

ETHNOBOTANICAL STUDY OF FOOD PLANTS AROUND 'DHEERAA' TOWN, ARSI, ETHIOPIA

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ABSTRACT: A study aimed at identifying plant species used and manipulated by the community for food was carried out around 'Dheeraa' town, in Arsi Zone of Oromia National Regional state, Ethiopia. The data were collected through four round fieldworks conducted from October to December 2003. Random and systematic sampling methods were employed to select the study sites as well as the informants. Ethnobotanical methods using semi-structured interviews were employed to collect data on food plants used by the community. In this study, 71 species of food plants were recorded of which, the local people cultivate 30 species. Wild edible plant species claimed a larger proportion (41 species, 58%) of the total records. Of the edible plants of the study area 16 species used by the community in traditional medicine, are categorized as nutraceuticals. The non-cultivated food plants are very rare in the area and this might be attributed to the ongoing habitat modification and loss of natural vegetation. It is important to create awareness on sustainable use of wild edibles and the cultivated food. On top of the benefits that these food plants offer as part of the local vegetation, their potentials as food sources are worth considering in efforts towards realizing household food self-sufficiency in the study area.

Key words/phrases: Dheeraa, ethnobotany, food plants, indigenous knowledge, nutraceutical plants

INTRODUCTION

Depending on their tradition, the people of the world feed upon various types of food. However, 90% of the food is derived from plant materials and most of these are of high nutritional value. For example, some species of *Dioscorea* (one of the African traditional food sources) contain almost all nutrients including those normally obtained from animal protein (Baquar, 1992). Fewer than 20 plant species produce 90% of the food consumed by the global population (Maheshwari, 1987 cited in Maheshwari, 1988). Zemed Asfaw and Mesfin Tadesse (2001) referring to the various sources reported that about 5% of the total plant species of the world serve as food for human beings. Furthermore, soil protection and improvement, and provision of fuelwood are the indirect roles of plants in increasing the availability of food.

Plants also serve as source of drinking water, which is part of food. The stem and bark of some plant species produce water. For example, a study on useful plants of Ghana by Abbiw (1990) stated that the cut stem of *Adansonia digitata*, *Cleistopholis patens*, *Costus afer*, *Phyllanthus muellerianus*, *Sterculia setigeria* produce clear drinking water while *Calotropis procera* and *Daniella oliveri* are indicators of underground water. Besides, the water that

accumulates in the leaf bases of *Ravenala madagascariensis* has been mentioned in Willis (1973), for its use as drinking water.

In Ethiopia, there are lots of food materials that are obtained from either cultivated or non-cultivated plants. For example, Zemed Asfaw and Mesfin Tadesse (2001) estimated that 8% of the higher plant species in the country are edible, and 25% of these are cultivated. Ethiopia has many indigenous food crops (Harlan, 1969; Zemed Asfaw, 1997). *Eragrostis tef*, *Ensete ventricosum*, *Brassica carinata*, *Plectranthus punctatus* subsp. *edulis*, *Guizotia abyssinica* and *Coccinia abyssinica* are the well-known examples of indigenous crops (Harlan, 1969; IUCN, 1996; Zemed Asfaw, 1997; Zemed Asfaw and Mesfin Tadesse, 2001). The country is also an important center for sorghum, finger millet, field pea and safflower (IUCN, 1996). In addition to the conventional crops, the Ethiopian flora contains many wild plants that produce quantities of food. Hence, the natural vegetation of the wilderness, farmlands and home gardens are sources of edible plants.

This study was conducted in a semi-arid area, which is part of the drylands of Ethiopia. Nabhan and Felger (1985) indicated that arid lands worldwide offer a rich variety of wild and cultivated food plants that have a good adaptation

to low and variable precipitation regimes. Groove (1985) also mentioned that the arid lands are sources of one fifth of the world's food supplies. According to Maydell (1990), the multipurpose trees of drylands play the best roles in food provision. Nevertheless, environmental crises like global warming, loss of biodiversity and desertification are becoming the major tribulations of human beings. These could also be factors for rising food shortage problems of the world, which is more pronounced in drylands. The prevailing loss of biodiversity calls for collection, investigation and conservation of the natural resources (FAO, 1983). Ethnobotanical information compilation and analysis play vital role in rescuing natural resources of an environment.

This study aims at documenting, describing and studying the utilization and manipulation of the food plants used by the community around 'Dheeraa' town in south-eastern Ethiopia. The study area is an area where environmental

degradation is observed and drought and famine frequently affect the people. Hence, studying the food plants available in the surrounding may help to improve the present situation in food shortage and sustainability for the people.

