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GATHERED FOOD PLANTS IN MOROCCO: THE LONG FORGOTTEN SPECIES IN ETHNOBOTANICAL RESEARCH

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ABSTRACT:

This paper presents an enthnobotanical review of available references with information on the consumption of gathered food plants in Morocco. A total of 246 species is recorded of which 162 belong to the herbaceous plants category distributed into 38 families. The trees/shrubs category counts 84 species belonging to 38 families. Recorded plants represent 6.3% of Morocco's vascular flora counting 3913 species. Within the herbaceous category, the Asteraceae is the richest family with 30 species, followed by the Lamiaceae and Brassicaceae with 18 and 13 species, respectively. Sixteen families are represented by one species. Within the trees/shrubs group, the richest family is the Fabaceae with nine species followed by the *Rosaceae* with six species. Twenty plant families are represented by one species only. For the small plants category, the aerial part, namely the leaves, prepared in the beqoul way are the most frequently used. For the trees/shrubs group, the fruits represent the part most frequently consumed. The role of women in developing and transmitting gathered food plants related knowledge is discussed. A brief comparison of Morocco with neighboring Mediterranean countries is also included. It is concluded that gathered food plants related knowledge and traditions are at risk of erosion. Thus, it is not only necessary to document wild food associated knowledge but the study of wild food plants can help uncover opportunities for the use of these plants in the future.

KEY WORD: *Gathered Food Plans, Beqoul, Beqoula, Ethnobotanical, Sahara, Morocco.*

INTRODUCTION:

Since the beginning of time, humans have used plants in different ways to satisfy their basic needs for food. The nutritional function of plants evolved in close relation with the evolution of mankind. Food practices and food habits are developed according to social groups and communities that develop them. Selected plants for use as food depend on available plant diversity resources.

Located in the north western corner of Africa, Morocco benefits from an exceptional position with Mediterranean sea in the north, the Atlantic ocean in the west and the Sahara desert in the south and east. The Rif and the Atlas mountains (High Atlas culminating in over 4000 m, the Middle Atlas culminating in over 3000 m and the Anti-Atlas) contribute substantially to shaping Morocco's territory.

As explained by Berkat and Tazi (2006), Morocco is dominated by the Mediterranean climate as rainfall occurs within the cool season and the warm season is dry. However, owing to its latitudinal location, and as well as the influence of the Atlantic Ocean and the Mediterranean Sea, and that of the powerful Atlas mountain ranges between the southern Saharan and the other zones, the climatic conditions are quite diverse. As also indicated by Berkat and Tazi (2006), major soil types include i) yermosols, lithosols, regosols, and sierozems which predominate because of mountains and large areas of the Saharan and arid zones; ii) rendzinas; iii) xerosols; iv) vertisols; v) gleysols; and vi) saline soils.

Climate diversity, soil diversity and ecosystem diversity are translated into plant diversity. Thus, Morocco enjoys one of the richest plant diversity in the the Mediterranean basin. According to the latest statistics, Morocco's vascular flora counts 3913 species, 155 families and 981 genera (Fennane & Ibn Tattou, 2012). The three richest plant families are the Asteraceae in the first place with 550 species, followed by the Fabaceae and the Poaceae with 424 and 355 species, respectively (Fennane & Ibn Tattou, 2012). Furthermore, the number of strictly Moroccan endemic taxa is 640, representing 16.3% of the national total, in addition to 280 strictly endemic subspecies (Fennane & Ibn Tattou, 2012).

Morocco is also characterized by its cultural diversity. The country's ancient history and contemporary evolution allowed the development of a specific culture which intrinsically embodies a myriad of visibly distinct subcultures. One of the areas this cultural diversity expresses itself relates to food. Apart from Morocco's rich traditional cuisine, the country has also a rich tradition of using wild plants as food. The people of Morocco, particularly women in rural areas, know how to take advantage of available plant diversity to make delicious nutritional dishes especially during the spring season when wild plant availability is at its highest. Unfortunately, this tradition has not been investigated and information on wild food plants is simply lacking.

In the case of the Sahara and desert areas, Monteil (1953) provided insightful information regarding the local Sahara vernaculars and uses of gathered food plants. Bellakhdar (1978) also pointed out the importance of gathered food plants for nomads and Sahara people. In 1991, Birouk et al. inventoried the flora of Sahara provinces with mention of the food use of wild plants as part of adopted use categories. Tanji and Nassif (1995) identified several weeds as sources of food. Hmamouchi (1997) published an article on plants in which food plants are singled out. Recently, a circum-Mediterranean ethnobotanical field survey for wild food plants conducted during the years 2003-2006 in seven Mediterranean countries

included Morocco (Hadjichambis et al., 2008). This study contains some information on Morocco's use of wild food plants. However, the most substantial insights on the use of gathered plants in human consumption are found in Bellakhdar's study on medicinal plants (1997). The author provides information on wild food plants and their use noting the parts used, preparation ways, and relevant aspects.

Visibly, there is some information on wild food plants but it is scattered in botanic and ethnobotanical works. Most importantly, there are no specific studies on gathered food plants similar to those conducted in other Mediterranean countries and regions (Tardío et al., (2005) for Central Spain, Tardío et al. (2006) for Spain, Della et al. (2006) for Cyprus, Ozbucak et al. (2006) for Turkey, Lentini and Venza (2007) for Sicily, Pardo-de-Santayana et al.(2007) for Spain and Portugal and Ali-Shtayeh et al. (2008) for Palestine.

The authors of the circum-Mediterranean ethnobotanical field survey argue that the use of local Mediterranean plants is at the brink of disappearance (Hadjichambis et al., 2008). They point out the critical need to understand how these plants are consumed, when and how consumption patterns change over time and place in the Mediterranean. The study stresses out the importance to study prevailing systems before this knowledge disappears and find innovative ways of infusing them to the future Mediterranean generations (Hadjichambis et al., 2008). Moreover, today's consumers in different countries are looking for health boosting benefits from natural foods. Gathered food plants are increasingly considered and effectively used as sources of such benefits.

The goal of this paper is to contribute to filling existing information gap and demonstrate not only the richness of wild gathered food plants in Morocco but the human engineering behind their use. More specifically, the aim of this paper is to:

- bring into light the diversity of wild food plants in Morocco,
- document the traditional practices and knowledge systems pertaining to wild food plants in the country..

METHODS:

Over the years, collecting ethnobotanical data on wild food plants has always been part of varying research activities conducted in different parts of Morocco particularly in mountain communities. Therefore, the methods used are diverse. In some situations, the questions on food plants were integrated in survey questionnaires. In other situations, the food plants were raised in focus group discussions with women or semi-structured interviews with key informants. The last and most important primary data collection regarding gathered food plants was that achieved in conjunction with an ethnobotanical exploration conducted during the years 2008-2012 in Marmoucha in the Middle Atlas. Semi structured interviews and focus groups were conducted with different groups. Staying for weeks in Marmoucha

communities provided in-depth insights. In addition, the bibliographic research has been an important methodological component, especially for the Sahara areas of Morocco.

Because of their importance and their frequent use, few terms need definition. In this paper, the term 'gathered' is used to indicate plants collected from the wild; thus the terms 'gathered' and 'wild' are used interchangeably. The term beqoul is defined as any wild herbaceous plant that is used entirely or partially as food in the large sense, including condiments and spices. In local culinary traditions, it refers to the mixture of several wild food plants used to prepare a springtime meatless dish highly prized by rural people especially in mountainous areas. However, the term beqoula is specifically used to refer to species of the Malvaceae family, particularly of the Malva genus and the Lavatera genus to a lesser degree. The term beqoula is also used to indicate the traditional dish prepared using these plants.

The plant nomenclature used is based on the two tomes of Flore Vasculaire du Maroc, inventaire et chorologie (Fennane & Ibn Tattou, 2005; Ibn Tattou & Fennane, 2008).

RESULTS AND DISCUSSIONS:

Tables 1 and 2 present a list of wild food plants in Morocco organised in two plant categories, the herbaceous and the trees-shrubs group. All reported plants are ordered alphabetically by plant families. For each species, presented information include the most common vernaculars used in Morocco, the part (s) used, the consumption mode and some of the references reporting the food use of the plant. A total of 246 species is recorded of which 162 belong to the herbaceous plants category and 84 to the trees/shrubs group. Recorded plants represent 6.3% of Morocco's vascular flora counting 3913 species. Plants in the first category belong to 38 families. Plants of the trees/ shrubs group also belong to 38 families. In the herbaceous category, eight families contribute 102 species and 20 families contribute one species each. Figure 1 presents the eight richest families in terms of food plants provisioning. With 30 food plants, the Asteraceae tends to provide the largest number of gathered food plants, followed by the Lamiaceae and the Brassicaceae in third place with 18 and 13 species, respectively.

Parts consumed and consumption patterns

As clearly indicated in table 1, in terms of parts used in food consumption within the category of herbaceous plants, the aerial part, namely young leaves and tender stems, is the most frequently used part. With the exception of few food plants which are consumed exclusively raw in salads, most plants are cooked in beqoula, in beqoul, used as vegetable in meat-based dishes or as a garnish for couscous sauce.

