

## **Food for two seasons: Culinary uses of non-cultivated local vegetables and mushrooms in a south Italian village**

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### **Abstract**

The use of non-cultivated plants in a daily diet based on local cuisines is potentially of considerable interest to nutritional scientists, because of the plants' role as local products and their potential as sources of novel nutraceuticals. In many Mediterranean regions these traditions are at risk of disappearing, hence the urgent need to study such knowledge systems. Accordingly, an ethnobotanical survey was carried out among the 850 inhabitants of the village of Castelmezzano, in central Lucania, which is located in the inland southern Italy. Seventy-five taxa of non-cultivated and semi-cultivated local food plants and mushrooms were documented, and uncommon food uses of a few species were reported for the first time. These include *Bellavalia romana*, *Lepista nebularis* and *Onopordum illyricum*. Most of the recorded non-cultivated food plants and mushrooms are cooked in oil or fat. Very few are consumed raw. This article discusses in detail the traditional culinary uses of these plants, their seasonality, ethnoecology, and their economic and nutritional potentials. The article also demonstrates how food agro-biodiversity is inextricably connected with cultural heritage.

**Keywords:** *Non-cultivated plants, seasonality, ethnoecology, cultural heritage, Italy*

### **Introduction**

Correlations between the Mediterranean diet and community health status have attracted considerable interest (Matalas et al. 1999; Holdsworth et al. 2000; Kafatos et al. 2000), particularly since the discovery of links between the dietary tradition of these populations and longevity (Trichoupolou & Vasipoulou 2000; Trichoupolou et al. 2003). Also, the consumption of olive oil and vegetables has been epidemiologically correlated with many health benefits; for example, in the discussion about the 'Albanian paradox' (Gjonça & Bobak 1997). A few studies have suggested the potential benefits in the prevention of age-related diseases (ARDs) of phytochemicals such as (n-6):(n-3) essential fatty acids, vitamins E and C, and polyphenolic antioxidants commonly found in non-cultivated Mediterranean food plants (Lionis et al. 1998; Trichoupolou et al. 2000; Simopoulos 2001). In recent times, the dietary contribution

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of green leafy vegetables, which are mainly non-cultivated, and their potential health benefits have been recognized as an important area of research (Takruri & Humeid 1988; Chapman et al. 1997; Guil et al. 1997; Grivetti & Ogle 2000; Lockett et al. 2000; Vanderjagt et al. 2000; Ogle et al. 2001a, 2001b, 2001c; Corlett et al. 2002; Johnson & Grivetti 2002a; Owen & Johns 2002; Tarwadi & Agte 2003).

Aside from their health benefits, such products are also important elements in defining local or regional identity. Food provides a mean of expressing one's belonging to a region, and at the same time it is often seen as an opportunity for local businesses to make money, with small-scale producers, traders and most notably restaurants offering speciality foods. In Italy these are known as '*prodotti tipici*'.

During the past 25 years, the collection and consumption of non-cultivated food plants have been the focus of an increasing number of field studies aimed at documenting traditional knowledge (TK) in an anthropological and ethnoecological/ethnobotanical context: in Africa (Etkin & Ross 1982; Ogle & Grivetti 1985a, 1985b, 1985c, 1985d; Johns & Kokwaro 1991; Johns et al. 1996a, 1996b; Schackleton et al. 1998; Lockett & Grivetti 2000; Asfaw & Tadesse 2001; Marshall 2001; Mertz et al. 2001; Ogoye-Ndegwa & Aagaard-Hansen 2003; Addis et al. 2005), in the Americas (Bye 1981; Lepofski et al. 1985; Kuhnlein 1992; Turner 1995, 1997; Ladio & Lozada 2000; Ladio 2001; Vierya-Odilon & Vibrans 2001), and in Asia (Moreno-Black et al. 1996; Pemberton & Lee 1996; Leimar Price 1997; Tukan et al. 1998; Ertuğ 2000; Khasbagan et al. 2000; Johnson & Grivetti 2002b; Ogle et al. 2003).

On the other hand, most ethnobotanical and ethnopharmacological studies conducted in the circum-Mediterranean areas have primarily addressed medicinal plants, and have often ignored food plants and mushrooms. In the past decade, however, a few studies have systematically analysed in sufficient detail the consumption of non-cultivated botanicals in the Mediterranean area (Forbes 1976; Meilleur 1982, 1986; Paoletti et al. 1995; Pieroni 1999; Pieroni et al. 2002a; Bonet & Vallès 2002; Tardío et al. 2002; Guarrera 2003), and all have clearly demonstrated that these local foods represent a relevant part of traditional<sup>1</sup> Mediterranean diets.

While in many European regions the use of non-cultivated plants for food and medicines is slowly disappearing, recent studies confirm that the gathering of wild plants is gaining increased importance in household economies in Central Europe, especially among migrant communities (Jonsson et al. 2002a, 2002b) and in post-communist societies (Ekström et al. 2003).

The aim of this study has been to investigate traditional uses of non-cultivated plants in the daily diet of the south-Italian village of Castelmezzano, located in the Basilicata region<sup>2</sup> (Figure 1), and to compare these with practices carried out today. The study investigates the cultural practices associated with the gathering, processing, and consumption of the plants. We concentrated our attention on the Basilicata area because it is the Italian region with the lowest percentage of urban population (17% in the period 1997–1999; ISTAT 2000) and the highest male life expectancy (75.7 years in the period 1991–1995; ISTAT 2000). Hence it seemed that we would be more likely to encounter surviving traditions related to the use of local non-cultivated plants.

The village of Castelmezzano (Figure 2) has 850 inhabitants, all of whom are autochthonous South Italians. It is located 750 m above sea level in the *Dolomiti Lucane*, a mountainous area bordering the Basento River valley. The economy of Castelmezzano is nowadays only partially based on small-scale agriculture and animal breeding (mainly sheep and *Podolica* cattle<sup>3</sup>). The history of the area has been

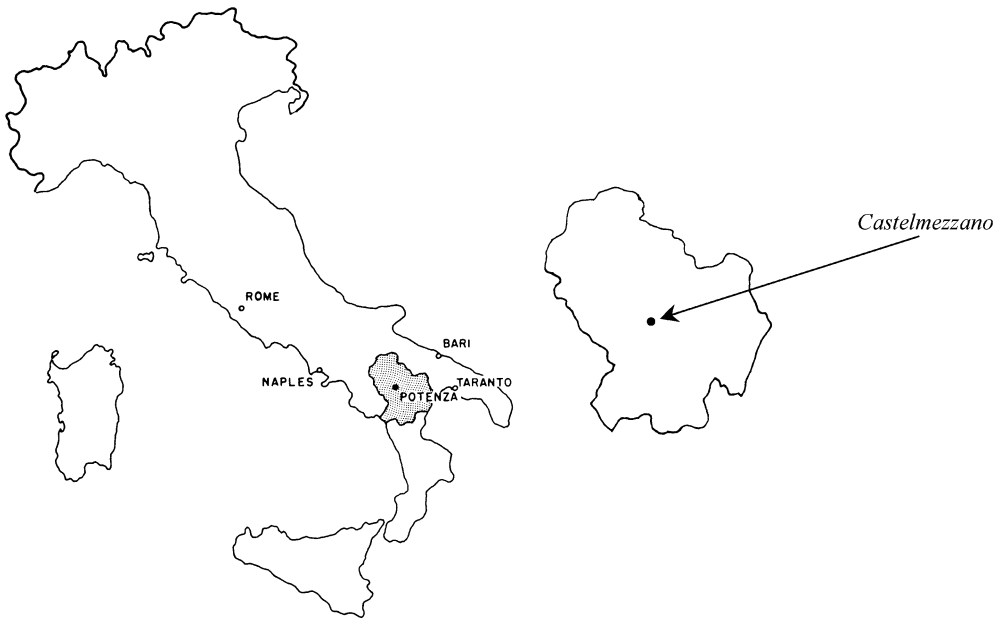


Figure 1. Location of the studied area.

characterized by successive domination by the Normans (11th–12th century AD), the Swabians (13th–14th century AD) and the Spanish Bourbons (15th century AD). Small-scale agricultural, especially the cultivation of durum wheat (*Triticum durum*) and animal breeding, in particular *Podolica* cattle, have played key roles in this area for centuries, and have given it a distinctive cultural identity and economy. Today, most of the young people of Castelvezzano work as paid labourers in Potenza, the regional capital of Basilicata, leaving the small agricultural and pastoral activities to be carried out by the older generations.