MATERIALS AND METHODS

Location of the study area

The study was conducted around 'Dheeraa' town which is located at 8°16'N and 39°20'E (EMA, 1988), about 125 km southeast of Addis Ababa. The elevation of the study area is between 1400–1850 m a.s.l. The altitude increases as one goes from eastern to southwestern and western sides of 'Dheeraa' town. Much of the study area is found in the flat terrain of the Ethiopian Rift Valley and dominated by undulating plains of eastern escarpments (Fig. 1).

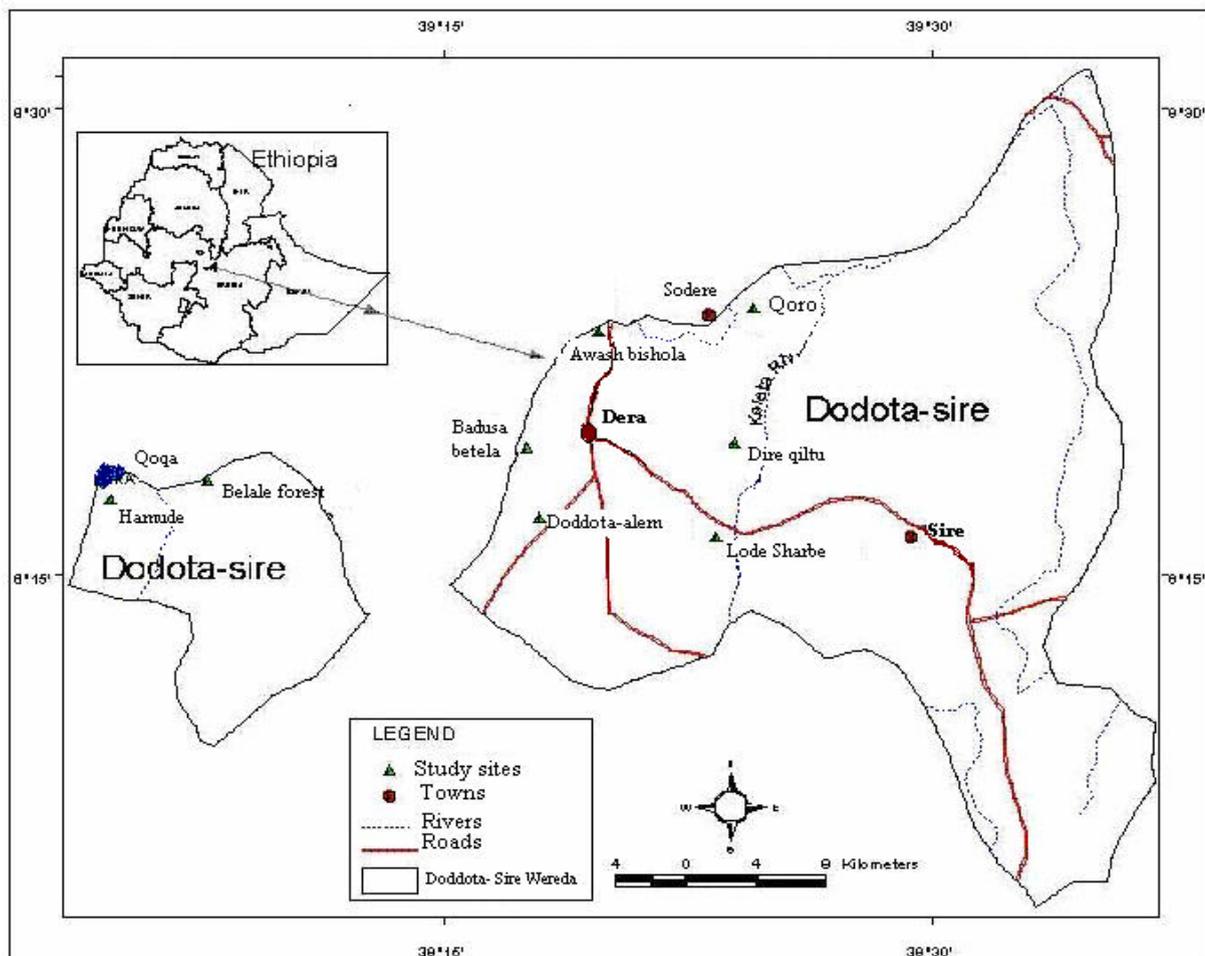


Fig. 1. Map of the study area.

Climate

According to the information obtained from Oromiya Bureau of Agricultural Development (OBAD), the average annual rainfall around 'Dheera' is 700 mm, and the shortest and longest rainy seasons are: from February to March, and from June to September, respectively. The hottest season lies between March and June with temperature sometimes exceeding 28°C. In the coldest season (November to January), the temperature lowers to about 11°C and 12°C. Hence, it lies in the semi-arid climatic zone.