In rural areas, wild leafy greens are eaten raw as people are effectively in the wild, particularly children, shepherds or women as they gather the plants but once at home, gathered plants are preferably cooked. A cooked beqoul dish eaten with bread is the most frequent consumption mode of wild plants in rural Morocco. Another common rural dish based on wild gathered plants is meatless couscous moistened with a

gravy prepared based on any mixture of greens and milk. Salads with raw leafy greens acquired from local markets or from vendors on roadsides is an urban practice. Examples of wild food plants eaten exclusively raw in different regions of Morocco include *Ammi majus*, *Astragalus baeticus*, *Centaurea diluta*, *Limonium sinuatum* subsp. b*eaumierianum*, *Smyrnium olusatrum*, *Silybum marianum*, T*ragopogon porrifolius*, and *Trichodesma* calcarata.

In mountainous areas, people prize considerably the traditional springtime meatless beqoul dish. The latter may include any combination of gathered food plants depending primarily on local preferences and availability of particular plants in surrounding fields. Often, plants are gathered within walking distances from housing compounds. The most important criteria required in the selection are the young and tender qualities of the plant and preferred taste qualities (bitterness, sweetness, acidity, etc). Some plants are well known for their acidic properties such as *Portulaca oleracea* L. as well as different species of the *Rumex* genus. Other plants are much prized for their sweet taste such as various edible species of the *Scorzonera* genus.

Regarding the cooking process, plants are cooked in either one of two ways. After being carefully sorted out, washed and nicely chopped, one way consists of boiling in little water, draining, and then seasoning. The second way is steaming followed by seasoning. The latter includes a number of ingredients (onions, garlic, tomatoes, coriander, salt, pepper, cumin, and olive oil). It must be pointed out that the beqoul preparation mode has evolved a great deal over the years. According to a good many Berber women from different regions of Morocco, the old way of preparing beqoul was to beat the plants with a rock salt until homogenization, 3 to 4 tablespoons of olive oil are added to the mix which is cooked over charcoal fire. Some people may add chili peppers according to taste. Nowadays, garlic, tomatoes, preserved lemon, pepper and cumin and many more other ingredients are used.

Examples of wild food plants that are very likely to be included in the beqoul dish are

Amaranthus albus, *Amaranthus blitoides*, *Anchusa italica*, *Atriplex patula*, *Beta macrocarpa*, *Borago officinalis*, *Capsella bursa-pastoris*, *Convulvulus arvensis*, *Emex spinosa*, *Launaea nudicualis*, *Leontodon saxatilis*, *Portulaca olearecea*, *Silene vulgaris*, *Sonchus asper*, *Sonchus oleraceus*, *Sonchus pinnatifidus*, *Sonchus tenerrimus*, *Taraxacum obovatum*, and *Urtica urens*.

Within the trees-shrubs group, the most frequently consumed part is the fruit followed by leaves (Table 2). Often, fruits, particularly berries and acorns are eaten fresh. Examples of edible berries yielding trees and shrubs are *Arbutus unedo*, *Berberis hispanica*, *Capparis decidua*, C*eltis australis*, *Combretum aculeatum*, *Crataegus laciniata*, *Crataegus monogyna*, *Grewia bicolor*, *Grewia tenax*, *Lycium barbarum*, *Lycium intricatum*, *Lycium europaeum*, *Maerua crassifolia*, *Nitraria retusa*, *Periploca laevigata*, Pistacia atlantica, *Rhus albida*, *Rhus tripartite*, *Rubus ulmifolius*, *Salvadora persica*, and *Withania frutescens*.

In the case of seeds, these are essentially processed into flour. Most often this flour is mixed with flour from cereals, namely barley or sorghum. The mix is used to make flat bread, porridge or couscous. In the Sahara, gathered seeds contribute considerably to the people's food basket. At times, they are gathered and stored for later uses. In addition, another frequent use of some seeds regardless of their botanic origins (small plants, trees or shrubs) is the use as condiment or as a spice. Examples include *Foeniculum vulgare*, *Melilotus indica*, *Melilotus sulcatus*, and *Sinapis alba*.

In Morocco, the floristic richness allows the availability of a variety of plants as herbs. Every region of the country benefits from the availability of aromatic plants that are used to flavour tea, coffee, buttermilk, melted butter (smen) and a good many traditional preparations such as snails and zammitta. Examples of such plants include various species of the *Thymus* genus, the *Salvia* genus and other species particularly from the *Lamiaceae* family. Moreover, there are plants known for their properties to curdle milk and they are used for this purpose. Examples of such plants include *Cynara baetica* and *Cynara humilis*.

Two characteristics stand out as major features of consuming wild food plants in Morocco. These are seasonality, regional variability, and urban-rural differences. In some areas where irrigation is practiced such as oasis and other irrigated zones some edible weeds are taken from fields during the summer or whenever available. However, because of the nature of the gathering activity, the consumption of food plants is primarily a seasonal tradition and often associated with springtime when food plants quality, diversity, and availability in the wild are at their highest. This is confirmed by the results of the ethnobotanical study in the cercle of Ouezzane showing that 58% and 34% of consumed wild plants are available during the spring and summer, respectively (Hadjichambis et al., 2008).

Secondly, not all gathered food plants are widely used in Morocco. Some plants are consumed in one region but not eaten in another region. Each region of the country has its own variant of gathered food plants and the ways they are prepared. Southern areas are likely to be influenced by the natural availability of argan forests while northern part of Morocco is rich with highly diversified ecosystems. In addition to the availability of food plants, regional food habits and practices are culturally bound. Decisions to use or not to use a particular plants are primarily cultural. In Marmoucha for example, *Portulaca olearecea* is widely available in the spring and summer in irrigated parcels, but it is less frequently used than in other regions of Morocco where people have to purchase this plant. Another striking example is *Asparagus* species, found in most forests and thus easily available to neighboring communities. These species are not as commonly consumed as expected; rather they are effectively gathered and sold to local collectors to be exported. The most concrete difference in gathered food plants consumption is the urban rural differential. Gathered food plants use is essentially a rural phenomenon. In rural Morocco, in the past and nowadays, the beqoul dish is considered the main dish of the day and it is eaten with bread. In urban areas, what is

often prepared is the *beqoula* based on Malva species and *Portulaca oleracea*, often considered a salad or a side dish.

In conjunction with the consumption of wild plants is the development of seasonal and/or permanent market activities regarding these plants. Gathered plants are frequently sold in local markets and on roadsides. Examples include bundles of *Asparagus* sp., *Malva* sp., *Portulaca*, and *Scolymus hispanicus*. Examples of fresh fruits sold on roadsides and local markets include the fruits of *Arbutus unedo* in the Taza-Oujda, Azilal-Beni-Mellal roads, the acorns of *Quercus suber* particularly in the Mamora region, and the drupes of *Ziziphus lotus* in the Rhamna, Oued Zem-Boujaad roads. These fruits may also be sold in large cities.

The role of women in developing, preserving and transmitting gathered food related practices and local knowledge

As noted earlier, Morocco's plant diversity allows the gathering of a large number of edible plants available in the wild. But it takes human engineering, skills, and knowledge to transform extremely tiny seeds into delicious nutritious porridge or to detodetoxify presumed toxic plants through proper cooking and preparation. The world over and Morocco is no exception, the area of edible wild plants is the privileged domain of women. Women, especially those living in rural areas, are the persons most familiar with edible plants, where and when to collect, and how to turn them into good food throughout the year (Nassif, 2009). In Mountain areas, knowledge and use of wild plants for human consumption are still quite strong. Most women interviewed on this question, old and young alike, acknowledge their familiarity with edible plants available in their surroundings. The transmission of this knowledge continues according to local traditions, as girls accompany their mothers to neighbouring fields, gather plants near water sources, or when they accompany their family members in their pastoral journey.

The role of wild plants in Mountain communities extends the food function. At times, the preparation of a special dish is considered an occasion for sharing, exchange and community strengthening. This is expressed in the words of a young woman from Aït Bazza, "Each time I prepare a dish based on the petals of *Papaver rhoes*, I share with my neighbour, and she does the same when she prepares this dish".

Unfortunately, the consumption of wild food plants is not evenly and equally practiced throughout Morocco. In urban areas, the use of wild plants for human consumption is hardly practiced and even in rural areas of the coastal plains with strong urban influences, the use of wild food plants is increasingly disappearing. In these areas, younger generations know very little if anything at all on edible wild plants. Most importantly, their unfamiliarity with gathered food plants is intrinsically associated with negative perceptions and erroneous information on the plants and the people who use them.

A comparative perspective on gathered food plants

Morocco is not unique with respect to gathered food plants. The consumption of wild plants is widespread throughout the world. Most importantly, some countries of the Mediterranean basin tend to use the same wild plants consumed in Morocco. For example, the consumption of *Silene vulgaris* is widespread in several Mediterranean countries (Tardío et al., 2005; Tardío et al., 2006; Della et al., 2006; Ozbucak et al., 2006; Pardo-de-Santayana et al., 2007).

During the years 2003-2006, as part of the RUBIA project, a circum-Mediterranean ethnobotanical field survey for wild food plants was conducted in selected sites in seven Mediterranean countries including Morocco. In the latter, fieldwork was conducted in the cercle of Ouezzane. The results of the study show that 55% of the 294 taxa recorded in the seven countries were used in Morocco in common with at least one more country (Hadjichambis et al., 2008). More specifically, it is noted that in the cercle of Ouezzane, the following species are used: i) leaves of *Amaranthus retroflexus* eaten raw or cooked in a traditional preparation, ii) leaves of *Portulaca oleracea* consumed cooked, and iii) the flowering buds-fruits of *Capparis spinosa* consumed crushed. *Portulaca oleracea* is considered a good example of a circum-Mediterranean plant. It is popular in six out of the seven countries and its leaves are used raw in salads in Cyprus, Crete and Albania or cooked in Egypt, Morocco and Spain (Hadjichambis et al., 2008).