This report represents the first step within a broader European Union-funded research project, aimed at contributing to the sustainable development and continued

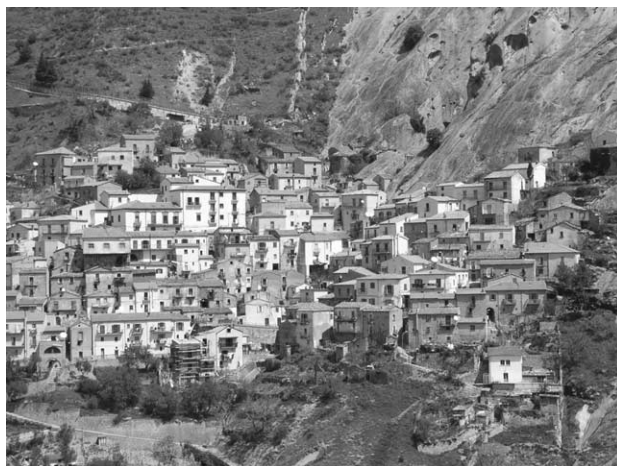


Figure 2. An overview of Castelvezzano.

use of non-cultivated food plants, and to the search for new nutraceuticals from non-cultivated local botanical taxa, which are traditionally consumed in diverse selected areas of the Mediterranean, and are of potential interest in the prevention of ARDs. The general objectives of this multi-disciplinary project, which involves ethnobotanists, food chemists, nutritionists, pharmacologists and molecular biologists, include the following:

- to document non-cultivated and semi-cultivated botanicals/mushrooms, and neglected crops traditionally consumed in four selected Mediterranean areas;
- to characterize the molecular mechanisms mediating the effects of extracts derived from selected local food plants and mushrooms in a variety of *in vitro* and *in vivo* models (i.e. in targets of relevance in the context of chronic and ARDs); and
- in the longer term, to diffuse the non-cultivated local food products that have a recognized effect on the prevention of ARDs, and to suggest inputs for improving the socio-economic sustainability of the cultivation/gathering of these minor local food plants in the study areas.

## Methods

Fieldwork was carried out in Castelmezzano in the following periods: April–June 2002, October–November 2002, and April–June 2003. TK regarding food plants was assessed using standard ethnobotanical tools (Alexiades & Sheldon 1996). Classical cognitive anthropological series of queries were also used to analyse the folk classification of these botanicals (Berlin 1992; D’Andrade 1995). All this information was gathered through consented interviews with 86 elderly members (mostly women) of Castelmezzano, who still retain considerable knowledge about these practices.

In the first phase of the field research, participants were asked to freely recall all non-cultivated food plants that were still used on a regular basis, as well as those that were used in the past. During the interviews, several fresh and dried plant specimens stocked in a transportable field herbarium were presented to the participants. Participants were asked to give the local name for the plant samples and to describe their preparation and use. Participant observation techniques were also utilized to better understand the cultural implications of plant gathering, preparation and distribution of foods within the community. In the second phase of the study, round-table focus groups (Leimar Price 1997) with local gatherers and women took place in order to discuss and elaborate on details concerning the information collected in the first phase.

In contrast to studies carried out by a few other authors (Bonet & Vallès 2002; Pardo de Santayana et al. 2005a, 2005b), the documentation of non-cultivated plants used in infusions and other hot beverages having a medicinal character was considered to be beyond the scope of this study. Also, we did not record plant parts used in the preparation of decoctions or infusions or alcoholic macerates (liqueurs), since they are not consumed within food contexts. The locals perceive these preparations as having certain medicinal characteristics and did not quote them spontaneously when speaking about food. Moreover, with the exception of the ‘medicinal’ *grappas* in north-eastern Italy (Volpato 2003), it is very difficult to assert that these preparations are part of the ‘traditional’ culinary heritage, since they were generally introduced into

the household customs during the 1950s and 1960s, when people in rural areas found themselves with significantly larger amounts of cash that enabled them to buy alcohol to prepare such liqueurs.

Voucher specimens of all the non-domesticated and most uncommon cultivated ethnobotanicals were collected and identified following the standard botanical works for Italian flora (Pignatti 1982). For the identification of mushrooms, we referred to Cetto (1987) and Gerhardt (1997). These voucher specimens, approximately 2000 pictures of traditional gathering and processing of wild food plants, and 20 h of tape-recorded interviews are stored at the authors' address. In the transcription of the vernacular names of the recorded botanicals, the neutral centralized vowel ('schwa') of the southern Italian Calabro-Neapolitan dialects has been symbolized by the sign 'ē'.

## Results and discussion

### *Non-cultivated plants in the local cuisine*

All the interviewees agreed that today in Castelmezzano far fewer non-cultivated vegetables are consumed than in previous decades. This shift has also been observed in other areas in southern Italy (Pieroni 2003), and in other Mediterranean regions (Bonet & Vallès 2002), and is the result of a changing socio-economic context: the younger generation has all but lost the TK necessary to identify, gather and process these species, while many middle-aged informants perceive the consumption of non-cultivated vegetables in a negative way, often as a symbol of poverty in the past. The same features regarding this negative cultural meaning associated with the gathering and consumption of non-cultivated food plants were described in Calabria, southern Italy (Teti 1992). These local products are only very rarely part of the feasting cuisine in Castelmezzano; however, in the spring they still represent an important part of the daily cuisine.

Moreover, young women today often join the workforce as factory workers and in clerical positions, and rely on older women in their family, their mothers, aunts and grandmothers, to care for their children while they are at work. The young women have little time to carry on the traditional ways of preparing food or to gather vegetables, and so they buy nearly all the foodstuffs for their family in supermarkets and local, open-air markets. For both genders of the younger and middle-aged generation, the leaving behind of traditional ways of living in the search for other ways of life has had a detrimental impact on the transmission and perpetuation of TK about non-cultivated vegetables, and subsequently in maintaining these local products in the daily diet.

Nevertheless, we observed that nearly all the older women, especially those belonging to the lower social classes, still gather and cook non-cultivated plants and mushrooms. The consumption of these local products is an important part of the daily diet in their households, and also the households of their closest younger relatives, with whom non-cultivated vegetables are often shared. In Table I, we present all the non-cultivated and semi-cultivated plants that the informants quoted. We show the local folk names, the parts of the plants that are used, details of their traditional culinary uses, including traditional recipes in italics, and the frequency of consumption.

Table I. Non-cultivated and semi-cultivated food plants gathered and consumed in Castelmezzano.

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)  | Folk generics (including<br>determinative articles) | Status | Part(s) used  | Traditional culinary use(s)  | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|--|---|--------|---------------|--|---------------------|--|
| <i>Agaricus campester</i> (L.) FR.<br>(Agaricaceae), CASTAGAP  | <i>u fungē cuppē</i>                                | nc     | Caps          | <i>fungē pa paparulē verdē</i> : fried with green<br>sweet peppers (and chillies)  | ++                  | No   |
| <i>Agrocybe cylindracea</i> (DE CAND.: FR.) R.MRE<br>(syn.: <i>Pholiota aegerita</i> BRIG.)<br>(Bolbitaceae), CASTAGRP | <i>u fungē de chiuppē</i>                           | nc     | Caps          | See <i>Agaricus campester</i>  | +                   | Yes  |
| <i>Allium ampeloprasum</i> L. (Liliaceae s.l.),<br>CASTALL   | <i>u agliē ardidē</i>                               | nc     | Bulbs         | Omelette   | +                   | Yes  |
| <i>Amaranthus retroflexus</i> L.<br>(Amaranthaceae), CASTAMA   | <i>u pedērossē</i>                                  | nc     | Young shoots  | Boiled and fried   | +                   | Yes  |
| <i>Anchusa italica</i> RETZIUS<br>(Boraginaceae), CASTANC  | <i>u sucamelē</i>                                   | nc     | Flowers       | Sucked as snack  | +                   | No   |
| <i>Arbutus unedo</i> L. (Ericaceae),<br>CASTARB  | <i>a grumē</i>                                      | nc     | Fruits        | Raw as snack   | +*                  | No   |
| <i>Armoracia rusticana</i> GAERTNER, MEYER ET<br>SCHERB. (Brassicaceae),<br>CASTARM                                    | <i>u rafanē</i>                                     | sc     | Root          | Raw, ground on <i>fēvēciddē</i> , with cheese and<br>pork sauce; cooked: <i>rafanatē</i> (during Car-<br>nival time); pie made by eggs, cheese, pieces<br>of home-made sausages, and ground root of<br><i>A. rusticana</i> | +++                 | No   |
| <i>Asparagus acutifolius</i> L.<br>(Liliaceae s.l.), CASTASP   | <i>u sparacē (dē sparaognē)</i>                     | nc     | Young shoots  | Boiled, then with scrambled eggs, and<br>traditionally fried in <i>zugnē</i> (especially at<br>Easter Day)   | ++                  | Yes  |
| <i>Atriplex hortensis</i> L.<br>(Chenopodiaceae), CASTATR  | <i>u jetonē</i>                                     | sc     | Leaves; stems | Boiled and fried; dipped in eggs and corn<br>meal, then fried in olive oil   | +                   | No   |
| <i>Bellavalia romana</i> (L.) SWEET<br>(Liliaceae s.l.), CASTBEL   | <i>u cipuddēnē (bianchē)</i>                        | nc     | Bulbs         | See <i>Leopoldia comosa</i>  | +*                  | No   |

