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Ethnobotanical Survey and Documentation of Wild Edible Fruits(WEF) in the Semkhor Region of Dima Hasao District, Assam

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Abstract

Semkhor Dima Hasao district of Assam has incredible potential in providing valuable Wild edible Fruits (WEFs) and very few works has been done on it. This paper deals with documentation of 75 species of WEFs belonging to 35 families and 51 genera. An attempt has been made to record the use of fruits and its treatment in various ailments. Besides medicinal values it also has high market values.

Keywords: Wild edible fruits, Semkhor, Ethno medicine.

1. Introduction

Wild edible fruits are prized fruit crops because of their distinctive tastes, textures, and hues. Recent research has demonstrated that the high antioxidant content, vitamins, minerals, and fibers of wild edible fruits offer substantial health benefits (Saka J et al. 1994). According to Deshmuk and Shinde (2010), certain WEFs have therapeutic qualities as well. In addition to being consumed fresh, wild edible fruits are used extensively in a variety of food products, including ice cream, yogurt, jams, jellies, and beverages (Ercisli & Sagbas 2017). In addition to increasing the productivity of domesticated crops, feeding undernourished people requires the use of underutilized Wild Edible Plants (WEPs) (Farooq and Azam 2002). According to Ajay and Pratap (2012), a variety of WEFs are utilized by rural and tribal people and greatly enhance their standard of living. Out of the approximately 800 species of wild edible crops found in India, about 300 are consumed by the people of North-East India, which acts as a significant reservoir of wild edible fruits (WEFs).(Pongener & Hazarika 2017). The eight states that make up the northeastern region—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura—have a combined land area of 262180 km². One of India's biodiversity hotspots has been determined to be the northeast region. According to Chatterjee et al. (2006), there are roughly 225 tribes in this area out of India's 450 total. According to the 2019 India State Forest Report, Assam has 75.31% forest cover and is one of the states with the highest biodiversity in North-East India. Approximately 300 out of the 800 known species of wild edible crops in India are consumed by the people of North East India, making the region a significant reservoir of wild edible fruits(WEFs) (Pongener & Hazarika 2017). The eight states that make up the northeastern region—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura—have a combined land area of 262180 km². One of India's biodiversity hotspots has been determined to be the northeast region. According to Chatterjee et al. (2006), there are roughly 225 tribes in this area out of India's 450 total. According to the 2019 India State Forest Report, Assam has 75.31% forest cover and is one of the

states with the highest biodiversity in North-East India. (Pongener & Hazarika 2017). The eight states that make up the northeastern region—Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura—have a combined land area of 262180 km². One of India's biodiversity hotspots has been determined to be the northeast region. According to Chatterjee et al. (2006), there are roughly 225 tribes in this area out of India's 450 total. According to the 2019 India State Forest Report, Assam has 75.31% forest cover and is one of the states with the highest biodiversity in North-East India. One of the largest districts in Dima Hasao is one of the biggest districts in Assam.

As per the India state forest report 2021, Dima Hasao -one of the largest districts in Assam- has approximately 77.58% forest cover. Since traditional knowledge is verbally transmitted from generation to generation by the ancestors, information about numerous valuable ethno-botanical plants is lost, which is why there is very little documentation on wild edible fruits from the Dima Hasao district. In light of this, the current study was conducted to record edible fruits from the Semkhor region of the Dima Hasao district of Assam that have ethnomedical value.

2. Materials and Methods

2.1 Study site

The study was done in the semkhor area of Dima Hasao district. On 2nd February 1970, Dima Hasao district was constituted in Assam, which enjoys the status of an Autonomous District under the provision of the sixth schedule of the constitution of India. The Dima Hasao district is located in the southern part of the state of Assam between 25°58/N and 25°47/N latitudes as well as 92°27/E and 93°43/E longitudes. The district is bounded by Nagaon and Hamren Sub-Division of Karbi Anglong district of Assam on the North, Cachar district of Assam on the south, in the east by Nagaland and Manipur states and in the west Khasi and Jaintia Hills of Meghalaya state. The river Kapili separates Dima Hasao from the state of Meghalaya. The total geographical area of the Dima Hasaos district of the state of Assam is 4,888 sq. km. (4.88 Lac hectares), occupying 6.23% of the state's total area.