In a study on Mediterranean gathered food plants, sixteen plants were considered of widespread use (> 33% of the 62 zones) in the Mediterranean. These were *Allium ampeloprasum, Arbutus unedo, Asparagus acutifolius, Borago officinalis, Cichorum intybus, Chondrilla juncea, Crataegus monogyna, Foeuniculum vulgare, Malva sylvestris, Rorippa nasturtium aquaticum, Rubus ulmifolius, Papaver rhoeas, Portulaca oleracea, Scolymus hispanicus, Silene vulgaris,* and *Sonchus oleraceus* (Rivera et al., 2006). With the exception of *Allium ampeloprasum,* all the 15 remaining species are also used in Morocco.

The results of other studies show that the most popular wild food plants traditionally used in the Madrid province and other regions in Spain are *Scolymus hispanicus* and *Silene vulgaris* (Tardío et al., 2005; Tardío et al., 2006). *Silybum marianum* and *Cichorium intybus* were also used, especially during periods of scarcity (Tardío et al., 2005). According to Tardío et al., some of these species are still so popular that they are considered like a trademark of the local gastronomy. For example, *Scolymus hispanicus* and *Silene vulgaris* are considered trademark in many regions in the Center and Western parts of Spain (Tardío et al., 2006). All reported species are also commonly used in Morocco. Most importantly, the use of local names reveal some of the cross-cultural similarities. In Spain, 'tagarnina' is one of the local names for *Scolymus hispanicus* (Tardío et al., 2006) while in Morocco, one the vernaculars used to indicate *Scolymus hispanicus* is 'guernina'.

CONCLUSIONS:

In Morocco, rural people, particularly Mountain people are gatherers of native plants and fruits. Because of their natural environments where forests and rangelands provide a significant diversity of edible species. Consumption of wild plants is an ancient tradition in mountain areas of Morocco and continues to be part of the eating habits in these communities.

Unfortunately, gathered food plants did not attract any considerable ethnobotanical research interest in the country where ethnobotanical studies have almost exclusively focused on medicinal plants. As a result, wild food plants have been the least studied and the least known. There is a need to study these plants not only for a botanical perspective but also in terms of their importance as sources of nutritional food and as part of the traditional heritage of communities using these plants.

Present and future generations may be interested in eating beqoul dishes if they learn about them. Over centuries, wild plants have been consumed and are still eaten in particular regions of the country. For example in Marmoucha (Middle Atlas), the tradition of wild food plants consumption is still strong. Women as well as young girls are very knowledgeable in this regard. But this is not the case in plain areas and urbanized agglomerations which are influenced by urban food habits. Consequently, gathered food plants related knowledge and traditions are much at higher risks of erosion. Most importantly, the study of wild food plants can help uncover opportunities for the use of these plants in the future.

Besides, the use of gathered plants as food does not threaten these species given the existing plant diversity and the abundance of most of selected plants. On the contrary it is the abusive exploitation for such resources for market and exports that put these plants in danger.

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REFRENCES:

Ali-Shtayeh, A. et al. 2008. Traditional knowledge of wild edible plants used in Palestine. *Journal of ethnobiology and ethnomedicine* 4:13.

Bellakhdar, J. 1978. Médecine traditionnelle et toxicologie Ouest-sahariennes : Contribution à l'étude de la pharmacopée marocaine. Editions Techniques Nord-Africaines, Rabat. 357 p.

Bellakhdar, J. 1997. La pharmacopée marocaine traditionnelle: médecine arabe ancienne et savoir populaires. Ibis Press, Paris. 760 pp.

Berkat, O. & Tazi, M. 2006. Morocco. Country Pasture/ Forage Resource profiles/ FAO. www.fao.org/ag/AGP/.../Morocco/Morocco.htm

Birouk, A., Lewalle J. & Tazi, M. 1991. Le patrimoine végétal des provinces sahariennes du Maroc. Actes Editions. Institut Agronomique et Vétérinaire Hassan II. p. 78

Della, A., Paraskeva-Hadjichambi, D. and Hadjchambis, A. 2006. An ethnobotanical survey of wild edible plants of Cyprus. *Journal of ethnobiology and ethnomedicine* 2:34.

Fennane, M. et Ibn Tattou M. 2005. Flore vasculaire du Maroc inventaire et chorologie. Institut Scientifique, Université Mohammed V – Agdal Rabat. Volume 1.

Fennane, M. et Ibn Tattou, M. 2012. Statistiques et commentaires sur l'inventaire actuel de la flore vasculaire du Maroc. Bulletin de l'Institut Scientifique, Rabat, section Sciences de la Vie, n° 34 (1), p. 1-9.

Hadjichambis, Ch., et al. 2008. Wild and semi-domesticated food plant consumption in seven circum-Mediterranean areas. *International journal of food sciences and nutrition* 59: (5): 383-414.

Hmamouchi, M. 1997. Plantes alimentaires, aromatiques, condimentaires, médicinales et toxiques au Maroc. CIHEAM – Options Méditerranéennes, vol. 23 : 89-108.

Ibn Tattou M. et Fennane, M. 2008. Flore vasculaire du Maroc inventaire et chorologie. Institut Scientifique, Université Mohammed V – Agdal Rabat. Volume 2.

Lentini , F. and Venza, F. 2007. Wild food plants of popular use in Sicily. *Journal of Ethnobiology and Ethnomedicine* 3:15.

Monteil, V. 1953. Contribution à l'étude de la flore du Sahara occidental. De l'Arganier au Karite. Catalogue des plantes connues des Tekna, des Rguibat et des Maures. Volume II. Université Mohammed V-Agdal. Rabat, Maroc.

Nassif, F. 2009. Mountain women in Morocco: Sustaining livelihoods in Aït Bazza community. INRA – CRRA Settat.

Ozbucak, T. B., Kutbay, H. and Akcin, O. E. 2006. The contribution of wild edible plants to human in the Black Sea region of Turkey. *Ethnobotanical leaflets* 10: 98-103.

Pardo-de-Santayana, M., Tardío, J., Blanco, E., Carvalho, A.M., Lastra, J., San Miguel, E. & Morales, R. et al. 2007. Traditional knowledge of wild edible plants used in the northwest of the Iberian Peninsula (Spain and Portugal): a comparative study. *Journal of ethnobiology and ethnomedicine* 3: 27.

Rivera, D.; Obon, C.; Heinrich, M., Inocencio, C., Verde, A., and Fajardo, J. 2006. Gathered Mediterranean food plants – Ethnobotanical investigations and historical development. In: Heinrich Muller Galli (eds): local Mediterannean food plants and Nutraceuticals Basel, Karger, vol. 59, 18-74.

Tanji, A. and F. Nassif. 1995. Edible weeds in Morocco. *Weed Technology*. Vol. 9 :617-620.

Tardío, J., Pardo-de-Santayana, M. and Morales, R. 2006. Ethnobotanical review of wild edible plants in Spain. *Botanical Journal of the Linnean Society* 152: 27-71.

Tardío, J., Pascual, H. and Morales, R. 2005. Wild food plants traditionally used in the province of Madrid, Central Spain. *Economic Botany* 59 (2) pp. 122-136.

Table 1. Gathered annual/perennial herbaceous plants consumed as food, condiments, and spices in different regions of Morocco as reported in the literature

No.	Scientific name	Most common vernaculars	Consumed part	Consumption mode	Regions where frequently used	References
	Acanthaceae					
1	*Blepharis ciliaris* (L.) Burtt	Lfelch			Sahara	Birouk et al., 1991
	Aizoaceae					
2	*Aizoon canariense* L.	tezza, taghassoult	Seeds	Processed into flour	Sahara, arid zones	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991
3	*Aizoon hispanicum* L.	dezza, tliyiye, taghassoult	Seeds	Processed into flour	Sahara, arid zones	Bellakhdar, 1978; Birouk et al., 1991; Tanji, 2005
4	*Mesembryanthemum* crystallinum L.	lghassoul	Seeds	processed into flour	Sahara	Bellakhdar, 1978; Birouk et al., 1991
5	*Mesembryanthemum nodiflorum* L.	lghassoul	Seeds	processed into flour	Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991
6	*Opophytum theurkauffii* (Maire) Maire = *Aizoon theurkauffii* Maire = *Mesembryanthemum theurkauffii* (Maire) Maire	afzou	Seeds	Processed into flour, mixed with barley or sorghum flour to make flat bread. Boiled in salted water & smached into puree by the Ouled Dlim	Sahara, very prized by Rguibat people	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978, 1997
7	*Sesuvium portulacastrum* (L.) L.	erwi				Birouk et al., 1991
	Alliaceae					
8	*Allium roseum* L.	toum lberry	Entire plant	Vegetable, condiment	In the countryside, the plant used as a substitute for	Bellakhdar, 1997