Table I (Continued)

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)   | Folk generics (including<br>determinative articles)     | Status | Part(s) used          | Traditional culinary use(s)  | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|---|---|--------|-----------------------|--|---------------------|--|
| <i>Beta vulgaris</i> L. ssp. <i>vulgaris</i><br>(Chenopodiaceae), CASTBET                       | <i>a jetē</i>   | sc     | Leaves                | Boiled and fried in olive oil with chilli pepper; <i>u cauzonē pē le jetē</i> : the leaves are boiled leaves, then mixed with cheese, all as stuffing for a <i>calzone</i> | +++                 | Yes  |
| <i>Borago officinalis</i> L. (Boraginaceae),<br>CASTBOR   | <i>a vurrascinē/a sucamelē</i>                          | nc     | Leaves;<br>flowers    | Soup (with other vegetables), generally served with ground dried ricotta; sucked as snack  | ++                  | Yes  |
| <i>Brassica rapa</i> L. ssp. <i>rapa</i> (DC.) METZG.<br>(Group Ruvo Bailey),<br>(Brassicaceae) | <i>a cimē rapē</i>                                      | sc     | Aerial parts          | Boiled and fried   | ++                  | Yes  |
| <i>Carlina acaulis</i> L. (Asteraceae),<br>CASTCAR  | <i>a carrinē</i>  | nc     | Flower<br>receptacles | Stuffed with cheese and eggs; fried  | +                   | No   |
| <i>Castanea sativa</i> MILL. (Fagaceae)   | <i>a castagnē</i>                                       | sc     | Seeds                 | Boiled with bay leaves and wild fennel fruits; roasted   | +++                 | Yes  |
| <i>Chenopodium album</i> L.<br>(Chenopodiaceae), CASTCHE  | <i>u scenēsčē</i>                                       | nc     | Young shoots          | Boiled and fried   | +                   | Yes  |
| <i>Cichorium intybus</i> L. (Asteraceae),<br>CASTCHI  | <i>a cicoirē</i>  | nc     | Young whorls          | Raw: mixed salads; boiled; boiled, then fried with olive oil, garlic, chilli pepper, sometimes tomato sauce  | +++                 | Yes  |
| <i>Clematis vitalba</i> L. (Ranunculaceae),<br>CASTCLE  | <i>a vitacchiē</i>                                      | nc     | Young shoots          | Boiled, then in an omelette with eggs and cheese (traditionally fried in pork fat, <i>zugnē</i> )  | ++                  | Yes  |
| <i>Clitocybe geotropa</i> (BULL.: FR.) QUÉL.<br>(Tricholomataceae), CASTCLI1P                   | <i>u fungē a ordēnē</i>                                 | nc     | Caps                  | Fried; <i>fungē arraganatē</i> : baked in oven with oil, fresh sheep cheese and wild oregano   | ++                  | No   |
| <i>Clitocybe gibba</i> (PERS.: FR.) KUMMER<br>(Tricholomataceae), CASTCLI2P                     | <i>u fungē frumnē</i>                                   | nc     | Caps                  | Fried; <i>fungē arraganatē</i>   | +++                 | No   |
| <i>Clitopilus prunus</i> (SCOP.: FR.) KUMMER<br>(Entolomataceae), CASTCLI3P                     | <i>u muscēronē vastardē/u vis-<br/>ciaronē vastardē</i> | nc     | Caps                  | Fried with oil and fresh cheese; dried   | +                   | No   |
| <i>Cornus mas</i> L. (Cornaceae),<br>CASTCOR  | <i>u curnalē</i>  | nc     | Fruits                | Raw as snack   | +                   | Yes  |

Table I (Continued)

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)   | Folk generics (including<br>determinative articles)   | Status | Part(s) used          | Traditional culinary use(s)  | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|---|---|--------|-----------------------|--|---------------------|--|
| <i>Corylus avellana</i> L. (Betulaceae),<br>CASTCOR   | <i>a noceddē/a veddanē</i>  | nc     | Kernel                | Eaten dried; eaten roasted   | ++                  | Yes  |
| <i>Crataegus monogyna</i> JACQ. and<br><i>Crataegus oxycantha</i> L. (Rosaceae),<br>CASTCRA1 and CASTCRA2 | <i>a ceraseddē</i>  | nc     | Fruits                | Raw as snack   | +                   | Yes  |
| <i>Crepis vesicaria</i> L. (Asteraceae),<br>CASTCRE   | <i>a marogliē</i>   | nc     | Young whorls          | Raw: mixed salads; cooked: boiled, then<br>fried with olive oil, garlic, chilli pepper,<br>sometimes tomato sauces             | +++                 | Yes  |
| <i>Cydonia oblonga</i> L. (Rosaceae),<br>CASTCYD  | <i>a cotugnē</i>  | sc     | Fruits                | Boiled; <i>cotugnē arrostutē</i> : roasted under<br>ashes  | ++                  | Yes  |
| <i>Cynara cardunculus</i> L. ssp. <i>cardunculus</i><br>(Asteraceae), CASTCYN                             | <i>a scalirē</i>  | nc     | Stems                 | Boiled and/or fried  | +                   | No   |
|   |   |        | Flower<br>receptacles | Snacks   | +                   |  |
| <i>Daucus carota</i> L. (Apiaceae),<br>CASTDAU  | <i>a (radēchē) bastenarghē</i>  | nc     | Root                  | Roasted; boiled and fried  | +                   | No   |
| <i>Eruca sativa</i> L. (Brassicaceae),<br>CASTERU   | <i>a ruchē</i>  | sc     | Leaves                | Raw in salads  | +++                 | Yes  |
| <i>Ficus carica</i> L. (Moraceae),<br>(diverse local varieties)   | <i>a fichē (a fichē piluseddē, a<br/>fichē cannētātē, a fichē vut-<br/>tatē, a fichē lattarolē)</i> | sc     | Pseudofruits          | Raw; dried   | +++                 | Yes  |
| <i>Foeniculum vulgare</i> ssp. <i>piperitum</i><br>(Ucria) COUTINHO (Apiaceae),<br>CASTFOE                | <i>u fenucchiē salvaccē</i>   | nc     | Young aerial<br>parts | Boiled and then served with fava beans<br>purée; boiled in mixtures with other wild<br>greens, then served with diverse dishes | +++                 | Yes  |
|   | <i>u jurē fenucchiē</i>   | nc     | Fruits                | Aromatizing many dishes (home-made<br>sausages); aromatizing <i>frisellē</i>   | +++                 | Yes  |
| <i>Fragaria vesca</i> L. (Rosaceae)   | <i>a fràula</i>   | nc     | Fruits                | Raw  | +                   | Yes  |
| <i>Glycyrrhiza glabra</i> L. (Fabaceae),<br>CASTGLY   | <i>a grēlizjē</i>   | sc     | Roots                 | Raw as snack   | +                   | No   |



Table I (Continued)