Fig-1 Map of Assam.

Fig-2. Map of Dima Hasao showing study area.

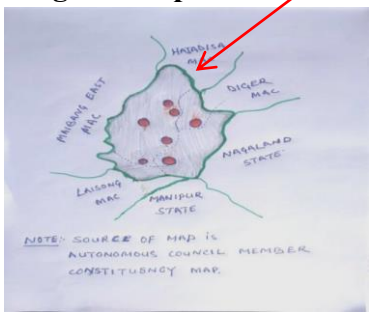

Fig- 3. Map of Study area showing its important places.

2.2. Method

The survey were done from the month of September 2020 to November 2021 and were able to visit 8 villages in Semkhor area *viz*. Semkhorma, Jaobra, Medikol, Grijanapur, Makalu, etc. Some information was collected through interviews with the villagers and was documented.

3. Results and Discussion

A total of 75 species of wild edible fruits (WEFs) belonging to 35 families and 51 genera were recorded. List of Wild Edible Fruits Botanical names, Local names, Family, Habit and its Uses are tabulated and arranged alphabetically (Table 1). It is anticipated that research on wild natural product species will contribute to the conservation of these 21 threatened species. These underutilized organic products offer several useful advantages for their protection in addition to their favorable reputation for health. Due to persistent exploration of almost no preferred trees for consumable organic products in India, the population of these species is rapidly declining. This has led to the neglect of other wild natural product species, which have enormous untapped business potential but receive little publicity. Some of these organic products are extremely important due to their healing qualities. The handling ventures are only interested in common soil products because we are unaware of this. Despite the fact that people can consume these organic products in both fresh and dried forms, their nutritional and medicinal value remains largely under explored. Only a few yields of organic product crops are economically developed; there may not be a suitable assortment, improvement, or agro-procedures for these yields. To enhance the daily nutrition of the local population, trees derived from organic materials could be utilized as food supplements. By creating a variety of appetizing items from the wild eatable natural products, an attempt can be made to use these wild natural products as a source of income, particularly for impoverished country dwellers and young people without jobs. They can be supplied to the food industry locally with little effort if they are semi-handled. The therapeutic potential of these organic products is particularly intriguing, indicating a significant scope for further research. Also more popular are well-known tonics and starters. These organic materials that occur naturally can also be used as primary fixings. To support the customary cases, logical research must be directed. The fact that our ancestors were fully aware of the ways in which natural products, such as plants, can be used to treat a wide range of illnesses is fascinating. (Tangtam T. and others, 2012). Trees accounted for 44 species of the recorded plant propensity for wild consumable organic products, followed by bushes (9 species), climbers (5 species), spices (4 species), and creepers (3 species) (Fig 3). Out of 36 gathered families, 33 groups of WEFs were Dicot (Moraceae, Oxalidaceae, Rutaceae, Phyllanthaceae, Burseraceae, Fagaceae, Rhizophoraceae, Anacardiaceae, Boraginaceae, Cucurbitaceae, Urticaceae, Rosaceae, Elaeagnaceae, Vitaceae, Myricaceae, Sapindaceae, Sterculiaceae, Capparaceae, Passifloraceae, Primulaceae, Punicaceae, Juglandaceae, Euphorbiaceae, Lobeliaceae, Actinidiaceae, Clusiaceae, Dilleniaceae, Piperaceae, Myrtaceae, Combretaceae, Rhamnaceae, Lauraceae, Achariaceae) and 3 Families were Monocot (Zingiberaceae, Arecaceae, Musaceae). Moraceae and Rosaceae each had nine species, followed by Arecaceae with five, Rutaceae and Anacardiaceae with four, Euphorbiaceae with three, Cucurbitaceae and Oxalidaceae with two, and the remaining 36 families with one species each (Fig. 5). By and large ready organic products of *Artocarpus spp, Averrhoa carambola, Calamus spp, Canarium strictum, Citrus spp, Castanopsis tribuloides, Choerospondias axillaris, Ficus spp*, and so forth are eaten crude, while organic products like *Hodgsonia macrocarpa, Livistona jenkinsiana, Docynia indica* are cooked and eaten. Wild palatable organic products like *Rhus semialata, Emblica officinalis* are utilized to treat

