Ukrainian Journal of Ecology

Ukrainian Journal of Ecology, 2021, 11(5), 91-96, doi: 10.15421/2021_214

ORIGINAL ARTICLE

Documentation of the wild edible fruits of tehsil Takht-e-Nasrati, Pakistan

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Received: 24.05.2021. Accepted: 13.07.2021.

Plants play a miraculous role in the improvement of our living standards. Along with cultivated, wild edible fruit plants also contribute to raising our national and local economy. Very little research has been conducted on wild edible food, and no such study has been conducted in the study area. Therefore, the main objectives of the present study were to (i) document the wild edible fruits of tehsil Takht-e- Nasrati, (ii) assessing the traditional medicinal usage patterns of wild edible fruit species. The study was carried out from 01.01.2014 to 01.01.2015. In total, 11 plant species belonging to 10 families were collected. The families to which these plants belong are Malvaceae, Moraceae, Oleaceae, Sapotaceae, Aricaceae, Solanaceae, Salvadoraceae, Cappidaceae, and Boraginaceae, are represented by a single species each. The family Rhamnaceae is the only family which has 2 species of wild nature producing edible fruits. The collected and identified wild edible fruit plants were *Grewia tenax* (Forsk.) Fiori, *Ficus religiosa* L., *Olea ferruginae* Royle, *Phonix sylvestris* (L.) Roxb., *Monotheca buxifolia* (Falc.) Dcne. ex Engler, *Solanum nigrum*, *Salavadora oleoides* Decne, *Capparis decidua* (Forsk.) Edgew, *Cordia myxa* L., *Zizyphus mauritiana* Lam., and *Z. nummularia* (Burm. f) Wight & Arn.

Keywords: wild edible fruits, tehsil Takht-e-Nasrat, district Karak, Pakistan.

Introduction

Study area

Takht-e-Nasrati is the subdivision, i.e., a tehsil of District Karak. Its geographical coordinates are 32.47° to 33.28° North and 70.30° to 71.30° East. It is located on the south side of the district headquarter at a 21 km distance. The west side is bounded by District Bannu, while the south end of the area touches District Lakki Marwat and Mianwali, respectively. On the east side, the Soor Ghar (red mountains) separate the study area from the province of Punjab. The area is hot, and the temperature in June and July months] reach up to 50 degrees centigrade; therefore, it mainly supports plants of xerophytic nature. The wild edible fruit plants of such area are valuable but unprotected in spite of that they contribute so much to the local economy and livelihood of the local people during the season.

Wild Edible Fruits

The plants growing wildly and producing edible fruits with no side effects are termed wild fruit plants. The history of the use of wild fruits is older than the cultivated plants of edible fruits. Wild fruits are a cheap and easy source for nutritional purposes and medicinal and commercial aspects. (Rai et al., 2005). Some of these plants- like *Monotheca buxifolia, Zizyphus mauritiana, Olea ferruginae*, and *Phoenix sylvestris* have the potency to commercialize, but the lack of a commercial market, the target aim has not been achieved like in other countries of the world. These plants help in poverty reduction and share in food security. So, their domestication and commercialization are ultimately required (Hoe and Siong, 1999; Deshmukh and Waghmode, 2011).

The wild edible fruits help during food crises and provide nutritional opportunities for the people living in remote areas (Ogle and Grivetti, 1985). Wild edible fruits have great medicinal potential and need further investigation, but unfortunately in our country, no systematic work has been done in this respect (Shaheen et al., 2011). Wild edible fruits have a standardized role in blood purification and facilitate our digestive system. It is believed and proved scientifically that these fruits have the most active

medicinal value compared to the fruits of domesticated plants (Marwat et al., 2009a). As wild edibles contribute so much to our daily life and the reported area has plants of such value. The systematic investigation of plants for food usage has begun in the past few decades, but this research area is still a virgin. Very little research has been conducted on the wild edible fruits, and no such study has been conducted in the study area. In this study, our objectives were (i) documenting the wild edible fruit species of the study area, (ii) assessing the traditional medicinal usage patterns of wild edible fruit species.

Materials and Methods

The following equipment was made ready before the launching of the research work. Map the study area, presser, polythene bags, cutter, digital camera, and compass Altimeter. Before the field visits, general information about the said area, vegetation in the target area, geographical, geological, and topographical status were known from the concerned departments.

Field visits and collection

A total of 60 visits were made both in plain and mountainous localities from 2014 to 2015. Through a questionnaire and face-to-face interviews with the local people, the researcher facilitated the researcher to collect only those plants that produce wild edible fruits. All these fruits were collected during the season at a mature stage.