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)  | Folk generics (including<br>determinative articles)                                   | Status | Part(s) used           | Traditional culinary use(s)   | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|--|---|--------|------------------------|---|---------------------|--|
| <i>Helianthus tuberosus</i> L. (Asteraceae)  | <i>a tartufoḷē</i>  | sc     | Tubers                 | Boiled  | +*                  | No   |
| <i>Helvella crispa</i> (SCOP.) FR.<br>(Helvellaceae), CASTHELP   | <i>u (fungē) spunzòḷē</i>   | nc     | Whole<br>fruiting body | Fried with oil and fresh cheese   | +                   | No   |
| <i>Lactarius pargamenus</i> (SWARTZ: FR.) FR.<br>(Russulaceae), CASTLAC1P  | <i>u (fungē) lattaruḷē</i>  | nc     | Caps                   | See <i>Agaricus campester</i>   | ++                  | No   |
| <i>Lactarius scrobiculatus</i> SCOP.: FR.<br>(Russulaceae), CASTLAC2P  | <i>u fungē lardarē</i>  | nc     | Caps                   | See <i>Agaricus campester</i>   | +                   | No   |
| <i>Lactuca serriola</i> L. (Asteraceae),<br>CASTLAC  | <i>a lactucastrē</i>  | nc     | Young aerial<br>parts  | Raw in salads; boiled and/or fried  | +                   | Yes  |
| <i>Leontodon crispus</i> VILL. (Asteraceae),<br>CASTLEO  | <i>u musē de pecorē</i>   | nc     | Young whorls           | Soup, in mixtures with other vegetables;<br>raw: mixed salads; cooked: boiled, then fried<br>with olive oil, garlic, chilli pepper, some-<br>times tomato sauce   | ++                  | No   |
| <i>Leopoldia comosa comosa</i> (L.) PARL.<br>(syn. <i>Muscari comosum</i> (L.) MILL.)<br>(Liliaceae s.l.), CASTLEO | <i>u cipuddēnē (rosa)</i>   | nc     | Bulbs                  | Fried with eggs; after maceration in cold<br>water for a few days, boiled and then fried<br>with dried sweet pepper and eggs; boiled and<br>served with <i>vin cuttē</i> ; <i>cipuddēnē sott'olio</i> :<br>boiled in water, and pickled in olive oil,<br>aromatizing with chilli pepper, garlic and<br>mint | ++                  | Yes  |
| <i>Lepista nebularis</i> BATSCH.: FR.<br>(Tricholomataceae), CASTLEPP  | <i>u (fungē) palomminē</i>  | nc     | Caps                   | See <i>Agaricus campester</i>   | +                   | No   |
| <i>Malus domestica</i> BORKH. (Rosaceae),<br>(diverse local varieties)   | <i>a meleddē/(a limonceddē,<br/>a maciatēchē, a meleddē<br/>rossē, a pumē bananē)</i> | sc     | Fruits                 | Eaten raw; boiled; <i>meleddē arrostita</i> : roasted<br>under ashes  | +++                 | Yes  |
| <i>Malus sylvestris</i> MILL. (Rosaceae)   | <i>a meleddē agristē</i>  | nc     | Fruits                 | Boiled; roasted <i>acquavitē</i>  | +*                  | Yes  |
| <i>Morus alba</i> L. and <i>M. nigra</i><br>(Moraceae)   | <i>u ciuz neurē/ u ciuz bianchē</i>   | sc     | Fruits                 | Raw as snack  | +                   | Yes  |
| <i>Muscari</i> sp. pl. (Liliaceae s.l.)  | <i>u cipuddēnē (neurē)</i>  | nc     | Bulbs                  | See <i>Leopoldia comosa</i>   | +*                  | Yes  |

Table I (Continued)

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)                       | Folk generics (including<br>determinative articles)               | Status | Part(s) used            | Traditional culinary use(s)  | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|---|---|--------|-------------------------|--|---------------------|--|
| <i>Onopordum illyricum</i> L. (Asteraceae),<br>CASTONO                      | <i>u cardonē</i>  | nc     | Roots                   | Boiled, then fried   | +                   | No   |
| <i>Origanum heracleoticum</i> L.<br>(Lamiaceae), CASTORI                    | <i>a riganē</i>   | nc     | Flowering<br>tops       | Aromatizing several dishes   | +++                 | Yes  |
| <i>Papaver rhoeas</i> L. (Papaveraceae),<br>CASTPAP                         | <i>a paparinē/ u scattēbottē</i>                                  | nc     | Young whorls;<br>leaves | Raw: mixed salads; soup with other vegeta-<br>bles; cooked: boiled, then friend with olive<br>oil, garlic, chilli pepper, sometimes tomato<br>sauces | ++                  | Yes  |
| <i>Picris echinoides</i> L. (Asteraceae),<br>CASTPIC                        | <i>u spruscēnē</i>  | nc     | Young whorls;<br>leaves | Raw: mixed salads; soup with other vegeta-<br>bles; boiled, then friend with olive oil, garlic,<br>chilli pepper, sometimes tomato sauces            | ++                  | Yes  |
| <i>Pleurotus eryngii</i> (DE CAN.: FR.) QUÉL.<br>(Polyporaceae), CASTPLE1P  | <i>u (fungē) cardungiddē</i>                                      | nc     | Whole<br>fruiting body  | <i>fungē arraganatē</i> ; roasted with pork fat<br>( <i>l'ontē</i> )   | +++                 | Yes  |
| <i>Pleurotus ostreatus</i> (Jacq.: Fr.) Kummer<br>(Polyporaceae), CASTPLE1P | <i>u fungē travinē</i>  | nc     | Whole<br>fruiting body  | See <i>Agaricus campester</i>  | +                   | No   |
| <i>Portulaca oleracea</i> L. (Portulacaceae)                                | <i>a perchiazzē</i>   | nc     | Aerial parts            | Raw in salads (mixed or even alone)  | +                   | Yes  |
| <i>Prunus cerasus</i> L. (Rosaceae),<br>(diverse local varieties)           | <i>a cerasē (a cerasē maciatichē,</i><br><i>a cerasē neurē)</i>   | sc     | Fruits                  | Eaten raw  | ++                  | Yes  |
| <i>Prunus domestica</i> L. (diverse local<br>varieties)                     | <i>lē prunē<sup>pl</sup> (a cascaveddē, a</i><br><i>pruneddē)</i> | sc     | Fruits                  | Eaten raw  | ++                  | Yes  |
| <i>Prunus dulcis</i> (MILLER) D.A. WEBB.<br>(Rosaceae)                      | <i>a menēla</i>   | sc     | Kernel                  | Eaten raw; dried; aromatizing <i>sanghēnaccē</i><br>and <i>frisellē</i>  | +++                 | Yes  |
| <i>Prunus spinosa</i> L. (Rosaceae),<br>CASTPRU                             | <i>u trignonē</i>   | nc     | Fruits                  | Raw as snack; <i>acquavitē</i>   | +                   | Yes  |
| <i>Pyrus communis</i> L. (Rosaceae),<br>(diverse local varieties)           | <i>a perē (u spadonē de virnē, a</i><br><i>muscareddē)</i>        | sc     | Fruits                  | Eaten raw; dried; boiled; roasted; <i>all'acitē</i> :<br>pickled in vinegar  | +++                 | Yes  |
| <i>Quercus virgiliana</i> (TEN.) TEN.<br>(Rosaceae), CASTQUE                | <i>a liannē castagnarē</i>  | nc     | Kernel                  | Roasted  | +*                  | No   |

Table I (Continued)

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)                | Folk generics (including<br>determinative articles) | Status | Part(s) used                  | Traditional culinary use(s)   | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|--|---|--------|-------------------------------|---|---------------------|--|
| <i>Ramaria aurea</i> (SCHFF: FR.) QUÉL.<br>(Ramariaceae), (CASTRAMP) | <i>u fungē riccē (dē terrē)</i>                     | nc     | Whole<br>fruiting body        | See <i>Agaricus campester</i>   | ++                  | No   |
| <i>Reichardia picroides</i> (L.) ROTH<br>(Asteraceae), CASTREI       | <i>u panē grizzitiddē</i>                           | nc     | Young whorls                  | Raw: mixed salads; soup with other vegeta-<br>bles; boiled, then friend with olive oil, garlic,<br>chilli pepper, sometimes tomato sauces                                 | +++                 | Yes  |
| <i>Rosa canina</i> L. (Rosaceae),<br>CASTROS                         | <i>u scaddapoddēcē</i>                              | nc     | Pseudofruits                  | Raw as snack  | +                   | Yes  |
| <i>Rubus ulmifolius</i> SCHOTT. s.l.<br>(Rosaceae), CASTRUB          | <i>le ciuz (dē rēvōtalē)</i> <sup>pl</sup>          | nc     | Fruits                        | Raw as snack  | +                   | Yes  |
| <i>Ruscus aculeatus</i> L. (Liliaceae s.l.),<br>CASTRUS              | <i>u sparacē (dē fruscitiddē)</i>                   | nc     | Young shoots                  | Boiled, then fried with scrambled eggs; <i>panē<br/>cuottē pa i fruscitiddē</i> : boiled bread served<br>with <i>butirro</i> of <i>Podolica</i> cow milk, and<br>chillies | ++                  | No   |
| <i>Silybum marianum</i> L. (Asteraceae),<br>CASTSIL                  | <i>u cardeddē/u cardonē spic-<br/>chialicchiē</i>   | nc     | Stems                         | Raw: snack  | +*                  | Yes  |
| <i>Sinapis arvensis</i> L. (Brassicaceae)                            | <i>a lāssanē</i>                                    | nc     | Root<br>Young aerial<br>parts | cooked: boiled and/or fried<br>Boiled and fried   | +*<br>++            | Yes  |
| <i>Sonchus oleraceus</i> L. (Asterecae),<br>CASTSON                  | <i>u sivonē</i>                                     | nc     | Young whorls                  | Raw: mixed salads; soup with other vegeta-<br>bles; boiled, then friend with olive oil, garlic,<br>chilli pepper, sometimes tomato sauces                                 | +++                 | Yes  |
| <i>Sorbus domestica</i> L. (Rosaceae)                                | <i>a sorvē</i>                                      | sc     | Fruits                        | Raw as snack; dried ( <i>a sertē</i> : necklace of<br>dried fruits)   | +                   | Yes  |
| <i>Sparassis laminosa</i> FR. (Hydnaceae),<br>CASTSPAP               | <i>u fungē riccē (dē cirrē)</i>                     | nc     | Whole<br>fruiting body        | See <i>Agaricus campester</i>   | +                   | No   |
| <i>Taraxacum officinalis</i> WEBER<br>(Asteraceae), CASTAR           | <i>a marogliē</i>                                   | nc     | Young whorls                  | See <i>Crepis vesicaria</i>   | +                   | Yes  |
| <i>Thymus serpyllum</i> s.l. (Lamiaceae),<br>CASTTHY                 | <i>u sarapuddē</i>                                  | nc     | Aerial parts                  | To aromatize cheese (added to milk with<br>rennet or covering cheese during storage);   | +                   | No   |