against stomach throb, fever and looseness of the bowels (SC Deorani also, GD Sharma 2007). Natural products like *Artocarpus heterophyllus, Morus alba, Docynia indica, Myrica esculenta,* The local population typically uses *Pyrus communis* to plan wines. Even within the Mon area, there were various organic products that were truly bizarre. A few organic products, including *Gynocardia odorata* (Picture Plate. 1, M), were found in the lower part of the area. Oddly, this natural product is poisonous and used to keep bugs away, but it also tastes good. The upper part of the area is home to species such as *Debregeasia longifolia* Wedd and *Maesa indica* (Roxb.) A. DC (Picture Plate. 1 J, O). Because of its high market value and potential for financial gain, *Ammomum subulatum* (Cardamom) is typically found in sloping areas, whereas *Areca catechu* (Tamul) is found in lower slopes of the area.

Table 1: List of wild edible fruits found in Semkhor area in Dima Hasao district

Botanical Name	Local name	Family	Habit	Uses
Amomum subulatum Roxb.	Ilachi(Common) Cardamom(Eng)	Zingiberaceae	Herb	Fruits are used to treat eyelid inflammation, itching, nausea, thirst and dyspnea.
Areca catechu L.	Gowai(Dimasa) Tamul (Assamese)	Arecaceae	Tree	To treat flatulence, raw pericarp is chewed. Nuts are used to treat malaria and to prevent dysentery.
Artocarpus heterophyllus Lamk.	Thaipolung(Dimasa) Jackfruit (Eng)	Moraceae	Tree	Ripe fruits consumed for constipation.
Artocarpus chaplasha Roxb.	Jaram-pha-ang (Dimasa)	Moraceae	Tree	Fruits used for constipation.
Artocarpus lakoocha Roxb.	Monkey fruit(Eng) Jaram-kasiba (Dimasa)	Moraceae	Tree	Fruits are edible.
Averrhoa carambola L.	Starfruit(Eng) Kamrang (Dimasa)	Oxalidaceae	Tree	Juice from crushed fruits is consumed to prevent jaundice.
Baccaurea ramiflora Lour.	Burmese grape (Common) Koshmaithai (Dimasa)	Meliaceae	Tree	Skin conditions are treated with fruits, and arthritis is treated with their juice.
Calamus erectus Roxb.	Cane(Common) Dirah-gong (Dimasa)	Arecaceae	Shrub	Ripe fruits are consumed raw, and seeds that have been powdered are used to treat gastrointestinal issues and indigestion.
Calamus tenius Roxb.	Cane(Common) Dirah-Hagong (Dimasa)	Arecaceae	Shrub	Fruits are edible.
Canarium strictum Roxb.	Raal(Common) Taisudi (Dimasa)	Burseraceae	Tree	Anti-inflammatory, antibacterial, antifungal, ans anti-diabetic fruits.
Caryota urens	Jaggary palm (Common) Gowaipanglai (Semsa)	Arecaceae	Tree	As a tonic, powdered nuts are used to boost energy and vitality.
Castanopsis tribuloides (Smith) A. DC	Chinkapin (Common) Taisurang (Dimasa)	Fagaceae	Tree	Seeds are eaten raw or cooked.