Preservation, drying, and mounting was carried to confirm the identification of the flora. A total 200 people were interviewed, of which 100 were males between 70 and 80 years, 50 were females between 60 and 70 years, 25 were elders of age b/w 26 to 59 years, and 25 were youngsters between 20 and 25 years. As compared to the old age females and young the information of old age males regarding the investigated case was valid and authentic, so they gave much preference in this respect (Table 1).

Table 1. Age and gender distribution of Ethnic informants.

Interviewees	Age	Number	Percentage
Youngsters	20-25	25	13%
Elders	26-59	25	13%
Females	60-70	50	25%
Males (old age)	70-80	100	50%

Results

Results obtained from the study show that wild plants bear edible fruits which are used by the local people not for nutritional and medicinal purposes but also for commercial aspects to raise their economy (Table 2). A total of 200 inhabitants of different ages were interviewed. The information of the older people was specially recorded. Eleven plants were utilized as edible fruits. Based on the plant habit classification, herbaceous growth form was dominated by 9.09% of species, shrubs with 45.45%, and trees with 45.45% (Fig. 1). Rhamnaceae was recorded with two species as the leading family, while rest of the families like Aricaceae, Boraginaceae, Capparidaceae, Malvaceae, Moraceae, Oleaceae, Sapotaceae, Salvadoraceae and Solanaceae were represented by one species each (Table 3). The collected edible fruits plants of wild nature were arranged alphabetically and vernacular and English names, habits and occurrence, and indigenous uses (Table 3). At a young stage, the fruits are green in color but when become mature, i.e., ripened, they turn into different colors like red, yellow, orange, and black (Fig. 2). The local inhabitants, especially of remote and mountainous areas, use these fruits commonly in the season.

Table 2. Local uses of the wild fruits of the reported area.

S.No	Botanical Name	Nutritional Value	Commercial Value	Medicinal Value
1	*Grewia tenax*	+	-	+
2	*Monotheca buxifolia*	+	+	+
3	*Zizypus mauritiana*	+	+	+
4	*Zizypus nummularia*	+	-	+
5	*Olea ferruginae*	+	+	+
6	*Solanum nigrum*	+	-	+
7	*Salvadora oleoides*	-	-	+
8	*Capparis decidua*	+	-	-
9	*Cordia myxa*	+	-	+
10	*Phoenix sylvestris*	+	+	+
11	*Ficus religiosa*	+	-	-

Table 3. Alphabetical arrangement of collected plants of wild edible fruits, Tehsil Takht-e-Nasrati, Pakistan.

Botanical Name	Family name	Local name	English name	HB	Occurrence	Local usages
Capparis decidua	Capparidaceae	Keera	Caper Berry	S	Common in the reported area	Mature fruits are edible and used as vegetables in mountainous areas.
Cordia myxa	Boraginaceae	Lasora	Assyrian Plum	T	Less common in the study area	Nutritious, Edible, used to relieve the burning of the throat (Expectorant)
Ficus regiliosa	Moraceae	Peepal	B.Tree	T	Rare tree of the area	Fruits are nutritious occasionally eaten by the local people
Grewia tenax	Malvaceae	Sanzarrah	White Cross Berry	S	rare in desert	Fruits are edible, nutritious, increase lactation but have no economic value.
Monotheca buxifolia	Sapotaceae	Gurgurra	Francias	S	Common in mountains	Nutritional, medicinal (laxative), have significant commercial value
Olea ferruginae	Oleaceae	Shween	Olive	T	Common in mountains	Fruits are not only nutritional but also have a market value
Phonex sylvestris	Aricaceae	Khajoora	Wild Date Plum	S	Sandy plain areas	Fruits, nutritious, medicinal (Cardiotonic, laxative) have a great market value
Salvadora oleoides	Salvadoraceae	Plainah	Grape of Desert	T	Less common tree of desert, hilly areas	Occasionally edible, very effective in the expulsion of placenta or lochia in cows
Solnum nigrum	Solanaceae	Gonshaba	Black Nightshade	H	Common in waste habitat	Scientifically proved that green berberries are anti-diabetes, mature berries are edible
Zizyphus murtiana	Rhamnaceae	Bera	Red date	T	Common in the study area	Fruits are medicinal (laxative, purgative carminative), delicious and have a market value
Zizypus numularia	Rhamnaceae	Karkarna	Wild Jujube	S	Common in waste habitat	Fruits are medicinal (laxative, purgative, carminative) and delicious have no commercial value

Key: HB=Habit, **S**=Shrub, **T**=Tree, **H**=Herb.

