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Unity in diversity—food plants and fungi of Sakartvelo (Republic of Georgia), Caucasus

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Abstract

Background: The Republic of Georgia is part of the Caucasus biodiversity hotspot, and human agricultural plant use dates back at least 6000 years. Over the last years, lots of ethnobotanical research on the area has been published. In this paper, we analyze the use of food plants in the 80% of Georgia not occupied by Russian forces. We hypothesized that (1) given the long tradition of plant use, and the isolation under Soviet rule, plant use both based on home gardens and wild harvesting would be more pronounced in Georgia than in the wider region, (2) food plant use knowledge would be widely and equally spread in most of Georgia, (3) there would still be incidence of knowledge loss despite wide plant use, especially in climatically favored agricultural regions in Western and Eastern Georgia.

Methods: From 2013 to 2019, we interviewed over 380 participants in all regions of Georgia not occupied by Russian forces and recorded over 19,800 mentions of food plants. All interviews were carried out in the participants' homes and gardens by native speakers of Georgian and its dialects (Imeretian, Rachian, Lechkhurian, Tush, Khevsurian, Psavian, Kakhetian), other Kartvelian languages (Megrelian, Svan) and minority languages (Ossetian, Ude, Azeri, Armenian, Greek).

Results: The regional division was based primarily on historic provinces of Georgia, which often coincides with the current administrative borders. The total number of taxa, mostly identified to species, including their varieties, was 527. Taxonomically, the difference between two food plant groups—garden versus wild—was strongly pronounced even at family level. The richness of plant families was 65 versus 97 families in garden versus wild plants, respectively, and the difference was highly significant. Other diversity indices also unequivocally pointed to considerably more diverse family composition of wild collected versus garden plants as the differences between all the tested diversity indices appeared to be highly significant.

The wide use of leaves for herb pies and lactofermented is of particular interest. Some of the ingredients are toxic in larger quantities, and the participants pointed out that careful preparation was needed. The authors explicitly decided to not give any recipes, given that many of the species are widespread, and compound composition—and with it possible toxic effects—might vary across the distribution range, so that a preparation method that sufficiently reduces toxicity in the Caucasus might not necessary be applicable in other areas.

Conclusions: Relationships among the regions in the case of wild food plants show a different and clearer pattern. Adjacent regions cluster together (Kvemo Zemo Racha, and Zemo Imereti; Samegrelo, Guria, Adjara, Lechkhumi and Kvemo and Zemo Svaneti; Meskheti, Javakheti, Kvemo Kartli; Mtianeti, Kakheti, Khevsureti, Tusheti. Like in the case of

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the garden food plants, species diversity of wild food plants mentioned varied strongly. Climate severity and traditions of the use of wild food plants might play role in this variation. Overall food plant knowledge is widely spread all-across Georgia, and broadly maintained.

Keywords: Republic of Georgia, Caucasus, Traditional Knowledge, Knowledge loss, Food plants, Conservation

Background

Georgia is situated between latitudes 41° and 44° N, and longitudes 40° and 47° E, with an area of 69,700 km², with 20% of the country currently occupied by Russian forces (Fig. 1). Georgia politically associates with European Union and takes part in all major programs of European development and cooperation. Georgia can be defined as a transcontinental country on the divide between Asia and Europe, with its larger part located south to this divide (i.e., in Asia) and smaller but strategically important parts (Khevi, Piriketi Khevsureti, etc.) located north of the continent divide (i.e., in Europe) [1].

The uplift of the Georgian Caucasus started in the late Oligocene and shares the same structural characteristics as the younger mountains of Europe. The Greater Caucasus mostly includes Cretaceous and Jurassic rocks, interspersed with Paleozoic and Precambrian formations in higher regions. Hard, crystalline, metamorphosed

rocks like schist and gneisses, as well as pre-Jurassic granites are found in the western part, while softer, Early and Middle Jurassic clayey schist and sandstones in the eastern part. The foot of the Greater Caucasus are built of younger limestone, sandstones, and marls. The Lesser Caucasus in contrast is predominantly formed of Paleogene rocks interspersed with Jurassic and Cretaceous formations. The youngest geological structures of Georgia are represented by the vast volcanic plateaus in the southern part of country. These divisions lead to an extremely complex terrain with pronounced climatic gradients: (1) the mountains of the greater Caucasus with peaks over 5000 m (Shkara, Babis Mta, Chanchakhi, etc.); (2) the inter-mountain plains between the Greater and Lesser Caucasus mountains; (3) the mountains of the Lesser Caucasus with peaks rarely exceeding 3000 m (Mepistskaro, Kheva, Shavi Klde, Kanis Mta, Arsiani); (4)



Fig. 1 Location and historical provinces of Georgia

the Volcanic plateau of the Southern Georgia with elevations from 1300 to 2200 m [2–4].

Georgia's climate is influenced by its location in the warm temperate zone stretching from the Black to the Caspian Seas, and the complexity of its terrain. Georgia has a coastline of 330 km with warm climate, the mean temperature reaching 4–7 °C in January and 22–23 °C in July, and high precipitation (1500–2000 mm annually). The warm oceanic-subtropical climate can be found only at lower elevations (less than 650 m); in more elevated terrains and to the north and east the climate becomes moderately warm. The Greater Caucasus bars cold air from the north, while warm and moist air from the Black Sea spreads easily into the coastal lowlands until reaching the Likhi range, which partly impedes further westward movement of the warm and moist air. In central Georgia, precipitation in mountains can be twice that in the plains. In the mountains, weather conditions change to cool and wet quite steeply with increasing elevation and above 2100 m the environment becomes sub-alpine and alpine, with permanent snow and ice above 3600 m [2–4].

Plant use history

The Caucasus is regarded as global biodiversity hotspot [5–8]. Botanical has a long history, and the vegetation composition as well as flora are well-known [2, 3].

The territory of modern-day Georgia (Fig. 1) has been inhabited since the early Stone Age, and agriculture was already well-developed during the early Neolithic [9], although human occupation started already in the Early Pleistocene, with the 1.7-Myr-old hominid fossils of Dmanisi in Southern Georgia being the earliest known hominid-site outside of Africa [10–12]. The history of plant and animal use has been documented since the Upper Paleolithic through fossils found in Dzudzuana Cave, dated to ~36–34 Ka BP, including wool (*Capra caucasica*), and dyed fibers of wild flax (*Linum usitatissimum*) [13]. Archeological findings from the Neolithic and Early Bronze periods dating back to the 6th–2nd millennium BC are rich with plant fossils and seeds of both wild species and local landraces [14]. The earliest seeds of *Vitis vinifera* (grapevine) were excavated in southern Georgia and date to about 8000 years BP [15]. Medicinal species like *Alchemilla millefolium*, *Artemisia annua*, *A. absinthium*, *Centaurea jacea* and *Urtica dioica* found in the archeological record are still used in the modern pharmacopoeia [16].

Due to its ancient roots agriculture in Georgia is characterized by a great diversity of landraces, and endemic species of crops, already documented in Soviet times [17–22]. However, starting with the implementation of Stalinist agricultural reforms in the 1950s, a rapid loss of local cultivars occurred [23–26]. This process accelerated

during post-independence, and knowledge loss has been shown to even extent to aggravate wolf-human conflicts [27]. However, a wide variety of local cultivars can still be found in case of *Vitis vinifera* (Vitaceae) shows its highest genetic diversity in Georgia, with over 600 varieties known, and several dozen used commercially [9, 15, 28–31]. In contrast, essentially none of the 144 varieties, and 150 forms of wheat (*Triticum*) registered in Georgia in the 1940s [21, 22] are sown in modern Georgian commercial agriculture [25], although traditional varieties are still reported from nearby Turkey [32]. The situation is similar in case of *Hordeum vulgare* (Poaceae) which originally was important in beer production, for religious rituals and traditional medicine [9, 33] and *Secale cereale* (Poaceae) [34].

In contrast to the loss of cereals, legumes like peas (*Pisum sativum*), lentils (*Lens cornicularis*), chickpeas (*Cicer arietinum*), fava beans (*Vicia faba*), and vegetables like garden lettuce (*Lactuca sativa*), beans (*Phaseolus vulgaris*), basil (*Ocimum basilicum*), peppermint (*Mentha x piperita*), onions (*Allium cepa*), sugar beets (*Beta vulgaris*), spinach (*Spinacia oleracea*), carrots (*Daucus carota*), radishes (*Raphanus sativus*), turnips (*Brassica rapa* var. *rapa*), welsh onion (*Allium fistulosum*), amaranth (*Amaranthus viridis*), goosefoot (*Chenopodium album*), leeks (*Allium ampeloprasum*) and garlic (*Allium sativum*) are still common in home gardens. Herbs like parsley (*Petroselinum crispum*), coriander (*Coriandrum sativum*), tarragon (*Artemisia dracunculoides*), savory (*Satureja hortensis*), garden cress (*Lepidium sativum*), dill (*Anethum graveolens*), fennel (*Foeniculum vulgare*), celery (*Apium dulce*), and *Allium fistulosum* (Chinese onion) are widely cultivated and popular ingredients of local cuisine [1]. The maintenance of such diversity is of high importance as source material for global crop production [35, 36]. Many species are widely sold as medicines [37].

Over the last years, ethnobotanical research in Georgia has received a large boost, and a wide variety of studies on all aspects of plant use have been published [38–52]. Few of these however focused entirely of food plants [38, 52], many of which are still cultivated in small home-gardens. Home-gardens are often cited as important reservoirs for crop germplasm [53–58] and are mostly sources of food [59, 60]. In wider Eurasia, home gardens have been shown to be an important repository of plant diversity are often part of complex seed exchange networks [61–64].

Given the trajectory of ethnobotanical studies in Georgia, a meta-analysis of the data food plant uses was long overdue. In this publication, we hypothesized that (1) given the long tradition of plant use, and the isolation under Soviet rule, plant use both based on home gardens and wild harvesting would be more pronounced in

Table 1 All Food plant and fungal species encountered in Georgia

Family / Scientific name	Local Name (Georgian, if not indicated otherwise in parenthesis: Arm. = Armenian; Imer. = Imeretian; Khev. = Khevsurian; Psha. = Pshaviab; Rach. = Rachian; Russ. = Russian; Svan. = Svanetian; Tush. = Tushetian)	Use description (for a short explanation of traditional foods see below)	Location
Actinidiaceae			
<i>Actinidia callosa</i> Lindl.	კივი (k'ivi), აქტინიდია (akt'iniidia)	Fruit - Eaten raw, used to distill Alcohol, and make Jam Leaves - Phkhali	Garden
Adoxaceae			
<i>Sambucus ebulus</i> L.	ანწლი (ants'li), აწწლი (ants'ili), ღენღი (genghi Svan.), გენჭვ (gentchv Svan.)	Fruit - Eaten raw, used to distill Alcohol, and make Jam Leaves - Phkhali	Wild collected, Garden
<i>Sambucus nigra</i> L.	დიდგულა (didgula), თიფსელა (tkhipsela), თოფილაი (thophilai Svan.)	Fruit - Eaten raw, used to distill Alcohol, and to make Jam	Wild collected
<i>Viburnum lantana</i> L.	უზანი (uzani), თურსა (tursa Tush.), წონწოფ (tzontzoph Svan.), ალუდა (aluda Khev.), ჭიჩულა (urdzani Khev.), ჭიჩულა (t'sirchua Khev.)	Fruit - Eaten raw	Wild collected, Garden
<i>Viburnum opulus</i> L.	ძახველი (dzakhveli), წონწოფ (tzontzoph Svan.), სანწეფი (santzeph Svan.), წანწოფი (ts'ants'ofi Svan.), ალუდა (aluda Khev.)	Fruit - Eaten raw, used to distill Alcohol, and for tea	Wild collected
Amaranthaceae			
<i>Amaranthus cruentus</i> L.	ჯიჯლაყ-ყვაკილი (jijlaq'a-q'vavili), ლერტაგიჭი (lertagich'i Ossetian)	Leaves - Phkhali	Garden
<i>Amaranthus palmeri</i> S. Watson	ჯიჯლაყი (jijlaq'hi)	Leaves - Phkhali	Garden, Wild collected
<i>Amaranthus paniculatus</i> L.	წითელი ჯიჯლაყა (ts'iteli jijlaq'a), თათრულა ფხალი (tatrula pkhali)	Leaves, Stem - Phkhali	Wild collected
<i>Amaranthus retroflexus</i> L.	ჯიჯლაყა (jijlaq'a), ჭიჭლაყა (ch'ich'laq'a), რუხვეფერია (rukhp'eria), წითელი ფხალი (ts'iteli pkhali), ლიხანა ფხალი (likhana pkhali), ჩვეულეზრევი ჯიჯლაყა (chveulebrivi jijlaq'a), თვითმავალა (tvitmavala), წონწარა ფხალი (ts'ots'nara pkhali), წონწარა (ts'ots'nara), მხალი-ბალახი (mkhali balakji), თეთრი მხალი (tetri mkhali)	Leaves, Stem - Phkhali, Khachapuri	Wild collected, Garden
<i>Amaranthus spinosus</i> L.	ჯიჯლაყ-ყვაკილი (jijlaq'a-q'vavili)	Stem - Eaten raw, Phkhali	Garden
<i>Atriplex hortensis</i> L.	წითელი მხალი (ts'iteli pkhali), თათაბო (tatabo Tush.)	Leaves - Phkhali	Wild collected
<i>Beta vulgaris</i> L.	ჭარხალი (ch'arkhali), წითელი ჭარხალი (tsiteli ch'arkhali), შავი ფხალი (shavi pkhali), ხოლმუნტა (kholnuta Khev.), (sokla Arm.)	Root - Eaten raw Leaves - Pickled (lactofermented), Phkhali	Garden
<i>Beta vulgaris</i> L. ssp. <i>cicla</i> (L.) Moq.	მანგოლდი (mangoldi), ფოთლოვანი ჭარხალი (phothlovani charkhali), ჭარხალი (ch'arkhali), წითელი ფხალი (ts'iteli pkhali), სოტოლია (sot'olia)	Leaves - Phkhali	Garden
<i>Beta vulgaris</i> L. ssp. <i>esculenta</i> (Salisb.) Gürke var. <i>altissima</i> Rösig.	შაქრის ჭარხალი (shakris ch'arkhali), ხულ (khul Svan.)	Root - Eaten raw and cooked Leaves - Pickled (lactofermented), Phkhali	Garden
<i>Blitum virgatum</i> L.	მათუთა (matula, ნაცარქათამა (natsarkatama), ძაღლთჟოლა (dzaghltzhola Tush.)	Leaves, Stem, Seeds - Phkhali	Wild collected
<i>Chenopodium album</i> L.	ნაცარქათამა (natsarqathama), მხალი (mkhali), ჯუმურია (jumuria), ქათამნაცარა (katam, natsara), ქათანაცარა (qathanatsara Svan.), მესგვლა (mesgvla Svan.), მენსკვა (menshkva Svan.), ფუტაყ (futac' Ossetian)	Leaves, Stem - Phkhali, Khachapuri, - Mkhlovana	Garden, Wild collected
<i>Chenopodium bonus-henricus</i> L.	მხალი (mkhali)	Leaves - Phkhali	Garden
<i>Chenopodium</i> sp.	ნაცარქათამა (tsatsarkatama Khev.)	Stem - Pickled (lactofermented)	Wild collected
<i>Spinacia oleracea</i> L.	ისპანახი (isp'anakhi), ნაცარქათამა (natsarkatama)	Leaves, Stem - Phkhali, Pickled (lactofermented)	Garden
Amaryllidaceae			
<i>Allium ampeloprasum</i> L.	პრასი (prasi), პრასა (prasa Svan.)	Leaves, Stem, Whole plant - Phkhali	Garden
<i>Allium ascalonicum</i> L.	სოხვი (sokhvi)	Stem - Eaten raw	Garden
<i>Allium atroviolaceum</i> Boiss	ყანის ნიორი (q'anis ni ori), კატაპრასი (k'atap'راسي)	Bulb - Pickled (lactofermented)	Garden
<i>Allium cepa</i> L.	ხახვი (khakhvi), ხვარხვი (khvarkhvi), შირაქულა (shirakula), ჩ'ლაყვა ხახვი (ch'lak'va khakhvi), ქართოპილა ხახვი (k'art'opila khakhvi)	Bulb, Whole plant - Eaten raw and cooked, Spice Leaves - Phkhali	Garden
<i>Allium fistulosum</i> L.	ჭლაკვი (ch'lakvi), სოხვი (sokhvi), ჭყუბალა (ch'q'ubala), ჭაგვ (ch'hagv Svan.)	Bulb, Whole plant, Stem, Leave - Eaten raw and cooked, Spice, Phkhali	Garden
<i>Allium kunthianum</i> Vved.	კლდის ხახვი (k'l'dis khakhvi), კლდისნიორა (k'l'disni ora)	Leaves - Phkhali	Wild collected
<i>Allium ponticum</i> Miscz.	ყანის ნიორი (q'anis ni ori), კატაპრასი (k'atap'راسي)	Bulb - Pickled (lactofermented)	Garden
<i>Allium porrum</i> L.	პრასი (p'راسي), იმერული პრასი (imeruli p'راسي), პრასა (p'راسا)	Bulb, Whole plant, Stem, Leave - Eaten raw and cooked, Spice, Phkhali	Garden

Table 1 (continued)