Carallia brachiata (Lour.)Merr.	Freshwater-mangrove (Common) Taimikrie (Semsa)	Rhizophoraceae	Tree	Ripe fruits are eaten raw.
Citrus grandis L.	Pomelo(Eng) Jamber (Dimasa)	Rutaceae	Tree	Fruits juice used against jaundice.
Citrus medica L.	Citron(Eng) Taisamikri (Semsa)	Rutaceae	Tree	Fruits juice is used to treat urinary complaints and kidney issues.
Citrus limon L.	Lemon(Common) Taisakasi (Semsa)	Rutaceae	Tree	Fruit juice is used to increase appetite and prevent gastrointestinal issues.
Citrus indica L	Wild Orange(Common) Taisa (Semsa)	Rutaceae	Tree	Fruit juice helps in gaining appetite,
Choerospondias axillaris (Roxb.) B.L Burtt & A.W	Hill-hog Plum(Eng) Taisu (Dimasa)	Anacardiaceae	Tree	Fruit is used as medicine to increase blood flow.
Cordia dichotoma G.Forst	Glue berry(Eng) Jasim (Semsa)	Boraginaceae	Tree	Fruits with medicinal qualities and as fodder
Cucumis hystrix Chakrav.	Cucumber(Eng) Hagranigala (Dimasa)	Cucurbitaceae	Creeper	Fruits eaten either raw or cooked.
Debregeasia longifolia Wedd	Orange wild rhea (Eng) Samsaigi (Semsa)	Urticaceae	Shrub	Fruits help in Digestion.
Dillenia indica Linn.	Elephant apple(eng) Taidi (Dimasa)	Dilleniaceae	Tree	Fever, chelera, dysentery and chest pain are all treated with fruits as a tonic.
Docynia indica (Wall.)Decne	Wild apple(Eng) Shangpaitai (Semsa)	Rosaceae	Tree	Fruits that are used to treat digestive issues.
Elaeagnus conferta Roxb	Wild olive(Eng) Taisurim (Dimasa)	Elaeagnaceae	Shrub	Fruits are used to treat Sores and ulcer.
Emblica officinalis Gaertn	Goose berry(Eng) Hamlai (Semsa)	Euphorbiaceae	Tree	Dry fruit is used for treating hemorrhage, anddiarrhea.
Ficus auriculata Lour	Fig(Common) Taikarao (Dimasa)	Moraceae	Tree	Fruits are eaten raw.
Ficus hispida L.	Fig(Common) Taiham(Semsa)	Moraceae	Tree	Fruits are good for liver.
Ficus semicordata Buch.- Ham ex J.E. Smith	Fig(Common) Thaiyung (Dimasa), Bataigede (Semsa)	Moraceae	Tree	Fruits are eaten raw.