Table I (Continued)

| Botanical taxon/taxa (family),<br>VOUCHER SPECIMEN(S)   | Folk generics (including<br>determinative articles) | Status | Part(s) used | Traditional culinary use(s)   | Frequency<br>of use | Culinary<br>use<br>recorded<br>also among<br>Albanians in<br>Lucania |
|---|---|--------|--------------|---|---------------------|--|
| <i>Tricholoma georgii</i> (CLUS. EX FR.) QUÉL.<br>(syn.: <i>Calocybe gambosa</i> (FR.) DONK)<br>(Tricholomataceae), CASTTRI | <i>u muscëronë/u visciaronë</i>                     | nc     | Caps         | Raw as snack and in salads; fried with oil and<br>fresh cheese; dried | +++                 | No   |
| <i>Urospermum delechampii</i> (L.)<br>SCHMIDT-B. (Asteraceae),<br>CASTURO   | <i>a maroglië</i>                                   | nc     | Young whorls | See <i>Crepis vesicaria</i>   | +                   | No   |
| <i>Veronica beccabunga</i> L.<br>(Scrophulariaceae)   | <i>u crisciunë</i>                                  | nc     | Aerial parts | Raw in salads   | +*                  | No   |
| <i>Ziziphus jujuba</i> MILL. (Rhamnaceae)   | <i>le ceciolë</i> <sup>pl</sup>                     | sc     | Fruits       | Raw as snack  | +*                  | Yes  |

<sup>pl</sup>, folk name in plural; nc, non-cultivated; sc, semi-cultivated; \*disappeared use; +, rare use (ca. once a year); ++, low use (one to five times a year); +++, common use (more than five times a year). Culinary vernacular terms: *acquavitë*, home-made distillate (generally made from grapes); *butirro*, kind of sour cream; *fërëcidë*, kind of home-made noodles, made using knitting-needle or a dried stem of *suncë* (*Juncus* sp.); *frisellë*, non sweetened biscuits baked at Easter; *sanghënaccë*, dessert made by heating pig blood, old biscuits, cinnamon, sultanas, dried figs, and orange peels; *vinë cuttë*, concentrated boiled grape juice; *zugnë*, pork fat.

*Plants consumed with fat*

Nearly one-half of the non-cultivated food plants are cooked with fat (Figure 3). The most common procedure is to boil them first and then fry or roast them with olive oil or pork fat, adding garlic and chillies.

A few vegetables and nearly all the mushroom species are roasted in the oven, adding olive oil, cheese or ricotta and wild oregano. This dish is known locally as ‘*arraganatē*’. In southern-Italian dialects this term means ‘cooked with oregano’; however, in Castelmezzano it simply means ‘cooked in the oven with cheese’. A few other vegetables such as *Asparagus acutifolius* and *Ruscus aculeatus* shoots are generally boiled and then consumed with scrambled eggs or in a sort of omelette, always with added oil and/or pork fat. Pork fat seems to be used more frequently than olive oil, an aspect that is often overlooked in nutritional studies.

The cooking process and the constant presence of oil or fat should be considered carefully when studying the nutritional properties of non-cultivated food resources, because these influence the bio-availability of specific classes of natural constituents, and consequently the potential ‘beneficial’ effects of a food, such as their antioxidant activity, and their prevention of ARDs and cancer.

*Plants consumed raw*

The consumption of vegetables in raw, mixed salads is very rare, and in many households it seems to represent a by-product of recent cultural changes and trends introduced via the mass media. Historically, raw food products including non-cultivated fruit were consumed as snacks rather than at meal times. This generally took place outside the household, while the villagers were involved in agricultural or pastoral activities. It was a practice carried out mainly by children and younger people, and today has all but disappeared in Castelmezzano. Nevertheless, a few species of fruits are still dried near the fireplace and stored for the winter. These include nuts like *Juglans regia*, *Prunus dulcis* and *Corylus avellana*.

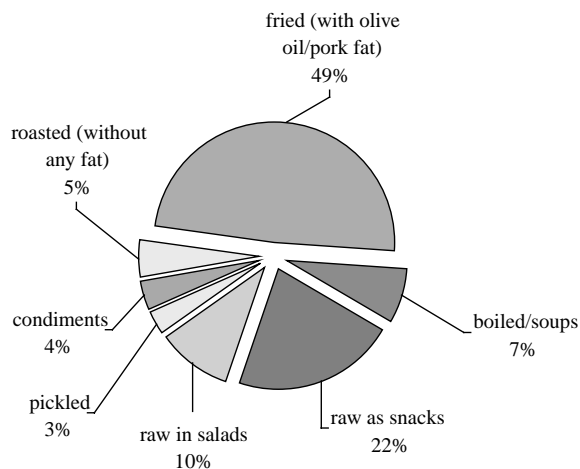


Figure 3. Culinary preparation of non-cultivated food species in Castelmezzano.

*Plants consumed after boiling*

Very few vegetables are consumed after boiling, as this procedure generally represents only the first step in the cooking process. The only relevant food tradition that relies solely on boiling is the preparation of soup. Various mixes of non-cultivated vegetables are used in soups, including *Sonchus oleraceus*, *Papaver rhoeas*, *Reichardia picroides*, *Crepis vesicaria*, *Leontodon crispus* and the leaves or whorls of *Borago officinalis*. A few local varieties of *Cydonia oblonga*, *Pyrus communis* and *Malus domestica* are also consumed after being boiled or roasted, without any fat because their taste would otherwise be considered too unpleasant.

*Plants consumed after being preserved or pickled*

*Leopoldia* and, until recently, *Muscari* and *Bellavalia* bulbs are generally cut, sometimes macerated in cold water overnight to decrease their bitterness, boiled in water or in a mixture of water and vinegar and then preserved in olive oil. This way of preserving plant products has nearly disappeared in Castelmezzano.

*Plants used as condiments*

There are only a few non-cultivated aromatic plants in the cuisine of Castelmezzano. The only local plant products consumed as condiments are horseradish (*Armoracia rusticana*), wild fennel (*Foeniculum vulgare* spp. *piperitum*) and wild oregano (*Origanum heracleoticum*). Ground horseradish is used to aromatize a sauce served with home-made noodles, or an omelette consumed during Carnival. Wild fennel fruits are widely used to aromatize home-made pork sausages. The flowering tops of wild oregano are used to flavour many dishes based on roasted vegetables and cheese, and also a few types of local *pizza*.<sup>4</sup>

*Non-cultivated vegetables and mushrooms: Foods for two seasons*

There is a strong seasonality in the gathering and consumption of these local foods. Weeds are generally gathered and consumed during spring and in October, whereas mushrooms and fruits are gathered and consumed during the entire autumn (Table II). The majority of the non-cultivated vegetables are eaten fresh, directly after they are harvested. In Castelmezzano, the consumption of these species still plays a dominant role in the households during April and May, and, to a lesser degree, during the month of October. Recently a few women started to freeze some plant products in the spring and use them during the year. These mostly included the more frequently consumed young aerial parts of wild fennel (*F. vulgare* ssp. *piperitum*), whorls of wild chicory (*Cichorium intybus*), and the shoots of wild asparagus (*Asparagus acutifolius*).

Only a few plant products are dried, stored, and consumed throughout the year. These include wild fennel fruits and wild oregano, which are both considered condiments. Fruits and mushrooms are gathered during the autumn. Mushrooms are generally not dried, but eaten fresh or sometimes frozen, while most fruits are stored in the cellar and consumed throughout the winter.