<i>Allium rotundum</i> L.	ყანის ნიორი (q'anis niori), ქლაკვი (ch'lak'vi), სორხი (sorkhi), ღოღე სორხი (g'og'e sorkhi)	Stem, Bulb - Eaten raw, Phkhali, Pickled (lactofermented)	Garden
<i>Allium sativum</i> L.	ნიორი (niori), რუსულა ნიორი (rusula niori)	Bulb, Flowers, Leaves, Whole plant - Eaten raw, Cooked, Phkhali	Garden
<i>Allium</i> sp.	ველური პრასა (veluri p'rasa), ველური პრასა (veluri p'rasa)	Stem - Eaten raw	Wild collected
<i>Allium ursinum</i> L.	ღანძილი (ghanzili), მთის ღანძილი (mtis ghandzil), ოლენა (olena), სობო (sobo), ნიხანძილ (nikhandzil Svan.)	Leaves, Whole plant - Phkhali, Pickled (lactofermented)	Wild collected, Garden
<i>Allium victorialis</i> L.	ღანძილი (ghanzili), მთის ღანძილი (mtis ghandzil), ოლენა (olena), სობო (sobo), მთის ღანძილი (mtis ghanzili), (t'q'niora) ტყინიორა, ნიორა (niora), შყაუვი ღვესუ (shq'azhvi g'vesu), ნიხანძილ (nikhandzil Svan.), შიშლილ (shishkil Svan.), შებუ (shebu Tush., Khev.), (Masundi Arm.)	Leaves, Stem, Bulb, Whole plant - Phkhali, Pickled (lactofermented)	Wild collected, Garden
<i>Galanthus woronowii</i> Losinsk.	ვორონოვის თეთრყვავილა (voronovis tetrq'avila), ენძელა (endzela)	Bulb - Eaten raw (NOTE - in other regions regarded as toxic)	Wild collected
<i>Narcissus</i> sp.	ნარგიზი (nargizi), ნიორა მცენარე (niora mtsenare)	Flower - Eaten raw (NOTE - in other regions regarded as toxic)	Wild collected
Annonaceae			
<i>Annona cherimola</i> Mill.	ანონა (anona)	Fruit - Eaten raw	Garden
Apiaceae			
<i>Aethusa cynapium</i> L.	მარიამძმარა (mariamdzmara)	Leaves - Phkhali	Wild collected
<i>Agasyllis latifolia</i> (Bieb.) Boiss.	დუცი (dutsi), ლაგი (lagi Khev.), ლჰჰ (gheh Svan.), ლეი (lei Svan.)	Stem, Leaves, Root - Phkhali, Pickled (lactifermented), Chave, Khachapuri	Wild collected
<i>Anethum graveolens</i> L.	კამა (k'ama), ცერეცო დიდი კამა (tseretso didi k'ama), ცერეცო (tseretso)	Leaves, Seeds, Stem, Whole plant - Spice, ingredient of Svan salt, Eaten raw	Garden
<i>Angelica tatianae</i> Bordz.	ანგელოზა (angeloz)	Stem - Pickled (lactofermented)	Wild collected
<i>Anthriscus cerefolium</i> (L.) Hoffm.	ჭყიმა-ფხალი (ch'q'ima-phkali)	Leaves, Stem - Phkhali	Garden
<i>Anthriscus nemorosus</i> (M. Bieb.) Spreng.	მათუთი (matuti), ლიმი (limi Svan.)	Leaves, Seeds, Stem - Pickled (lactofermented), Eaten raw	Wild collected, Garden
<i>Anthriscus sylvestris</i> L.	ლიმი (limi), ჭყიმი (ch'q'imi), მანარა (matsara), ლიმის დედა (g'imis deda), (Mandag Arm.)	Stem, Leaves - Pickled (lactofermented), Phkhali	Wild collected
<i>Apium graveolens</i> L.	ნიახური (niakhuri), დიდი ნიახური (didi niakhuri), სონა (sona)	Stem, Root, Leaves - Eaten raw, Pickled (lactofermented), Spice, Phkhali	Garden
<i>Carum carvi</i> L.	ძირა (zira), კვლიავი (k'vilavi), კ'ვლიავა (k'vilapi), წყლის ქონდარი (ts'q'lis kondari Tush.), გიცრულ (gitsrul Svan.)	Seeds - Spice, ingredient of Svan salt, Eaten raw, Khinkali, Chave, Pickled (lactofermented)	Garden, Wild collected
<i>Chaerophyllum aureum</i> L.	ძენძკლია (dzents'k'lia), ყინტორა (q'int'ora), სობო (khoz), ყვასგ სვან (qhvassg Svan.), ჭიმი (ch'imi Tush.)	Stem, Root - Pickled (lactofermented)	Wild collected
<i>Chaerophyllum bulbosum</i> L.	ლიმი (g'imi), ატოლი (at'oli), ჭიმი (ch'imi Tush.)	Stem, Leaves, Seeds - Pickled (lactofermented), Phkhali, Khachapuri	Wild collected
<i>Chaerophyllum caucasicum</i> (Fisch.) B. Schischk	ლიმი (g'imi), ატოლი (at'oli), ხიფხოლა (khipkhola), ჭიმი (ch'imi Tush.), (Shushan Arm.), (Pampara Arm.)	Leaves, Stem, Root - Phkhali, Khachapuri, Pickled (lactofermented)	Wild collected
<i>Conium maculatum</i> L.	მათუთი (matuti), კონიო (k'onio), მათუთა (matuta)	Leaves, Stem - Phkhali, Pickled (lactofermented) (NOTE - in other regions regarded as highly toxic)	Wild collected
<i>Coriandrum sativum</i> L.	ქინძი (kindzi)	Seeds, Leaves, Stem - ingredient of Svan salt, Phkhali, Spice	Garden
<i>Daucus carota</i> L. ssp. <i>sativus</i>	სტატილო (st'apilo), ფერისცვალა (peristsvala), სიქილონჯა (sikilonja), მარკოვი (markovi), (Markowa Arm.)	Root, Leaves, Whole plant - Phkhali, Eaten raw	Garden
<i>Falcaria vulgaris</i> Bernh.	კოფრჩხილა (k'oprchkhila), ბატიფეხა (bat'ipekha)	Leaves, Stem - Phkhali, Pickled (lactofermented)	Wild collected
<i>Foeniculum vulgare</i> Mill.	ცერეცო (tseretso), დიდი კამა (didi k'ama), ოკრუპი (ok'rup'i), კამა (k'ama)	Root, Seeds, Stem, Leaves - Eaten raw, Phkhali, ingredient of Svan salt, Spice	Garden
<i>Heraclium asperum</i> M. Bieb.	შუპყა (shupq'a)	Stem, Leaves - Pickled (lactofermented), Sats'ebai, Phkhali	Wild collected
<i>Heraclium leskovii</i> Grossh.	შუპყა (shupq'a)	Stem - Pickled (lactofermented)	Wild collected
<i>Heraclium</i> sect. <i>vilosum</i>	თეთრი დიყი (tetri diq'i), ლაგი (lagi)	Stem - Pickled (lactofermented)	Wild collected
<i>Heraclium sosnowskyi</i> Manden	დიყი (diq'i), ხევსურის დიყი (khevsuris diq'i), დიყინა (diq'ina), ქეხი (Qekhi Arm.)	Leaves, Seeds, Stem - Pickled (lactofermented), - Phkhali, Sats'ebai, Chave	Wild collected, Garden

Table 1 (continued)

<i>Heraclium</i> sp.	ლემბი (leshkhi)	Stem - Pickled (lactofermented)	Wild collected
<i>Heraclium</i> sp.	დიცი (diq'i)	Leaves - Phkhali	Wild collected
<i>Heraclium</i> sp.	დიცი (diq'i), მდიცი (mdiq'i), მდუხი (mdusi)	Stem - Pickled (lactofermented)	Wild collected
<i>Heraclium</i> sp.	დიცი (diq'i), ჩიჩვლა (chichvla), ნანჩხოლ (nanchkhol)	Stem - Pickled (lactofermented)	Wild collected
<i>Heraclium wilhelmsii</i> Fisch. & Avé-Lal	დიცი (diq'i), ქეხი (Qekhi Arm.)	Stem - Pickled (lactofermented)	Wild collected
<i>Hippomarathrum crispum</i> (Pers.) Boiss.	ქარქვეტა (Marts'q'vi), ბურბურა (burbura), ქარქვეტა (karkvet'a)	Sem, Leaves - Phkhali, Pickled (lactofermented)	Wild collected
<i>Levisticum officinale</i> W.D.J. Koch	ცისკარა (tsisk'ara), სასუქა (sasukua)	Leaves, Stem - Phkhali, Chave, Sats'ebai, Pickled (lactofermented)	Wild collected, Garden
<i>Ligusticum alatum</i> Spreng.	მარიამა (mariamdzmara)	Leaves - Phkhali, Sats'ebai	Wild collected
<i>Petroselinum crispum</i> (Mill.) Fuss	ოხრახუში (okhrakushi), მაკიდო (mak'ido), მადდანობი	Leaves, Stem, Whole plant, Seeds	Garden
<i>Xanthogalum purpurascens</i> Avé-Lal.	ჯოჭი (joch'i), ქურქუნდელი (kurkundeli)	- Spice, eaten raw Stem - Eaten raw	Wild collected
Araceae			
<i>Arum italicum</i> subsp. <i>albisothum</i> (Stevens ex Ledeb.) Prime	ქლაკოდა (qalakoda Svan.)	Leaves - Phkhali	Wild collected
<i>Arum orientale</i> M. Bieb.	ქლაკოდა (qalakoda Svan.)	Leaves - Phkhali	Wild collected
<i>Arum</i> sp.	ნიუკა (niuk'a), დაჭრილა (dach'rila), ქლაკოდა (qalakoda Svan.)	Leaves, Stem - Phkhali, Eaten raw	Wild collected, Garden
Araliaceae			
<i>Aralia spinosa</i> L.	არალია (aralia)	Flower - Honey source (Bees)	Garden
Asparagaceae			
<i>Asparagus officinalis</i> L.	სატაცური (sat'atsuri)	Human Food, Human Food - Phkhali	Garden, Wild collected
<i>Asparagus</i> sp.	სატაცური (sat'atsuri)	Human food	Wild collected
<i>Muscari sosnowskiy</i> Schchian	ყაზახა (q'azakha)	Human Food	Wild collected
<i>Ornithogalum woronowii</i> Kasch	იმერული ძაღლინორა (imeruli dzag'lniora)	Leaves, Bulb - Phkhali, Eaten raw	Wild collected
<i>Polygonatum glaberrimum</i> C. Koch	სვინტრი (svint'ri), სკვანტილა (sk'vant'ila)	Leaves - Chave, Phkhali	Wild collected
<i>Ruscus colchicus</i> Yeo	ძმერხლი (dzmerkhlil)	Stem - Eaten raw	Wild collected
<i>Ruscus hypophyllum</i> L.	ძმერხლი (dzmerkhlil)	Human food	Wild collected
<i>Scilla</i> sp.	ცისთვალა (tsitsvala), ოლენა (olena)	Stem - Eaten raw	Wild collected
Asteraceae			
<i>Achillea grandiflora</i> M. Bieb.	ჯორთკუდა (jortk'uda)	Leaves - Phkhali	Wild collected
<i>Achillea millefolium</i> L.	ფარსმანდუკი (parsmanduk'i)	Whole plant, Leaves - Tea, Khachapuri	Wild collected
<i>Arctium lappa</i> L.	ძირხვენა (dzirxvena), ოროვანდი (orovandi), (Graduk Arm.)	Leaves, Root, Stem - Phkhali, Eaten raw, Pickled (lactofermented)	Wild collected
<i>Artemisia absinthium</i> L.	აბზინდა (abzinda), ხმატურა (khmat'ura), მიწავაშლა (mits'avashla), გიეში (gieshi Tush.)	Leaves - Phkhali, Tea	Garden, Wild collected
<i>Artemisia dracunculus</i> L.	ტარხუნა (t'arkhuna)	Leaves, Root, Stem, Seeds - Phkhali, Spice, Eaten raw, Beverage	Garden
<i>Artemisia vulgaris</i> L.	ჯორთკუდა (jortk'uda)	Leaved - Phkhali, Sats'ebai	Wild collected
<i>Bidens tripartita</i> L.	ორკილა (Orkbila), ყერედა (Ch'ereda Russ.)	Seeds - Eaten raw	Wild collected
<i>Cichorium intybus</i> L.	ხაპრაი (khap'arai), ტიტა (t'i'ts), ვარდკაჭაჭა (vardk'ach'ach'a Svan.), ხათალიდინც (khataldidinq' Ossetian)	Leaves, Stem, Root - Sats'ebai Root - Coffee replacement	Wild collected
<i>Cirsium arvense</i> (L.) Scop.	თეთრი ნარი (tetri nari), გლიხორხა (გლიხორხა), ნარა (nara)	Leaves, Stem - Phkhali	Wild collected, Garden
<i>Cirsium</i> sp.	ნარი (nari), (Shafalukh Arm)	Leaves - Sats'ebai	Wild collected
<i>Cirsium vulgare</i> (Savi.) Ten.	ჩვეულბრივი ნარი (chveulebrivi nari), ქვაცხაცხი (ქვაცხაცხი)	Flower - Honey source (Bees)	Wild collected
<i>Crepis</i> sp.		Leaves - Phkhali	Wild collected
<i>Cynara cardunculus</i> L.	ესკანური არტიოკი (eskanuri artishoki)	Flower - Eaten raw	Garden
<i>Echinops</i> sp.	თავკომბალა (tavk'ombala)	Seeds - Eaten raw	Wild collected
<i>Eruca vesicaria</i> (L.) Cav.	რუკულა (ruk'ula)	Leaves - Phkhali	Garden
<i>Helianthus annuus</i> L.	მზესუმზირა (mzesumzira)	Seeds - eaten raw	Garden
<i>Helianthus tuberosus</i> L.	მიწავაშლა (mits'avashla), ხმატურა (khmat'ura), მიწის ვაშლი (mits'is vashli)	Leaves, Roots - Phkhali, Eaten raw Roots - Cooked	Garden
<i>Lactuca sativa</i> L.	მწვანე სალათა (Mtsvane salata), სალათა (salata), ბერძნული სალათა (berdznuli salata), სალათის ფოთოლი (salatis potoli)	Leaves - Phkhali	Garden
<i>Lactuca sativa</i> L. greek	მწვანე სალათა (Mtsvane salata)	Leaves - Phkhali	Garden
<i>Lactuca serriola</i> L.	ლორის ქადა (ghoris qada), ნარკოკობა (nark'ok'oba), ყინჭახა (ch'inch'akha), ხარნუყა (kharnuq'a Tush.), (rdzia-rdzia)	Leaves, Stem - Phkhali, Chave, Sats'ebai	Garden, Wild collected
<i>Lapsana communis</i> L.	ვაზისძირა (rdzia-rdzia), ფურფურა (puchpucha), ბურტყელა (burt'q'ila), პურტყელა (p'urt'q'ela)	Leaves - Phkhali	Wild collected
<i>Lapsana grandiflora</i> M. Bieb	მწარე ხარნუყა (mits'are kharnuq'a)	Leaves - Phkhali	Wild collected
<i>Matricaria chamomilla</i> L.	გვირილა (gvirila)	Leaves, Whole plant- Tea, Chave	Wild collected

Table 1 (continued)