Fragaria indica L.	Wild strawberry (Eng), Thaijili (Dimasa)	Rosaceae	Herb	Fruit is good for liver and used as tonic.
Garcinia pedunculata G.Don.	Bor Thekera (Assamese) Takraigede (Dimasa)	Clusiaceae	Tree	Fruit extract are used for cardiac problems and as diuretic.
Gynocardia odorata	Chhalmogra (Common) Taimuru (Semsa, Dimasa)	Achariaceae	Tree	Medicinal potential.
Hodgsonia macrocarpa (Bl.) Cogn.	Pig Fruit(Common) Thaabai (Semsa, Dimasa)	Cucurbitaceae	Climber	Fruit pulp used as skin infections.
Juglans regia L	Walnut (Eng), Jalangpang(Semsa)	Juglandaceae	Tree	Fruits are edible.
Livistona jenkinsiana Griff	Fan palm (Eng) bakari pang(Semsa)	Arecaceae	Tree	Raw fruits help avoid stomach problems like gastritis and indigestion.
Maesa indica (Roxb.) A.DC.	Wild berry (Eng) Penyatai (Semsa)	Primulaceae	Shrub	Fruits are eaten raw.
Mangifera andamanica L.	Mango(Common), Aam (Hindi), Taiju(Dimasa)	Anacardiaceae	Tree	Ripe fruits are edible.
Morus alba L.	Mulberry (Eng) Marbatai (Dimasa)	Moraceae	Tree	Fruits are edible.
Morus nigra Linn	Blackberry (Eng) Mugatai (Semsa)	Moraceae	Tree	Fruits have tonic effect on kidney.
Musa balbisiana Colla.	Wild banana (Eng), Hagrani Tailik (Semsa)	Musaceae	Herb	Fruits are eaten raw or cooked..
Myrica esculenta ex D. Don	Bayberry (Eng) Thaimikri (Semsa)	Myricaceae	Tree	Fruits are consumed fresh for indigestion.
Nephelium lappaceum	Rambutan (Eng) Thaodaograng (Semsa)	Sapindaceae	Tree	Green fruit is said to be astringent, stomachache, and anthelminthic.
Oxalis corniculata Linn	Sleeping beauty (Eng) Sam-mikri (Semsa)	Oxalidaceae	Herb	Fruits are edible.
Trichosanthes Wallichiana	Trichosanthes (Common name), Daokathai (Semsa)	Cucurbitaceae	Climber	Fruits edible and also used as a bird trap.
Parthenocissus semicordata	Himalayan Woodbine (Common) Geliothai (Semsa)	Vitaceae	Creeper	Since fruit are edible, fruits are used to make smoothies, desserts and other dishes.
Prunus nepaulensis (Ser.) Steud	Bird cherry (Eng) Bonsomthai (Dimasa)	Rosaceae	Tree	The freshness of the fruit lowers the risk of cancer.
Passiflora edulis Sim.	Passion fruit (Eng), Gisimthai (Dimasa)	Passifloraceae	Climber	Fruits are eaten raw.

Phoebe cooperiana	Jinglong (Dimasa)	Lauraceae	Tree	Fruits are eaten raw.
Phyllanthus acidus (Linn.) Skeels	Star gooseberry (Eng), Leiwathai (Dimasa)	Euphorbiaceae	Tree	Fruits are taken raw for dyspepsia and jaundice.
Phyllanthus emblica Linn.	Goose berry(Eng), Hamlaithai(Dimasa).	Euphorbiaceae	Tree	Dry fruit is useful in diarrhea and dysentery.
Piper nigrum Linn.	Black pepper(Eng), mosaidi(Dimasa)	Piperaceae	Climber	Dried fruits are good for Stomachache, diarrhea, toothache.
Pratia begonifolia Linds.	Fruiting plant (Eng), Giliwathai (Sema)	Lobeliaceae	Creeper	Fruits are edible.
Prunus salicina (L.)	Plum (Eng) Delaodimikri (Semsa)	Rosaceae	Tree	Fruits are taken as a source of antioxidants.
Prunus persica (L.) Batsch	Peach (Eng), Delaodi (Semsa)	Rosaceae	Tree	Fruits are eaten raw, cooked, or dried and has good source of vitamin A
Punica granatum L.	Pomegranate (Eng), Dalimthai (Dimasa)	Punicaceae	Tree	Fruits along with its rind are consumed for cardiac disorders.
Rhus semialata Murr.	Nutgall tree (Eng), Bontao (Semsa)	Anacardiaceae	Tree	Fruit is good for gastric problems and stomachache.
Rubus ellipticus Sm.	Golden Raspberry (Eng), Aloathai gurmu (Semsa)	Rosaceae	Shrub	Fruits are used to treat indigestion
Rubus idaeus L.	Red raspberry (Eng) Aloathai kasiba (Semsa),	Rosaceae	Shrub	Red raspberry have antioxidant effects in killing stomach colon cancer cells.
Rubus moluccanus	Broad-leaf bramble (English), Aloathai (Semsa)	Rosaceae	Shrub	Fruits are commercially extent in jams and sauces.
Saurauia macrotricha Kurt ex Dyer	Saurauia (Common), Oteythai(Semsa)	Actinidiaceae	Tree	Folk medicine.
Spondias pinnata (L.f.) Kurz	Ambara (Hindi), Thaisudi (Semsa)	Anacardiaceae	Tree	Fruits are consumed against dysentery, gastric burns and are diuretic.
Sterculia villosa Roxb. ex.Sm.	Hairy Sterculia (Common), Dukundu (Semsa)	Sterculiaceae	Tree	Seeds are edible.
Stixis suaveolens (Roxb.)Bail	Fragrant caper vine (Eng), Tharao (Dimasa)	Capparaceae	Climber	Fresh fruit is consumed to cure dizziness, fever and headache
Syzygium jambos Linn. Alston	Rose apple (Eng) Runsib (Semsa)	Myrtaceae	Tree	Fruits are edible