Based on the current agroecological classification (MOA, 1998), the study area lies in three major agroecological zones: SA1 (hot to warm semi-arid lowlands), SA2 (tepid to cool semi-arid mid-highlands), and SM2 (tepid to cool semi-moist highlands). Specifically, the study sites lie in the sub-agroecological zones of SA1-2 (hot to warm semi-arid lakes and rift valleys), SA2-2 (tepid to cool semi-arid lakes and rift valleys), and SM2-2 (tepid to cool semi-moist lakes and rift valleys).

In MOA (1998), it is indicated that the mean annual percent of evapo-transpiration is 1400-1700 mm, which is greater than the mean annual precipitation (700-1200). This clearly shows that there is moisture deficiency in the area. It is also mentioned in Arsi Zone Food Security Program (2002), that the area usually experiences very erratic rainfall and drought. This together with the high population growth hastens the natural resource degradation.

Vegetation and soil

The vegetation of the study area belongs to the Somalia-Masai Regional Centre of Endemism (White, 1983). It is characterized by having a flora dominated by *Acacia* woodland. Cambisol (45%), Lithosol (35%) and Adosol (20%) are the major soil types of the area (MOA, 1998; Arsi Zone Food Security Program, 2002).

Population and land use

The people are settled farmers growing mainly the annual food crops such as *Eragrostis tef*, *Zea mays* and *Sorghum bicolor* in integration with cattle rearing. Most of them are Afaan-Oromo speakers and some of them speak both Afaan-Oromo and Amharic languages. Based on the information from the District Agricultural Development Office, the total population in the study area is 35,372 with 19,355 males and 16,017 females. About 60% of the total area is usable; where 46.16%, 3.76%, 5.37%

and 1.86% are cultivated, pasture land, natural vegetation and settlement area, respectively.

Sampling techniques and data collection

The main criterion for the selection of sites was the vegetation cover of the area based on the information obtained from the District Agricultural Development Office as well as the observation during the reconnaissance survey. A total of 75 informants were involved in the study. These informants were selected applying both the systematic and random sampling techniques. The informants were in three age categories (15-25, 26-45, and above 46). Fifteen informants whose ages were more than 40 were considered as key informants and their selection was based on the information obtained from the village leaders.

Ethnobotanical data were collected following Martin (1995), Maundu (1995) and Cunningham (2001). The method of semi-structured interview was applied to obtain information on useful plants. Collection of data was also done through guided field walk, which involves a combination of observation and interview methods. This implies that some of the interviews were made while walking through the vegetation and observing. The vernacular names of the plants were recorded in Afaan-Oromo, except for those indicated otherwise. Informants were also asked to rank and give score to some wild edible plants according to their personal taste and preference.

Plant specimens were collected, pressed and dried in the field. Identification of plant specimens was done in the field and confirmed at the National Herbarium of Ethiopia at Addis Ababa University, where the collected specimens were deposited.

Data analysis

The data collected through semi-structured interview were analysed using percentages and descriptive statistics like frequency distribution. The scores given to each species as the preference of the informants were added and ranked. The method of cluster analysis was also applied to regroup the responses. This was aided by SPSS version 10.0 software (SPSS, 1999).

RESULTS

Diversity and status of food plants

The local community in the study area source edible plant products from agricultural fields,

home gardens and the natural vegetation. The people in the study area identified 71 species of food plants that they use as food in various ways. These are grouped under 58 genera belonging to 34 families. Forty-one species of these plants are non-cultivated edible plants while the rest are cultivated food plants. The cultivated edible plants are largely herbs while that of the non-cultivated category comprises of largely trees (Table 1). Regarding the parts used as food sources fruits scored the highest number (Table 2).

Cultivated food plants

Thirty species were documented as cultivated food plants (Appendix 1). Among these, 8 species are fruit crops, 7 species are vegetables, cereals and pulses comprise 5 species, each, 3 species are oil crops and 2 species are cash crops. The largest number for the cultivated plants goes to herbs (63%), and the seeds are the most usable parts (19.72%).

Regarding the family, the Poaceae comprises the largest number (6 species), followed by Fabaceae (5 species), Asteraceae and Rutaceae 3 species each, Alliaceae and Solanaceae 2 species each, and only 1 species for each of the other families (Appendix 1).

Among the documented cultivated food plants those that are grown in home gardens added up to 15 species (50%), those in farmlands were 10 (33%) and the rest 5 species (17%) occurred in both farmlands and home gardens.

Though the percentage of cultivated plant species grown in the farmland is fewer as compared to those in the home gardens, the main source of staple food is the farmland. Barley

(*Hordium vulgare*), wheat (*Triticum spp.*), maize (*Zea mays*) and teff (*Eragrostis tef*) are produced mainly for consumption. Others like pea (*Pisum sativum*), chickpea (*Cicer arietinum*), haricot bean (*Phaseolus vulgaris*), lentil (*Lens culinaris*), and linseed (*Linum usitatissimum*) are produced mainly for the market.