Table II. Periods of gathering and consumption (shading) of the most important non-cultivated food plants/mushrooms in Castelmezzano.

| Botanical taxon/taxa   | January | February | March | April | May | June | July | August | September | October | November | December |
|--|---------|----------|-------|-------|-----|------|------|--------|-----------|---------|----------|----------|
| <i>Agaricus campester</i> (L.) FR.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Armoracia rusticana</i> GAERTNER, MEYER ET SCHERB.                                    |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Asparagus acutifolius</i> L.  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Atriplex hortensis</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Beta vulgaris</i> L. ssp. <i>vulgaris</i>   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Borago officinalis</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Brassica rapa</i> L. ssp. <i>rapa</i> (DC.) METZG.                                    |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Castanea sativa</i> MILL.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Cichorium intybus</i> L.  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Clematis vitalba</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Clitocybe geotropa</i> (BULL.: FR.) QUÉL.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Crepis vesicaria</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Ficus carica</i> L. (diverse local varieties)   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Foeniculum vulgare</i> ssp. <i>piperitum</i> (UCRIA) COUTINHO<br>(young aerial parts) |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Foeniculum vulgare</i> ssp. <i>piperitum</i> (UCRIA) COUTINHO<br>(fruits)             |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Leontodon crispus</i> VILL.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Leopoldia comosa comosa</i> (L.) PARL.  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Malus domestica</i> BORKH. (diverse local varieties)                                  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Origanum heracleoticum</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Papaver rhoeas</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Picris echioides</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Pleurotus eryngii</i> (DE CAN.: FR.) QUÉL.  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Prunus dulcis</i> (MILLER) D.A. WEBB.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Pyrus communis</i> L. (diverse local varieties)                                       |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Reichardia picroides</i> (L.) ROTH  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Ruscus aculeatus</i> L.   |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Sonchus oleraceus</i> L.  |         |          |       |       |     |      |      |        |           |         |          |          |
| <i>Tricholoma georgii</i> (CLUS. EX FR.) QUÉL.   |         |          |       |       |     |      |      |        |           |         |          |          |

G, period of gathering (in the only cases when periods of gathering and consumption do not overlap).

*Medicinal foods*

Non-cultivated species with reported specific medicinal properties ingested in a food context are listed in Table III. The consumption of most non-cultivated leafy vegetables is considered 'healthy', though without any specification; however, a few culinary preparations are perceived to be home-made medicines. Overlapping between foods and medicines is quite well known in traditional societies (Etkin & Ross 1982; Etkin 1996; Heinrich 1998; Johns 1999; Pieroni 2000; Pieroni et al. 2002a; Pieroni & Price 2005) and represents an often neglected field in ethnopharmaceutical research.

In Castelmezzano, we recorded a few uncommon food-medicines. As in other areas of Italy, wild asparagus shoots, boiled and consumed with eggs, are considered to be a diuretic, but the medicinal value ascribed to butcher's broom shoots (*R. aculeatus*) is unique. The shoots are boiled, then cooked with bread and dairy products, and are thought to relieve and prevent hepatic troubles. Similarly, sow thistle (*S. oleraceus*) salads are thought to heal gastritis, and brooklime (*Veronica beccabunga*) salads are considered to have diuretic and beneficial effects on kidney stones.

Culinary preparations based on plants and considered to be part of healthcare practices in traditional cultures are usually exclusively administered by the women in the household. These aspects should be investigated in greater depth in future ethnobiological studies in the circum-Mediterranean area, as the household provision of care and health-care (Niehof 2002) is often underestimated, most studies privileging the 'medicine of the healers' instead of the 'medicine of the households' (Howard 2003).

*Cognitive–anthropological and ethno-ecological aspects of non-cultivated food plants in Castelmezzano*

The classification of folk taxa is shown in Figure 4 using a simplified diagram (cf. Berlin 1992). The various categories of non-cultivated botanicals (excluding fruits) covered in this study as classified by local women in Castelmezzano are shown;

Table III. Medicinal foods derived from non-cultivated plants in Castelmezzano.

| Botanical taxa and family                        | English name    | Part(s) used | Culinary preparation  | Medicinal use                   |
|--|-----------------|--------------|---|---------------------------------|
| <i>Asparagus acutifolius</i><br>(Liliaceae s.l.) | Wild asparagus  | sh           | Boiled and consumed alone or with scrambled eggs and fresh cheese                         | Diuretic                        |
| <i>Borago officinalis</i><br>(Boraginaceae)      | Borage          | le           | Soups with onions, dried sweet pepper and served on bread                                 | Galactagogue                    |
| <i>Cichorium intybus</i><br>(Asteraceae)         | Wild chicory    | le           | Soup  | Laxative                        |
| <i>Ruscus aculeatus</i><br>(Liliaceae s.l.)      | Butcher's broom | sh           | Boiled and traditionally consumed with bread and sour cream from <i>Podolica</i> cow milk | Hepato-depurative               |
| <i>Sonchus oleraceus</i><br>(Asteraceae)         | Sow thistle     | wh           | Raw in salad  | Anti-gastritis                  |
| <i>Sorbus domestica</i><br>(Rosaceae)            | Service tree    | fr           | Eaten dried or boiled   | Anti-diarrhoea                  |
| <i>Veronica beccabunga</i><br>(Scrophulariaceae) | Brooklime       | ap           | Eaten raw in salads   | Diuretic; to heal kidney stones |

Part(s) used: ap, aerial parts; fr, fruits; le, leaves; sh, shoots; wh, whorls.



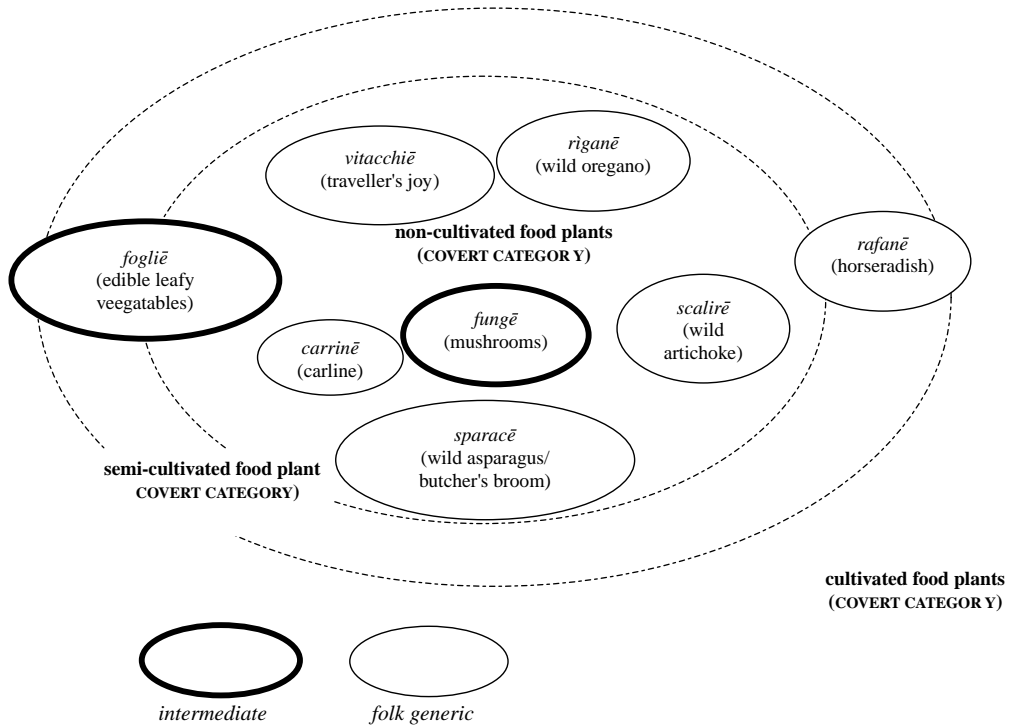


Figure 4. Local classification of a few important non-cultivated food plants (excluding fruits) in Castelmezzano.

however, non-cultivated plants are not represented by a clearly expressed linguistic category. Most are part of the *intermediate* category ‘*fogliē*’ (literally meaning ‘leaves’), roughly corresponding to what the modern nutritional sciences nowadays call green leafy vegetables. Moreover, the distinction between cultivated and non-cultivated species is quite vague and fluctuant, indicating that it is locally of limited relevance. For example, while the term ‘*fogliē*’ generally indicates non-cultivated leafy vegetables, a few semi-cultivated<sup>5</sup> plants are also referred to as ‘*fogliē*’—for example, rocket (*Eruca sativa*), spinach beet (*Beta vulgaris*), and broccoli tops (*Brassica rapa* ssp. *rapa* Group Ruvo Baley). These cultivated species grow in the same ecological zone as the gathered *fogliē*; for example, around home-gardens in the vineyards. According to the locals in Castelmezzano, prototypical for non-cultivated (wild) species are mushrooms (*fungē*) and, to a lesser extent, young non-cultivated shoots like those of the wild asparagus (*A. acutifolius*), butcher’s broom (*R. aculeatus*) and traveller’s joy (*Clematis vitalba*), and the flower receptacles of wild artichokes (*Cynara cardunculus* ssp. *cardunculus*) and carlines (*Carlina acaulis*), which are not commonly considered to be types of *fogliē*.