<i>Petasites albus</i> (L.) Gaertn.	ბურა (buera), დილმა (dilma), ბურღუ (buurg'u)	Leaves - Phkhali	Wild collected
<i>Petasites hybridus</i> (L.) G. Gaert, B. Mey. & Scherb.	ბურა (buera), ბურღვა გურიში (gurghvi guriashi), დიმელა (dimela), ბურღვილ (burghvil Svan.), ბარამბო (barambo Ajar.), ბურღვა (burghva (Gur.))	Leaves, Stem- Phkhali, Chave, Pickled (lactofermented)	Wild collected
<i>Serratula quinquefolia</i> Bieb. ex Willd.	სალვერავი (saghveravi), ირმისმხალა (irmismkhala), ნადირის ფხალი (nadiri pkhali), საფურცქენლა (sapurtskvnela)	Leaves, Stem- Phkhali, Chave, Pickled (lactofermented)	Wild collected
<i>Solidago canadensis</i> L.	ყვავილწვრილა (q'vavilts'vrila)	Flower - Eaten raw	Wild collected
<i>Sonchus asper</i> (L.) Hill.	ლიჭა (ghich'a), ლენჭო (ghench'o)	Leaves - Phkhali	Wild collected, Garden
<i>Stevia</i> sp.	სტევია (stevia)	Leaves - Sweetener	Garden
<i>Tagetes patula</i> L.	ყვითელი ყვავილი (qhvitheli qhvavili), იმერული ზაფრანა (imeruli zaphrana), ზაფრანა (zaprana), ხავერდა (khaverda), იაყააქუ (yaq'aaku), ჭითაპირი (ch'itap'iri), გულყვითელა (gulqhvithela Svan.)	Flowers, Leaves - Spice, ingredient of Svan salt	Garden, Wild collected
<i>Taraxacum confusum</i> Schischk.	სალვილა (saghvidzla), ბურბუმელა (Burbushela Tush.)	Leaves - Phkhali, Chave	Wild collected
<i>Taraxacum officinale</i> Wigg.	სალვილა სალვილა (saghvidzla), ბაბუანვერა (babuats'vera), თუნთიმ ქები (tuntish ch'ebi), ფანდურპაპაი (pandurpapai Tush.), საჯარაი (sajarai Svan.)	Leaves, Stem, Flowers, Root - Phkhali, Chave, Tea, Sweetener, Eaten raw	Wild collected
<i>Tragopogon</i> sp.	ფამფარა (pampara), (Sindz Arm.)	Root, Stem, Leaves, Latex - Eaten raw, Pickled (lactofermented), Phkhali	Wild collected, Garden
<i>Tussilago farfara</i> L.	ვირისტერვა (virist'erpa)	Leaves - Tea	Wild collected
<i>Xanthium strumarium</i> L.	ლორის ბირკა (g'oris birk'a), ბირკა (birk'a)	Leaves - Phkhali	Garden, Wild collected
Begoniaceae			
<i>Begonia rex</i> Putz.	ბეგონია (begonia), ბატიბუტი (bat'ibuti')	Seeds	Garden
Berberidaceae			
<i>Berberis vulgaris</i> L.	კონახური (k'ots'akhuri), მჟაუნა (mzhauna), მამჟაველა (mamzhavela), ჩვეულბრივი კონახური (chveulebrivi k'ots'akhuri), გოცხილი (gotshkil Svan.), ესკალმარა (esholtsmara Khev.)	Fruit, Leaves, Root - Spice, Tkhemali, Phkhali Leaves - Compote	Wild collected
Betulaceae			
<i>Alnus barbata</i> C.A. Mey.	მურყანი (murq'ani), ბელყაც (belqhats Svan.)	Leaves - Tea	Wild collected
<i>Betula litwinowii</i> Doluch.	არყი (arq'i)	Juice - Drunk raw	Wild collected
<i>Betula</i> sp.	არყი (arq'i)	Juice - Drunk raw	Wild collected
<i>Corylus avellana</i> L.	თხილი (tkhili), ჩვეულბრივი თხილი (chveulebrivi tkhili), თხირი (თხირი), შდიხ (shdikh Svan.), (khaka Svan.), (nemsa (Svan.))	Fruit - Eaten raw Leaves - Phkhali	Garden, Wild collected
<i>Corylus colurna</i> L.	დათვითხილა (datvitkhila), დათვითხილა (datvtkhila)	Fruit - Eaten raw Leaves - Phkhali	Wild collected
<i>Corylyus pontica</i> K. Koch.	თხილი (tkhili), ჩვეულბრივი თხილი (chveulebrivi tkhili), თხირი (თხირი), შდიხ (shdikh Svan.), (khaka Svan.), (nemsa (Svan.))	Fruit - Eaten raw Leaves - Phkhali	Garden, Wild collected
<i>Fagus orientalis</i> Lipsky	წიფელი (ts'ipeli)	Leaves - Phkhali	Wild collected
Boraginaceae			
<i>Mycosotis</i> sp.	კესანე (k'esane), კურდღლის საკნატუნო (კურდღლის საკნატუნო), თიკნისყურა (თიკნისყურა)	Leaves, Stem - Phkhali	Wild collected
<i>Symphytum grandiflorum</i> DC.	ლაშქარა (lashkara), კარსჰავა (karshava), სარო (saro)	Leaves, Stem - Phkhali	Wild collected
<i>Trachystemon orientalis</i> (L.) G. Don	ანჩხლა (anchkhla), ბატკნისყურა (bat'k'nisq'ura), ერბოვანა (erbovana)	Leavesd - Phkhali, Khachapuri	Wild collected, Garden
Brassicaceae			
<i>Armoracia rusticana</i> G. Gaertn., B. Mey. & Scherb.	პირშუმხა (p'irshushkha), ხრენი (khreni)	Root, Leaves - Phkhali, Eaten raw	Garden
<i>Brassica juncea</i> (L.) Czern.	სარეპტის მდოგვი (sarep'tis mdogvi), დონგი (dongi)	Leaves - Phkhali	Garden
<i>Brassica montana</i> Pourr.	კოლრაბი (k'olrabi), ხვითი (khvit'i), კეჟერა ფხალი (k'ezhera pkhali), კეჟერა ფხალი (k'ezhera pkhali), ხული (khuli)	Leaves - Phkhali	Garden
<i>Brassica oleracea</i> L.	კომბოსტო (k'ombost'o), კეჟერა ფხალი (k'ezhera pkhali), კეჟერა (k'ezhera), ლახანა (lachana Svan.)	Leaves - Phkhali, Eaten raw, Pickled (lactofermented)	Garden, Wild collected
<i>Brassica oleracea</i> L. red	ლურჯი კომბოსტო (lurji k'ombost'o)	Leaves - Phkhali	Garden
<i>Brassica oleracea</i> L. var. <i>botrytis</i>	ყვავილოვანი კომბოსტო (q'vavilovani k'ombost'o)	Leaves, Flowers - Phkhali, Eaten raw	Garden
<i>Brassica oleracea</i> L. var. <i>gemmifera</i>	ბრიუსელის კომბოსტო (briuselis k'ombost'o)	Leaves - Phkhali	Garden
<i>Brassica oleracea</i> L. var. <i>gongyloides</i>	კოლრაბი (k'olrabi), შავი ფხალი (shavi pkhali), ხვითი (khvit'i), კეჟერა ფხალი (k'ezhera pkhali), ხული (khuli)	Leaves, Stem, Root - Phkhali, Eaten raw	Garden
<i>Brassica oleracea</i> L. var. <i>Italica</i>	კომბოსტო (k'ombost'o), ბროკოლი (brok'oli)	Leaves, Flowers - Phkhali, Pickled (lactofermented)	Garden
<i>Brassica rapa</i> subsp. <i>campestris</i> (L.) Clapman	შალგი (shalgi), გიერა (giera Tush.)	Leaves - Phkhali	Wild collected
<i>Brassica rapa</i> subsp. <i>oleifera</i> (DC) Metzg.	შალგი (shalgi), გიერა (giera Tush.)	Leaves, Stem - Phkhali, Sats'ebai, Pickled (lactofermented), Eaten raw	Wild collected

Table 1 (continued)

<i>(Brassica campestris L. ssp. oleifera DC.)</i>				
<i>Brassica rapa L. subsp. rapifera Metzger</i>	თალგამი (thalgami), ბოლოკი (bolok'i), ქართ (quarth Svan.), მინჩალა (mitsichala Imer.)	Root, Leaves - Pickled (lactofermented), Phkhali, Eaten raw	Garden	
<i>Brassica rapa var. rapa L.</i>	თალგამურა (thalgamura)	Root, Seeds - Eaten raw	Garden	
<i>Bunias orientalis L.</i>	ხატოტი (Khat'ot'i), ხობნუტა (khotchadi), ტიტა (t'i'ta), ხობნუტა (Khokhnuta Khev.)	Leaves, Flowers, Stem - Phkhali, Eaten raw	Wild collected	
<i>Capsella bursa-pastoris L.</i>	ხავარტა (khavart'a), ხარკბილა (kharik'bila), წინმატურა (ts'its'mat'ura), ოდელია (odelia), რეკეზოს (rek'ebos), ხნ (khnts' ossetian)	Leaves, Stem - Phkhali	Wild collected	
<i>Cardamine hirsuta L.</i>	ტყის წინმატი (t'q'is ts'its'mat'i)	Leaves, Stem - Phkhali	Wild collected	
<i>Erysimum cheiri L.</i>	შაბუ (shabu)	Leaves - Phkhali	Wild collected	
<i>Lepidium sativum L.</i>	წინმატი (ts'its'mat'i)	Leaves - Phkhali, Eaten raw	Garden	
<i>Raphanus raphanistrum subsp. sativus (L.) Domin</i>	თვის ბოლოკი (tvis bolok'i), რედისკა (redisk'a), თალგამი (talgami), შავი ბოლოკი (shavi boloki), მინსმხალა (mits'imxala)	Root, Leaves - Phkhali, Eaten raw	Garden	
<i>Rapistrum rugosum (L.) All.</i>	ბოლოკა (bolok'a), შალგი (shalgi), ბოლოკას კოტი (bolok'as k'ot'i)	Stem, Levaes, Root - Phkhali, Eaten raw	Wild collected, Garden	
<i>Sinapis arvensis L.</i>	მინდვრის მდოგვი (mindvris mdogvi), შალგი (shalgi), მდოგვი (modogvi), გიერა (giera Tush)	Leaves - Phkhali, Pickled (lactofermented)	Garden	
Campanulaceae				
<i>Campanula alliariifolia Wild.</i>	ბუსკანტურა (busk'ant'ura), სკვანტილა (sk'vant'ila)	Leaves - Phkhali	Wild collected	
<i>Campanula biebersteiniana Roem. & Schult.</i>	ქარცხვი (kartskhvi)	Flower - Eaten raw	Wild collected	
<i>Campanula glomerata L.</i>	დილხამი (dilkhami), ქარბადელო (ch'arbadelo)	Leaves, Stem - Phkhali, Eaten raw	Wild collected	
<i>Campanula rapunculoides L.</i>	მიჩიგტარაი (michigt'arai), მაჩიტა (machit'a), ჩიტთიავა (chit'itava), მაჩიკა (machika Khev.)	Leaves, Root, Stem - Sats'ebai, Eaten raw, Phkhali	Wild collected	
<i>Gadellia lactiflora (M. Bieb.) Shulkina</i>	კიცძიშლი (kitsdzishi), დონდოლა (dondola), ალოშა (alosha), დონდოლო (dondola), საფურცქვენლა (sapurtskvnela), მუყუდო (muq'udo), კენკეშა (k'enk'eshha Khev.), ქიც (kits Svan.)	Leaves, Stem - Phkhali, Eaten raw, Khachapuri, Sats'ebai	Wild collected	
Cannabaceae				
<i>Cannabis sativa L.</i>	კანაფი (k'anapi), ქან (qan), ქანა (kana)	Seeds - ingredient of Svan salt, Eaten raw, - Khachapuri, Oil	Garden, Wild collected	
<i>Humulus lupulus L.</i>	სვია (svia), სვე (sve)	Flower, Leaves, Stem - ingredient for Beer, Phkhali,	Wild collected, Garden	
Caprifoliaceae				
<i>Lonicera caucasica Pall.</i>	წერნა (ts'erts'a), ჭიჭკოტი (ch'ich'k'ot'i Tush.)	Fruit - Eaten raw	Wild collected	
Caryophyllaceae				
<i>Melandrium divaricatum Boiss.</i>	ვირთბატრა (virtbat'ra), სასტვენა (tsik'niq'ura), სასტვენა (sast'vena), ბალანსა (balansa Khev.)	Leaves - Phkhali	Wild collected	
<i>Melandrium sp.</i>	სასტვენა (sast'vena), სასტვენა (tsik'niq'ura)	Leaves, Stem - Phkhali	Wild collected	
<i>Oberna lacera Sims</i>	ქვიშამხალი (kvisha pkhali Tush.)	Leaves, Stem - Phkhali, Human food	Wild collected, Garden	
<i>Oberna wallichiana Ikonn.</i>	ჭრიჭინა (ch'ritchina), ჭყიპანტა (ch'q'ip'ant'a), მჭივანა (mch'ivana), სატკეცელა (sat'ketsela)	Leaves, Stem - Phkhlovana	Wild collected, Garden	
<i>Silene sibirica (L.) Pers.</i>	ოლენა (olena)	Leaves, Stem - Pickled (lactofermented)	Wild collected	
<i>Stellaria media (L.) Vill.</i>	ჟურუკი (zhuruk'i)	Leaves - Khachapuri	Wild collected	
Convolvulaceae				
<i>Convolvulus arvensis L.</i>	ხვართქლა (khvartkla), გამბულა ბალაცი (gambula balakhi), პატალა (p'atala)	Leaves, Stem - Phkhali	Garden	
Cornaceae				
<i>Cornus mas L.</i>	შინდი (shvindi), შინდი (shindi), შული (shuldi), ბძგირი (bdzgiri), შემ (shem Ossetian)	Fruit - Eaten raw, Jam, Juice, Compote	Garden, Wild collected	
<i>Swida australis (C.A. Mey.) Pojark ex Grossh.</i>	შინდანლა (shindants'la)	Leaves, Stem - Phkhali	Wild collected, Garden	
Crassulaceae				
<i>Sedum caucasicum Boriss.</i>	კლდის დუმა (k'ldisduma Tush.)	Leaves - Phkhali, Eaten raw	Wild collected	
<i>Sedum stoloniferum Gmel.</i>	მსუქანა (msukana)	Leaves, Stem - Phkhali	Wild collected	
<i>Sempervivum caucasicum Rupr. ex Boiss.</i>	კლდისვაშლა (pkhija), ჯორისკუდა (jorisk'uda), (კლდის დუმა (k'ldisduma Tush.)	Leaves - Phkhali	Wild collected	
Cucurbitaceae				
<i>Bryonia dioica Jacq.</i>	ლემურა (leshura)	Leaves - Phkhali	Wild collected	
<i>Citrullus lanatus (Thunb.) Matsum. & Nakai</i>	საზამთრო (sazamthro), ჩვეულებრივი საზამთრო (chveulebrivi sazamtro)	Fruit - Pickled (lactofermented), Eaten raw	Garden	
<i>Cucumis melo L.</i>	ნესვი (nesvi)	Fruit - Eaten raw	Garden	
<i>Cucumis sativus L.</i>	კიტრი (k'it'ri), პიკული კიტრი (pi'luyli k'it'ri), კინტირი (k'int'iri)	Fruit, Flowers - Salad, eatyen raw, Pickled (lactofermented), Dye for pickles	Garden	
<i>Cucurbita maxima L.</i>	ქესტანა (kest'ana), მსხვილი გოგრა (mskhvili gogra)	Fruit - Eaten raw	Garden	

Table 1 (continued)

<i>Cucurbita pepo</i> L.	გოგრა (gogra), ხაპერა (khap'era), ხაპი (khap'i), ბამბის ხაპი (bambis khap'i), კოშიე ხაპი (k'oshie khap'i), ქესტანა (khp'era), მწარე ხაპა (mts'are khap'a, თათრული კვახი (tartuli k'vakhi), ხოკერა კვახი (khok'era k'vakhi) ,უკანო კვახი (uk'ano k'vakhi), წაბლა ხაპი (ts'abla khap'i), ხოკერა გოგრა (khok'era gogra), კოპეშია (k'op'eshia), კობეშია (kobeshia Svan.), კვახი (kvakhi Svan.)	Fruit, Seeds, Leaves - Pickled (lactofermented), Phkhali, Eaten raw	Garden
<i>Cucurbita pepo</i> L. var. <i>giromontia</i>	ყაბაყი (q'abaq'i)	Fruit, Flowers - Eaten raw, cooked	Garden
<i>Cucurbita pepo</i> L. var. <i>patisson</i>	გოგრა (gogra), ყაბაყი პატისონი (q'abaq'i p'atisoni)	Fruit - Eaten raw, cooked	Garden
<i>Cucurbita</i> sp.	ხაპი (khap'i), წაბლა ხაპი (ts'abla khap'i)	Fruit - Eaten raw, cooked	Garden
<i>Lagenaria siceraria</i> (Molina) Standl.	მწარე კვახი (mts'are k'vakhi)	Fruit - Eaten raw, cooked	Garden
<i>Cucurbita</i> sp.	გოგრა (gogra), ყაბაყი (q'abaq'i)	Fruit - Eaten raw, cooked	Garden
Cupressaceae			
<i>Juniperus sabina</i> L.	ჭყერო (tchqhero Svan.)	Stem, Root - Eaten raw as famine food NOTE - in other regions regarded as toxic)	Wild collected
Dipsacaceae			
<i>Cephalaria gigantea</i> (Ledeb.) Bobrov	სკიპალო (sk'ip'alo)	Stem - Eaten raw	Wild collected
Dryopteridaceae			
<i>Dryopteris filix-mas</i> (L.) Schott.	ჩადუნა (chaduna), ჩადა (chada Svan.), გვრიმბ (gvrimb Svan.)	Leaves - Phkhali, Pickled (lactofermented) (NOTE - in other regions regarded as toxic)	Wild collected
Ebenaceae			
<i>Diospyros lotus</i> L.	ხურმა (khurma), ჩვეულებრივი ხურმა (chveulebrivi khurma), კარალიოკი (k'araliok'i), იაპონური ხურმა (iap'onuri khurma), მარსინაია (marsinaia)	Fruit - Eaten raw and dried	Garden, Wild collected
<i>Diospyros</i> sp.	ხურმა (khurma), ალიაღა (aliag'a)	Fruit - Eaten raw and dried	Garden
<i>Diospyros virginiana</i> L.	ვირჯინიული ხურმა (virginiuli khurma), ხურმა (khurma)	Fruit - Eaten raw and dried	Garden
Elaeagnaceae			
<i>Elaeagnus</i> sp.	ფშატი (pshati)	Fruit - Eaten raw and dried	Wild collected
<i>Hippophaë rhamnoides</i> L.	ქაცვი (katsvi), აპლეჰიხა (ap'lep'ikha)	Fruit - Eaten raw and dried	Wild collected
<i>Shepherdia argentea</i> Nutt.		Leaves - Phkhali	Garden
<i>Shepherdia</i> sp.		Fruit - Eaten raw	Wild collected
Ericaceae			
<i>Empetrum hermaphroditum</i> Hagerup	კენერა (k'ets'era)	Fruit, Leaves - Phkhali	Wild collected
<i>Oxycoccus quadripetalus</i> Gilib.	შტოში (shtoshi)	Fruit - Eaten raw	Wild collected
<i>Vaccinium arctostaphylos</i> L.	მოცვი მაღალი (motsvi maghali), მაღალი მოცვი (mag'ali motsvi), მოცვი (motsvi), ლუდი მოცვი (ludi motsvi), მელიშია (melishia), დატვის მოცვი (datvis motsvi), ცინყა (tsinqha Svan.), მეგმულდ (megmuld Svan.)	Fruit - Eaten raw, to distill Alcohol, Jam, Compote, Wine Leaves - Tea, ingredient for Beer, Phkhali	Wild collected
<i>Vaccinium myrtillus</i> L.	მოცვი (motsvi), მთის მოცვი (mtis motsvi), მოდგინარი (modginari), ბალის მარწყვი (bag'is marts'q'vi), (shlishavi, tselis'p'ira), მინდორიში მელიშია (mindorishi melishia), , უოლი (zholi Tush.), იღვი (ighvi Svan.), მეგმულდ (megmuld Svan.), შელშავი (shelshavi Khev.), ნითელმოჩა (ts'itelmochi Khev.), მეგმულდ (megmuld Svan.)	Fruit - Eaten raw, to distill Alcohol, Jam, Compote, Wine Leaves - Tea, ingredient for Beer, Phkhali	Wild collected
<i>Vaccinium</i> sp.	მოცვი (motsvi), მელიშია (melishia)	Fruit - Eaten raw	Wild collected
<i>Vaccinium uliginosum</i> L.	ლურჯი მოცვი (lurji motsvi)	Fruit - Eaten raw	Wild collected
<i>Vaccinium vitis-idaea</i> L.	ნითელი მოცვი (ts'iteli motsvi), სტომი (stomi Tush.), ვიღვი (vighv Svan.), მაიოლ / მაია (maiol / maia Svan.), ნითელმოჩა (tsitelimocha Tush.)	Fruit - Eaten raw Leaves, Branches - Tea	Wild collected
Euphorbiaceae			
<i>Aleurites moluccanus</i> L. Willd.	ლუმბინგი (lumbingi)	Seeds - Oil	Garden
Fabaceae			
<i>Astragalus caucasicus</i> Pall.	გლერძი (glerdzi)	Leaves - Tea	Wild collected
<i>Cicer arietinum</i> L.	მუხუდო (mukhudo)	Seeds - Eaten cooked	Garden
<i>Coronilla varia</i> L.	ყვავისფერხილა (q'vavisprchkhila)	Leaves - Khachapuri	Wild collected
<i>Galega orientalis</i> Lam.	ხბომუბლა (khhoshubla)	Leaves, Stem - Pickled (lactofermented), Phkhali	Wild collected
<i>Glycine max</i> (L.) Merr.	სონა (soia), მუხუდო (mukhudo), იაპონია (iap'onia), სოიო (soio Svan.)	Leaves, Seeds - Phkhali Seeds - eaten cooked	Garden
<i>Glycyrrhiza glabra</i> L.	ძირტკბილა (dzirt'k'bila)	Root - Sweetener	Wild collected
<i>Lathyrus roseus</i> Steven	ვაზისძირა (vazisdzira), არჯაკელი (arjak'eli Tush.), ზერჩო (zercho Svan.)	Leaves, Stem - Phkhali	Wild collected
<i>Lathyrus tuberosus</i> L.	თერო (tero)	Tuber - Eaten cooked	Wild collected