The traditional food of the Arsi Oromo people is porridge made of barley or maize flour. Next to porridge, 'Qamashaa' is the famous traditional food. It is usually prepared from wheat flour. The dough is prepared in a shape of pasta manually or with a simple machine and allowed to dry in sun. Then the required size is taken and cooked whenever needed. This food is served during fasting period and for special guests.

Non-cultivated food plants

In this study, 41 species of non-cultivated food plants, which belong to 30 genera and 23 families, were collected and enumerated (Appendix 2). This result indicates that wild edible plants of the study area are highly diversified. The family Tiliaceae comprises of the largest number of species (6 species), followed by Fabaceae (4 species). Boraginaceae, Moraceae, Anacardiaceae, and Rhamnaceae consist of 3 species each while Appocynaceae and Flacourtiaceae include 2 species each. The other 15 families contain only 1 species each.

Only two of the non-cultivated food plants (5%) are served after cooking, all the rest (95%) are eaten raw without any processing. Concerning the parts used, fruits of the non-cultivated food plants are the most frequently used part whereas root, bark and stem are used less frequently (Table 2).

Table 1. Habit and status of food plants.

Habit	Cultivated		Non-cultivated		Total	Percent of total
		%		%		
Herb	19	63.33	2	4.89	21	29.6
Shrub	0	0	10	24.39	10	14.08
Tree	8	26.67	28	68.29	36	50.7
Liana	1	3.33	1	2.43	2	2.82
Bulbous	2	6.67	0	0	2	2.82
Total	30	100	41	100	71	100

Table 2. Parts of plant used as food.

	Root	Stem	Leaf	Fruit	Seed	Bark	Bulb	Gum
Cultivated	0	1	2	11	14	0	2	0
Non-cultivated	1	1	2	35	0	1	0	2
Total	1	2	4	46	14	1	2	2
Percent of total	1.41	2.82	5.63	64.79	19.72	2.82	2.82	2.82

Youngsters and children were observed using wild edible plants more frequently than the other age groups. Hence, this group of the community was able to tell all the names of the wild edible plants and the parts used. They were the sole informants about *Capparis fascicularis* (Haaranga-maa-adii), *Erythrina brucei* (Waleenaa), *Scutia myrtina* (Budagaree), *Toddalia asiatica* (Arabagubee), and *Ziziphus spina-christi* (Buleesaa).

The key informants were asked to rank 6 species of wild edible plants for their good taste according to their personal preference. The scores given to each species were added and the highest score was ranked to be first. Accordingly, *Balanites aegyptiaca* ranked first (Table 3). Most of the informants

tasted and confirmed that they are familiar with the fruit. Cluster analysis was made to confirm this result and the degree of similarity between the responses of informants is shown in Figure 2.

Nutraceutical plants

Among the species recorded in this study, about 16 species benefit the community in two ways; providing food as well as traditional medicine. Further analysis showed that 5 of the species were cultivated (4 species in home gardens and one species in farmland) and the other 11 species were non-cultivated food plants. The nutraceutical species recorded in this study are given in Table 4 along with their medicinal uses.

Table 3. Preference ranking for most popular non-cultivated food plants.

Scores given by key informants (respondents)	Species name					
	<i>Balanites aegyptiaca</i>	<i>Ficus sycomorus</i>	<i>Grewia bicolor</i>	<i>Mimusops kumel</i>	<i>Rhus natalensis</i>	<i>Ziziphus mucronata</i>
R1	6	3	5	1	2	4
R2	6	2	4	3	1	5
R3	5	3	4	1	2	6
R4	6	3	2	4	1	5
R5	6	3	2	4	1	5
R6	6	3	2	4	1	5
R7	6	4	2	3	1	5
R8	6	3	2	4	1	5
R9	6	2	5	1	3	4
R10	6	2	4	1	3	5
R11	6	2	4	1	3	5
R12	6	3	2	4	1	5
R13	6	2	4	1	3	5
R14	6	3	2	4	1	5
R15	6	2	4	1	3	5
Total score	89	40	48	37	27	74
Rank	1	4	3	5	6	2

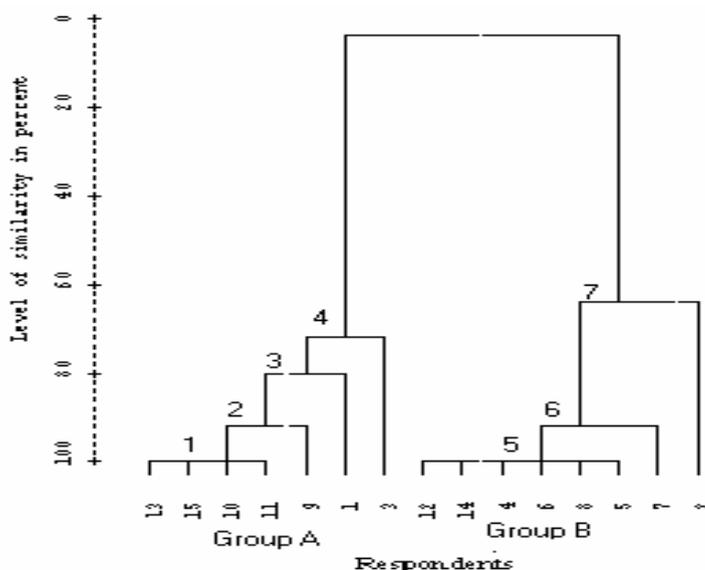


Fig. 2. Dendrogram showing the similarity of responses to the most important Non-Cultivated Food Plants.