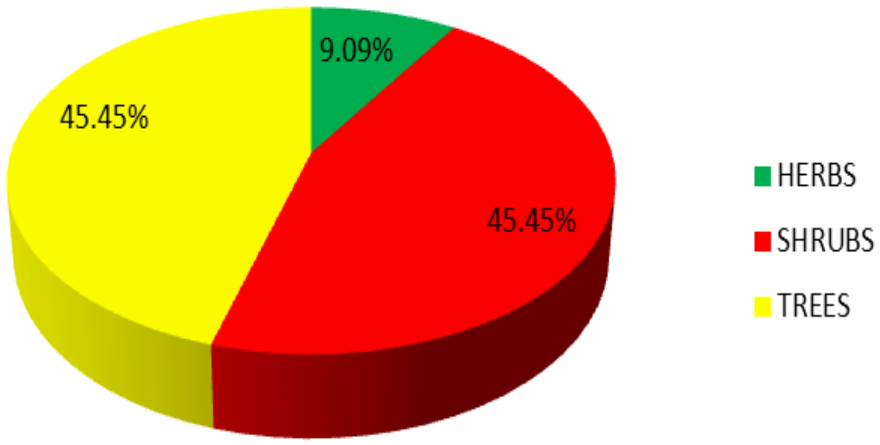

Fig. 1. Pie chart showing the percentage of the collected wild edible fruit plants.

Fig. 2. Photographs of the plants with their respective edible fruits: A) *Zizyphus mauritiana,* B) fruit, C) *Zizyphus numularia,* D) fruit, E) *Capparis decidua,* F) fruit, G) *Olea ferruginae,* H) fruit, I) *Cordia myxa,* J) fruit, K) *Salvadora oleoides,* L) fruit, M) *Monotheca buxifolia,* N) fruit, O) *Solanum nigrum,* P) fruit, Q) *Grewia tenax,* R and T) fruit, S) flower, U) *Phoenix sylvesyris* V) fruit, W) *Ficus religiosa* and X) fruit.

Discussion

Green plants are the lungs of nature. Without plants, existing life in the universe is impossible. All plants are essential for humans, but their fruits have direct interaction in our daily lives. The present report is just about the medicinal, nutritional, commercial, and edible value of the wild fruits in the study area, so the traditional information of the local inhabitants should be brought under consideration. The remote areas, either plain or mountainous, have impoverished human communities.

The local people use the mature fruits of Capparis decidua for nutritional purposes, but in India, the local inhabitants of Rajasthan and Haryana, these fruits are used as vegetables in the running season (Minshra et al., 2006). Along with agriculture, these people have great dependency on such fruits during the season, not for nutritional and medicinal aspects but also for commercial value to reduce poverty. In-fact, these fruits are brought underuse when become mature, but in some cases in raw form, the green berries are used in hand made recipes to control specific diseases like diabetes mellitus (Satyanarayana et al., 2008). Some (*Phoenix sylvestris, Olea ferruginae, Monotheca buxifolisa, Zizyphus mauritiana*) play a role in earning money; however, some like *Cordia myxa* are used as an expectorant (Afzal et al., 2007).

The fruits of *Cordia myxa* are nutritious but can also help relieve burning throat in case of severe coughing (Marwat et al., 2011.). It has been proved scientifically that the berries of *Solanum nigrum* are used in Asia to manage tumors, ulcers, and diabetes Mellitus,

but the children of the remote area use these berries at a mature stage, not for nutrition but also taste (Sahala Sohrabipour et al., 2013). The date palm (*Phoenix sylvestris, Monotheca buxifolias, Olea ferruginae*) grows wildly in the investigated area but bears edible fruits used for nutritional, commercial, and medicinal purposes. According to the observation of the local people, the fruits of *Phoenix sylvestris* are cardio-tonic, facilitate heart function, and are used as general tonic and laxative (Daud et al., 2014, Rashid and Marwat et al., 2006). *Grewia tenax* is a multi-stemmed woody shrub that grows wildly and produces edible fruits that are nutritious, but according to Marwat et al. (2011), these fruits contain iron, so can be used medicinally but have no commercial value at the present. Its fruits also increase lactation in mothers (Elhassan and Yagi, 2010). Some wild fruits (*Ficus religiosa* and *Salvadora oleoides*) are occasionally eaten despite that these fruits have great medicinal value, not only for humans but also for domestic animals.

Conclusion

It has been concluded that wild fruits are the great natural food source for the remote community in critical days, so-called drought. They also play a vital role in the traditional medicine system of the study area. Some of these fruits have commercial value, so domestication and ex-situ conservation should be encouraged. The different information about the uses of the wild edible fruits is totally in the custody of old community members. This should be released from their custody and must be documented for future records.

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Citation:

Khattak, NS., Ijaz, F., Fatima, NUA., Taimur, N., Nawaz, G., Bibi, S., Kamal, S., Ahmad, R., Nawaz, S., Saman, S., Sami-Ur-Rahman, Khattak, NA., Parveen, S., Azeem, A. (2021). Documentation of the wild edible fruits of tehsil Takht-e-Nasrati, Pakistan. Ukrainian Journal of Ecology, 11 (5), 91-96.