Terminalia chebula	Balliric myrobalan (Eng), Selikathai (Dimasa)	Combretaceae	Tree	Fruit used as purgative.
Ziziphus Mauritian Lam.	Indian jujube(Eng) Thaigangdi (Semsa)	Rhamnaceae	Shrub	Fruits are cooling, tonic, laxative, and useful in blood disease.


A


B


C


D


E


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G


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K


L

Picture Plate 1: Some of the wild edible collected of WEFs from Dima Hasao, Assam.
A. *Rhus semialata* Murr. **B**. *Hodgsonia macrocarpa* BI. Cogn. **C**. *Calamus erectus* Roxb. **D**. *Ficus hispida* L. **E**. *Canarium strictum* Roxb. **F**. *Livistona jenkinsiana.* **G.** *Phoebe cooperiana* **H.** *Terminalia chebula* **I.** *Baccaurea ramiflora* Lour. **J.** *Debregeasia longifolia* Wedd. **K.** *Juglans regia* L. **L.** *Choerospondias axillaris* Roxb. **M.** *Gynocardia odorata.* **N.** *Myrica esculenta* ex D.Don. **O.** *Maesa indica* (Roxb.) A. DC. **P.** *Phyllanthus acidus* Linn.

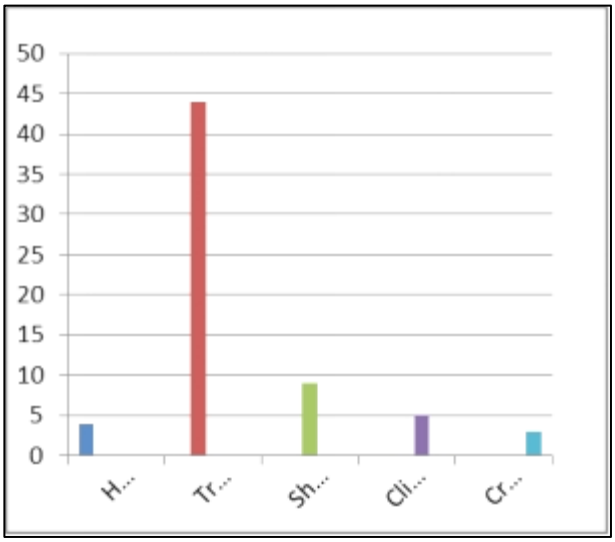

Fig 4: Bar diagram showing WEFs plant habits

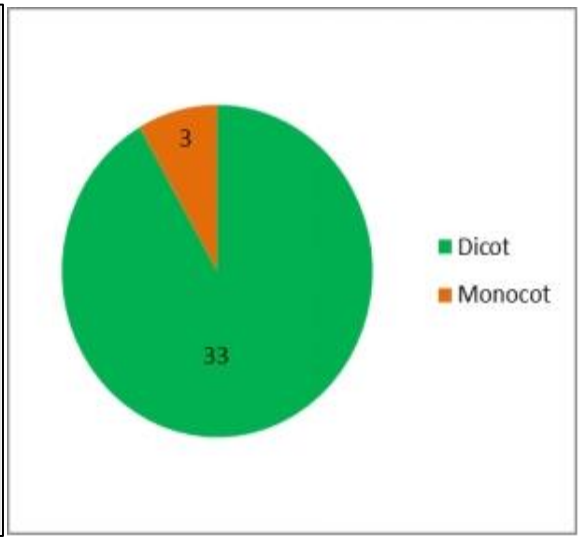

Fig 5: Number of Dicot & Monocot WEFs.