Table 4. List of species with nutraceutical values.

Species name	Parts used	Used to treat
<i>Allium sativum</i>	Bulb	Flue, and lung abscess
<i>Balanithes aegyptiaca</i>	Gum	Feverile disease
<i>Capparis fascicularis</i>	Root	Tooth ache and wounds
<i>Carica papaya</i>	Seed and Fruit	Diarrhoea
<i>Carisa spinarium</i>	Root	- Stomach ache and muscle cramp
	Stem	- Evil eye
<i>Citrus aurantifolia</i>	Fruit	Flue, wounds, stomach ache, skin rash
<i>Cordia ovalis</i>	Leaf and Stem	Feverile disease
<i>Cucurbita pepo</i>	Seed	Stomach ache (worm expulsion)
<i>Grewia bicolor</i>	Leaf	Stomach ache
<i>G. ferruginea</i>	Leaf	Stomach ache
<i>G. villosa</i>	Leaf	- Stomach ache
	Stem	- Allergies that make the body swell
<i>Opuntia ficus-indica</i> (L.) Miller	Fruit	Gastritis & Diarrhoea
<i>Papea capensis</i>	bark	Tonsillitis
<i>Punica granatum</i>	Leaf	Diarrhoea
<i>Rumex nervosus</i>	Leaf	- Diarrhoea
	Root	- Wound & Hepatitis
<i>Ximenia americana</i>	Root and Bark	Lung abscess, muscle cramp, wounds

Note: For the uses of these plants as food, see Appendix 1 and 2.

DISCUSSION

The food plant species recorded in this study comprised of the cultivated food plants and the non-cultivated edible plants; the former being categorized as conventional food crops and the latter as wild or semi-wild food plants. Similar categorization was made by Zemed Asfaw (1997) in his study of the useful plants of Ethiopia.

Although larger number of species than those grown in fields is grown in home gardens, home gardening is not adequately practiced in the study area. Part of the reason for this may be related to the shortage of water sources in the area. However, the results indicate that traditional people work hard to harmonize their environment by planting many species of plants with various uses. This is usually practiced in their home gardens. Hence, the home gardens similar to other traditional home gardens in the country mentioned by Zemed Asfaw (1997), house diverse species of plants.

Very rare plant species of the area were encountered in these poorly developed gardens. This corroborates with earlier results which reported that home gardens serve as refuges for endangered useful species. Similar to most parts of the country (e.g., Zemed Asfaw, 1997), the home gardens in the study sites are located in close association with living houses, composed mainly of food plants.

The gardens provide plant materials for quick and easy access to foodstuffs, like maize (*Zea mays*),

haricot bean (*Phaseolus vulgaris*), tomato (*Lycopersicon esculentum*), pepper (*Capsicum annuum*), sugarcane (*Saccharum officinarum*), mango (*Mangifera indica*) and papaya (*Carica papaya*). These crops are produced in limited numbers for local consumption.

Non- cultivated food plants (wild edible plants)

More numbers of wild edible plant species were recorded in this study than the cultivated category. However, when the level of use is considered, there is more reliance on the few cultivated food plants. According to the informants, wild edible plants are consumed by households when there is failure in harvest of the cultivated food crops because of drought. At other times children enjoy most wild edible plants. The general public consumes wild edibles as snacks, supplement or refreshments. Therefore, they occasionally consider the wild edible plants as famine foods or foods for children. Similar studies from other parts of the country by Zemed Asfaw (1997) and Tesfaye Aawas (1997) as well as from other parts of the world (e.g., Cunningham, 2001; Grivetti, 2001) reported that wild edible plants help to prevent starvation and sustain life during drought season and social unrest.

