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Edible Indigenous Wild Fruit Plants of Eastern Botswana

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Abstract: Botswana harbors a rich floral diversity of wild fruit plants which have served as mainstay sources of nutrition and medicines for many years. The majority of wild fruits of eastern Botswana have served as sources of nutrition for many years. Some of them have gained immense popularity that they form integral parts of many local hotel menus. Wild fruits trees of Botswana if properly exploited can ensure food security for both rural and urban dwellers. Today wild fruits still represent some of the commodities sold by both local shops and street vendors. This paper provides an inventory of edible fruit plants of eastern Botswana.

Key words: Edible wild fruits, eastern botswana, food security, traditional fruit recipes, Tswapong hills, nutrition

Introduction

The region constituting eastern Botswana is characterized by sandy loam soils. The vegetation varies from scattered wooded grassland to dense bushveld. There is also a chain of rocky Tswapong hills rich in both medicinal plants and edible wild fruit trees and shrubs. Rainfall in this region is unreliable, unpredictable and usually rains around November - January. Annual rainfall in this region is of relief or convectional type and is 200mm on average. After rains many plants produce fruits and the fruits ripen quickly before they are exposed to the scorching savannah heat. Ethnic groups which reside in Eastern Botswana are called the Batswapong and they have a long history of wild fruit gathering. History holds it that in the long past some wild fruits were collected and given as offerings during wedding ceremonies. Some wild fruits were collected and appropriately preserved for consumption during times of food scarcity. Some fruits served as ingredients for local traditional breweries.

Indigenous fruit trees of Botswana although mostly undomesticated play important roles in people living in rural areas of Botswana. Some indigenous fruit trees yield a crop in poor rainfall years, thereby improving food security for rural households (Mojeremane and Tshwenyane, 2004). On average, one year in three years is a crop failure for arable agriculture in Botswana, hence the importance of wild indigenous fruits (Mojeremane and Tshwenyane, 2004). In addition to their roles as sources of food, indigenous wild plants serve as medicines, fodder, firewood, craft and cash products and building materials for rural communities. Most of them are important sources traditional beverages, food recipes, oil, carbohydrates and proteins (FAO, 1982; Maghembe *et al.*, 1994). Like vegetables, wild fruits are valuable sources of vitamins and minerals essential for proper maintenance of good health (Saka

et al., 1994). Forty years ago Botswana was amongst some of the poorest nations and by then people depended among other things wild fruits and vegetables to ensure food security.

Materials and Methods

A survey on inventories of the different wild fruit plants was done by means of interviewing rural communities in Tswapong region (particularly Seolwane village). The following different plants were investigated:

Results

Family name: Rubiaceae

Species name: *Vangueria infausta*

Local name: mmilo

Description: A shrub or small deciduous tree occurring in wooded grassland, bushveld often in rocky places. It bears short hairy bracelets. Leaves are elliptic to ovate, dull green densely covered with short, soft hairs particularly when young.

The fruit is a drupe, subglobose, up to 35mm in diameter, yellowish to brown, crowned with a circular scar left by the calyx. The fruit is edible and can be consumed fresh or mixed with milk. The seed can be removed leaving a dry sweet-sour flesh which can be dried to produce a traditional recipe called *nchwachwa*, eaten during the dry winter season. The fruits are commonly sold by local street vendors.

Family name: Anacardiaceae

Species name: *Sclerocarya birrea subsp caffra*

Local name: morula

Description: medium to large deciduous tree with an erect trunk and spreading, rounded crown, occurring in bushveld and woodland. The fruit is a fleshy globular drupe, almost spherical, ripening to yellow after falling to the ground. The fruits are rich in Vitamin C. Stone very

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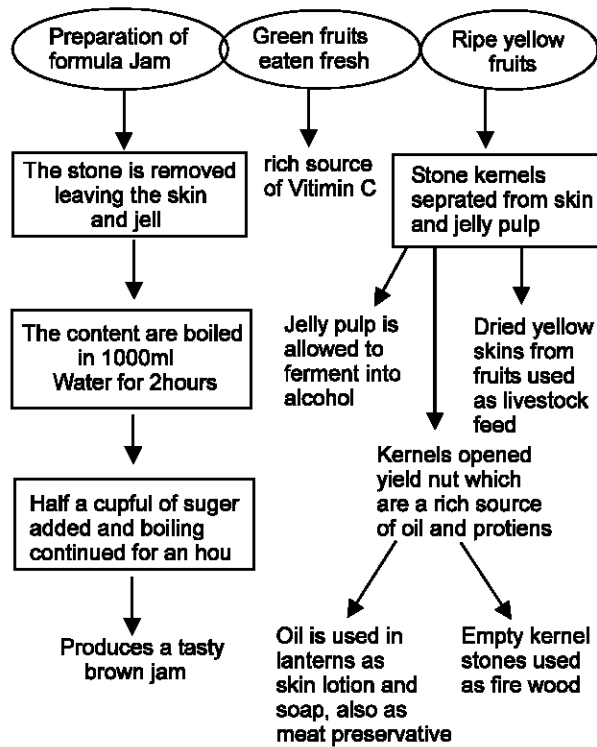