					onions & leeks	
9	*Allium triquetrum* L.	toum lberry	Entire plant	Vegetable, condiment	Consumed as onions	Bellakhdar, 1997
	Amaranthaceae					
10	*Amaranthus albus* L.	blitou	Leaves	Cooked in beqoul	Marmoucha (Middle Atlas)	Nassif, unpublished data
11	*Amaranthus blitoides* S. Watson	blitou, saqta	Leaves	Cooked in beqoul	Marmoucha (Middle Atlas)	Nassif, unpublished data
12	*Amarnanthus retroflexus* L.	blitou	Leaves	Cooked in beqoul	Marmoucha (Middle Atlas)	Nassif, unpublished data
	Amaryllidaceae					
13	*Pancratium trianthum* Herb.	amajij, teylum	Bulbs		Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991
	Apiaceae					
14	*Ammi majus* L.	tlaylan, traylal	Stems	Raw	Countryside	Bellakhdar, 1997
15	*Ammodaucus leucotrichus* Cosson	lkamoun soufi, kamoun	Seeds	As a substitute for ordinary cumin	Sahara	Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997
16	*Ammoides pusilla* (Brot.) Breistr. = *Ammoides verticillata* (Desf.) Briq.	nounkha	Aerial plant	Condiment for preparing snails' broth	Oujda, Fès	Bellakhdar, 1997
17	*Anethum foeniculoides* Maire & Wilczek	lgezzah, lkezziza	Aerial part, seeds			Hmamouchi, 1997
18	*Apium nodiflorum* (L.) Lag. = *Sium nodiflorum* L. = *Helosciadum nodiflorum* (L.) Koch	ziyata	Aerial part	Raw (salads), cooked with beqoula	Countryside	Bellakhdar, 1997
19	*Crithmum maritimum* L.		Aerial part			Birouk et al., 1991; Hmamouchi, 1997

20	*Deverra denudata* (Viv.) Pfisterer & Podlech = *Pituranthos chloranthus* (Coss. & Dur.) Schinz	lgezzah, zaâzaâ, legziziha	Shoots, core of roots	Young shoots & core of roots eaten raw	Sahara Touaregs	Bellakhdar, 1997
21	*Deverra scoparia* Cosson & Durieu = *Pituranthos scoparius* (Coss. & Dur.) Schinz	attach, tatakht	Shoots, core of roots, aerial part	Young shoots & core of roots eaten raw, nomads use the plant to perfume meat & flat bread	Sahara Touaregs & nomads	Bellakhdar, 1997
22	*Ferula communis* L.	Boubal	Unopen inflorescences	Steamed or cookded under the ash, smached, seasoned with olive oil & spices.	Countryside	Bellakhdar, 1978, 1997; Hmamouchi, 1997
23	*Foeniculum vulgare* Mill.	besbes, wamssa	Seed, stems	Seeds as condiment to perfume bread, cakes, or zamitta, cakes. Young stems eaten raw or cooked as a vegetable with meat	Widespread	Bellakhdar, 1978, 1997
24	*Ridolfia segetum* Moris	tebch	Stems	Raw or cooked as a legume in couscous	Chaouia, Douakkala	Tanji & Nassif, 1995; Bellakhdar, 1997; Tanji, 2005
25	*Smyrnium olusatrum* L.	lhyyar	Stems, young shoots	Raw	Bergers	Bellakhdar, 1997
	Asclepiadaceae					
26	*Glossonema boveanum* (Dec.) Dec. = *Cynanchum boveanum* Dec.	achakan, graynat achakan	Flowers		Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991
	Asparagaceae					
27	*Asparagus altissimus* Munby	sekoum	Berries	Fresh	Sahara	Monteil, 1953; Bellakhdar, 1978, 1997
	Asphodelaceae					
28	*Asphodelus refractus* Boiss.	berwag, taziya	Seeds, aerial part	Processed into flour to make cakes or porridge, as	Sahara	Birouk et al., 1991; Bellakhdar, 1997;

				a delicacy, mixed with crushed dried dates; leaves fried, boiled, or cooked in the manner of beqoula or in couscous sauce		Hmamouchi, 1997
29	*Asphodelus tenuifolius* Cav.	berwag, taziya	Seeds, aerial part	Processed into flour to make cakes or porridge, as a delicacy, mixed with crushed dried dates; leaves fried, boiled, or cooked in the manner of beqoula or in couscous sauce	Sahara	Monteil, 1953 ; Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997
	Asteraceae					
30	*Aaronsohnia pubescens* (Desf.) Bremer & Humphries = *Matricaria pubescens (*Desf.) Sch. Bip.	Ghezim sghir, guertouf, lerbyan	Leaves	Perfume and preserve melted butter	Sahara	Bellakhdar, 1997
31	*Artemisia atlantica* Cosson & Durieu var.*maroccana* Maire	chih	Leaves	Perfume tea	Atlas mountains	Bellakhdar, 1997
32	*Artemisia herba-alba* Asso	Chih, izri, ifssi	Aerial part	Perfume tea, coffee, basic condiment in cooking snails	Widespread	Bellakhdar, 1997
33	*Brocchia cinerea* (Delile) Vis.	gertoufa, rebrouba	Aerial part before flowering	Perfume milk, tea, used as a bubstitute for mint or tea	Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991; Hmamouchi, 1997
34	*Centaurea diluta* Aiton	Daâga, chefraj, zmamour	Stems	Raw	Chaouia	Tanji & Nassif, 1995
35	*Chrysanthoglossum trifurcatum* (Desf.) B. H.	Tayright	Aerial part	perfume tea	Nomads in the Dra region	Bellakhdar, 1997

	Wilcox & al. = *Chrysanthemum trifurcatum* Desf.					
36	*Cichorium intybus* L.	Bouâgad, adghorrro	Leaves	Young leaves eaten raw (salads), cooked in soups	Widespread	Bellakhdar, 1997
37	*Cynara baetica* (Spreng.) Pau = *Cirsium baeticum* Spreng.	Tifghit	Flower (rennet)	Milk curdling	Rif & Middle Atlas mountains	Nassif, upublished data
38	*Cynara cardunculus* L. = *Cynara silvestris* Lam.	Lqoq lberri	Bottom of receptacles	Cooked as a vegetable similar to artichoke	Widespread	Bellakhdar, 1997
39	*Cynara humilis* L.	Timet	Flower (rennet) , bottoms of receptacles	Same way as artichoke, milk curdling	Countryside	Tanji & Nassif, 1995; Bellakhdar, 1997
40	*Echinops spinosissimus* Turra = *Echinops spinosus* L.	Taskra	Stems	Raw or cooked with meat. Roots & heads also edible	Widespread	Birouk et al., 1991 Bellakhdar, 1978, 1997
41	*Endopappus macrocarpus* Sch. Bip. = *Chrysanthemum macrocarpum* (Sch. Bip) Batt.	Gahwan	Leaves	Young leaves eaten raw	Sahara	Bellakhdar, 1997
42	*Geropogon Hybridus* (L.) Sch. Bip.	lahyat lâatrous, lguiz roumi, talma	Leaves	Raw	Chaouia	Nassif, unpublished data
43	*Glebionis coronaria* (L.) Spach = *Chrysanthemum coronarium* L.	Gahwan, kraâ djaja, ghadou mlal	Stems	Eaten raw after peeling	Widpread	Nassif, unpublished data
44	*Launaea capitata* (Spreng.) Dandy = *Launaea glomerata* Hook.	Elghorram, Ouden ennaâja,	Aerial part	Raw (salads), cooked with meat	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997

		greynat leghzal				
45	*Launaea fragilis* (Asso) Pau = *Launaea resedifolia* subsp. *longiloba* (Boiss.& Reuter) Maire	Laâdida, makr	Aerial part	Raw (salads), cooked with meat	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
46	*Launaea nudicaulis* (L.) Hook.	Lgherrima, gherrimet lahmar	Aerial part	Raw (salads), cooked with meat	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
47	*Leontodon saxatilis* Lam.	Tizodia	Leaves	Cooked in Beqoul	Marmoucha	Nassif, unpublished data
48	*Reichardia tingitana ssp.* Discolor (L.) Roth.	Adgherni			Sahara	Birouk et al., 1991
49	*Rhaponticum acaule* (L.) DC. = *Cynara acaulis* L. = *Leuzea acaulis* (L.) Holub = *Stemmacantha acaulis* (L.) Dittrich	Tafgha	Bottoms of receptacles	Raw or cooked like artichoke	Widespread	Bellakhdar, 1997
50	*Scolymus hispanicus* L.	Guernina, taghediwt	Stems after being peeled from spines	Raw or cooked as a vegetable with meat	Widespread	Tanji & Nassif, 1995; Bellakhdar, 1997; Tanji, 2005
51	*Scolymys maculatus* L.	Guernina, taghediwt	Stems after being cleaned from spines	Raw or cooked as a vegetable with meat	Widespread	Bellakhdar, 1997
52	*Scorzonera undulata* Vahl.	Alam, lguiz	Leaves, roots, heads	Leaves raw (salads), roots eaten raw or cooked in water, heads consumed as appetizers	Children & sheperds	Bellakhdar, 1997
53	*Silybum marianum* (L.) Gaertn.	Tawra, bouzerwal	Bottoms of receptacles	Raw	Shepherds	Bellakhdar, 1997