The group *fogliē*, as defined by local people in Castelmezzano, includes both ‘semi-cultivated plants’ and ‘weedy’ folk taxa. In bio-scientific terms, weeds are defined as plants that ‘grow entirely or predominantly in situations markedly disturbed by man, without, of course, being a deliberately cultivated plant’ (Baker 1965). The term ‘weed’ once implied a plant that is ‘undesirable’ as a major crop, but weeds nowadays

are considered to be a fundamental part of agro-biodiversity (Spahillari et al. 1999). Weeds are spontaneous, have a high reproductive capacity, and are competitive and aggressive in their habits, and, contrary to the general view of a few years ago, they are now recognized as an important source of locally used medicines (Stepp & Moermann 2001; Stepp 2004). Approximately one-third of the species presented in Table I are in fact *weeds*, which highlights their role in the local cuisine.

Mushrooms and shoots are generally gathered in the secondary forests or in the hedgerows bordering the durum wheat fields, areas that are located quite far from the village centres. In contrast, *fogliē* are collected mainly by women near the inhabited centre, along country pathways, in the vineyards or near the wheat fields. Only a few plants are gathered in the marshes. Men are the main collectors of mushrooms.

In Castelmezzano the perception of 'wilderness' seems to be related to the distance from the inhabited village, and especially to the degree of agricultural or pastoral activities that disturb the natural environment. Plants gathered in the forest, such as mushrooms, wild asparagus, butcher's brooms shoots, wild artichoke and carline, are considered to be 'more wild' than those that grow spontaneously and are gathered around the vineyards (*fogliē*).

In summary, these data demonstrate how the collection of non-cultivated plants is inextricably embedded in cultural concepts describing the traditional management of natural resources and the spatial organization of the *natural-cultural* landscape.

#### *Wild or non-cultivated relatives of cultivated plants*

Interest in the conservation of wild or non-cultivated relatives of cultivated plants, which are generally known in the scientific literature as 'Wild Relatives' (WRs) of cultivated plants, has increased considerably in recent times, and is now considered a priority in many biodiversity programmes. Non-cultivated relatives are often used as sources of desirable genes in research related to the genetic improvement of crops (Heywood & Zohary 1995), and, as such, have contributed remarkably to the improvement of many crop species.

Examples of important genera of WRs include *Allium*, *Cynara*, *Daucus*, *Asparagus*, *Lactuca*, and *Cichorium*. Many of these are important crops in south European agriculture. Sometimes, however, local concepts of relatedness between cultivated and non-cultivated vegetables do not follow botanical and bio-scientific schemes (Table IV).

Often the informants in this research considered species that are botanically very different to be related to a crop species; for example, the onion (*Allium cepa*) and *Muscari*, and the tassel hyacinth (*Leopoldia comosa*) and the *Bellavalia* species. In some cases (Linares & Bye 1987), the overall shape and use of a species seem to be essential in this categorization, and, in other cases, in the local folk taxonomy a few proper WRs such as artichoke (*Cynara cardunculus* ssp. *scolymus*) and wild artichoke (*C. cardunculus* ssp. *cardunculus*); carrot and wild carrot (*Daucus carota*) are not considered to be related in any way. This study therefore highlights the need to adapt definitions of WRs in agro-nutritional analyses to specific cultural frameworks, since WRs are sometimes 'seen' by folk cultures in a way that is quite different from the dominant views of bio-science.

Table IV. Cognitive and botanical correspondences between a few cultivated vegetables and their WRs in Castelmezzano.

| Cultivated species<br>(English name,<br>botanical name, folk name)   | Non-cultivated species or WRs<br>(English name, botanical name,<br>folk name)            | Botanical<br>correspondence | Linguistic/cognitive<br>correspondence in<br>Castelmezzano |
|--|--|-----------------------------|--|
| Artichoke, <i>Cynara cardunculus</i> ssp. <i>scolymus</i> , carciofē | Wild artichoke, <i>Cynara cardunculus</i> ssp. <i>cardunculus</i> , scalarī              | Yes                         | No   |
| Asparagus, <i>Asparagus officinalis</i> , sparac                     | Wild asparagus, <i>Asparagus acutifolius</i> , sparacē dē sparaognē                      | Yes                         | Yes  |
| Beet, <i>Beta vulgaris</i> , jetē                                    | Orach, <i>Atriplex hortensis</i> , jetonē  | No                          | Yes  |
| Carrot, <i>Daucus carota</i> , carotē                                | Wild carrot, <i>Daucus carota</i> , radēchē bastenarghē                                  | Yes                         | No   |
| Cichory, <i>Cichorium intybus</i> Catalogna Group, catalognē         | Wild cichory, <i>Cichorium intybus</i> , cicoirē   | Yes                         | No   |
| Fennel, <i>Foeniculum vulgare</i> , fenucchiē                        | Wild fennel, <i>Foeniculum vulgare</i> spp. <i>piperitum</i> , fenucchiē salvaccē        | Yes                         | Yes  |
| Garlic, <i>Allium sativum</i> , agliē                                | Wild leech, <i>Allium ampeloprasum</i> , agliē ardidē                                    | No                          | Yes  |
| Lettuce, <i>Lactuca sativa</i> , lactuchē                            | Wild lettuce, <i>Lactuca serriola</i> , lactucastrē                                      | Yes                         | Yes  |
| Onion, <i>Allium cepa</i> , cepudda                                  | Tassel hyacinth, <i>Leopoldia</i> , <i>Bellavalia</i> , and <i>Muscari</i> ssp., cepuddē | No                          | Yes  |

### Mushrooms

Mushrooms represent often a very neglected area in ethnobiology. Wild edible fungi are collected for food in more than 80 countries all over the world, and their commercial harvesting is an important business in countries as diverse as Zimbabwe, Turkey, Poland, the USA, Northern Korea, and Bhutan (FAO 2004). The dietary contribution of edible mushrooms is seen more than ever as being crucial to the food security in a few marginal areas of Africa, Asia and Latin America.

Apart from very recent ethnomycological field works carried out in Africa and Southern America (Montoya et al. 2003; van Dijk et al. 2003; Zent et al. 2004), no systematic investigations have been carried out in the Mediterranean on the traditional gathering of mushrooms. In Southern Europe the consumption of mushrooms has often been assumed to be irrelevant. In fact, in the past much of the discussion on folk food ethnomycological knowledge has often been influenced by the disputable anthropological discourse on mycophilic and mycophobic populations (Wasson & Wasson 1957).

We found that in Castelmezzano the consumption of a few of the 13 recorded fungi species is very crucial, especially in October and November, with the only exception being *Tricholoma georgii*, which is gathered and consumed in May and June. Most of the mushroom species are gathered mainly by men, and they are generally roasted. *T. georgii*, on the other hand, is generally eaten raw (see Figure 5). Mushrooms are an important food item, and they are often exchanged within the members of the community, thereby strengthening kinships and social relations. A few of the species



Figure 5. The young fruiting bodies of the mushrooms *Tricholoma georgii*, consumed raw with salt, olive oil and lemon juice.

gathered in Castelmezzano are known for their toxicological or pharmacological relevance.

*Lepista nebularis*, for example, which is commonly gathered and consumed in the studied area during the autumn, is known to have caused a few cases of severe gastrointestinal troubles, especially if it is not cooked long enough (Cetto 1987). Recent phytopharmacological investigations on edible European mushrooms have shown extremely interesting antioxidant, anti-inflammatory, anti-cancer, anti-fungal, cholesterol-lowering, anti-hypertensive, and, especially, immunomodulatory properties (Hossain et al. 2003; Sepcic et al. 2003, 2004; Zhao et al. 2003; Hyoung Lee et al. 2004; Wang & Ng 2004). The species with these properties include *Pleurotus eringii*, which is commonly consumed in Castelmezzano, and other species of the same genus; *Pholiota aegerita*, which is seldom consumed in the studied area, but is frequently gathered in other south-Italian territories (Pieroni et al. 2002a); and *Tricholoma giganteum*. We believe a more systematic comparative evaluation of the ethnomycology of diverse Mediterranean areas could reveal very interesting indications for the future of nutraceutical sciences.

#### *Comparative analysis of the use of local food plants in Castelmezzano and the rest of Italy*

A bibliographic comparison of our data was carried out using comprehensive compilations of edible plants (Hedrick 1972; Couplan 1989; Facciola 1998; Plants for a Future Database 2000), the most relevant comprehensive field ethnobotanical studies, and economico-botanical reviews conducted in Italy during the past 50 years that considered non-domesticated food plants (Alliotta 1987; Caneva et al. 1997; Ditunno & Lamusta 1997; Manzi 1999; Guarrera 2003; Picchi & Pieroni 2005).