Fig. 1: Some of the economic uses of *Sclerocarya birrea*

hard with two or three lids. The fruit is edible, eaten either fresh or made into a delicious jelly; also makes a popular alcoholic *morula beer* (a morula liquor is available commercially as amarula). The kernels of the stones produce high protein edible nuts.

Sclerocarya birrea has many economic uses. A decoction of the stem bark treats malaria. The nuts are a very good source of oil which is used as skin lotion, in lanterns and processed into morula soap.

Family name: Sapotaceae
Species name: *Mimusops zeyheri*
Local name: mmupudu

Description: A shrub or small to medium-sized evergreen tree, usually with a wide-spreading dark green rounded crown, occurring in bushveld along forest margins, often in rocky places and along streams. The fruit is a berry, ovoid with persistent calyx, 20-30x10-25mm yellow to orange, usually single seeded. The fruits are edible and rich in vitamin C and pleasantly sweet with a mealy consistency.

Family name: Malvaceae
Species name: *Azanza garkeana*
Local name: Morojwa
Description: A shrub or small to medium sized deciduous tree; occurring in bushveld. It bears bracelets with woolly

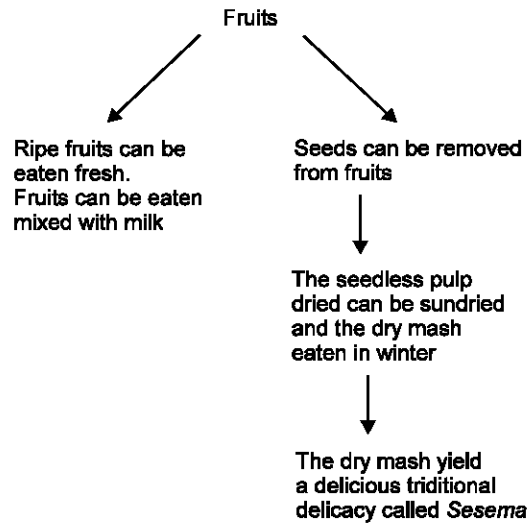


Fig. 2: Uses of *Mimusops zeyheri* fruits

hairs. The tree fruits a woody capsule, subglobose, 25-40mm in diameter, yellowish green to brown. The fruit is edible while still green and juicy, the seeds and rind are discarded. When chewed the flesh is sweet and glutinous (Braam and Piet, 1997).

Family name: Capparaceae
Species name: *Boscia albitrunca*
Local name: Motopi

Description: A small tree with a rounded, much branched crown and rigid branchlets; occurring in semi-desert areas and bushveld, often on termitaria. Roots are edible and used locally as a substitute for coffee or chicory. The tree fruits a berry, round, about 10mm in diameter, hairless, yellowish. Fruit pulp mixed with milk produces a delicious dish.

Family name: Euphorbiaceae
Species name: *Bridelia mollis*
Local name: Mokopakopa

Description: A deciduous shrub or small tree, occurring in bushveld, often in rocky places. Young growth densely furry. The fruit is a berry, almost spherical, about 10mm in diameter, black when mature. The fruit is edible and is made into a jam.

Family name: Sapindaceae
Species name: *Pappea capensis*
Local name: Molalagkaka

Description: A small to medium sized deciduous tree with a spreading, often intricately branched crown, occurring in bushveld wooded grassland, valley bushveld and karoid vegetation. Bracelets with short brownish hairs. The fruit is a capsule, up to 3-lobed, up to 20mm in diameter, furry green, splitting to reveal a shiny black seed enclosed by a fleshy, orange-red appendage.

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Fleshy cover of seeds edible and makes a delicious jam. Seeds yield an oil which is edible (Roodt, 1998) and is also used medicinally and for soap making. The fleshy part of the fruit is delicious and is used to make jelly and to brew an alcoholic beverage (Setshogo and Ventor, 2003).

Family name: Apocynaceae
Species name: *Stomatostemma monteiroae*
Local name: Mosata

Description: A climber or creeper. The stems are rounded and it coils around the plant that it uses for support. Roots are tuberous. The fruits are elongated with some rings on their longitudinal section. The fruits are locally used as a relish. They are harvested whilst still green and seeds removed. The seeds are removed fruits boiled in water for half an hour. The cooked fruits are then sliced and sun dried. The dried fruit flesh has a meaty taste and is preferred by vegetarians.