54	*Sonchus asper* (L.) Hill.	tifaf	Leaves	Raw (salads) or cooked in beqoul	Oasis, mountain areas	Bellakhdar, 1997; Nassif, unpublished data
55	*Sonchus oleraceus* L.	tifaf, tilfaf, tadgarnit	Leaves, stems	Raw (salads) or cooked in beqoul	Oasis, mountain areas	Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997; Nassif, unpublished data
56	*Sonchus pinnatifidus* Cav.	tifaf, tilfaf	Leaves, stems	Raw (salads) or cooked in beqoul	Oasis, rural areas	Bellakhdar, 1978, 1997
57	*Sonchus tenerrimus* L.	tifaf, tilfaf	Leaves, stems	Raw (salads) or cooked in beqoul	Oasis, rural areas	Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997
58	*Taraxacum obovatum (*Willd.) DC.	Iwjdam	Leaves	Raw (salads) or cooked in beqoul	Beni Mguild, Marmoucha	Bellakhdar, 1997; Nassif, unpublished data
59	*Tragopogon porrifolius* L.	Alamen, lguiz, lahyat lâatrous	Roots, leaves	Raw	Marmoucha, Chaouia	Nassif, unpublished data
	Boraginaceae					
60	*Anchusa italica* Retz. = *Anchusa azurea*	lsan tour, illes oufounas	Leaves	Cooked in beqoul, in beqoula	Mountain areas, Marmoucha	Bellakhdar, 1997, Nassif, unpublished data
61	*Borago officinalis* L.	lsan tour, illes oufounas, lhourraycha	Leaves	Used in the couscous sauce, cooked in beqoul	Oriental marocain, Chaouia	Hmamouchi, 1997, Bellakhdar, 1997; Tanji, 2005
62	*Echium plantagineum* L.	lsan tour, illes oufounas	Leaves	Cooked in beqoula	Rural areas	Bellakhdar, 1997
63	*Heliotropium crispum* Desf. = *A. bacciferum* = *A. undulatum*	Khouniza ratba, tiddaline	Aerial part before flowering		Nomads in the Sahara, Tissint region	Bellakhdar, 1997

64	*Trichodesma africana* (L.) Lehm. = *Borago africana* L.	lahreycha			Sahara	Birouk et al., 1991
65	*Trichodesma calcarata* Batt.	lharcha lkhayba, taynast	Aerial part	Raw	Sahara nomads	Bellakhdar, 1978, 1997; Birouk et al., 1991
	Brassicaceae					
66	*Brassica nigra* (L.) Koch = *Sinapis nigra* L.	Asnab, kerkaz	Leaves	Cooked in beqoula dish	Rural areas	Bellakhdar, 1997
67	*Capsella bursa-pastoris* (L.) Medik.	lâihyane	Leaves	Cooked in beqoul	Marmoucha	Nassif, unpublished data
68	*Diplotaxis harra* (Forssk.) Boiss. = *Sinapis harra* Forssk.	Lharra, cheryat	Aerial part, seeds	Cooked to prepare special sauces, cooked in beqoula, seeds as spice	Sahara, Middle Atlas	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
69	*Diplotaxis* sp.	kerkaz	Leaves, seeds	Cooked to prepare special sauces or incorporated in beqoula dish, seeds used as spice	Sahara, Middle Atlas, Oulmès	Bellakhdar, 1997
70	*Eremophyton chevallieri* (Baratte) Béguinot = *Enarthocarpus chevallieri* Barratte	gern etteys, galglan	Leaves	Cooked in the beqoula way	Nomads	Bellakhdar, 1997
71	*Eruca sativa* Miller = *Eruca vesicaria* (L.) Cav.	Lharra, bou hammou	Leaves	raw or cooked to make sauces or as garnish for couscous	Sahara, Oasis	Birouk et al., 1991; Bellakhdar, 1997; Tanji, 2005
72	*Matthiola maroccana* Coss.	chgaâa	Seeds	Added in soups and couscous sauces	Sahara	Monteil, 1953; Bellakhdar, 1978
73	*Moricandia arvensis* (L.) DC.	krumb ej-jmel	Leaves	Mixed with malva leaves to prepare beqoula	Southern areas	Bellakhdar, 1997
74	*Moricandia suffruticosa* (Desf.) Coss. & Dur.	jerjir lhar	Aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997

75	*Nasturtium officinale* R. Br.	Gernounej	Shoots	Raw (salads), cooked in beqoul, in goat meat tajine, or as sauce for couscous	Middle Atlas, Marmoucha	Bellakhdar, 1997; Nassif, unpublished data
76	*Schouwia purpurea* (Forssk.) Scweinf. = *Subularia purpurea* Forssk.	Jerjir	Leaves	Cooked as a vegetable, boiled in water & eaten as it is or added to soups	Sahara	Birouk et al., 1991; Bellakhdar, 1978, 1997
77	*Sinapis alba* L.	Bahamou	Seeds	Condiment		Tanji, 2005
78	*Sisymbrium runcinatum* Lag.	Lâihyane	Leaves	Cooked in beqoul or in sauce for couscous with goat milk	Marmoucha	Nassif, unpublished data
	Caryophyllaceae					
79	*Paronychia argentea* Lam.	atay dial lebled	Aerial part	A substitute for tea	Sahara	Bellakhdar, 1978
80	*Silene vulgaris* (Moench) Garcke	tighecht, tighighit	Leaves	Cooked in beqoul dish	Different regions, especially in mountains tians	Bellakhdar, 1997; Nassif, unpublished data
	Chenopodiaceae					
81	*Atriplex patula* L.	Tibidas	Leaves	Edible but rarely used	Marmoucha	Nassif, unpublished data
82	*Beta macrocarpa* Guss.	selg, tibidas	Leaves	Cooked in beqoul	Marmoucha	Nassif, unpublished data
83	*Beta patellaris* Moq.	Selg	Leaves, fruits	Young leaves cooked, fruits consumed fresh, leaves cooked	Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991; Hmamouchi, 1997
	Convolvulaceae					
84	*Convolvulus arvensis* L.	luwaya, tanesfalt	Leaves	Cooked in beqoula	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
	Cynomoriaceae					

85	*Cynomorium coccineum* L.	tertout	Heart of the plant	Raw after peeling or dried & processed into flour used to make porridge with milk	Rguibat, nomads	Monteil, 1953; Bellakhdar 1978; Birouk et al., 1991; Hmamouchi, 1997
	Cyperaceae					
86	*Bolboschoenus maritimus* (L.) Palla = *Scirpus maritimus* L.	smar, azlaf	Central stems	Raw or processed into flour	Sahara	Bellakhdar, 1997
87	*Cyperus conglomeratus* Rottb.	talabout, saâd	Seeds		Sahara	Monteil, 1953
88	*Cyperus longus* DC.	Saâd	Tubers			Hmamouchi, 1997
89	*Cyperus rotundus* L.	Saâd, yerni rmel, tamouchyat	Tubers, aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997
90	*Scirpoides holoschoenus* (L.) Sojak = *Scirpus holoschoenus* L.	boufachkha	Central stems	Raw or processed into flour	Sahara	Birouk et al., 1991; Bellakhdar, 1997
	Fabaceae					
91	*Astragalus baeticus* L.	krinbouch, grayn leghzal	Pods/seeds	Fresh	Widespread	Tanji & Nassif, 1995; Tanji, 2005
92	*Astragalus caprinus* L.	krinbouch, grayn leghzal	Pods/seeds	Fresh	Children & shepherds	Bellakhdar, 1997
93	*Astragalus hamosus* L.	krinbouch, grayn leghzal	Pods/seeds	Fresh	Children & shepherds	Bellakhdar, 1997
94	*Astragalus sesameus* L.	krinbouch, grayn leghzal	Pods/seeds	Fresh	children and shepherds	Bellakhdar, 1997
95	*Astragalus vogelii* (Webb) Bornm. (arbust ou non?)	attayr	Seeds	Ripe seeds edible	Sahara	Monteil, 1953
96	*Cullen plicatum* (Delile) Stirton	tatraret	Aerial part		Sahara	Hmamouchi, 1997

	= *Psoralea plicata* Delile					
97	*Lotus edulis* L.	krinbouch	Pods	Fresh		Bellakhdar, 1997
98	*Melilotus indica* (L.) All.	Nfal, nefla wawbhayr	Seeds	Condiment to flavor traditional biscuits	Oriental region	Bellakhdar, 1997
99	*Melilotus sulcatus* Desf.	Nfal, nefla wawbhayr	Seeds	Condiment to flavor traditional biscuits	Oriental region	Bellakhdar, 1997
	Geraniaceae					
100	*Erodium crassifolium* L'Hér.	hellalt neyreb, lkhellal	Aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997
101	*Erodium glaucophyllum* (L.) L'Her.	serrah enneireb, hellalt neyreb, garn leghzal,	Seeds		Sahara	Monteil, 1953
	Lamiaceae					
102	*Lavandula stoechas* L.	ahelhal, lhelhal, amezzir	Leaves	Perfume butter milk, condiment in cooking snails	Beni-Mellal	Bellakhdar, 1997
103	*Melissa officinalis* L.	Tronj, hbaq tronj	Leaves	Perfume tea, drink	Widespread	Bellakhdar, 1997; Hmamouchi, 1997
104	*Mentha gattefossei* Maire	Flyou dial jbel	Leaves, flowers	Perfume tea	Middle-Atlas	Bellakhdar, 1997
105	*Mentha longifolia* (L.) Hudson	Timersat, naânaâ	Leaves	Condiment & drink		Hmamouchi, 1999
106	*Mentha pulegium* L.	flyou	Leaves	Condiment, herbal drink, perfume tea	Widespread	Bellakhdar, 1997; Hmamouchi, 1997
107	*Mentha suaveolens* Ehrh. = *Mentha rotundifolia* (L.) Huds	timersat, timija, mchichtro	Leaves	Used in bread, in msemen, in soups or to perfurme food products	Widespread, especially in the countryside	Bellakhdar, 1997; Hmamouchi, 1997
108	*Origanum compactum* Bentham	zaâtar	Leaves, flowers	Very common condiment (snails' broth, cucumber salad, fish dishes, pizza,	Widespread	Bellakhdar, 1997