From a cultural perspective, the most astounding semi-cultivated species in Castelmezzano are horseradish (*A. rusticana*) and orach (*Atriplex hortensis*). Non-cultivated horseradish is very rarely found elsewhere in Italy, and is generally restricted to the Northern/Alpine areas (Pignatti 1982). In Castelmezzano, however, horseradish is very commonly 'tolerated' in home-gardens, and informants insist that this species has always been part of the local cuisine. It is probable that horseradish arrived in Castelmezzano and in the other villages of inland Lucania via migrants from Swabia during the thirteenth century; however, this hypothesis needs to be confirmed by more

detailed historico-botanical study. In a few old home-gardens, we also found a local variety of *A. hortensis*, which previously had been recorded in the home-gardens of isolated mountainous areas of Central Italy (Hammer et al. 1999).

Among the non-cultivated species, it is interesting to note the rapidly disappearing tradition of gathering and consuming pigweed (*Amaranthus retroflexus*) leaves, cotton thistle (*Onopordum illyricum*) roots, wild artichoke (*C. cardunculus*) flower receptacles, *Bellavalia romana* bulbs and the mushroom *L. nebularis*. The culinary use of *Bellavalia* has never been reported in earlier scientific literature, nevertheless in Castelmezzano these *Bellavalia* bulbs are considered to be a good substitute for tassel hyacinth (*L. comosa*) bulbs, whose consumption is very popular in the south-eastern regions of Italy (Apulia and Basilicata) (Casoria et al. 1999; Pieroni et al. 2002a).

It is well known that cultural aspects strongly influence the preference and consumption of medicinal/food species (Heinrich et al. 1998; Pieroni 2001; Pieroni et al. 2002a; Vandebroek et al. 2004). Comparing the ethnobotanical data from Castelmezzano with those recorded during a previous project on the traditional consumption of non-cultivated vegetables (*liakra*) among ethnic 'historical' Albanians (in this case, Arbëreshë of Ginestra/Zhurë, who migrated to southern Italy during the fifteenth century; Pieroni et al. 2002a), it becomes apparent that these weedy foods play a major role among ethnic Albanians (final column in Table I). The number and the frequency of consumption of non-cultivated green vegetables gathered by the Albanians is higher (+8) than in Castelmezzano. However, this is not the case with mushrooms, since the two regions differ somewhat in their ecology and thus mushrooms are less common in Ginestra than in Castelmezzano. Overall, it is obvious that preferences concerning the use of food plants can only be explained based on cultural preferences.

#### *Economic considerations*

Wild asparagus and wild fennel are commonly gathered in Castelmezzano, and are also sold in unofficial, small, open-air markets in the nearby city of Potenza. Less frequently seen in the local markets are *S. oleraceus*, *B. officinalis*, *P. rhoeas*, and *C. vesicaria* leaves, which are usually sold in mixtures with other cultivated leafy vegetables. Small-scale trade of fresh *T. georgii* mushrooms in May–June and of *Morus* ssp. fruits in June also occurs in Potenza.

Clearly, the potential of such food plants should be further explored. For example, in Tuscany *R. picroides* whorls are gathered and marketed widely during winter and spring, representing an important source of additional cash for small farmers. If attempts were made at sustainable cultivation and/or controlled gathering activities of a few of the non-cultivated vegetables recorded in this study, it is possible these could generate interesting economic opportunities for the local communities of the Dolomiti Lucane.

#### *Nutritional considerations*

High concentrations of ascorbic acid and carotenoids have been detected in non-domesticated *Amaranthus* and *Chenopodium* ssp. (Guil et al. 1997), while remarkably high levels of flavonoids has been determined in the leaves of three non-domesticated food plants from Crete, which are also consumed in Castelmezzano. These are *P. rhoeas*, *F. vulgare* and *S. oleraceus* (Trichoupolou et al. 2000). Phenols have also

been found in high concentration in *C. vesicaria* (Zeghichi et al. 2003b). High levels of vitamin C and carotenoids have been reported in *S. oleraceus* leaves (Guil-Guerrero et al. 1998), and recent ethnobotanical studies have demonstrated *in vitro* anti-oxidant activity in *L. comosa*, *O. heracleoticum*, *C. vesicaria* and *P. rhoeas* (Pieroni et al. 2002b; Zeghichi et al. 2003b; El & Karakaya 2004).

On the other hand, most of the non-cultivated vegetables recorded in Castelmezzano (e.g. *Atriplex*, *Clematis*, *Crepis*, *Leontodon*, *Picris*, and *Reichardia* ssp.), and nearly all of the mushroom species have not been yet studied in any detail phytochemically, nutritionally or phytopharmacologically. Moreover, in the case of a few plants such as *R. aculeatus*, quite a lot is known in the modern pharmacology and evidence-based phytotherapy about the dried plant parts, while the fresh portions that are consumed as food have never been analysed in pharmacological or nutritional studies, so we do not know their potential contribution to a healthy diet. The potential of non-cultivated vegetables and mushrooms in preventive medicine and their benefits in term of *phytoceutical* intake in the daily diet surely merits in-depth investigations.

## Conclusions

Castelmezzano is a prime example of a rapidly changing community where local traditions compete with modern ways of life. The tradition of using edible, non-cultivated plant products is still alive among the older generations; however, it seems only a question of time before this traditional knowledge is lost forever. Hence, ethnobotanical study by outsiders should be viewed from the perspective of using such scientific data within the community and beyond. Also urgently required are sustainable projects for studying the gathering and culinary processing of these plants and for instilling existing TK in the younger generations.

This study has stressed the need to re-evaluate the importance of local non-cultivated plants as sources for food speciality products in Mediterranean communities. A few studies have recently underlined the nutritional potential of non-cultivated vegetables native to the Mediterranean and the Near East (Guil-Guerrero et al. 1998, 1999; Trichoupolou et al. 2000; Branca et al. 2002; Pieroni et al. 2002b; Coulaidis et al. 2003; Turan et al. 2003; Zeghichi et al. 2003a, 2003b; El & Karakaya 2004); however, further systematic studies on the phytochemistry and phytopharmacology of many of these species have been carried out within the framework of the pluri-disciplinary research project illustrated in the Introduction, as these will offer interesting inputs into modern nutritional and food sciences.

Furthermore, profitable, integrated small-scale activities such as bio-diversity, conservation and eco-tourism, involving sustainable harvesting of these taxa, could represent an important source of income, especially in less affluent southern European areas. These local products would be greeted enthusiastically by urban populations interested in re-discovering 'traditional' food products, dishes and cuisines, given the new (disputable) nutritional aesthetics demonstrated by the international movement *Slow Food* (Miele & Murdoch 2002), which originated in Bra, northern Italy, in 1986. Although defined as 'culinary Luddism' by some, this interesting shift in ideological and cultural discourse on food and nutrition originated by a segment of the Italian Left (Parasecoli 2003) has spread to many other European countries. Moreover, the protection of 'endangered foods' provides the lens through which people in many rural communities often re-construct their identity and take up a position in the

contemporary cultural debate on market models (Leitch 2003) and within the contradictory phenomenon of *glocalism* ('global localism').

The present study demonstrates how the traditional consumption of these species is strongly embedded in unique cultural concepts. This shows a strong link between local people and their management of the natural environment. The renaissance of this TK will require novel curricula in schools and universities (Verde López & Fajardo Rodríguez 2003; Slow Food 2005), and it will also require substantial changes in the agenda of many in the food industry, as well as local policy-makers and cultural stakeholders in the Mediterranean. Sustaining food agro-biodiversity is meaningful only if the efforts take in account food's inextricable connections with cultural heritage. Known as 'terroir' in France (Bérard et al. 2005), nowadays we call it 'bio-cultural diversity' (Maffi 2001).

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### Notes

- 1 A clarification is also needed here concerning the terms 'traditional' and 'traditionally', which are frequently (ab-)used in the terminology of many discourses touching ethnobotany and food anthropological horizons. We use here these terms for defining something that has been an *integrated part of a culture for more than one generation* (Ogoye-Ndegwa & Aagaard-Hansen 2003).
- 2 The region where Castelmezzano is located has been historically named Lucania, a term that is still used by the local population.
- 3 This local breed of cattle has descended from the *Bos primigenius podolicus*, the very large, long-horned cattle thought to have been domesticated in the Middle East during the fourth century BC. Most authors agree that this animal was introduced into Southern Italy by the Longobards during the sixth century AD (Picchi 2001).
- 4 In Castelmezzano the term *pizza* indicates a sort of home-made flat bread, which can be dressed in many different ways: with tomatoes, as in the famous Italian pizza, or with cubes of pork lard, sweet peppers, and sometimes even sugar only.
- 5 'Semi-cultivated plants' not deliberately planted in the home-gardens/vineyards, but deliberately tolerated by the people and grown semi-spontaneously, even if they do not represent spontaneous plants in a strictly botanical sense, are different from 'weeds', which have similar *ethno-ecological characteristics* but are botanically considered spontaneous.

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