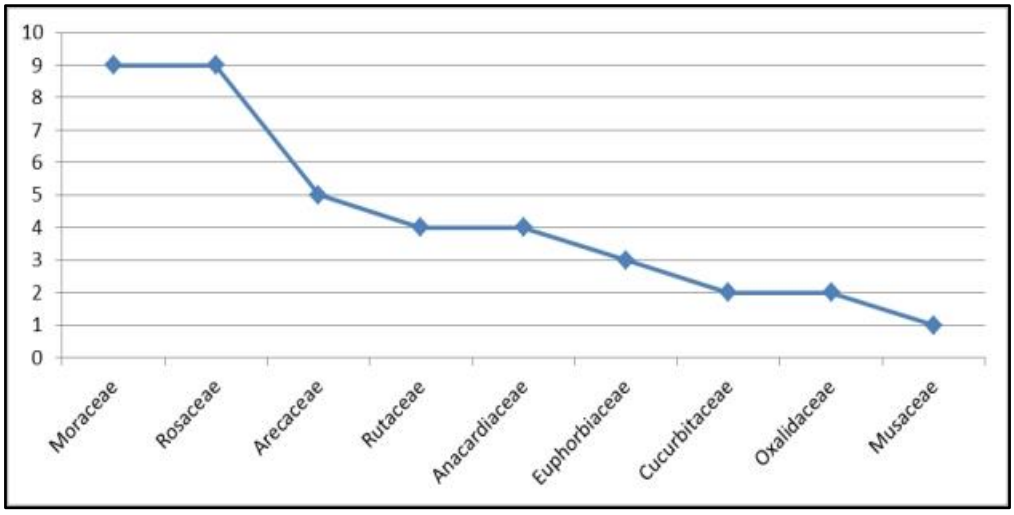

Fig 6: Families having highest number of WEFs species

It is fascinating to explore the extensive knowledge our ancestors had about using plants and other natural products for healing. According to Sangtam T. et al. (2012), trees accounted for the majority of the Wild Consumable Organic product plant propensities that were noted, with bushes, climbers, spices, and creepers following closely behind. Of the 36 families present, three were monocots and 33 were dicots. With nine species each, the Moraceae and Rosaceae families were the most prevalent, followed by the Arecaceae with five. Some families only had one species, while others had fewer. Ready-made goods from a particular species, for example, *Artocarpus spp, Averrhoa carambola, Calamus spp, Canarium strictum*, Citrus spp, *Castanopsis tribuloides, Choerospondias axillaris,* and Ficus spp, are eaten crude, while others, as *Hodgsonia macrocarpa, Livistona jenkinsiana,* and *Docynia indica,* are cooked before utilization. A few wild eatable organic products, similar to *Rhus semialata and Emblica officinalis,* are utilized to treat stomach infirmities, fever, and loose bowels. Nearby individuals regularly use natural products like *Artocarpus heterophyllus, Morus alba*, *Docynia indica*, *Myrica esculenta*, and *Pyrus communis* to make wines. A few organic products, as *Gynocardia odorata,* which are noxious and are utilized as bug repellent, are likewise palatable. Species like *Debregeasia longifolia* Wedd and Maesa indica (Roxb.) A. DC are tracked down in the upper locale of the region. Cardamom, or *Ammomum subulatum,* is generally developed in uneven areas, though *Areca catechu* (Gowai) is developed in lower slopes because of its high market worth and potential for money age for local people.

4. Conclusion

The present study on wild edible organic products aims to assess the availability of natural resources in the Assam region of Dima Hasao and to explore their diverse uses. It is evident from the documentation that WEFs can raise the wages of the local population and also depend on it as a source of clothing and medicine. The review makes it clear that more research is desperately needed to identify more underutilized organic products, which will help the natural product container.

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