				etc), used in preserving melted butter (*smen*)		
109	*Origanum elongatum* (Bonnet) Emberger & Maire = *O. gladulosum* var. *elongatum* Bonnet	Istahdar, zouw	Leaves	Condiment and herbal drink	Bou Iblane	Bellakhdar, 1997
110	*Salvia aegyptiaca* L.	Tazoukennit, keff jmel,	Leaves	substitute for tea	Sahara	Birouk et al., 1991; Hmamouchi, 1997
111	*Salvia lavandulifolia* subsp. blancoana = *Salvia aucheri* subsp. *blancoana* (Webb. & Heldr.) Maire	Tifessit	Leaves	Perfume tea	Middle-Atlas	Bellakhdar, 1997
112	*Satureja alpina* (L.) Scheele subsp. *granatensis* (Boiss. & Reuter) Maire	flyou diel berr	Leaves	To preserve and perfume melted butter (smen)	Rif & Middle Atlas mountains	Bellakhdar, 1997
113	*Teucrium chamaedrys* L.		Leaves, stems			Hmamouchi, 1997
114	*Teucrium polium* L.	jaada, ayrar, tayrart	Aerial part	perfume tea	Sahara nomads	Bellakhdar, 1997; Hmamouchi, 1997
115	*Thymus atlanticus* (Ball) Roussine = *Thymus serpyllum*	Azukenni	Leaves, flowers	Herbal drink	Mountain areas	Hmamouchi, 1997
116	*Thymus hesperidum* Maire	azukenni	Leaves, flowers	Perfum tea, herbal drink	Sahara	Hmamouchi, 1997
117	*Thymus satureioides* Cosson	Azoukenni	Leaves, flowers	Condiment in snails's broth & diverse dishes, used in preserving melted butter (*smen*)	Widespread	Bellakhdar, 1997
118	*Thymus vulgaris* L.	Zaâtar	Leaves, flowers	Herbal drink, perfum food	Widspread	Hmamouchi, 1997
119	*Ziziphora hispanica* L.	Flyou	Leaves,	Condiment, herbal drink,	Middle-Atlas	Bellakhdar, 1997

			flowers	perfume tea	Marmoucha	
	Malvaceae					
120	*Lavatera cretica* L.	khoubbiza, lkhoubeiz, tibi, abajir, beqoula	Leaves, stems	Finely chopped, steamed, then seasoned with oil of olive, garlic, salt to prepare the traditional beqoula dish	Widespread	Tanji & Nassif, 1995; Tanji, 2005
121	*Malva neglecta* Wallr. = *Malva rotundifolia*	khoubbiza, lkhoubeiz, tibi, abajir, beqoula	Leaves, stems	Finely chopped, steamed, then seasoned with oil of olive, garlic, salt to prepare the traditional beqoula dish		Tanji & Nassif, 1995; Bellakhdar, 1997
122	*Malva nicaeensis* All.	khoubbiza, lkhoubeiz, tibi, abajir, beqoula	Leaves, stems	Finely chopped, steamed, then seasoned with oil of olive, garlic, salt to prepare the traditional beqoula dish	Widespread	Tanji & Nassif, 1995; Tanji, 2005
123	*Malva parviflora* L.	khoubbiza, lkhoubeiz, tibi, abjir, beqoula	Leaves, young stems	Finely chopped, steamed, then seasoned with oil of olive, garlic, salt to prepare the traditional beqoula dish	Widespread use in Morocco	Birouk et al., 1991; Tanji & Nassif, 1995; Bellakhdar, 1978, 1997; Hmamouchi, 1997; Tanji, 2005
124	*Malva sylvestris* L.	khoubbiza, lkhoubeiz, tibi, abajir, beqoula	Leaves, stems	Finely chopped, steamed, then seasoned with oil of olive, garlic, salt to prepare the traditional beqoula dish		Tanji & Nassif, 1995; Bellakhdar, 1997
	Molluginaceae					
125	*Limeum viscosum* Fenzl	lemdesma, desma	Seeds		Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991
	Neuradaceae					
126	*Neurada procumbens* L.	saâdane	Young shoots	Raw or cooked	Sahara nomads	Bellakhdar, 1997
	Nyctaginaceae					
127	*Boerharvia repens* L.	amwachar,	Seeds	Eaten as a chilled porridge	Sahara	Mounteil, 1953;

		tamochalt				Bellakhdar, 1978
	Orobanchaceae					
128	*Cistanche phelypaea* (L.) Gout.	danun	Entire plant	Underground parts or the entire plant cooked under the ach or boiled in water. Dried, ground & used with other cereals to make porridge or cakes	Sahara nomads	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997
	Oxalidaceae					
129	*Oxalis pes-caprae* L. = *Oxalis cernua* Thunb.	Houmeida safra	Bulbs, stems	Raw after peeling or cooked in beqoula	Children & chepherds, Countryside, Gharb	Bellakhdar, 1997 Tanji, unpublished data
	Papaveraceae					
130	*Glaucium corniculatum* (L.) J. H. Rudolph = *Chelidonium corniculatum* L.	guern jedyan, galyat serrah	Seeds	Fresh or roasted in a similar way to sunflower seeds		Bellakhdar, 1997
131	*Glaucium flavum* Crantz	guern jedyan, galyat serrah	Seeds	Fresh or roasted in a way similar to sunflower seeds & other roasted seeds		Bellakhdar, 1997
132	*Papaver rhoes* L	belaâman, bennaâman	Young shoots, petals	Prepared alone in the beqoula way, in beqoula, or used in sauce for couscous	Widespread	Bellakhdar, 1997; Nassif, unpublished data
	Pedaliaceae					
133	*Sesamum alatum* P. Thonn.	selg lmohr	Seeds, leaves		Sahara	Birouk et al., 1991; Hmamouchi, 1997
	Plantaginaceae					
134	*Plantago akkensis* Murb.		Seeds	Mixed with barley grains, processed into flour used to	Sahara nomads	Bellakhdar, 1997

				make flat bread or porridge		
135	*Plantago albicans* L.	lyelma, almzeimer, tayka	Seeds	Mixed with barley grains, processed into flour used to make flat bread or porridge	Sahara nomads	Bellakhdar, 1997
136	*Plantago amplexicaulis* Cav.	lyelma, lesnab	Seeds	Mixed with barley grains, processed into flour used to make flat bread or porridge	Sahara nomads	Bellakhdar, 1997
137	*Plantago ciliata* Desf.	lyelma	Seeds	Mixed with barley grains, processed into flour used to make flat bread or porridge	Sahara nomads	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
138	*Plantago ovata* Forssk.	lyelma	Seeds	Mixed with barley grains, processed into flour used to make flat bread or porridge	Sahara nomads	Bellakhdar, 1997
	Plumbaginaceae					
139	*Limonium sinuatum* (L.) Miller subsp.*beaumierianum* (Maire) Sauv. & Vindt	lgarsa, azatim	Aerial part	Raw	Oasis in the South, nomads & people in the Haouz	Birouk et al., 1991; Bellakhdar, 1978, 1997
	Poaceae					
140	*Cymbopogon schoenanthus* (L.) Spreng.	idkhir, chaârat trab, tadoumst, lyedkher	Leaves	Raw (salads) or cooked with meat	Sahara	Bellakhdar, 1997
141	*Echinochloa colona* Link.	sirga	Seeds		Nomads	Bellakhdar, 1978
142	*Imperata cylindrica* (L.) Rauschel	silet, silt	Manna	droplets used as a sweetener		Bellakhdar, 1997
143	*Lolium multiflorum* Lam.	Zwan, madhoun			Sahara	Birouk et al., 1991
144	*Panicum turgidum* Forssk.	mrokba, bourokba	Seeds	Processed into flour and cooked into porridge	Sahara, highly prized by Rguibat	Monteil, 1953; Bellakhdar, 1978, 1997