Family name: Rhamnaceae
Species name: *Ziziphus mucronata*
Local name: Mokgalo

Description: A shrub or small to medium sized tree; occurring in a wide variety of habitats. The fruit is a drupe, subglobose, up to 30mm in diameter, shiny reddish to yellowish brown. The fruits are sweet and edible. Some species produce sour to bitter fruits. Crushed roasted seeds are used as coffee substitute.

Family name: Loganiaceae
Species name: *Strychnos cocculoides*
Local name: Moruta

Description: Armed deciduous shrub or small tree with a compact, rounded crown; occurring in bushveld, usually on sandy soils or in rocky places. The fruit is a large (up to 70mm in diameter), globose; rind thick and woody, dark green speckled with white, ripening to pale yellow. The seeds are many and embedded in pulp. The fruit pulp is edible and much sought after, and considered the most delicious of all the local members of the genus. The fruit pulp when mixed with honey is used to treat coughs. The fruit is sometimes buried in the sand to allow the pulp to liquefy.

Family name: Loganiaceae
Species name: *Strychnos madagascariensis*
Local name: Mogwagwa

Description: A deciduous shrub or small tree of ten many stemmed with a much-branched spreading canopy; occurring in bushveld, sand forest and coastal bush. The fruit is a large (80-100mm in diameter) globose; rind thick and woody, bluish green when young, yellow when mature; seeds many and embedded in pulp. The fruit pulp is edible.

Family name: Bombacaceae
Species name: *Adansonia digitata*
Local name: Mmowana

Description: Comparatively short, deciduous tree with hugely swollen trunk; occurring at low altitudes in hot dry bushveld. The fruit is ovoid to elliptic, about 120mm long, with hard woody shell, densely covered with yellowish grey hairs; seeds are numerous and embedded in a white powdery pulp. The pulp surrounding the seeds is rich in Vitamin C and makes a refreshing drink when mixed with milk. The seed pulp is rich in citric and tartaric acids (Braam and Piet, 1997).

Family name: Tiliaceae
Species name: *Grewia flavescens* Juss. Var. *flavescens*
Local name: Motsotsojana

Distribution: Scrambling multistemmed shrub or small tree; occurring in bushveld. Fruits a drupe, globose, usually shallowly 2-4lobed, 8-14x 14x15mm in diameter, yellowish brown. The fruits have a delicious taste and they can be used in the making of alcoholic beverage. The fruits can be sundried and preserved to be eaten during times of food scarcity.

Family name: Olacaceae
Species name: *Ximenia caffra*
Local name: Morotologakgomo

Description: A sparsely branched shrub or small tree occurring in bushveld and coastal bush. It produces a drupe oval, up to 40mm long, bright red with white spots. The fruit is edible, tasty but very sour near the seed. Seeds yield an oil which is used to soften leather and for cosmetic purposes. The oil can also be used to lubricate farm machinery and to preserve dried meat.

Family name: Olacaceae
Species name: *Ximenia americana*
Local name: Morotologapudi

Description: Much branched shrub or small tree with a blue-green appearance occurring in bushveld often in hot low altitude areas. A produces a drupe, oval, about 25mm long. The fruit is edible with a rather bitter sour taste. Oil from seeds is used to soften leather.

Family name: Tiliaceae
Species name: *Grewia flava*
Local name: Moretwa

Description: A multistemmed shrub or small tree; occurring in bushveld and wooded grassland, often in drier areas and on Kalahari sand. Older stems are roundish. It produces a drupe, globose or faintly 2-lobed, about 8mm in diameter, reddish brown. The stems are strong, elastic and used for bows. The fruit is edible and is used in making traditional beer (*khadi* or *mogwana*). The fruits are harvested when fully ripe and can be sun dried and eaten during times of food scarcity.

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Discussion

Wild fruits are important and can provide food nutrients that are essential to the body. Related type of study on traditional food plants of Botswana (Ohiokpehai and Ramosweu, 1999) has shown that products from wild fruits can be mixed with other food sources to yield a balanced diet. Some indigenous wild food plants are very rich sources of protein and Vitamin C (Ohiokpehai, 2003). Research has proved that indigenous plants play an important role in the lives of rural population. They are a vital source of food, medicine, building material, fuel and transport material (Ohiokpehai, 2003). The rural population can sell products from wild fruit plants to urban areas for income generation. The wild fruits together with their products can cheaply be preserved to ensure food security during times of famine. The findings of this study reflect the immense untapped nutritional capacity of these wild fruit plants. Their domestication, especially those with commercial value, is important for nutrition security.

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