The neglect of wild edible plants by the present human beings may end up with a reduction of dietary diversity and knowledge associated with wild edible plants (Grivetti, 2001). The observation

in the study area shows that the people rely on a very small range of crops as their food source. Regarding the knowledge associated with wild edible plants, the younger people could tell the uses of plants as food than for other uses. As a result more ethnobotanical data about the non-cultivated food plants were obtained from male youngsters. This may be because these individuals spend most of their time in more natural areas, herding cattle where they interact with many wild edible plants. Commonly, they take their snack from the gift of the wild vegetation, and rarely go back home for lunch. Staying longer time with the plants might have given them enough time to taste the plants and become familiar to them. Thus, they can identify, tell the names, compare the sweetness, texture, flavor and other characteristics. For example, children of the area very much like to eat the dry fruit of *Prosopis juliflora*. Though the plant is an alien species recently introduced to the area, they gave it a local name and call it "Yezinjero qitta" which means "bread of baboons". This indicates that the elderly people no longer keep their knowledge about wild edible plants than other use categories such as medicines, construction and fuel wood. This further asserts that wild edible plants are given less worth as food by the elderly people.

The local community use the non-cultivated plants more as medicine, fuel wood and construction material, than as food. Therefore, they are overused and as a result they are not frequently encountered in the area at the present time. The elderly informants have been talking with a great regret about the loss of most of the wild edible plants and most of the time and further affirmed that it is a result of habitat modification. This is also what is happening in other parts of the country namely the Cheffa District in southern Wolo (Bayafers Tamene, 2000). According to the

informants the wild edible plant species that are low in population are *Mimusops kummel*, *Ximenia americana*, *Cordia ovalis*, *Ziziphus spina-christi*, *Ziziphus mucronata* and *Rhus retinorrhoea*. Fruits of *Mimusops kummel* and *Ziziphus mucronata* are sold in the local market.

As a result of the preference ranking, the fruit of *Balanites aegyptiaca* was found to be the commonly used and tastier non-cultivated food plant. Most people prefer this plant, may be because it is more abundant than the other species. Hence, it is well known by all age groups of the community.

The analysis employed produced two major clusters of informants (Group 'A' and Group 'B', see Figure 2). The grouping differentiated informants that are from different localities with different plant associations as indicated in Table 5. The two localities are situated on the opposite sides of the center of the study area (Dheeraa) and have different altitudes (between 1400-1700 m a.s.l. for the localities of Group 'A' and between 1800-1850 m a.s.l. for the localities of Group 'B'). The vegetation type where the respondents Group 'A' are living is dominated by *Acacia-Balanites* community. The informants in Group 'B' are living in the plant community where *Grewia spp.* and *Rhus spp.* are dominant. Respondents who are living in the same village show more similarity in their knowledge than those from other villages. For example: Respondents 13, 15, 10, and 11 from group 'A' are residents of the same village and they show 100% similarities. Similarly, respondents 12, 5, and 6 from group 'B' are living in the same village and these also show 100% similarity (Table 5). This can reflect what has been said earlier by Balick and Cox (1996) that traditional societies of the world accumulated a wealth of knowledge as a result of prolonged interaction with the natural world in their surroundings.

Table 5. Clusters of respondents.

Major Clusters	Included Respondents	Main features
Group 'A'	13,15,10,11,9,1,3	All respondents are inhabitants of the study sites located in the western part of 'Dheera' where <i>Grewia spp.</i> and <i>Rhus spp.</i> are the commonly encountered wild edible plants
Group 'B'	12,14,4,6,8,5,7,2	All respondents are inhabitants of the study sites located in the eastern part of 'Dheera' where <i>Acacia spp.</i> and <i>Balanites aegyptiaca</i> are the commonly encountered wild edible plants

Nutraceutical plants

The products or by-products of food plants serve human beings in so many ways, one of which is medicine. Food plants that also offer medicine are known as nutraceutical plants. The term nutraceutical implies "food or parts of food that provide medical or health benefits" (Felice, 1999). In this study about 39% of the nutraceutical plant categories are products of the home gardens as vegetables and fruits. Though the informants mention these food plants as medicine, the community most frequently uses garlic (*Allium sativum*) and Lemon (*Citrus aurantifolia*). The use of the former is acknowledged, particularly as a spice and medicine. It is also mentioned in many literature sources being a healer for many diseases (Ferrie, 2003; Felice, 2004). The rest of the nutraceutical category of the study area comprises about 61% of the total plants giving food and medicine to the community. Among the wild edible plants categorized as nutraceutical plants, those most frequently used by the community are *Balanites aegyptiaca* and *Carissa spinarum* (*C. edulis*). This might be because these species of plants are more abundant than the other species. In Kabuye and Ngugi (2001), it is shown that *Carissa spinarum* on top of being eaten is also used by a number of communities in Kenya to strengthen bones and for general fitness. This plant is used for similar applications by the local community to the study area.

CONCLUSION

The people of the study area use a large number of food plant species. However, the reliance for daily diet is more on the cultivated food crops than on the non-cultivated (wild) edible plants. Wild edible plants are widely used by all age groups only during drought or famine season. The community does not attach credible importance of the plants in their nutritional value.