Table 1 (continued)

<i>Lens cornicularis</i> L.	ოსპი (osp'i), ქირს (qirs. Svan.)	Seeds - Eaten cooked	Garden
<i>Phaseolus sativus</i> L.	ლობიო (lobio), ჩვეულებრივი ლობიო (chveulebrivi lobio), ძირის ლობიო (dziris lobio), ლებია (lebia)	Fruit, Seeds - eaten cooked	Garden
<i>Pisum sativum</i> L.	მუხუდო (mukhudo), ბარდა (barda), მინდვრის ბარდა (mindvris barda), ცერცვი (tsertsvi), ღედაარ (ghedaar Svan.), ისაბ (isab Svan.)	Seeds - Eaten cooked	Garden
<i>Robinia pseudoacacia</i> L.	აკაცია (ak'atsia), ცრუაკაცია (tsruak'atsia), ეკლის ხე (ek'lis khe)	Flower - Honey source (Bees), Eaten raw Flowers, Young Stem - Pickled (lactofermented)	Wild collected, Garden
<i>Thymus colinus</i> Bieb.	ქონდარი (kondari)	Leaves - Tea	Wild collected
<i>Trifolium</i> sp.	სამყურა (samq'ura)	Leaves, Flowers - Phkhali	Wild collected
<i>Trigonella caerulea</i> (L.) Ser.	შამბრიკა (shambrika), ულუმბო (ulumbo), უცხო სუნელი (utskho suneli Svan.)	Flowers - Honey source (Bees)	Garden
<i>Vicia faba</i> L.	ცერცვი (tsertsvi), როვი (rovi Svan.)	Seeds - Eaten cooked	Garden
<i>Vicia sativa</i> L.	ჭეკუნტელაი (ch'ek'unt'elai)	Leaves - Sats'ebai	Garden
<i>Vigna angularis</i> (Willd.) Ohwi & H. Ohashi	აზუკი (azuk'i), საკადრისა (sak'adrisa)	Seeds - Eaten cooked	Garden
Fagaceae			
<i>Castanea sativa</i> Mill.	ნაბლი (ts'abli), ნაბლა (ts'abla), ჭიფერ (ch'iper), ჩვეულებრივი ნაბლი (chveulebrivi ts'abli), ჭებური (ch'uburi)	Seeds, Leaves - Phkhali, Eaten cooked	Wild collected, Garden
<i>Fagus orientalis</i> Lipsky	წიფელი (ts'ipeli), წიფელა (ts'ipela), აღმოსავლური წიფელი (ag'mosavluri ts'ipeli), თარსი ბალოს (tarsibalos Ossetian)	Seeds, Leaves - Phkhali, Eaten copked	Wild collected
<i>Quercus iberica</i> M. Bieb.	მუხა (mukha), ნილე (nile), ქართული მუხა (kartuli mukha)	Seeds - Eaten copoked	Wild collected
Gentianaceae			
<i>Swertia iberica</i> Fisch & C.A. Mey.	გაბლუარაი (gabluarai)	Leaves - Chave	Wild collected
Geraniaceae			
<i>Erodium cicutarium</i> (L.) L'Hér. ex Aiton	სავარცხელა (savartskhela), ბატიფეხა (bat'ipekha)	Leaves, Stem - Phkhali	Wild collected
<i>Geranium robertianum</i> L.	ნემსინვერა (nemsits'vera)	Leaves - Phkhali	Wild collected
<i>Geranium</i> sp.	ნემსინვერა (nemsits'vera), ოქროსბეჭედა (okrosbech'eda)	Leaves, Stem - Phkhali	Wild collected
Grossulariaceae			
<i>Grossularia reclinata</i> (L.) Mill.	ხურტკმელი (khurt'k'meli)	Fruit - Eaten raw, Compote	Garden, Wild collected
<i>Ribes biebersteinii</i> Berl. ex DC	მოცხარი (motskhari), მენცხვარი (mantskhald Svan.), ხუნწი (khunts'i Tush.)	Fruit - Eaten raw, Jam Leaves - Tea	Wild collected
<i>Ribes grossularia</i> L.	ოფლენდ (ophleend Svan.)	Fruit - Eaten raw, Compote	Garden, Wild collected
<i>Ribes nigrum</i> L.	მოცხარი (motskhari), შავი მოცხარი (shavi motskhari)	Fruit - Eaten raw, Jam	Garden, Wild collected
<i>Ribes orientale</i> Desf.	ალუდა (aluda)	Fruit - Eaten raw, Jam	Wild collected
<i>Ribes rubrum</i> L.	მოცხარი (motskhari), წითელი მოცხარი (ts'iteli motskhari), ალუდა (aluda), ჩვეულებრივი მოცხარი (chveulebrivi motskhari), მერცხალა (mertskhala), მთის ყურძენი (mtis q'urdzeni), ჩხარაზი (chkharazi)	Fruit - Eaten raw, Compote, Jam Leaves- Phkhali	Garden, Wild collected
<i>Ribes</i> sp.	მოცხარი (motskhari), სმაროდინა (smarodina), ხუნწი (khunts'i Tush.)	Fruit - Eaten raw, Jam	Garden, Wild collected
<i>Ribes uva-crispa</i> L.	ხურტკმელი (khurt'k'meli), (k'rizhnik'i), ოფლანდ (ophleend Svan.)	Fruit - Eaten raw, Jam	Garden, Wild collected
Guttiferae			
<i>Hypericum perforatum</i> L.	კრაზანა (k'razana)	Flowers, Leaves - Tea, ingredient for Beer	Wild collected, Garden
Indet.			
	აქარა (acara)	Fruit - Eaten raw	Garden
	ბრასიზ (brasidz)	Fruit - Eaten raw	Garden
	ნაჰუი (ts'ahui)	Fruit - Eaten raw	Garden
	დედოფალა (dedophala Svan.)	Fruit - Eaten raw	Wild collected
	ვირდუცა (virdutsa Khev.)	Stem - Pickled (lactofermented)	Wild collected
	ზესტრულა (zestrula Khev.)	Leaves - Phkhali	Wild collected
	ნესგვლა (nesgvla Svan.)	Leaves - Phkhali	Wild collected
	ცუშლა (tzushla Svan.)	Leaves - Phkhali	Wild collected
	ჯოჩოლა (jochola Khev.)	Leaves - Phkhali	Wild collected
	ჰაინერ (hainer Svan.)	Leaves - Phkhali	Wild collected
	(Achali Arm.)	Fruit - Eaten raw	Wild collected
	(Tatjanura Arm.)	Stem - Pickled (lactofermented)	Wild collected
	(Teterjik Arm.)	Fruit - Eaten raw	Wild collected
	(Uremi Arm.)	Fruit - Eaten raw	Wild collected
	(Vertshik Arm.)	Fruit - Eaten raw	Wild collected
	ჭარეში (ch'areshi)	Leaves - Phkhali	Wild collected
	თვილი (tvili)	Fruit - Eaten raw	Wild collected
	ბარიშინდი (barishindi)	Fruit - Eaten raw	Garden
	კაკია (k'ak'ia)	Leaves, Stem - Phkhali	Wild collected

Table 1 (continued)

	კარელი ჩიჩმატი (kareuli chichmati)	Fruit - Eaten raw	Wild collected
	მიციჩალა (mitsichala)	Fruit - Eaten raw	Garden
	მწვანე მადვალი (mtsване maghvali)	Leaves - Phkhali	Garden
	ნეგოშალი (negoshali)	Leaves - Phkhali	Wild collected
	საკრანა (sakrana)	Leaves - Phkhali	Garden
	სოდიტზ (soditz)	Leaves - Phkhali	Wild collected
	ფთაშეჭრილა (prtashch'rila), მინდვრის ფხალი (mindvris phkhal)	Leaves, Stem - Phkhali	Wild collected
	ჩაილოვა (ch'ailova)	Leaves - Khachapuri	Wild collected
	ჭერანი (ch'erani)	Fruit - Eaten raw	Garden
	ხოტშილავშა (khotshlivasha)	Leaves - Khachapuri	Wild collected
Iridaceae			
<i>Crocus sativus</i> L.	ზაფრანა (zaprana)	Flowers - Eaten raw	Garden
Juglandaceae			
<i>Juglans mandshurica</i> Maxim.	პეკანი (p'ek'ani)	Seeds - Eaten raw	Garden
		Fruits - Tea	
<i>Juglans regia</i> L.	ნიგოზი (nigozi), ჰეკე (heke), ჩვეულბრივი კაკლის ხე (chveulebrivi k'ak'lis khe), ეკლის ხე (ცრუაკაცია), ცრუაკაცია (ცრუაკაცია), კაკალი (kakali Svan.)	Seeds - Eaten raw, Phkhali, ingredient of Svan salt, Churchkhela	Garden, Wild collected
		Fruit - Tea, Spice, Jam	
		Seeds - Eaten raw	Garden
<i>Pterocarya pterocarpa</i> (Michx.) Kunth ex Iljinsk.	ლაფანი (lapani)		Garden
Lamiaceae			
<i>Lamium album</i> L.	ჭინჭრის-დედა (ch'inch'ris deda), ჯიმჭრის მაცილობელი (jimch'ris matsilobeli), მერმერხელოოდ (memerkhelood), დედაბრისკონკა (dedabrisk'onk'a), bebrik'onk'a (bebrik'onk'a), ფსრამოთ (psramot Ossetian)	Whole plant, Leaves, Stem - Phkhali	Wild collected
<i>Leonotis leonurus</i> (L.) R. Br.	ლეონიტისი (leonit'isi)	Leaves, Stem - Phkhali	Wild collected
<i>Mentha aquatica</i> L.	პიტნა (pit'na), ტენცო (t'entso)	Leaves - Spice	Wild collected
<i>Mentha longifolia</i> (L.) L.	ტყის პიტნა (t'q'is p'it'na), ვირიპიტნა (ვირიპიტნა), შანტალი პიტნაი (shant'ali pitn'a Tush.)	Leaves, Stem - Phkhali, Chave, Tea, Spice, Tkhemali	Wild collected, Garden
<i>Mentha pulegium</i> L.	ომბალო (ombalo), პიტნა (pit'na), ყვალმინთა (q'valimita)	Leaves, Stem - Phkhali, Suluguni, Tea, Spice	Garden
<i>Mentha</i> sp.	პიტნა (p'it'na)	Leaves, Stem - Spice	Garden
<i>Mentha x piperita</i> L.	ბაღის პიტნა (baghis pit'na), პიტნა (p'it'na), ყვალმინთა (q'valiminta)	Leaves - Phkhali, Tea, ingredient of Svan salt	Garden, Wild collected
<i>Nepeta mussinii</i> Spreng.	პიტნა (p'it'na)	Human Food - Tea	Wild collected
<i>Ocimum basilicum</i> L.	რეჰანი (rehani), შაშკულავი (shashk'ulavi), საშტრამი (sash'trami)	Leaves - Phkhali, ingredient of Svan salt, Spice, Eaten raw	Garden
<i>Ocimum basilicum</i> var. <i>purpurascens</i> Benth.	რეჰანი (rehani), წითელი რეჰანი (ts'iteli rehani)	Leaves, Stem - Spice	Garden
<i>Origanum vulgare</i> L.	თავშავა (tavshava)	Leaves, Stem - Tea, ingredient of Beer, Phkhali, Spice, Spice sold	Wild collected, Garden
<i>Salvia verticillata</i> L.	დაჯირა (djara)	Leaves, Stem - Phkhali	Wild collected
<i>Satureja hortensis</i> L.	ქონდარი (kondari), ქონდარი ბაღისა (kondari bag'isa)	Leaves, Stem - Phkhali, Tea, ingredient of Svan salt, Spice, Eaten raw	Garden, Wild collected
<i>Satureja laxiflora</i> K. Koch	მინდვრის ქონდარი (Mindvris kondari), ტყის ქონდარი (t'q'is kondari)	Leaves, Stem - Phkhali, Eaten raw	Wild collected
<i>Satureja spicigera</i> (C. Koch) Boiss.	ტყის ქონდარი (t'q'is kondari), ომბალო (ombalo), ონჭო (onch'o), ჭვინი (ch'vini Svan.), ჭვინ (tchvin Svan.)	Leaves, Stem - Phkhali, Tea, ingredient of Svan salt, Spice	Wild collected
<i>Thymus caucasicus</i> Willd. ex Benth.	ქონდარი (kondari), ბეგქონდარა (begkondara Tush.)	Leaves, Stem - Tea, - Spice	Wild collected
<i>Thymus collinus</i> Bieb.	ქონდარი (kondari), ბეგქონდარა (begkondara Tush.)	Leaves - Spice, Phkhal	Wild collected
<i>Thymus</i> sp.	ქონდარი (kondari), (Zetroni Arm.), მინდვრის ქონდარი (mindvris kondari)	Leaves - Tea, Phkhali	Wild collected
<i>Thymus transcasicus</i> Ronninger	ბეგქონდარა (begkondara Tush.), (Zetroni Arm.),	Leaves - Phkhali	Wild collected
<i>Ziziphora puschkinii</i> Adams.	ურცი (urtsi), ქონდარი (kondari), ბეგქონდარა (begkondara Tush.)	Leaves - Tea	Wild collected
<i>Ziziphora serpyllacea</i> M. Bieb.	ურცი (urtsi), ბეგქონდარა (begkondara Tush.)	Leaves - Tea, Human Food - Spice, Human Food - Phkhali	Wild collected
Lauraceae			
<i>Laurus nobilis</i> L.	დაფნა (dapna)	Leaves - Phkhali, Human Food - Spice	Garden
<i>Persea americana</i> Mill.	ავოკადო (avok'ado)	Fruit -Eaten raw	Garden
Liliaceae			
<i>Fritillaria lutea</i> Mill.	ყვითელი ღვინა (q'viteli g'vina), k'it'rana (kitrana), დათვკიტრა (datvk'it'ra Khev.)	Flowers - Eaten raw	Wild collected
<i>Gagea</i> sp.		Leaves - Phkhali	Wild collected
<i>Lilium szovitsianum</i> Fisch. & Avé-Lall.	მთის შროშანი (mtis shroshani), თორში (tiorshi), კიტრა (kit'ra)	Leaves, Stem- Phkhali	Wild collected
Linaceae			
<i>Linum usitatissimum</i> L.	ქუმელი (kumeli), სელი (seli)	Seeds - Eaten raw, Cooked, Oil	Garden

Table 1 (continued)

