorded and enumerated plants of the area with relevant information is given in Table I.

4. Results and Discussion

'Karaya or katira gum' obtained from bark of *Sterculia urens* Roxb. possess a lot of nutritious and medicinal properties. *Sterculia urens* Roxb. covers mostly sloppy and valley locality of south-east Rajasthan. *Senegalia catechu* (L.f.) P.J.H.Hurter & Mabb. (Syn. *Acacia catechu* (L.f.) Willd.) is common small sized tree of open forest and hill slopes of area, often becoming a key stone species at certain places. Its gum is very popular and nutritious. Gum of *Vachellia nilotica* (L.) P.J.H.Hurter & Mabb. (Syn. *Acacia nilotica* (L.) Willd. ex Delile) is popularly known as Gum Arabic. It is moderate sized thorny tree of area and gum is easily available and collected. *Terminalia pendula* (Edgew.) Gere & Boatwr. is abundant features of throughout forest area. Its gum is very effective. Salar (*Boswellia serrata* Roxb.) tree covers top strata of the hills and slopes. Gum obtained from *Boswellia serrata* Roxb. is supposed to be potential for healthy body and anti-inflammatory functions.

Seeds of *Buchanania cochinchinensis* (Lour.) M.R.Almeida eaten and used raw or used as a cooking spice. It is used in various traditional dishes. Fragrant flowers, young green pods and even leaves of *Moringa oleifera* Lam. are cooked and eaten. These are the significant source of antioxidants and essential nutrients. Tree of *Mangifera indica* L. bear popular edible fruit. Ripe fruits (Mango) of its are eaten. The fruit is also eaten green, processed into pickles, jams, and chutneys, and is frozen or dried. The fruit pulp of *Limonia acidissima* L. is sticky, brown, mealy, odorous and acidic. The taste of pulp may be sweet to sour. Tree of *Aegle marmelos* (L.) Correa is considered to be very sacred in whole area. Fruits are edible because of their sweet and aromatic pulp. Drinks prepared from its pulp used as summer drinks, it has medicinal value. Fruit pulp has cooling and laxative properties. *Annona squamosa* L. is an evergreen perennial small tree, found in hilly areas, valleys and open forest ranges of area. The fruit of *Annona squamosa* is juicy and creamy-white. The delicious fruit contains a sweet pulp, which may be eaten fresh or can be used for shakes.

Tall palm *Phoenix sylvestris* (L.) Roxb. is fairly found in low-lying areas and moist wastelands. Its mature fruits are delicious and edible, it contains a single seed. Fruits of *Ziziphus mauritiana* Lam. has highly

nutritious value. Fruits are cooling anodyne and used as tonic, digestive and blood purifier. *Manilkara hexandra* (Roxb.) Dubard ripe yellow fruit is very potential minor fruit as it is full of antioxidants, minerals and other phytochemicals. Ripe purple fruit pulp of *Syzygium cumini* (L.) Skeels is sour-sweet in taste and highly nutritious. Pulp of lomentum fruit of *Tamarindus indica* L. is acidic and has sour taste. Fruit pulp of *Diospyros melanoxylon* Roxb. is highly nutritious.

Seventeen wild trees species of angiosperms of area are enumerated in present communication. These tree species with their botanical names, common names, family, habit, morphology, edible parts and edible potentiality wise are arranged in Table-I. The plant species are arranged in alphabetical order.

Table-I.

Plant Botanical name	Common name	Family	Habit	Plant Morphology	Edible part	Edible Potentiality
<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	Tree	Large thorny deciduous tree	Fruits are edible.	Sweet and aromatic pulp of fruits has nutritious and medicinal value.
<i>Annona squamosa</i> L.	Sitaphal	Annonaceae	Tree	Small sized tree with yellowish - green tuberculate fruits	White clustered like pulp is eaten	Nutritional Value of fruits is highly significant.
<i>Boswellia serrata</i> Roxb.	Salar, Salai	Burseraceae	Tree	Tall deciduous tree with greyish papery bark	Gum is edible	A Potential for healthy body and anti-inflammatory functions.
<i>Buchanania cochinchinensis</i> (Lour.) M.R.Almeida.	Charoli, Chironji	Anacardiaceae	Tree	Medium to large sized tree, surface black- dark brown, rough	Seed is edible	Single seed, which is popular as an edible nut, used in various traditional dishes.
<i>Diospyros melanoxylon</i> Roxb.	Tendu	Ebenaceae	Tree	Medium sized tree with scaly	Fruits are edible	Pulp of ripe fruit is eaten. Fruits have a