Some of the food plants studied are also used as medicinal plants. Such benefits of plants as food and medicine can be considered as the best sustenance of life. Therefore, attention should be given to these plants and creating awareness about the benefit of nutraceutical plants may speed up the initiation of conservation of plant resources.

As it is indicated in the literature and mentioned by the informants, deforestation, changes of habitats, environmental degradation and cultural

transformation have resulted in loss of the natural vegetation. These in turn become factors for loss of useful plants and the knowledge associated with these plant species. Hence, conservation strategy that allows the participation of the local people may help in rehabilitation of the natural environment. In addition to the general benefits of the food plants as part of the local vegetation, their gross potentials as food and other utilities implicate their importance in realizing household food self-sufficiency in the study area.

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Appendix 1: List of cultivated food plants in the study area.

Scientific name	Family name	Vernacular name	Habit	Parts used	Grown in
<i>Allium cepa</i> L.	Alliaceae	Qullubbii-diimaa	Bulbous	Bulb	Farm lands
<i>A. sativa</i> L.	Alliaceae	Qullubbii-adiii	Bulbous	Bulb	Farm lands
<i>Brassica carinata</i> A.Br.	Brassicaceae	Gommana	Herb	Leaf	Farm lands & home gardens
<i>Capsicum annum</i> L.	Solanaceae	Qaaraa	Herb	Fruit	Home gardens
<i>Carica papaya</i> L.	Caricaceae	Paappaayee	Tree	Fruit	Home gardens
<i>Carthamus tinctorius</i> L.	Asteraceae	Suufii	Herb	Seed	Farm lands & home gardens
<i>Casimiroa edulis</i> La Llave.	Rutaceae	Kasmiroo	Tree	Fruit	Home gardens
<i>Cicer arietinum</i> L.	Fabaceae	Shumburaa	Herb	Fruit	Home gardens
<i>Citrus aurantifolia</i> (Christm) Swingle	Rutaceae	Loomii	Tree	Fruit	Home gardens
<i>C. sinensis</i> (L.) Obs.	Rutaceae	Burtukaana	Tree	Fruit	Home gardens
<i>Coffea arabica</i> L.	Rubiaceae	Buna	Tree	Seed	Home gardens
<i>Cucurbita pepo</i> L.	Cucurbitaceae	Dabaaqula	Liana	Fruit	Home gardens

Appendix 1 (Contd).

Scientific name	Family name	Vernacular name	Habit	Parts used	Grown in
<i>Eragrostis tef</i> (Zucc.) Trontter	Poaceae	Xaafii	Herb	Seed	Farm land
<i>Helianthus annuus</i> L.	Asteraceae	Suufii-faranjii	Herb	Seed	Farm land & home garden
<i>Hordeum vulgare</i> L.	Poaceae	Garbuu	Herb	Seed	Farm land
<i>Lactuca sativa</i> L.	Asteraceae	Salaaxaa	Herb	Leaf	Home garden
<i>Lathyrus sativus</i> L.	Fabaceae	Gaayoo	Herb	Seed	Farm land
<i>Lens culinaris</i> Medik	Fabaceae	Misira	Herb	Seed	Farm land
<i>Linum usitatissimum</i> L.	Linaceae	Talbaar	Herb	Seed	Farm land
<i>Lycopersicon esculatum</i> Mill.	Solanaceae	Timaatimii	Herb	Fruit	Home garden
<i>Mangifera indica</i> L.	Anacardiaceae	Maangoo	Tree	Fruit	Home garden
<i>Musa x paradisiaca</i> L.	Musaceae	Muuzzii	Herb	Fruit	Home garden
<i>Phaseolus vulgaris</i> L.	Fabaceae	Boloqqee	Herb	Seed	Farm land & home garden
<i>Pisum sativum</i> L.	Fabaceae	Atara	Herb	Seed	Farm land
<i>Psidium guajava</i> L.	Myrtaceae	Zayitunaa	Tree	Fruit	Home garden
<i>Punica granatum</i> L.	Lythraceae	Romaana	Tree	Fruit	Home garden
<i>Saccharum officinarum</i> L.	Poaceae	Shonkoraa	Herb	Stem	Home garden
<i>Sorghum bicolor</i> (L.) Moench.	Poaceae	Maashingaa	Herb	Seed	Farm land
<i>Triticum</i> spp.	Poaceae	Qamadii	Herb	Seed	Farm land
<i>Zea mays</i> L.	Poaceae	Boqqooloo	Herb	Seed	Farm land & home garden

Appendix 2: List of non-cultivated food plants.