Lythraceae <i>Punica granatum</i> L.	ბრონეული (brots'euli), ბერნული (ბერნული)	Fruit - Eaten raw, Tkhemali	Garden, Wild collected
Malvaceae <i>Alcea rosea</i> L.	ბაღის ტუხტი (baghis t'ukht'i), რუსული მოლოქა (rusuli moloka)	Leaves - Phkhali	Wild collected
<i>Althaea</i> spp. <i>Malva erecta</i> Presl.	ტუხტი (t'ukht'i) ბაღბა (balba), მოლოქა (moloka), მოლოქი (moloki), (bost'nis moloka), (Keji Arm.)	Leaves, Stem - Phkhali Leaves, Stem - Phkhali, Khachapuri	Wild collected Wild collected, Garden
<i>Malva neglecta</i> L.	ბაღბა (balba), მოლოქა (moloka), მოლოქი (moloki), (bost'nis moloka), (Keji Arm.)	Leaves, Stem - Phkhali, Khachapuri	Wild collected, Garden
<i>Tilia begoniifolia</i> Stev. <i>Tilia caucasica</i> Rupr.	ცაცხვი (tsatskhvi) ცაცხვი (tsatskhvi), კავკასიური ცაცხვი (k'avk'asiuri tsatskhvi)	Flowers - Tea Flowers - Tea, Honey source (Bees) Leaves - Phkhali	Wild collected Wild collected
Melanthiaceae <i>Veratrum lobelianum</i> Bernh.	ხაპტრაკა (khapt'rak'a), შხამა (shkhama)	Leaves - Phkhali	Wild collected
Moraceae <i>Ficus carica</i> L.	ლეღვი (legh'vi), ჩიტლეღვი (chit'leghvi), შავლეღვა (shavleghva), თეთრლეღვა (tetrleghva), ლული (lugh'i)	Fruit - Jam, Eaten raw, to distill Alcohol Fruit - Jam, Eaten raw, to distill Alcohol	Garden, Wild collected Garden
<i>Morus alba</i> L.	თუთა (tuta), ჯოლი (zholi)	Fruit - Jam, Eaten raw, to distill Alcohol	Garden
<i>Morus nigra</i> L.	zholi (khartuta), ჯოლი (zholi)	Fruit - Jam, Eaten raw, to distill Alcohol	Garden
Musaceae <i>Musa x paradisiaca</i> L.	ბანანი (banani)	Fruit - Eaten raw	Garden
Myrtaceae <i>Acca sellowiana</i> (O. Berg.) Burret	ფეიხოა (feikhoa)	Fruit - Eaten raw	Garden
Oleaceae <i>Fraxinus excelsior</i> L. <i>Ligustrum vulgare</i> L.	იფანი (ipini) კვიდო (k'vido), (k'untskha)	Leaves - Phkhali Fruit - Eaten raw	Wild collected Wild collected
Onagraceae <i>Chamaerion angustifolium</i> (L.) Holub.	თხანროთხალა (tkhats'artkhala)	Leaves - Khachapuri	Wild collected
Onocleaceae <i>Matteuccia struthiopteris</i> (L.) Tod.	ჩადუნა (chaduna), გვიმრა (gvimra), მუჩი (much'i Svan.), Mycha (Mucha Russ.)	Leaves, Stem - Pickled (lactofermented), Phkhali	Garden
Orobanchaceae <i>Pedicularis</i> sp.	სატილია (sat'ilia), კიტრაფურცელა (kit'rapurtsela)	Leaves - Phkhali	Wild collected
Oxalidaceae <i>Averrhoa carambola</i> L. <i>Oxalis acetosella</i> L. <i>Oxalis corniculata</i> L.	კარამბოლი (k'aramboli) მუაველა (muavela) მუაველა (muavela)	Fruit - Eaten raw Leaves - Phkhali Leaves - Phkhali	Garden Wild collected Garden
Papaveraceae <i>Papaver somniferum</i> L.	ყაყაჩო (kakacho), ლაჯღაჯღა (ghazhghazha), სრხდიდინა (srkhdidina Ossetian)	Whole plant, Buds, Flowers, Seeds, Leaves, Stem - Khinkali, Phkhali	Garden, Wild collected
Phytolaccaceae <i>Phytolacca americana</i> L.	ჭიაფერა	Fruit - Wine Leaves, Stem Pickled (lactofermented), Phkhali	Wild collected, Garden
Pinaceae <i>Abies nordmanniana</i> (Steven) Spach <i>Cedrus</i> sp. <i>Picea orientalis</i> (L.) Petern.	სოჭი (sochh'i), ტიშხ (tshishkh Svan.) კედარი (k'edari) ნაძვი (nadzvi)	Branches, leaves - Tea, Phkhali Young Cones - Jam Resin - Masticant Leaves, Young Cones - Phkhali	Wild collected Garden Wild collected
<i>Pinus kochiana</i> Klotzsch ex K. Koch	ფიჭვი (pich'vi), ხალცუცა (khaltsutsa)	Leaves, Young Cones - Phkhali, Young Cones - Jam Bark - Famine food	Wild collected
Piperaceae <i>Piper nigrum</i> L.	პილპილი (p'ilp'ili)	Seeds - ingredient of Svan salt	Bought
Plantaginaceae <i>Plantago major</i> L. <i>Valeriana officinalis</i> L.	მრავალძარღვა (mravaldzargh'va) გულბანდი (gulbandi Tush.)	Leaves, Stem - Phkhali Leaves - Tea	Wild collected Wild collected
Poaceae <i>Avena sativa</i> L. <i>Bambusa</i> sp.	შვრია (shvria), ზინთხ (zinthkh Svan.) ბამბუკი (bambuk'i)	Seeds - Eaten raw and cooked Young Stem - Pickled (lactofermented)	Garden Garden
<i>Digitaria milanjana</i> (Rendle) Stapf <i>Echinochloa crus-galli</i> L. <i>Hordeum vulgare</i> L.	ფეტვი (pet'vi), წვინი (tsvini (Svan.) ჯალაყინი (chalakini) ქერი (k'eri), მუხუდო (mukhudo), ქმინ (tchmin. Svan.)	Seeds - Eaten cooked, Phetveer, Ghomi, Flour Leaves, Stem - Salad Seeds - Beer, to distill Alcohol, Flour	Garden Wild collected Garden

Table 1 (continued)

<i>Hordeum vulgare</i> L. ssp. <i>vulgare</i> L. var. <i>coelestre</i> L. <i>Secale cereale</i> L.	ქერძველი (k'ershveli) ჭვავი (ch'vavi), მუხუდო (mukhudo), მანაშ (maanash Svan.), სვილი (svili)	Seeds - Flour Seeds - Beer, to distill Alcohol, Flour	Garden Garden
<i>Setaria italica</i> (L.) P. Beauv.	ლომი (gh'omi), ფეტვი (pet'vi), ლუმუშ (g'umush), ლუმ (g'um)	Seeds - Ghomi, Flour	Garden
<i>Sorghum bicolor</i> (L.) Moench <i>Triticum aestivum</i> L.	ჩვეულბრვი სორგო (chveulebrvi sorgo) ხორბალი (khorbali), დიკა (dik'a)	Seeds - Flour Seeds - Flour, Beer, to distill Alcohol	Garden Garden
<i>Triticum carthlicum</i> Nevski <i>Triticum dicoccum</i> Schrank ex Schübel	დიკა (dik'a) ასლი (asli)	Seeds - Flour Seeds - Flour	Garden Garden
<i>Triticum</i> sp. <i>Zea mays</i> L.	ხორბალი (khorbali), კობალი (kobali) სიმინდი (simindi), ტკურა სიმინდი (t'k'ucha simindi), ლაიტი (lait'i)	Seeds - Flour Seeds - Flour, Popcorn, Ghomi	Garden Garden
Polygonaceae			
<i>Fagopyrum tataricum</i> (L.) Gaertn.	წინიბურა (ts'its'bura), ტრუპკა (t'rup'k'a)	Seeds - Eaten cooked	Garden
<i>Koenigia alpina</i> (All.) T.M. Schust. & Reveal	წართხალი (ts'arkhali), ლეცირ (letsir Svan.), ჰარდლი (harrdi Svan.), ვერდელი (verdel Svan.), ჭიჭიშვილი (chech'ish'ala Khev.)	Leaves, Stem - Phkhali, Khachapuri, Pickled (lactofermented)	Wild collected
<i>Koenigia panjutini</i> (Kharkev.) T.M. Schust & Reveal	პანიუტინის მათიტელა (p'aniut'inis mat'it'ela), ვერდელი (verdeli Svan.)	Stem - Eaten raw	Wild collected
<i>Polygonum aviculare</i> L.	მატიტელა (mat'it'ela)	Leaves - Phkhali	Wild collected, Garden
<i>Polygonum carneum</i> C. Koch <i>Polygonum</i> sp.	დვარულა (dvarula) მამლაყინა (mamlakints'a)	Leaves, Stem - Phkhali Leaves - Phkhali	Wild collected Wild collected
<i>Rheum rhabarbarum</i> L. <i>Rumex acetosa</i> L.	მჟაუნა (mzhauna), მწყემსთმჟავი (mts'kems'mzhaviani), ყანის მჟავი (kamis mzhavai), ტელეფ (teleph Svan.), (Teterdjik Arm.), (Dachit Arm.)	Leaves - Phkhali Leaves, Stem - Phkhali, Pickled (lactofermented), Sats'ebai	Wild collected, Garden Wild collected, Garden
<i>Rumex acetosella</i> L. <i>Rumex alpinus</i> L.	მჟაუნა (mzhauna), კოკომჟავა (k'ok'omzhava) ლოლო (gh'olo), ოღვალო გუროიში (oghvalo guroiashi), კოკომჟავა აჭარაში (k'ok'omzhava ach'arashi), მთის ლოლო (mtis gh'olo), ტელეფი (t'eleepi), ჭირტალი (ch'irt'ali Tush.), საგუგა (saguga Tush, (Kvalo Arm.)	Leaves - Phkhali, Khachapuri Leaves, Stem - Phkhali, Pickled (lactofermented)	Wild collected, Garden Wild collected
<i>Rumex crispus</i> L.	ლოლო (gh'olo), (Avelug Arm.)	Leaves, Stem - Phkhali, Chave, Pickled (lactofermented)	Wild collected
<i>Rumex scutatus</i> L.	ლახტარა (lakht'ara), ქვიშის მჟავი (kvishis mzhavia), ჟამღ (zhamgh' Laz.)	Leaves, Stem - Phkhali, Khachapuri, Pickled (lactofermented)	Wild collected
<i>Rumex</i> sp.	ლოლო (gh'olo), მთის ლოლო (mtis gh'olo), ლოლ (g'ol Ossetian)	Leaves, Stem - Phkhali, Pickled (lactofermented)	Wild collected
<i>Rumex tuberosus</i> L.	მჟაუნა (mzhauna)	Leaves - Spice	Wild collected
Polyodiaceae			
<i>Polypodium vulgare</i> L.	ძირტკბილა (dzart'k'bila), კილამორა (k'ilamora)	Root - Sweetener, Eaten raw	Wild collected
Portulacaceae			
<i>Portulaca oleracea</i> L.	დანდური (danduri), სუქანა (sukana), კატკატო (k'at'k'at'o)	Leaves, Stem - Phkhali	Wild collected
Primulaceae			
<i>Cyclamen vernum</i> Sweet <i>Primula luteola</i> Rupr. <i>Primula</i> sp.	ყოჩივარდა (kochivarda) ვაშლისულა (vashlisula Tush.) ფურისულა (purisula), ფილისუნა (pirisula), თიკნიყურა (tik'niq'ura)	Root - Pickled (lactofermented) Leaves - Sats'ebai Leaves, Stem - Phkhali	Wild collected Wild collected Wild collected
<i>Primula vulgaris</i> subsp. <i>rubra</i> (Sm.) Arcang.	ფურისულა (purisula), სანრიპინა (sats'rip'ina)	Leaves, Flowers -Phkhali	Wild collected
<i>Primula veris</i> subsp. <i>macrocalyx</i> (Bunge) Lüdi	ფურისულა (purisula), ვაშლისულა (vashlisula Tush.)	Leaves, Stem - Pickled (lactofermented), Phkhali, Chave	Wild collected
<i>Primula woronowii</i> Losinsk.	ტყის ფურისულა (t'kis purisula), ფურისულა (purisula), ბაბილო (babilo), ვაშლისულა (vashlisula Tush.)	Leaves - Phkhali	Wild collected
Ranunculaceae			
<i>Adonis aestivalis</i> L.	მეკენძალი (mek'endzali), ცხვირისატებელა (tsverisat'ekhela), (dzag'lis q'aq'acho),	Leaves, Stem - Phkhali	Wild collected
<i>Clematis vitalba</i> L.	ინგრიხე (ingrikhe), სისიბარკლა (sisibark'la), ციცაბალბა (tsitsabalba Svan.)	Leaves, Stem, Branches - Phkhali	Wild collected
<i>Ranunculus repens</i> L.	ნიახურა (niakhura), წყლის ნიახურა (ts'q'lis niakhura)	Whole plant - Phkhali	Wild collected
Rhamnaceae			
<i>Oreohertzogia imeretina</i> (Booth, Petz. & Kirchn.) W. Vent. <i>Ziziphus jujuba</i> Mill.	იმერული ხეჭრელი (imeruli khechreli), გოგოსა (gogosa) უნაბი (unabi), ურნაბი (urnabi)	Fruit - Eaten raw Fruit - Eaten raw	Wild collected Garden, Wild collected
Rhododendraceae			
<i>Rhododendron caucasicum</i> Pall.	დეკა (dik'a), შვერი (shgver Svan.)	Branches, Leaves, Flowers - ingredient for Beer, Tea, Sats'ebai	Wild collected
<i>Rhododendron luteum</i> Sweet <i>Rhododendron ponticum</i> L.	იელი (ieli), ელი (ieli), დეკა (dik'a) შვერი (shk'eri), შკმერი (akh'meri), შვერი (shgver Svan.)	Flowers, Fruits - Tea Leaves - Tea, Phkhali	Wild collected Wild collected

Table 1 (continued)