145	*Pennisetum divisum* (Forssk. ex J. F. Gmel.) = *Pennisetum dichotomum* (Forssk.) Delile	mourkiba lkhayba	Seeds	Processed into flour used alone or mixed with other cereals flour	Sahara	Bellakhdar, 1997
146	*Stipagrostis pungens* (Desf.) De Winter = *Aristida pungens* Desf.	drinn, sbot, sbet	Seeds	Porcessed into flour used to make flat bread, eaten as it, or mixed with powder of dried dates	Sahara nomads	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978, 1997
147	*Tricholaena teneriffae* (L.) Link	demiya	Seeds		Sahara Rguibat	Bellakhdar, 1978
	Polygonaceae					
148	*Emex spinosa* (L.) Campd. = *Rumex spinosus* L.	lhenzab, hoummeida, tassemount	Leaves, roots	Raw or cooked as a vegetable for couscous	Sahara Rguibat	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978, 1997; Tanji & Nassif, 1995
149	*Rumex acetosa* L.	Hoummeida, tassemount	Leaves	Raw (salads)	Widespread	Bellakhdar, 1997
150	*Rumex vesicarius* L.	lhoummeid, hoummeida, tassemount	Leaves	Raw (in salads), added to beqoula	Widespread	Monteil, 1953; Bellakhdar, 1978, 1997
	Portulacaceae					
151	*Portulaca olearacea* L.	Rejla, agertin, timeqsine	Aerial part, seeds	Raw (salads), cooked alone in beqoula way, cooked in beqoul, or added to dishes as an acidifying ingredient. Seeds eaten mixed with other cereals in porridge or with dried powedred dates as some sort of *sfouf sahraoui*	Widespread use of aerial part, seeds used in the Sahara	Birouk et al., 1991; Tanji & Nassif, 1995; Bellakhdar, 1978, 1997; Hmamouchi, 1997

	Scrophulariaceae					
152	*Veronica anagallis-aquatica* L.	agraman, aguernouj	Leaves, seedlings	Raw (salads), cooked in the beqoula way, or cooked in beqoul	Sahara, Bab Berred, Marmoucha	Bellakhdar, 1997 Nassif, unpublished data
153	*Veronica beccabunga* L.	Agraman	Leaves, seedlings	Raw (salads), cooked in the beqoula way	Bab Berred	Bellakhdar, 1997
	Solanaceae					
154	*Solanum nigrum* L.	âneb eddib, adil nouchen	Berries	Fresh or added to food	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
	Urticaceae					
155	*Urtica dioica* L.	Hourriga, taqzint	Aerial part	Young leaves cooked to prepare a dish similar to the beqoula dish	Rural areas	Bellakhdar, 1997
156	*Urtica pilulifera* L.	Hourriga, taqzint	Aerial part	Young leaves cooked to prepare a dish similar to the beqoula dish	Rural areas	Bellakhdar, 1997
157	*Urtica urens* L	Hourriga, taqzint	Aerial part	Young leaves cooked in a mix of edible plants called *Ighiddiwen* by Beni-Touzine	Rural areas	Bellakhdar, 1997
	Verbenaceae					
158	*Verbena officinalis* L.	Baymout				Hmamouchi, 1997
	Zygophyllaceae					
159	*Fagonia glutinosa* Delile	tleha, desma			Sahara	Birouk, 1991; Hmamouchi, 1997
160	*Seetzenia lanata* (Willd.) Bullock = *Seetzenia africana* R. Br.= *Zygophyllum lanatum* Willd.	dartit, madnek			Sahara	Birouk et al., 1991

161	*Zygophyllum gaetulum* Emb. & Maire	Lâagaya	Aerial part, flowers	Herbal tea, drink	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997
162	*Zygophyllum waterlotii* Maire	Lâagaya	Leaves, flowers	Herbal tea, drink	Sahara	Birouk et al., 1991; Bellakhdar, 1997; Hmamouchi, 1997

Table 2. Wild trees/shrub/bushes with edible parts used in Morocco as reported in the literature

No	Scientific name	Moroccan vernaculars	Edible part	Consumption mode	Regions where frequently used	References
	Anacardiaceae					
1	*Pistacia atlantica* Desf.	btom, lebtom	Drupes	Fresh		Bellakhdar, 1978
2	*Pistacia lentiscus* L.		Drupes, gum	Extracted oil, gum used to flavor tea		Bellakhdar, 1997
3	*Rhus albida* Schousboe	Zuwaya	Drupes	Fresh	Sahara	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997
4	*Rhus tripartita* (Ucria) Grande	jdari	Drupes	Fresh	Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991; Hmamouchi, 1997
	Arecaceae (Palmae)					
5	*Chamaerops humilis* L.	doum, tizdemt	Berries, core of the stem	Ripe fruits eaten fresh, the core of the stem eaten fresh or cooked in traditional dishes, or as garnish for couscous	Widespread	Bellakhdar, 1997

	Asclepiadaceae					
6	*Leptadenia pyrotechnica* (Forssk.) Dec.	titarek	Pods	Fresh, leaves cooked in sauce for couscous		Birouk et al., 1991; Hmamouchi, 1997
7	*Periploca angustifolia* Labill. = Periploca laevigata	hellab, lhellab	Flowers		Sahara	Monteil, 1953
	Asparagaceae					
8	*Asparagus acutifolius* L.	sekoum, azzouy	Young shoots	Cooked		Bellakhdar, 1997
9	*Asparagus albus* L.	sekoum	Young shoots	Cooked		Tanji & Nassif, 1995; Bellakhdar, 1997
10	*Asparagus horridus* L. = *Asparagus stipularis* Forssk.	sekoum	Young shoots	Cooked		Bellakhdar, 1997
11	*Asparagus pastorianus* Webb & Berth.	sekoum	Young shoots	Cooked		Bellakhdar, 1997
	Asteraceae					
12	*Anvillea radiata* Coss. & Dur.	neged	Aerial part			Birouk et al., 1991; Hmamouchi, 1999
13	*Launaea lanifera* Pau = *Launaea acanthoclada* Maire		Leaves	Raw (salads), cooked with meat	Sahara	Bellakhdar, 1997
	Berberidaceae					
14	*Berberis hispanica* Boiss. & Reuter	irghis	Berries	Fresh		Hmamouchi, 1997
	Capparaceae					
15	*Boscia senegalensis* Poiret	eyzzen	Berries	Fresh	Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991
16	*Cadaba farinosa* Forssk.	zram	Aerial part			Birouk et al., 1991; Hmamouchi, 1997
17	*Capparis decidua* (Forssk.) Edgew.	ignin	Berries	Pulp of the fruit sucked through a hole in the	Sahara nomads	Monteil, 1953; Birouk et al., 1991;

				pericarp		Bellakhdar, 1978, 1997; Hmamouchi, 1997
18	*Capparis spinosa* L.	kebbar, taylalout	Berries & buds	Pickeled in salted water, cooked as vegetable with meat or fish, condiment.		Bellakhdar, 1997; Hmamouchi, 1997
19	*Cleome amblyocarpa* Barr. & Murb.	mkhinza	Aerial part	Dried leaves used to flavor		Hmamouchi, 1997
20	*Maerua crassifolia* Forssk.	atil	Berries	Fresh or dried	Nomads	Birouk et al., 1991; Bellakhdar, 1978, 1997
	Celastraceae					
21	*Maytenus senegalensis* (Lam.) Excell	boukhlal	Aerial part			Birouk et al., 1991; Hmamouchi, 1997
	Celtidaceae					
22	*Celtis australis* L.	teghzaz	Drupes	Fresh	Marmoucha, prized by children	Bellakhdar, 1997; Nassif, unpublished data
	Chenopodiaceae					
23	*Anabasis articulata* (Forssk.) Moq.		Aerial part			Hmamouchi, 1997
24	*Atriplex halimus* L.	legtaf	Aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997
25	*Salsola tetrandra* Forssk.	laârad, ljell			Sahara	Birouk et al., 1991
	Cistaceae					
26	*Cistus* sp.	irgel	Seeds	*Crushed* seeds eaten as an appetizer or chaplure on cakes	Countryside	Bellakhdar, 1997
	Combretaceae					
27	*Combretum aculeatum* Vent.	ikik	Drupes			Bellakhdar, 1978
	Convolvulaceae					

28	*Convolvulus trabutianus* Schw. & Muesch.	lgendoul	Seeds		Sahara	Monteil, 1953; Bellakhdar, 1978; Birouk et al., 1991; Hmamouchi, 1997
	Cupressaceae					
29	*Juniperus thurifera* L.	awal, tawalt	Drupes	Appetizer	Shepherds	Bellakhdar, 1997
	Cymodoceaceae					
30	*Cymodocea nodosa (Ucria) Asch = Zostera nodosa Ucria*		Aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997
	Ephedraceae					
31	*Ephedra altissima* Desf.	chdida, âallenda			Sahara	Birouk et al., 1991
	Ericaceae					
32	*Arbutus unedo* L.	sasnou, bakhanou	Berries	Fresh		Bellakhdar, 1997
	Euphorbiaceae					
33	*Chamaesyce granulata* (Forsskål) J. Sojak = *Euphorbia granulata* Forssk.	kbidet eddub	Aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997
34	*Euphorbia balsamifera* Aiton	fernan	Aerial part		Sahara	Birouk et al., 1991; Hmamouchi, 1997
35	*Euphorbia officinarum* L. subsp. e*chinus* (Hooker fil. & Cosson) Vindt = E*uphorbia echinus* Hooker fil. & Cosson	deghmous, takiouet	Aerial part	chopped and cooked as a vegetable salad	Sahara	Bellakhdar, 1978, 1997
36	*Euphorbia regis-jubae* Webb & Berth. = *Euphorbia obtusifolia* subsp. *regis-jubae* (Webb & Berth.)	talalt				Hmamouchi, 1997