Voucher No.	Scientific name	Family name	Vernacular name	Habit	Parts used
052	<i>Acacia seyal</i> Del.	Fabaceae	Waaccu	Tree	Gum
018	<i>A. tortilis</i> Harms.	Fabaceae	Xadacha	Tree	Gum
046	<i>Acokanthera schimperi</i> (A.DC.) Benth.	Appocynaceae	Qaraaruu	Tree	Fruit
033	<i>Amaranthus graecizans</i> L.	Amaranthaceae	Caameraa	Herb	Leaf
050	<i>Balanites aegyptiaca</i> (L.) Del.	Balanithaceae	Badanaa	Tree	Fruit
015	<i>Capparis fascicularis</i> DC.	Capparidaceae	Haarangamaa-aadii	Shrub	Fruit
048	<i>Carissa spinarum</i> L. (<i>C. edulis</i>)	Appocynaceae	Agamsaa	Shrub	Fruit
127	<i>Cordia africana</i> Lam.	Boraginaceae	Waddeesaa	Tree	Fruit
027	<i>C. ovalis</i> R. Br. ex G. Don	Boraginaceae	Mandhera	Tree	Fruit
026	<i>Dovyalis abyssinica</i> (A. Rich.) Warb.	Flacourtiaceae	Koshmii	Shrub	Fruit
016	<i>Ehretia cymosa</i> Thonn.	Boraginaceae	Ulaagaa	Tree	Fruit
057	<i>Erythrina brucei</i> Schweinf.	Fabaceae	Waleenaa	Tree	Root
024	<i>Ficus sur</i> Forssk.	Moraceae	Habruu	Tree	Fruit
071	<i>F. sycamorua</i> L.	Moraceae	Odaa	Tree	Fruit
072	<i>F. vasta</i> Forssk.	Moraceae	Qilxuu	Tree	Fruit
020	<i>Fluggea virosa</i> (Willd.) Vigot.	Euphorbiaceae	Qacaaculee	Shrub	Fruit
085	<i>Grewia bicolor</i> Juss.	Tiliaceae	Haaroressa	Tree	Fruit
060	<i>G. ferruginea</i> Hochst. ex A. Rich	Tiliaceae	Doqono	Tree	Fruit
017	<i>G. mollis</i> Juss.	Tiliaceae	Haaroressa-arbaa	Tree	Fruit
125	<i>G. trichocarpa</i> Hochst. ex A. Rich	Tiliaceae	Gororaa	Tree	Fruit
066	<i>G. tenax</i> (Forssk.) Fiori	Tiliaceae	Qococee	Shrub	Fruit
051	<i>G. villosa</i> Willd.	Tiliaceae	Ogobdii	Tree	Fruit
008	<i>Lannea schimperi</i> (A. Rich.) Engl.	Anacardiaceae	Haandarkoo	Tree	Fruit
082	<i>Lantana camara</i> L.	Verbenaceae	Yeregna-qolo*	Shrub	Fruit
091	<i>Mimusops kumel</i> Bruce ex DC.	Sapotaceae	Olaatii	Tree	Fruit
	<i>Olea europaea</i> L. subsp. <i>cuspidata</i> (Wall. ex G. Don) Cif. L' Olivicoltores	Oleaceae	Ejersa	Tree	Fruit
094	<i>Oncoba spinosa</i> Forssk.	Flacourtiaceae	Aakuku	Tree	Fruit
126	<i>Opuntia ficus-indica</i> (L.) Miller	Cactaceae	Aabushuki/ Shonkaa	Shrub	Fruit
059	<i>Papea capensis</i> Eckl. & Zeyh.	Sapindaceae	Biiqqaa	Tree	Fruit
096	<i>Pentarrhinum hispidum</i> E. Mey.	Asclepiadaceae	Gaale	Liana	Fruit
098	<i>Prosopis juliflora</i> (Sw.) DC.	Fabaceae	Yezinjero-qita*	Tree	Fruit
099	<i>Rhus natalensis</i> Krauss	Anacardiaceae	Dabobessa	Shrub	Fruit
009	<i>Rhus retinorrhoea</i> Oliv.	Anacardiaceae	Haawaas/ Dabalucaa	Tree	Fruit
013	<i>Rumex nervosus</i> Vahl.	Polygonaceae	Dhangaggo	Shrub	Stem
103	<i>Scutia myrtina</i> (Burm. f.) Kurz.	Rhamnaceae	Budagaree	Tree	Fruit
111	<i>Syzygium guineense</i> (Willd.) DC.	Myrtaceae	Baddeessa	Tree	Fruit
112	<i>Tagetes minuta</i> L.	Asteraceae	Ajowaa	Herb	Leaf
124	<i>Toddalia asiatica</i> (L.) Lam.	Rutaceae	Arrabagubee	Shrub	Fruit
117	<i>Ximenia americana</i> L.	Oleaceae	Hudaa	Tree	Fruit
061	<i>Ziziphus mucronata</i> Willd.	Rhamnaceae	Qurquraa	Tree	Fruit
053	<i>Ziziphus spina-christi</i> (L.) Desf.	Rhamnaceae	Bulesaa	Tree	Fruit

* Amharic names.