Rosaceae			
<i>Amygdalus communis</i> L.	ვაშლატამა (vaschat'ama)	Fruit - Eaten raw	Garden
<i>Aruncus vulgaris</i> Raf.	მეკენძალა (mek'endzali), ნეკენძალა (nek'endzala), აჯორიკა (ajorik'a), მეჭეხი (metchekhi Svan.)	Leaves, Branches, Flowers, Stems - Pickled (lactofermented), Phkhali	Wild collected, Garden
<i>Cotoneaster multiflorus</i> Bunge	ვაშლანა (vishlana)	Fruit - Eaten raw	Wild collected
<i>Crataegus curvisepala</i> Lindm.	კუნელი (k'uneli), კვინელი (k'vineli), ჯოლიორიმ კურკანტელა (ჯოლიორიმ კურკანტელა), ბუცაანცი (butsaantsi), თეთრი კუნელი (teri k'uneli), შავი (shavi Khev.)	Fruit - Eaten raw, Compote Fruit, Leaves, Flowers - Tea	Wild collected Wild collected
<i>Crataegus pentagyna</i> Waldst.	კუნელი (k'uneli), შავი კუნელი (shavi k'uneli), კუნელი (tsentsi Svan.), შავი (shavi Khev.)	Flowers, Fruit - Tea	Wild collected
<i>Crataegus</i> sp.	კუნელი (k'uneli)	Fruit, Leaves, Flowers - Tea	Wild collected
<i>Cydonia oblonga</i> L.	კომში (k'omshi), ბია (bia), მახრობელა (mkhrchobela), ვაშლა (vashla), (Tsamala Arm.)	Fruit - Eaten raw, Jam, Compote	Garden
<i>Fragaria indica</i> Andrews	გველის მარწყვი (gvelis marts'kvi), ტყარ ცემუა (tq'ar tsemua)	Fruit - Eaten raw	Garden
<i>Fragaria vesca</i> L.	მარწყვი (marts'kvi), ტყის მარწყვი (t'k'is marts'kvi), ცხევი ხილ (tskheki khil Svan.)	Fruit - Eaten raw, Jam, Pickled, Tkhemali	Wild collected, Garden
<i>Fragaria vesca</i> L. Alibaba	მარწყვი (marts'kvi)	Fruit - Eaten raw	Garden
<i>Fragaria virginiana</i> Mill.	ხენდრო (khendro), ბალის მარწყვი (bagh'is marts'kvi)	Fruit - Eaten raw	Garden
<i>Fragaria x ananassana</i> Duchesne ex Rozier	მარწყვი (marts'kvi), ბალის მარწყვი (bagh'is marts'kvi), ხენდრო (khendro), ბასყ (basq Svan.)	Fruit, Flower - Eaten raw	Garden
<i>Malus orientalis</i> Uglizk.	ვაშლი (vashli), მაჯალო (mazhli), პანტა-ვაშლი (p'ant'a-vashli), პანტე უშქური (p'ant'e ushkuri), ვისკვ (viskv Svan.)	Fruit - Eaten raw, to distill Alcohol, ingredient of Svan salt, Jam, Thlapi	Garden, Wild collected
<i>Malus domestica</i> (Suckow) Borkh.	სამოთხის ვაშლი (samotkhis vashli)	Human food	Garden
<i>Mespilus germanica</i> L.	სხმარტი (skhmart'li), ზღმარტი (zgh'mart'li), ყირიპ (q'irip'), ცქუმენტური (tskumunt'uri), ჟუნტე (zhunt') , მონტლე (mont'le Osset.)	Fruit - Eaten raw, Jam	Garden, Wild collected
<i>Prunus armeniaca</i> L.	გარგარი (gargari), ქერამი (ch'erami), (Kuraga Russ.)	Fruit - Eaten raw, Jam, Compote	Garden
<i>Prunus avium</i> (L.) L.	ბალი (bali), ბალამნარა (baliamts'ara), კახამბალი (k'akhambali), ხართივალა (ხართივალა), შამბალა (shambali), მნარე ბალი (mts'are bali), ჟიშხა (zhishkha), ველური ბალი (veluri bali), ჰებრა (hebra Svan.), ცხეკიშ (tskhekish Svan.)	Fruit - Eaten raw, to distill Alcohol	Garden, Wild collected
<i>Prunus cerasus</i> L.	მაღუბალი (alubali) ვიშნაბალი (vishnabali), ბალი (bali), კახამბალი (k'akhambali)	Fruit - Eaten raw, to distill Alcohol, Compote, Jam Leaves - Phkhali	Wild collected, Garden
<i>Prunus divaricata</i> Ledeb.	ტყემალი (t'q'emali), გულდედავას ტყემალი (guldedava t'q'emali), კორკიმელი (k'ork'imeli), ოტური (ot'uri), ტყი (t'q'i'), წითელი ტყემალი (ts'iteli t'q'emali), ბარყვენდ (barqhvend Svan.)	Fruit - Eaten raw, to distill Alcohol, Tkhemali, Wine, Jam, Compote, Thlapi	Garden, Wild collected
<i>Prunus insititia</i> L.	ლოღნოშო (gh'ogh'nasho), მურაკი (murak'i)	Fruit - Eaten raw, to distill Alcohol, Wine	Garden, Wild collected
<i>Prunus laurocerasus</i> L.	წყავი (shq'ava), ქ'ქ'ორი (ch'q'ori), წყი (ts'q'i')	Fruit - Eaten raw, Wine Leaves - Phkhali	Garden, Wild collected
<i>Prunus padus</i> L.	შოთხვი (shotkhvi)	Fruit - Eaten raw, Jam	Garden, Wild collected
<i>Prunus persica</i> (L.) Batsch	ატამი (atami)	Fruit - Eaten raw, Jam, Compote, to distill Alcohol	Garden
<i>Prunus</i> sp.	ქლიავი (q'navi)	Fruit - Eaten raw	Garden
<i>Prunus spinosa</i> L.	კვრინჩხი (k'vranchkhi), ტყის მურაკი (t'q'is murak'i)	Fruit - Eaten raw, Chave, to distill Alcohol	Garden, Wild collected
<i>Prunus vachuschtii</i> Bregaze	ალუჩა (alucha)	Fruit - Eaten raw, Thlapi	Garden
<i>Prunus x domestica</i> L.	ქლიავი (q'navi), ჭანჭური (ch'an'churi)	Fruit - Eaten raw, Jam, to distill Alcohol, Pickled, Compote	Garden, Wild collected
<i>Pyracantha coccinea</i> M. Roem.	ჩიტავაშლა (chit'avasha), სირვაშლა (sirvashla)	Flower - Tea	Wild collected
<i>Pyrus caucasica</i> Fed.	პანტა (p'ant'a), პანტა-მსხალი (p'ant'a mskhali), ჯარჭი (jarch'i), მსხალი (mskhali), პანტე სხული (p'ant'e skhuli)	Fruit - Eaten raw, Jam, to distill Alcohol, Phkhali, Syrup, Spice ingredient	Wild collected, Garden
<i>Pyrus communis</i> L.	მსხალი (mskhali), იცხი (iskhi Svan.)	Fruit - Eaten raw, Jam, to distill Alcohol, Pickled Leaves - Phkhali	Garden
<i>Raphiolepis bibas</i> (Lour.) Galasso & Banfi	მუშმალა (mushmala), იაპონური ზღმარტი (iaponuri zgh'mart'li), მუშმულა (mushmula)	Fruit - Eaten raw	Garden
<i>Rosa canina</i> L.	ასკილი (ask'ili)	Fruit - Tea, to distill Alcohol, Jam, ingredient for Beer	Wild collected
<i>Rosa pimpinellifolia</i> Boiss.	შავი ასკილი (shavi ask'ili), ასკილი (ask'ili)	Fruit - Eaten raw, Tea, ingredient for Beer	Wild collected
<i>Rosa</i> sp.	ასკილი (ask'ili)	Fruit, Flowers - Eaten raw, Tea, Jam, to distill Alcohol	Wild collected, Garden
<i>Rubus caesius</i> L.	ძაღლმაცვალა (dzag'lmaq'vala), მაცვალი (maq'vali)	Flowers and Leaves - Tea Fruit - Eaten raw	Wild collected

Table 1 (continued)

<i>Rubus fruticosus</i> L.	რუსული მაცვალი (rusuli maq'vali), მაცვალი (maq'vali), უეკლო მაცვალი (uek'lo maq'vali), ბარდი (bardi), Малина (malina Russ.)	Fruit - Eaten raw, to distill Alcohol, Jam, Compote	Garden, Wild collected
<i>Rubus idaeus</i> L.	ჟოლო (zholo), ჟოლი (zholi), ხვაფა (khvapa Tush.), ინღა (ingha Svan.), იმღვა (img'va Svan.), Малина (malina Russ.)	Fruit - Eaten raw, Jam, Compote Leaves - Tea	Garden, Wild collected
<i>Rubus saxatilis</i> L.	ხახამა (khakhama), ჟოლის-დედა (zholis-deda), მწყერთიფელა (mts'q'ertipkla Khev.), წერტიფელა (t'sert'ipkhla Khev.)	Fruit - Eaten raw, ingredient of Chave	Wild collected
<i>Rubus</i> sp.	მაცვალი (maq'hvali), მუია (muja), მუყი (muq'i), ვიღვი (vighv Svan.), უღვ (ughv Svan.)	Fruit - Eaten raw, to distill Alcohol, Jam	Wild collected, Garden
<i>Sorbus aucuparia</i> K. Koch	ჭნავი (მუყი), მწორო (mts'oro), ცირცელი (tsirtseli), ჭვაპა (chacaha), ჭვაპა (chacaha)	Fruit - Eaten raw, to distill Alcohol, Jam	Wild collected
<i>Sorbus boissieri</i> C.K. Schneid.	ცირცელი (tsirtseli)	Fruit - Eaten raw, to distill Alcohol, Jam	Wild collected
<i>Sorbus caucasigena</i> Kom.	ცირცელი (tsirtseli), გოგლანდ (gogland Svan.)	Fruit - Eaten raw, to distill Alcohol, Jam	Wild collected, Garden
<i>Sorbus torminalis</i> (L.) Crantz.	დათვისყურა (dathvisqhura), დატვიხალა (datvikhala), თამელი (tameli), მურგუ (murgu), მურგვი (murgvi Svan.)	Fruit - Eaten raw, to distill Alcohol, Jam	Wild collected
Rubiaceae			
<i>Coffea arabica</i> L.	ქაფა (kafa)	Seeds - Beverage (coffee)	Garden
Rutaceae			
<i>Citrus limon</i> (L.) Burm. f.	ლიმონი (limoni)	Fruit - Eaten raw	Garden
<i>Citrus reticulata</i> Blanco	მანდარინი (mandarini)	Fruit - Eaten raw	Garden
<i>Citrus sinensis</i> Osbeck	ფორთოხალი (portokhali)	Fruit - Eaten raw, Jam	Garden
<i>Citrus unshiu</i> Marcov.	მანდარინი (mandarini)	Fruit - Eaten raw	Garden
<i>Citrus x paradisi</i> Macfad.	გრეიპფრუტი (greip'prut'i)	Fruit - Eaten raw	Garden
Salicaceae			
<i>Salix caprea</i> L.	მდგნალი (mdgnali)	Stem - to darken Beer	Wild collected
Sapindaceae			
<i>Acer pseudoplatanus</i> L.	ნეკერჩხალი (nekerchkhali), თეკრა (thekra Svan.)	Flower - Tea	Wild collected
Smilacaceae			
<i>Smilax excelsa</i> L.	ეკალიფი (ek'alg'ich'i), კალია (k'aliā), მაცალ (maq'al), ეკალა (ek'ala), ღიჭი (g'ich'i), კალია (k'alia), dzigura (dzigura), ბარდი (bardi)	Leaves, Young Stem - Phkhali, Salad	Wild collected, Garden
Solanaceae			
<i>Alkekengi officinarum</i> Moench	ონტოკოვა (ont'k'opa)	Fruit, Leaves - Phkhali Fruit - Eaten raw	Wild collected
<i>Capsicum annuum</i> L.	წინაკა (ts'its'ak'a), პიმპილი (p'impi'li), მწარე წინაკა (mts'are ts'its'ak'a Khev.)	Fruit, Seeds - Eaten raw, Pickled (lactofermented), Spice, Dolma, ingredient of Svan salt	Garden
<i>Capsicum annuum</i> L. Sweet Bulgarian	წინაკა ბულგარული (tztizaka bulgaruli), ტკბილი წინაკა (t'k'bili ts'its'ak'a), წინაკა წითელი (tztizaka tziitheli), წინაკა (ts'tsak'a), ძაფანა (dzaphana Svan.)	Fruit - Eaten raw, ingredient of Svan salt	Garden
<i>Lycopersicon esculentum</i> L.	პამიდორი (p'amidori), p'omidori (p'omidori), p'omindori (p'omindori)	Fruit - Eaten raw, Pickled (lactofermented)	Garden
<i>Solanum melongena</i> L.	ბადრიჯანი (badrijani)	Fruit, Leaves, Human Food - Phkhali Fruit - Stews, Fried	Garden
<i>Solanum pseudocapsicum</i> L.		Fruit - Eaten raw	Garden
<i>Solanum tuberosum</i> L.	კარტოფილი (k'art'opili)	Tuber - Eaten cooked, and distilled for Alcohol Leaves - Phkhali	Garden
Staphyleaceae			
<i>Staphylea colchica</i> Steven	ჯონჯოლი (jonjoli), ჯონჯოლა (jonjola) ჩვეულებრივი ჯონჯოლი (chveulebrivi jonjoli), ბოტიყვერა (bot'iq'vera), კაფარი (k'apari), კამპარი (k'amp'ari), ნიორკავა (niorkava Svan.)	Flower, Young Fruits, Young Stem - Pickled (lactofermented)	Wild collected, Garden
Taxaceae			
<i>Taxus baccata</i> L.	უთხოვარი (utkhovari), ხერკინა (kherk'ina)	Fruit - Jam	Wild collected
Theaceae			
<i>Camelia sinensis</i> L.	ჩაი (chai)	Leaves - Tea	Garden
Tropaeolaceae			
<i>Tropaeolum majus</i> L.		Leaves - Phkhali	Garden
Ulmaceae			
<i>Ulmus glabra</i> Huds.	თელა (tela)	Bark - Cooked as famine food	Wild collected
Urticaceae			
<i>Urtica dioica</i> L.	ჭინჭარი (ch'inch'ari), ჯიმჭარი (jimch'ari), ფსრა (psra Ossetian), (Santachi Arm.), მერხელ (merkhel Svan.)	Leaves, Stem - Phkhali, Khinkali, Khachapuri, Tea	Wild collected
Violaceae			
<i>Viola arvensis</i> L.	პატარძალა (p'at'ardzala)	Leaves - Phkhali (NOTE - in other regions regarded as toxic)	Wild collected
<i>Viola</i> sp.	ია (ia), ია ია (ia ia)	Root - Pickled (lactofermented)	Wild collected

Table 1 (continued)

		Leaves - Khachapuri Leaves, Stem, Whole plant - Phkhali (NOTE - in other regions regarded as toxic)	
Vitaceae			
<i>Vitis labrusca</i> L.	იზაბელა (izabela), ადესა (adessa)	Fruit - Eaten raw	Garden
<i>Vitis sylvestris</i> W. Bartram	უსურვაზი (usurazi)	Fruit - Eaten raw	Wild collected
<i>Vitis vinifera</i> L.	ყურძენი (q'urdzeni), ჩვეულბრივი ვაზი (chveulebrivi vazi), ხეჭეტური (ch'etsheturi), ვაზი (vazi)	Fruit - Wine, Eaten raw, Khardali Leaves - Phkhali	Garden, Wild collected
Zingiberaceae			
<i>Eleteria cardamomum</i> (L.) Maton		Seeds used as Spice	Garden
FUNGI			
Agaricaceae			
<i>Agaricus arvensis</i> Schaeff.	ქამა (kama), ქოქოდოლ (kokodil)	Fruiting body cooked as food	Wild collected, Garden
<i>Agaricus campestris</i> L.	მინდვრის სოკო (mindvris sok'o)	Fruiting body cooked as food	Wild collected
<i>Agaricus tabularis</i> Peck	ცხვარიო (tskhvario)	Fruiting body cooked as food	Wild collected
<i>Bovista</i> sp.	ყვავთკუსა (q'vavtkusa), ფიჭვნარა (pich'vnara)	Fruiting body cooked as food	Wild collected
<i>Bovista</i> sp. / <i>Lycoperdon</i> sp.	გუდაფშუტა (gudapshut'a)	Fruiting body cooked as food	Wild collected
<i>Bovista gigantea</i> (Batsch) Gray	ცვარიო (tsvario), ფურფაშა (purpasha)	Fruiting body cooked as food	Wild collected
(<i>Calvatia gigantea</i> (Batsch) Lloyd.)			
<i>Coprinus comatus</i> (O.F. Müll.) Pers.	მერცხალა (mertskhala), გველის სოკო (gvelis soko)	Fruiting body cooked as food	Wild collected
<i>Lycoperdon perlatum</i> Pers.	მალათუ (malathu)	Fruiting body cooked as food	Wild collected
<i>Lycoperdon pyriforme</i> Schaeff.	მალათუ (malathu)	Fruiting body cooked as food	Wild collected
<i>Macrolepiota procera</i> (Scop.) Springer	წერენო (ts'erets'o)	Fruiting body cooked as food	Wild collected
Amanitaceae			
<i>Amanita caesarea</i> (Scop.) Pers.	ნიყვი (niq'vi), წითელქუდა (tzithelquda)	Fruiting body cooked as food	Wild collected
<i>Amanita muscaria</i> (L.) Lam.	წითელი მზამასოკო (tsiteli shkhamasok'o)	Fruiting body cooked as food (NOTE - in other regions regarded as toxic)	Wild collected
Auriculariaceae			
<i>Auricularia auricula-judae</i> (Bull.) Quél.	მურყანისოკო (murq'anisoko), გერდა (gerda)	Fruiting body cooked as food	Wild collected
Bankeraceae			
<i>Hydnum repandum</i> L.	ირმისტუნა (ilmist'ucha)	Fruiting body cooked as food	Wild collected
<i>Sarcodon imbricatus</i> (L.) P. Karts.	ირემა სოკო (irema-so'ko)	Fruiting body cooked as food	Wild collected
Boletaceae			
<i>Boletus edulis</i> Bull.	დათიკა სოკო (datik'a sok'o), [დათვის სოკო (datvis soko), ძირბუკა (dzirbuk'a), დათვა სოკო (datva sok'o)]	Fruiting body cooked as food	Wild collected
<i>Leccinum scabrum</i> (Bull.) Gray	დედაბერა (dedabera)	Fruiting body cooked as food	Wild collected
<i>Neoboletus erythropus</i> (Pers.) C. Hahn.	წითელფეხა (ts'itelpekha), ხუშხუხა (khushkhusha)	Fruiting body cooked as food	Wild collected
(<i>Boletus erythropus</i> Pers.)			
Cantharellaceae			
<i>Cantharellus cibarius</i> Fr.	მიქლოი (kikilo), მიქელა (miquela Svan.)	Fruiting body cooked as food	Wild collected
Clavariadelphaceae			
<i>Clavariadelphus pistillaris</i> (L.) Donk	მინდურისია (mindurisia)	Fruiting body cooked as food	Wild collected
Cortinariaceae			
<i>Cortinarius violaceus</i> (L.) Fr. Gray	ლურჯკაბა (lurjk'aba)	Fruiting body cooked as food	Wild collected
Fistulinaceae			
<i>Fistulina hepatica</i> (Schaeff.) With.	გვიძლა (gvidzla)	Fruiting body cooked as food	Wild collected
Fungi indet.			
	კოჯობა (kojoba)	Fruiting body cooked as food	Wild collected
	თეტროსოკო (tetrisokho)	Fruiting body cooked as food	Wild collected
	თვანასოხო (tvana sokho)	Fruiting body cooked as food	Wild collected
	Родственница (Rostvennitsa Russ.)	Fruiting body cooked as food	Wild collected
	არჩექალი (archekali Khev.)	Fruiting body pickled (lactofermented)	Wild collected
	ბუხმისოხო (bukhmisoko)	Fruiting body cooked as food	Wild collected
	გიგოჭარჩა (gigocharcha)	Fruiting body cooked as food	Wild collected
	ვიტელი (viteli)	Fruiting body cooked as food	Wild collected
	თალიჩა (talicha)	Fruiting body cooked as food	Wild collected
	თაში (tashi)	Fruiting body cooked as food	Wild collected
	თელასოკო (thelasoko)	Fruiting body cooked as food	Wild collected
	თვინინელი (tvinineli)	Fruiting body cooked as food	Wild collected
	თიანასოკო (tianasoko)	Fruiting body cooked as food	Wild collected

Table 1 (continued)