37	*Euphorbia resinifera* Berg.	zekoum, takiouet	Aerial part	Chopped and cooked as a vegetable salad.		Bellakhdar, 1997
	Fabaceae					
38	*Acacia arabica* (Lam.) Willd.	lamour, amour	Gum	Fresh or roasted	Sahara	Monteil, 1953; Birouk, 1991 ; Hmamouchi, 1997
39	*Acacia ehrenbergiana* Hayne =*Acacia seyal*	tamat	Gum, leaves	Fresh to pass hunger, leaves as a substitute for tea	Sahara	Monteil, 1953; Bellakhdar, 1978
40	*Acacia senegal* (L.) Willd.	awerwar, eirwar	Gum	Fresh to pass hunger	Sahara	Monteil, 1953
41	*Acacia tortilis* (Forssk.) Hayne subsp. *raddiana* (Savi) Brenan = *Acacia raddiana* Savi	talh, telh, amrad	Seeds	Whole or ground	Sahara	Birouk et al., 1991; Bellakhdar, 1978, 1997, Hmamouchi, 1997
42	*Ceratonia siliqua* L.	kharroub,	Pods	Fresh or processed for use in pastry as a substitute for chocolate	Widespread	Bellakhdar, 1978,1997
43	*Faidherbia albida* (Delile) A. Cheval. = *Acacia albida* Delile	afrar	Pods	Fresh		Bellakhdar, 1978, 1997
44	*Glycyrrhiza foetida* Desf.	arq souss	Roots	Shewed	Sahara, widespread	Bellakhdar, 1978, 1997
45	*Tamarindus indica* L.	aganat	Seeds	fresh or processed into flour after roasting	Sahara	Bellakhdar, 1978
46	*Tephrosia purpurea* (L.) Pers. = *Tephrosia leptostachya DC.*	amejmej	Leaves	perfume tea	Sahara	Bellakhdar, 1978
	Fagaceae					
47	*Castanea sativa* Miller	qastal	Fruits	Fresh or roasted	Rif	Bellakhdar, 1997
48	*Quercus ilex* subsp. *rotundifolia* (Lam.) T. Morais	kerrouch	Acorns	Fresh	Areas where *Quercus ilex* prevail	Nassif, unpublished data

49	*Quercus suber* L.	bellout	Acorns	Fresh after taking out the shell, boiled in salted water, or roasted.	Widespread	
	Grossulariaceae					
50	*Ribes alpinum L.*	qars –momou, adil nouchen, taghmamoucht	Gooseberries	Fresh	Bou-Iblane, Marmoucha	Nassif, unpublished data
51	*Ribes uva-crispa L.*	qars –momou, adil nouchen, taghmamoucht	Gooseberries	Fresh	Bou-Iblane, Marmoucha	Nassif, unpublished data
	Juncaceae					
52	*Juncus rigidus* Desf. = *Juncus maritimus*	smar	Young shoots		Sahara	Bellakhdar, 1978; Birouk et al., 1991; Hmamouchi, 1997
	Lamiaceae					
53	*Teucrium chardonianum* Maire & Wilczek	sedra lbaida	Leaves, stems			Hmamouchi, 1997
	Lauraceae					
54	*Laurus azorica* (Seub.) Franco	âsa sidna moussa	Leaves, berries	Condiment to flavor pasta, fish, meat dishes, preserved vegetables and olives	Widespread	Bellakhdar, 1997
55	*Laurus nobilis* L.	âsa sidna moussa	Leaves , berries	Condiment to flavor pasta, fish, meat dishes, preserved vegetables and olives	Widespread	Bellakhdar, 1978, 1997; Hmamouchi, 1997
	Malvaceae					
56	*Grewia bicolor* Jussieu	Imizziz	Berries	Fresh	Sahara	Monteil, 1953; Bellakhdar, 1978
57	Grewia tenax (Forssk.) Fiori	Legleya	Berries	Fresh	Sahara	Monteil, 1953; Bellakhdar, 1978, Birouk et al., 1991;

						Hmamouchi, 1997
	Myrtaceae					
58	*Myrtus communis* L.	Rihan	Berries, frlowers	Condiment, drink		Bellakhdar, 1997
	Nitrariaceae					
59	*Nitraria retusa* (Forssk.) Asch.	lgerzim, agerzim	Drupes	Fresh	Sahara	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978, 1997; Hmamouchi, 1997
	Plumbaginaceae					
60	*Limoniastrum guyonianum* Boiss.	zyata	Stems	Chewed	Nomads in the Sahara	Bellakhdar, 1978, 1987
61	*Limoniastrum ifniense* (A.Caballero) Font Quer	Zyata	Stems	Chewed	Shepherds and children in the Sahara	Monteil, 1953; Bellakhdar, 1978, 1997
62	*Limonium sinuatum* (L.) Miller subsp. *Beaumierianum* (Maire) Sauvage & Vindt	lgarsa, azatim			Sahara	Birouk et al., 1991
	Poaceae					
63	*Phragmites australis* (Cav.) Steudel	Legseyba			Sahara	Birouk et al., 1991; Hmamouchi, 1997
	Polygonaceae					
64	*Calligonum comosum* L'Hér.	Awarach	Young shoots	Fresh or dried & processed into flour often mixed with boiled water & little butter	Sahara touaregs	Birouk et al., 1991; Bellakhdar, 1997
	Rhamnaceae					
65	*Ziziphus lotus* (L.) Lam.	sedra, sder	Drupes	Fresh or dried & processed into flour for bread making, Grains	Prized by nomads, taken in travel	Monteil, 1953; Birouk et al., 1991; Bellakhdar, 1978,

				from the fruits' kernels gound & used to make 'amlou'	provisions	1997; Hmamouchi, 1997; Tanji & Nassif, 1995; Tanji, 2005; Nassif, unpublished data
66	*Ziziphus zizyphus* (L.) Meikle	zefzouf	Drupes	Fresh		Birouk et al., 1991 Bellakhdar, 1997 Hmamouchi, 1997
	Rosaceae					
67	*Amelanchier ovalis* Medik.	Tazart immissawn	Fruits	Fresh	Bou-Iblane, Marmoucha	Nassif, unpublished data
68	*Crataegus laciniata* Ucria = *Crataegus orientalis*	Admam	Fruits	Fresh	Sahara nomads	Bellakhdar, 1997
69	*Crataegus monogyna* Jacq. = *C. oxyacantha auct.* = *C. maura* L. = *C. brevispina* Kunze	Admam	Fruits	Fresh	Sahara nomads	Bellakhdar, 1997
70	*Prunus prostrata* labill.	Aberqouk immissawn		Fresh		Nassif, unpublished data
71	*Rosa canina* L.	Tabgha	Rose hips	Fresh	Bou-Iblane, Marmoucha	Nassif, unpublished data
72	*Rubus ulmifolius* Schott	tatchalt, chermou	Blackberries	Fresh, at times in the form of juice	Mountain areas	Nassif, unpublished data
	Salvadoraceae					
73	*Salvadora persica* L.	arak, lirak	Fruits	Fresh		Bellakhdar, 1978,1997
	Sapotaceae					
74	*Argania spinosa* (L.) Skeels	Argan	Drupes	Extracted oil eaten with bread, mixed with honey, or used as seasoning to flavour a variety of dishes	Widespread	Birouk et al., 1991 Bellakhdar, 1978, 1997; Hmamouchi, 1997
	Solanaceae					

75	*Hyoscyamus muticus* subsp. *falezlez* (Coss.) Maire	Labtin	Leaves			Birouk et al., 1991 Hmamouchi, 1997
76	*Lycium barbarum* L.		berries, seedlings	Fresh		
77	*Lycium intricatum* Boiss.	Lgherdeq	Berries, seedlings	Fruits eaten fresh, seedlings prepared in the asparagaus way, leaves eaten in salads. In the past, leaves were used as a substitute for tea		Monteil, 1953; Birouk et al., 1991 Bellakhdar, 1978, 1997 Hmamouchi, 1997
78	*Lycium europaeum* L.	Lgherdeq	Berries, seedlings	Fresh		Bellakhdar, 1997 [18]
79	*Withania frutescens* (L.) Pauquy	chajrat lahbila, tillermt	Berries	Fresh	Children	Bellakhdar, 1997
	Tamaricaceae					
80	*Tamarix aphylla* (L.) Korst.	Lathel	Gum	Sweet gum	Sahara	Birouk et al., 1991; Bellakhdar, 1978; Hmamouchi, 1997
81	*Tamarix canariensis* Willd.	tarfa, lfersig	Gum	Sweet gum	Sahara	Bellakhdar, 1978; Birouk et al., 1991 Hmamouchi, 1997
	Typhaceae					
82	*Typha angustifolia* L.	tabouda	Core of the stem & undregound parts	Raw, processed into flour after drying & grinding and used to make porridge	Sahara nomads, Touaregs	Bellakhdar, 1997
83	*Typha latifolia* L.	tabouda	Core of the stem & undregound parts	Raw, processed into flour after drying & grinding and used to make porridge	Sahara nomads, Touaregs	Bellakhdar, 1997

	Zygophyllaceae					
84	*Balanites aegyptiaca* (L.) Delile	teychet, taychot, tmar-tork	Drupes, aerial part	Fresh after peeling, pulp dried & crushed like candy, cooked in water to make breads and cakes; kernel eaten fresh or cooked in water. Young leaves & buds consumed as vegetables with meat	Sahara	Monteil, 1953; Birouk et al., 1991 Bellakhdar, 1978, 1997; Hmamouchi, 1997; Nassif, unpublished data

Figure 1. The richest families within the gathered herbaceous food plants in Morocco