				bark and ovoid fruits		high percentage of sugar.
<i>Limonia acidissima</i> L.	Kainth	Rutaceae	Tree	Large deciduous thorny tree with hard, woody fruits	Pulp of fruits is edible	Pulp is mealy, odorous, and acidic.
<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Tree	Evergreen, medium to large sized tree with large fruit	Fruits are edible.	Ripe fruits are fleshy, fragrant, juicy, and nutritious.
<i>Manilkara hexandra</i> (Roxb.) Dubard	Raini, Rayan, Khirni	Sapotaceae	Tree	Large evergreen tree with berry obovoid fruits	Fruits are edible	Ripe yellow fruits are sweet and tasty.
<i>Moringa oleifera</i> Lam.	Sahejna, Sejana	Moringaceae	Tree	small to medium evergreen, spreading open crown, leaves are either tripinnate or bipinnate	Flowers and pods are eaten	Flowers and pods are rich in antioxidants, bioactive compounds and essential nutrients.
<i>Phoenix sylvestris</i> (L.) Roxb.	Khajur	Arecaceae	Tree	A tall palm, crown of pinnate leaves with one-seeded berry fruits	Fruits are edible	Fruits (date) has high food value and eaten for their taste.
<i>Senegalia catechu</i> (L.f.) P.J.H.Hurter & Mabb.	Khair	Mimosaceae	Tree	Small sized deciduous tree with yellow flower	Gum is edible	Its gum is nutritious, edible, and medicinal.
<i>Sterculia urens</i> Roxb.	Karaya, Kadya	Sterculiaceae	Tree	Deciduous woody tree, pale coloured	Gum is edible	'Karaya or katira gum' possess lot of nutritious

				trunk and palmate leaves		and medicinal properties.
<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	Tree	Large evergreen tree with one seeded drupe fruits	Fruits are edible	Purple fruit pulp is sour-sweet in taste and highly nutritious and used in various medicines.
<i>Tamarindus indica</i> L.	Imli	Mimosaceae	Tree	Large tree, dense crown of leaves with lomentum fruits	Fruits are edible	Fruit pulp is acidic, contain tartaric acid, taste sour.
<i>Terminalia pendula</i> (Edgew.) Gere & Boatwr.	Dhok, Dhokra	Combretaceae	Tree	Moderate sized deciduous tree	Gum is edible	Effective and popular gum.
<i>Vachellia nilotica</i> (L.) P.J.H.Hurter & Mabb.	Babool	Mimosaceae	Tree	Moderate sized thorny tree with small yellow flowers	Gum is edible	Gum Arabic is very nutritious.
<i>Ziziphus mauritiana</i> Lam.	Pemlibor, Badabor	Rhamnaceae	Large shrub or small tree	Evergreen spiny tree with drupe globose fruits	Fruits are edible	Yellow to orange-brown ripped fruits has highly nutritious value.

Some of the wild fruits are highly nutritious. Forest edible produces of South-east Rajasthan region have been taken into current consideration. These edible forest tree and their produces of area have the potential of the source of minerals, vitamins and antioxidants as well as earning money for local people.

5. Conclusion

South-east Rajasthan has been found to support luxuriant growth of angiosperms. Moisture availability remain persist almost throughout the year in almost hilly areas of south-east Rajasthan. The forest vegetation of area is described as tropical dry deciduous. Angiosperm flora is widespread in different ecological habitats of whole region. Climatic, edaphic and biotic factors affect the local vegetation. This article deals with potentiality of forest trees for edible purpose of South-east part of Rajasthan state.

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