	თიასოკო (triasoko)	Fruiting body cooked as food	Wild collected
	თიკნიყურა (tik'niq'ura)	Fruiting body cooked as food	Wild collected
	თიორული (tiuruli)	Fruiting body cooked as food	Wild collected
	თშადასობო (tshadasoko)	Fruiting body cooked as food	Garden
	ირალა (tsirala)	Fruiting body cooked as food	Wild collected
	ირტელისობო (tsirtselisoko)	Fruiting body cooked as food	Wild collected
	კეკელა (kekela)	Fruiting body cooked as food	Wild collected
	კრუსე (kruse)	Fruiting body cooked as food	Wild collected
	კურილაზკატუმო (kurilakatumo)	Fruiting body cooked as food	Wild collected
	ლარგი (largi)	Fruiting body cooked as food	Wild collected
	მანსიტო (mansito)	Fruiting body cooked as food	Wild collected
	მარნულა (marnula)	Fruiting body cooked as food	Wild collected
	მატსუკალა (matsukala)	Fruiting body cooked as food	Wild collected
	მილიგაუმაჩი (miligaumachi)	Fruiting body cooked as food	Wild collected
	მიტისოკო (mitisoko)	Fruiting body cooked as food	Wild collected
	მიწის კალმახი (mits'is k'almakhi)	Fruiting body cooked as food	Wild collected
	მუსლიანკა (masilanka)	Fruiting body cooked as food	Wild collected
	მწარია (mts'aria)	Fruiting body cooked as food	Wild collected
	ნიჯული (nijuli)	Fruiting body cooked as food	Wild collected
	პილიპია (p'ilp'ila)	Fruiting body cooked as food	Wild collected
	საყლავა (saq'lava)	Fruiting body cooked as food	Wild collected
	სერანა (serana)	Fruiting body cooked as food	Wild collected
	სერჭა (sercha)	Fruiting body cooked as food	Wild collected
	ფიჭვა სოკო (pich'vasok'o)	Fruiting body cooked as food	Wild collected
	შანცკავა (shantskava)	Fruiting body cooked as food	Wild collected
	ცვილისობო (tsvilisoko)	Fruiting body cooked as food	Wild collected
	ციპჰელა (tsiphela)	Fruiting body cooked as food	Wild collected
	ცხვარა (tskhvara)	Fruiting body cooked as food	Wild collected
	წაპლისოკო (tsaplikosoko)	Fruiting body cooked as food	Wild collected
	წიანასოკო (tsianasoko)	Fruiting body cooked as food	Wild collected
	ჭრელკაბა (ch'relk'aba)	Fruiting body cooked as food	Wild collected
	ხეთამხალი (khetamkhali)	Fruiting body cooked as food	Wild collected
Gomphaceae			
<i>Ramaria flava</i> (Schaeff.) Quél.	ირმის რქა (irmis rka), საჩიჩელა (sachichela Svan.)	Fruiting body cooked as food	Wild collected
Hericiaceae			
<i>Hericium erinaceus</i> Bull. Pers.	ეშმაკის ბურნუთი (eshmak'is burnuti), გუდასოკო (gulasoko Tush.)	Fruiting body - Eaten cooked	Wild collected
Lepiotaceae			
<i>Macrolepiota procera</i> (Scop.) Springer	წერეწო (ts'erets'o), ხუშხუშა (khushkhusha), ხარხუშა (kharkhusha), წეროსწვივა (ts'erosts'viva)	Fruiting body cooked as food	Wild collected
Marasmiaceae			
<i>Marasmius oreades</i> (Bolton) Fr.	წრილა (ts'i'iala)	Fruiting body cooked as food	Wild collected
Morchellaceae			
<i>Morchella conica</i> Pers	ხარისფაშვა (khrispashva)	Fruiting body cooked as food	Wild collected
<i>Morchella esculenta</i> (L.) Pers.	ხარისფაშვა (khrispashva), თრიფელი (trifeli)	Fruiting body cooked as food	Wild collected
Physalacriaceae			
<i>Armillariella mellea</i> (Vahl) P. Kumm	მანჭკვალა (manch'k'vala)	Fruiting body cooked as food	Wild collected
Pleurotaceae			
<i>Pleurotus cornucopiae</i> (Paulet) Rolland	მანალოსოკო (machalosoko), მაღვალი (magh'vali)	Fruiting body cooked as food	Wild collected
<i>Pleurotus ostreatus</i> (Jacq. ex Fr.) P. Kumm	კალმახა (k'almakha), ციპლისობო (tsiplis sok'o), ხის სოკო (khis sok'o), ტყუბულ (tqhubul Svan.)	Fruiting body cooked as food	Wild collected
Pluteaceae			
<i>Pluteus cervinus</i> (Schaeffer ex Fr.) P. Kumm.	ირმის რქა (irmis rka)	Fruiting body cooked as food	Wild collected
Polyporaceae			
<i>Polyporus squamosus</i> (Huds.) Fr.	ძერანა (dzerana), ძერა (dzera)	Fruiting body cooked as food	Wild collected
Psathyrellaceae			
<i>Coprinopsis atramentaria</i> (Bull.) Redhead, Vilgalys & Moncalvo	მელანა (melana), სლიო (salio)	Fruiting body cooked as food	Wild collected
Ramariaceae			
<i>Ramaria flava</i> (Schaeff.) Quél.	საჩეჩელა (sachechela), ბანარა (bats'ara)	Fruiting body cooked as food	Wild collected
Russulaceae			
<i>Lactarius deliciosus</i> (L. ex Fr.) S.F. Grey	მჭადა (mtchada), ჭადა (chada), ჭადა (ch'adua), ჭკადუა (ch'k'adua), ჭადუა (tchadua Svan.)	Fruiting body cooked as food	Wild collected
<i>Lactarius piperatus</i> (L.) Pers.	არქასობო (arq'a soko), პაჭიჭა (pach'ich'a), არყა (arq'q), არყაი (arq'ai)	Fruiting body cooked as food	Wild collected
<i>Lactifluus piperatus</i> (L.) Roussel	ბერუითავი (beruithavi Svan.)	Fruiting body cooked as food and Pickled (lactofermented)	Wild collected
<i>Lactifluus volemus</i> (Fr.) Kuntze	მჭადა (mch'ada)	Fruiting body cooked as food	Wild collected
<i>Russula adusta</i> (Pers.) Fr.	ჩოხაშავა (chokhashava)	Fruiting body cooked as food	Wild collected

Table 1 (continued)

<i>Russula emetica</i> (Schaeff.) Pers.	ბღავანა (bahgavana)	Fruiting body cooked as food	Wild collected
<i>Russula rosea</i> Pers.	წითლი (ts'it'lio)	Fruiting body cooked as food	Wild collected
<i>Russula virescens</i> (Schaeff.) Fr.	ხახვილი (khalhvilo)	Fruiting body cooked as food	Wild collected
Strophariaceae			
<i>Hypoloma fasciculare</i> (Huds.) P. Kumm.	მატყუქუქ (mat'q'uq'q)	Fruiting body cooked as food (NOTE - in other regions regarded as toxic)	Wild collected
Sparassidaceae			
<i>Sparassis crispa</i> Wulfen	კომბოსტოსოკო (kombostosoko)	Fruiting body cooked as food	Wild collected
Suillaceae			
<i>Suillus granulatus</i> (L.) Roussel	დუმა სოკო (duma soko), Маслята (Masliata Russ.)	Fruiting body cooked as food	Wild collected
<i>Suillus luteus</i> (L.) Roussel	ზეთიანა (zethiana)	Fruiting body cooked as food	Wild collected
Tricholomataceae			
<i>Lepista sordida</i> (Schumach.) Singer	ღრუბელა (ghrubela), მელნისძირა (melnisdzira), მელანო (melano)	Fruiting body cooked as food	Wild collected
<i>Tricholoma aurantium</i> (Schaeff.) Ricken	ხობხობის მკერდი (Khokhbis mk'erdi), ხობხობისმკერდა (Khokhbismerda)	Fruiting body cooked as food	Wild collected
<i>Tricholoma portentosum</i> (Fr.) Quél.	შავჩოხა (shavchokha), თაგუნა (taguna)	Fruiting body cooked as food	Wild collected

Chave: made of dried herbs by boiling them, adding flour, fat (with or without meat) and salt; **Dolma:** grape leaves and others filled with herbs and meat; **Mkhlovana:** bread filled with beetroot leaves, spinach, herbs; **Khachapuri:** bread filled with cheese and herbs; **Khinkali:** dumplings with herbs and meat; **Phkhali:** minced herbs, sometimes mixed with walnuts, eaten as spread or cooked in pie; **Sats'ebai:** fresh herbs dipped in sour milk, **Thlapi:** fruit lather

Table 2 Regions of our fieldwork and number of food plant mentions recorded

Region	Number of mentions
Guria	2125
Khevsureti	2012
Zemo Svaneti	1942
Adjara	1866
Tori	1750
Tusheti	1633
Kvemo Svaneti	1406
Kakheti	1085
Lechkhumi	1017
Samegrelo	853
Meskheti	776
Kvemo Racha	708
Javakheti	699
Kvemo Kartli	678
Zemo Imereti	631
Mtianeti	342
Zemo Racha	277

and samples in which we had no more details about the purpose of usage of plants, i.e., in cases where plants were used as human food, but we did not know exactly for which kind of food. We considered regions and five altitudinal ranges (0–500 m, 501–1000 m, 1001–1500 m, 1501–2000 m, 2001–2500 m) as factors within our ordinations. We conducted non-metric multidimensional scaling (NMDS) followed by a permutational multivariate analysis of variance (PERMANOVA) with Euclidean

distance and 999 permutations using the “RVAideMemoire” package [72].

Results

The total number of taxa, mostly identified to species, was 527 (Tables 1 and 2, Appendix Tables 5, 6). Ninety-five species of fungi were consumed. Trees contributed 71 species (13.47%), Shrubs—43 (8.1%), Herbs—333 (60.32%), Climbers -5 (0.09%), and Fungi—95 (18.02%). Of all species 388 were wild, i.e., not cultivated, although some of them occurred on ruderal places and as weeds in gardens. In case of 20 vascular plants and 45 fungal species, the collected material did not allow a certain identification, and these species are thus indicated as "indet." in Table 1. Taxonomically, the difference between two food plant groups—garden versus wild ("forest")—was strongly pronounced even at family level. Only one plant species (*Piper nigrum* with four mentions) was bought in markets. Over 62% of the mentions (12,255) referred to cultivated plants, 7352 (37%) to wild collections, and some plants were found both collected in the wild and in gardens; however, this was a very small percentage (189 mentions, less than 1%). The great majority of mentions (>99%) were either from families found either in gardens (62%) or in the wild (37%). Over 41% of all mentions referred to the use of fruits, 21% to leaves, about 7% to seeds, and 5% to fruiting bodies, leaves/stems and stems. Whole plants were only used very infrequently. Of all the families, Rosaceae, Apiaceae, Lamiaceae, Amaryllidaceae and Solanaceae showed the highest importance. At a generic level, *Allium*, *Pyrus*, *Malus* and *Brassica* received the highest number of use report. Only 30 species (6% of the total) represented 46% of all use mentions, but only *Malus orientalis* (3.5%), *Pyrus communis* (3.2%),

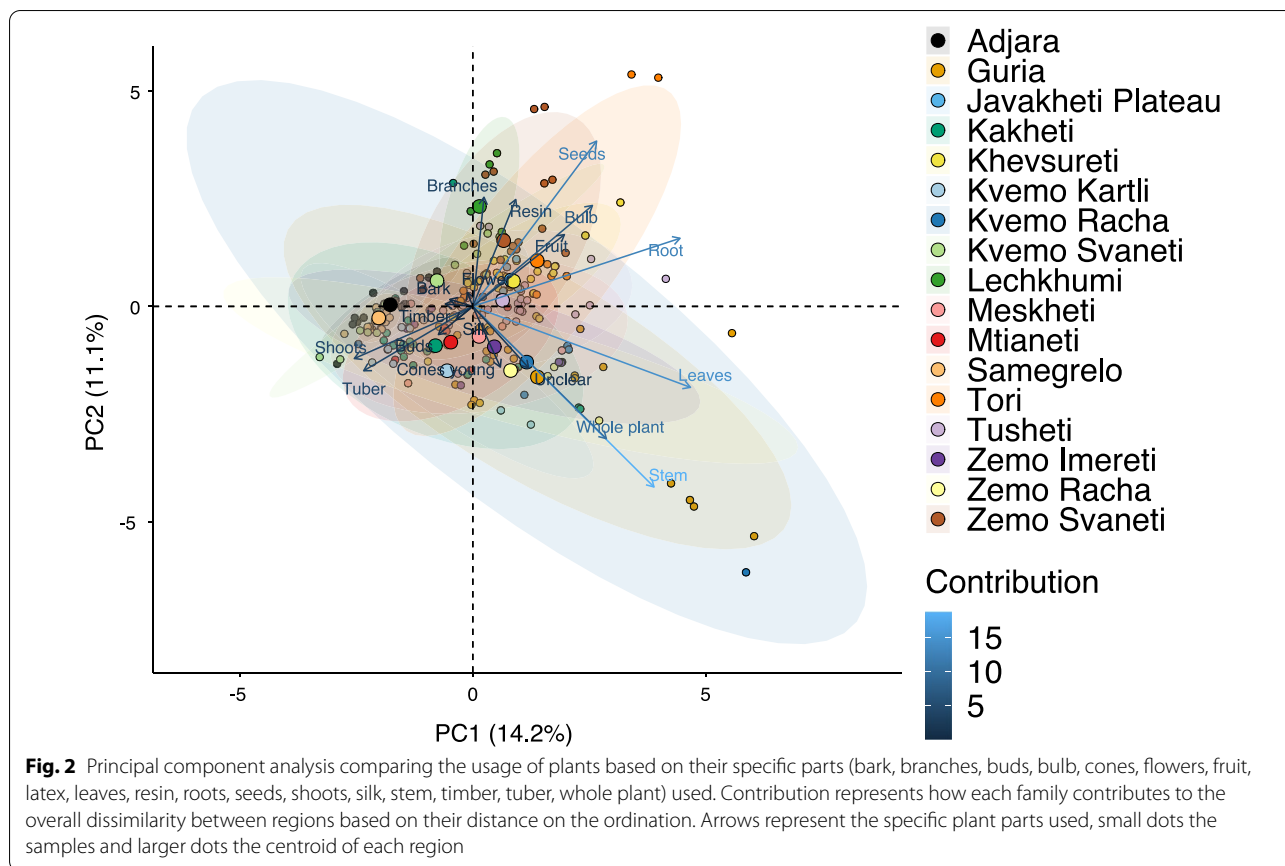


Table 3 Plant family diversity assessed by various indices

Index	Garden	Wild	P-value
Dominance, <i>D</i>	0.096	0.053	0.0001
Shannon <i>H</i>	2.709	3.525	0.0001
Evenness $e^{H/S}$	0.227	0.346	0.0001
Simpson index, $1-D$	0.904	0.947	0.0001
Equitability <i>J</i>	0.647	0.769	0.0001
Fisher α	9.168	15.9	0.0001
Berger–Parker, <i>BP</i>	0.219	0.166	0.0001

P-values are calculated using randomization tests (or Permutation test, software PAST 4.2)

Georgia than in the wider region, (2) food plant use knowledge would be widely and equally spread in most of Georgia, (3) there would still be incidence of knowledge loss despite wide plant use, especially in climatically favored agricultural regions in Western and Eastern Georgia.

Materials and methods

Ethnobotanical interviews

From 2013 to 2019, we interviewed over 380 participants in all regions of Georgia not occupied by Russian

forces on their general plant use, recording over 32,000 individual uses. The analyses of all uses have been published in a variety of papers [41–50]. However, of all uses over 19,800 mentions were of food plants, which is why we regarded it as prudent to present a separate analysis of these. Interviews using semi-structured questionnaires were conducted after obtaining the oral prior informed consent of the participants, which were selected by snowball sampling, trying to reach gender balance and representing different age groups. Most participants were however over 50 years old, as interviews targeted remote villages where only very few younger people remain. All interviews were carried out in the participants’ homes and gardens by native speakers of Georgian and its dialects (Imeretian, Rachian, Lechkhumian, Tush, Khevsurian, Psavian, Kakhetian), other Kartvelian languages (Megrelian, Svan) and minority languages (Ossetian, Ude, Azeri, Armenian, Greek). The languages in which a plant was mentioned are indicated in Table 1. Interviews were subsequently translated into English. Plants grown in home gardens were used as prompts, while wild-collected species were free listed. We classified species as "garden" when they were grown/collected in cultivated areas, and as "forest/wild-collected" when growing and

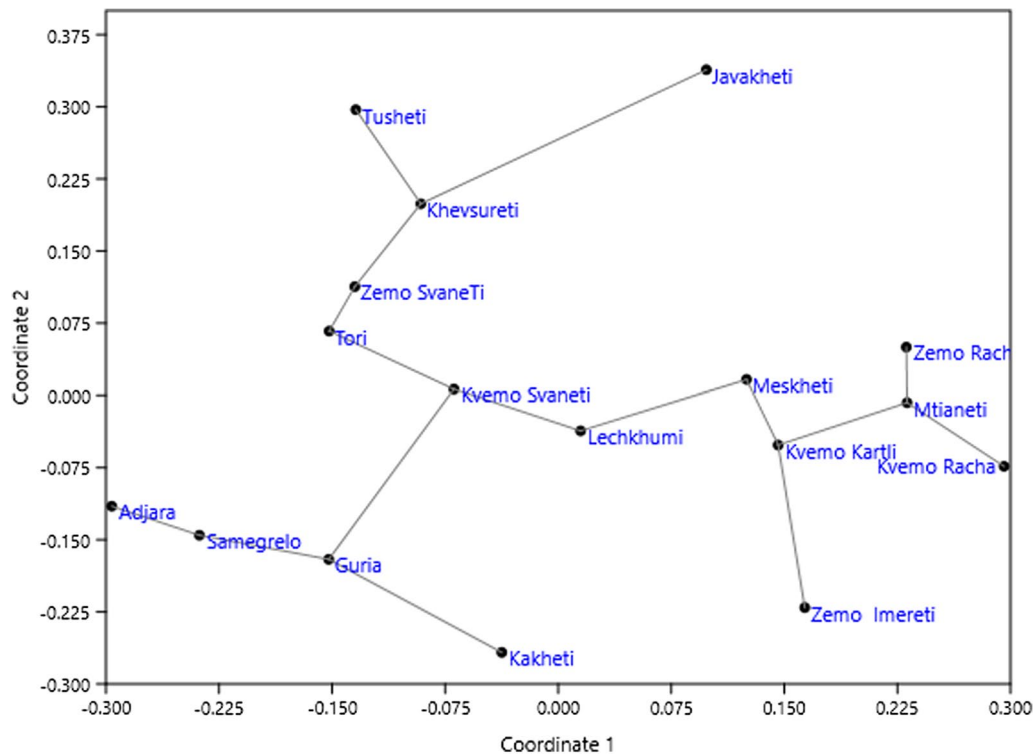


Fig. 3 nMDS ordination of regions by garden food plant species composition

harvested in the wild. We maintained the distinction of "forest" and "garden" because it was used in our previous publications from the region [50], to maintain consistency. In contrast to many other countries Georgia benefits from a complete flora [65–69] and a broad inventory of vernacular names in all languages [68]. Species were identified directly in the field, using this literature, and vouchers collected and deposited in the National Herbarium of Georgia (TBI). The nomenclature of all species follows www.tropicos.org, under APGIII [70]. Collection permits were provided through the Institute of Botany, Ilia State University, Tbilisi.

Data analysis

Data were tabulated using excel sheets and a combined matrix was constructed with plant entries in rows and plant data in columns including date, place, participant's age and gender, interviewer, plant identity (Latin, Georgian vernacular, local names), the use category, which parts were used, and the source (garden or forest). We compared species diversity among groups of species (forest *versus* garden, various provinces) using sample-based rarefaction as well as widely used diversity indices: Dominance (D), Shannon (H), Evenness ($e^{H/S}$), Simpson index, $(1 - D)$, Equitability (J), Fisher alpha, Berger–Parker

(BP), given that no single index may sufficiently show the importance of certain species. Similarity of species composition among groups of plants were analyzed using non-metric multidimensional scaling (nMDS). All these analyses were performed using software PAST4.02 [71].

Test if the usage of plants based on family and genus, plant system used, and general and specific plant parts differ between regions and different altitudinal ranges. I predict that these components will be different, since there will be a different plant composition among regions and along an altitudinal gradient, and that different human communities have their own ethnobotany knowledge, even though they are from the same country.

We compared the usage of plants based on their (i) family and (ii) genus, (iii) system (root, shoot, or both), and (iv) general (vegetative, reproductive, or both) and (v) more specific (bark, branches, buds, bulb, cones, flowers, fruit, latex, leaves, resin, roots, seeds, shoots, silk, stem, timber, tuber, whole plant) parts used between regions and altitudinal ranges. We also compared (vi) for what purpose plants are used between regions and altitudinal ranges. We removed from our analyses any data that was not possible to make any further identification, such as plants identification above family, and uncertain plant parts. We also removed fungi from our analyses,

Table 4 Pairwise comparisons with FDR p-value adjustment method of the different variables evaluated (plant family, plant genus, system used, general plant parts used, specific plant parts used, the usage) between altitudinal ranges after significant PERMANOVA analysis (Table Permanova)

Plant family	0–500	1001–1500	1501–2000	2001–2500
1001–1500	0.0013			
1501–2000	0.0013	0.0013		
2001–2500	0.0013	0.0013	0.0013	
501–1000	0.0490	0.0044	0.0013	0.0013
<i>Plant genus</i>				
	0–500	1001–1500	1501–2000	2001–2500
1001–1500	0.0011			
1501–2000	0.0011	0.0011		
2001–2500	0.0011	0.0011	0.0011	
501–1000	0.0180	0.0011	0.0011	0.0011
<i>General plant parts used</i>				
	0–500	1001–1500	1501–2000	2001–2500
1001–1500	0.0300			
1501–2000	0.3550	0.0300		
2001–2500	0.4144	0.0300	0.3550	
501–1000	0.0420	0.6270	0.0833	0.0300
<i>General plant parts used</i>				
	0–500	1001–1500	1501–2000	2001–2500
1001–1500	0.0017			
1501–2000	0.0722	0.0017		
2001–2500	0.0017	0.0017	0.0017	
501–1000	0.0271	0.6840	0.0288	0.0017
<i>Specific plant parts used</i>				
	0–500	1001–1500	1501–2000	2001–2500
1001–1500	0.0017			
1501–2000	0.0025	0.0017		
2001–2500	0.0017	0.0017	0.0017	
501–1000	0.0222	0.6670	0.0025	0.0017
<i>Usage</i>				
	0–500	1001–1500	1501–2000	2001–2500
1001–1500	0.0133			
1501–2000	0.0050	0.0957		
2001–2500	0.0050	0.0840	0.3020	
501–1000	0.0450	0.2833	0.0917	0.1750

Analyses were based on Euclidean distance and 999 permutations

and *Vitis vinifera* (2.7%) had over 2% of mentions, and *Chenopodium album* and *Urtica dioica* were the only not cultivated plants reaching over 1% of mentions. In most regions at all altitudinal ranges, the aboveground parts were most frequently used (Fig. 2),

Most plants (65%) were eaten without complicated preparation, either raw (55%), or fried/cooked (e.g., 8% that were fungi). A full 5% of all mentioned plant-uses

were for pickles / lactofermented (often stems), and a full 18% of all use reports were for *Phkhal* (boiled herb pie, especially in spring), 4% were used as spices, and around 2% for the distillation of alcohol. All other use categories (35) had much fewer mentions.

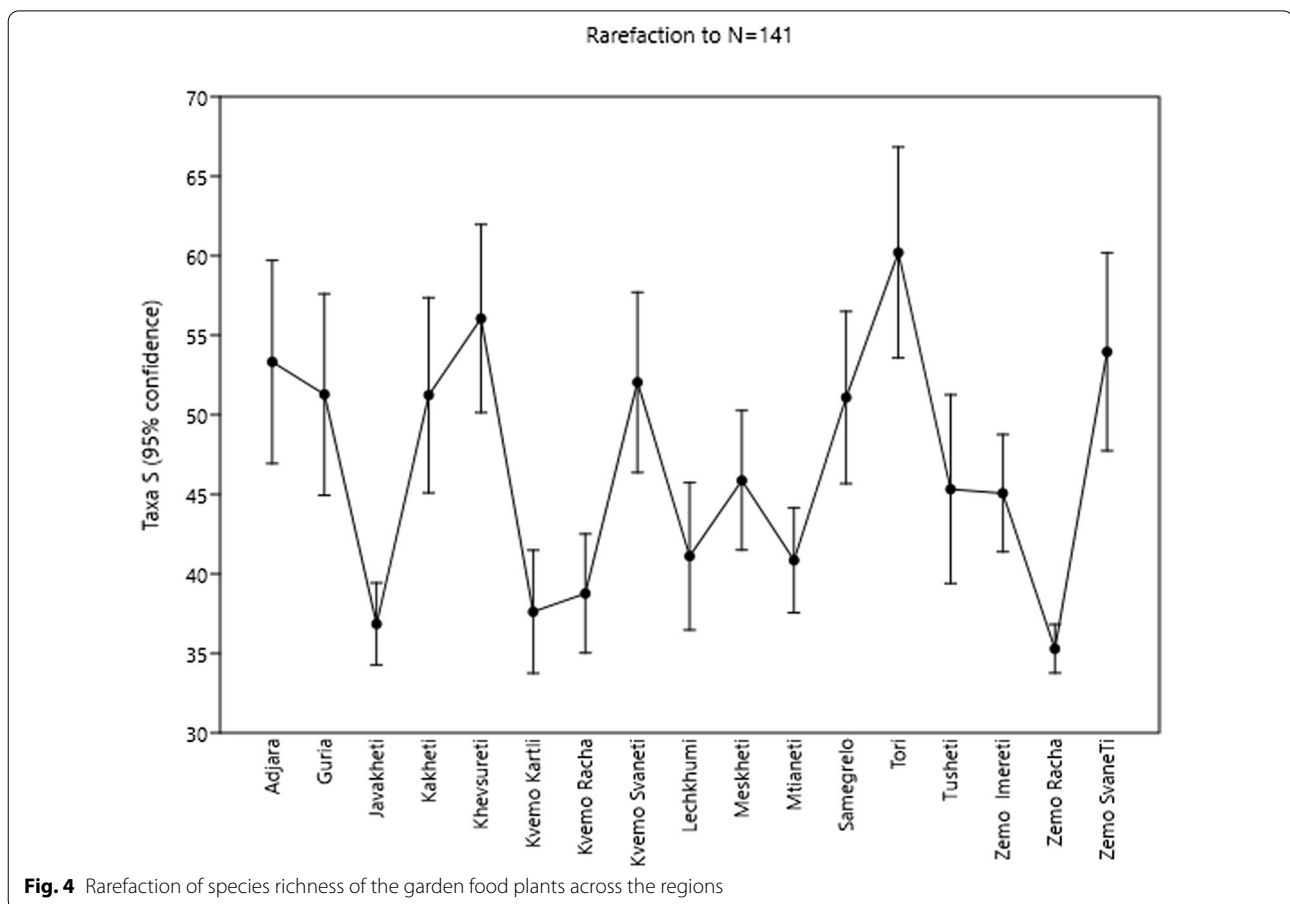
The richness of plant families was 66 in garden versus 97 families of wild plants, respectively, and the difference was highly significant. Other diversity indices also unequivocally pointed to a considerably more diverse family composition of wild versus garden plants as the differences between all the tested diversity indices appeared to be highly significant (Table 3).

The regions of Georgia could be divided into three groups by the similarity of garden food plants as can be seen on the nMDS ordination graph (Fig. 3). This ordination seems to be influenced on the presence of large markets: Adjara, Samegrelo, Guria, and Kakheti which are lowland regions with large cities are joined by minimum distance versus Tori, Zemo Svaneti, Khevsureti, Tusheti and Javakheti, which are the most remote places. Kvemo Svaneti, Lechkhumi, Meskheta, Kvemo Kartli, Zemo Imereti, Zemo and Kvemo Racha, Mtianeti are moderately remote from large markets. The grouping of the regions closer to large markets might however have another distinct reason: Adjara, Samegrelo, Guria, and Kakheti are also the climatically warmest regions in Georgia, with the longest growing seasons. This allows the production of food plants almost all year round, and greatly reduces the dependency on foraging wild species.

For comparison, we assessed the usage of plants between regions based on their family, genus, specific parts used (root, shoot, or both) used, reproductive stages used (vegetative, reproductive, or both) and their specific parts used (bark, branches, buds, bulb, cones, flowers, fruit, latex, leaves, resin, roots, seeds, shoots, silk, stem, timber, tuber, whole plant), but at regional level and within different altitudinal ranges through non-multidimensional scaling (NMDS) followed by permutational multivariate analysis of variance (PERMANOVA) with 999 permutations and Euclidian distance. The detailed results are given in Table 4 and Appendix Tables 7, 8, 9, 10 and 11.

The regions varied strongly in their species richness, based on species used (Fig. 4). These differences also might reflect the remoteness from large markets and severity of local climate.

Relationships among the regions in the case of wild food plants show a different and clearer pattern (Fig. 5). Adjacent regions in particular cluster together (Kvemo Zemo Racha, and Zemo Imereti; Samegrelo, Guria, Adjara, Lechkhumi and Kvemo and Zemo Svaneti; Meskheta, Javakheti, Kvemo Kartli; Mtianeti, Kakheti, Khevsureti, Tusheti). Like in the case of the garden food



plants, species diversity of the wild food plants mentioned varied strongly (Fig. 6). Climate and the need for of the use of wild food plants (especially in high altitude villages) play a role in this variation. As we already showed in various previous publications, language, cultural group, ethnicity, education, or gender of the participants had no impact on the main use of food plants, nor any other uses [41–50].

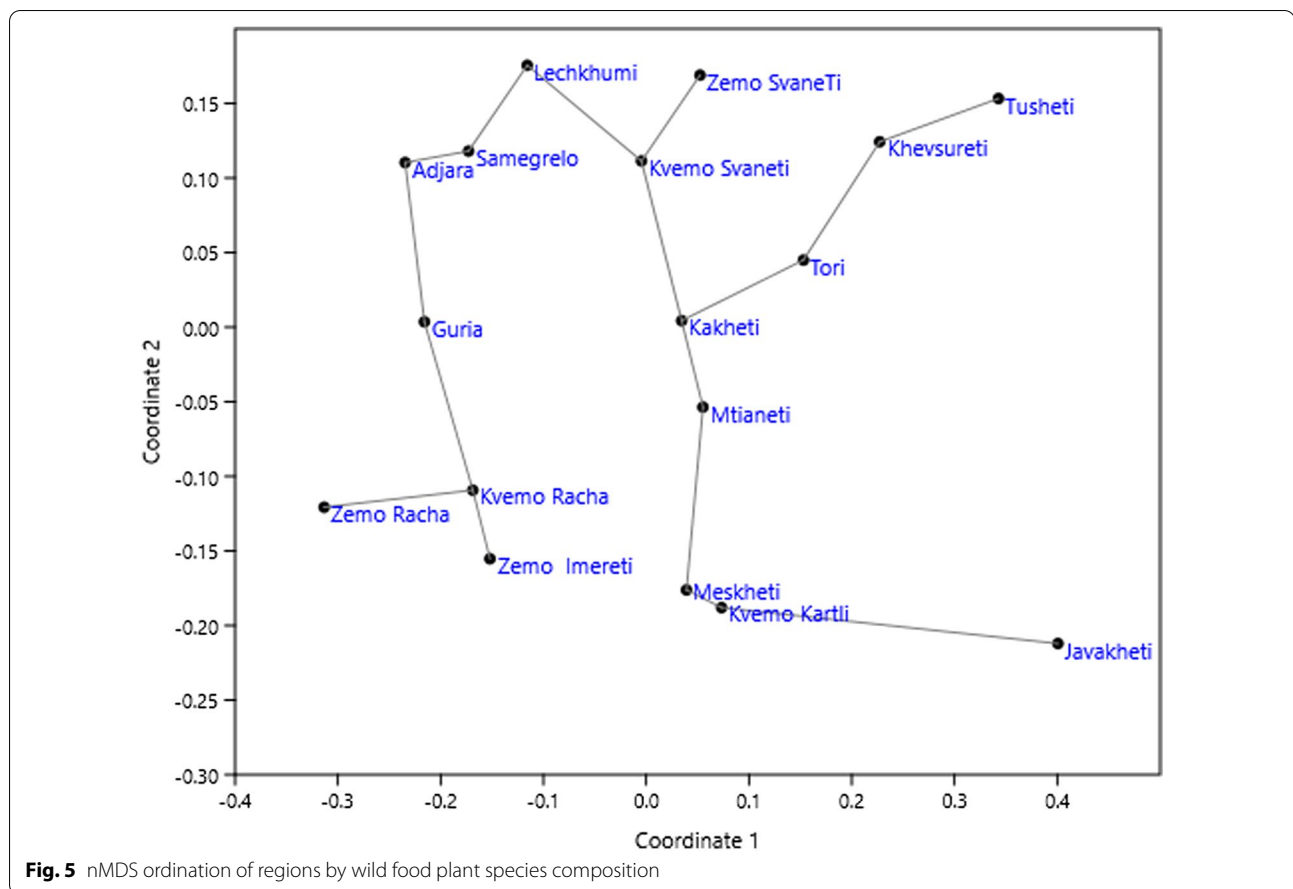
Pkhali and Pickles—emblematic foods of the Caucasus

Of all food preparations the use of plants as ingredient of boiled herb preparations (mostly as გაზაფხულის ფხალი—gazapkhali pkhali=Spring Pkhali, as the first vitamin source after winter), and as lacto-fermented or vinegar-based pickles are probably the most emblematic ones in the Caucasus, given that almost 50% of all food mentions were for pkhali, and almost 12% for pickled plants, and 8% for teas.

While the overall distribution of families, genera and their uses were similar between regions, overall most species were used in Guria. However, the knowledge distribution was most uneven for these food categories (Fig. 7). The altitudinal range between 1001 and

1500 m, followed by 1501–2000 m were clearly predominant when it came to diversity of plants used as well as uses (Fig. 8). This very unequal distribution of the most important families/genera, as well as their respective uses is reflected in Fig. 9. The altitudinal differences do not necessarily indicate however that the respective species did not grow also at lower altitudes. They simply indicate that at lower altitudes the participants rather preferred other food plants, and due to a lack of necessity were not interested in wild harvesting greens.

Only 60% of participants reported making pickles / lactofermented preparations. Of these, over 16% each came from Zemo Imereti and Khevsureti, and 12% each from Zvemo Svaneti, the Javakheti-Plateau, and Guria. The first regions represent all high altitude—short growing season areas, where the population does need to preserve food for winter. Guria is relatively warm—but very wet and snow-rich, which also might explain the prevalence of pickles. No participants whatsoever from Adjara, Samegrelo (the most subtropical regions) and Mtianeti (close to the capital Tbilisi) reported making pickles. Unsurprising, Kakhetians were also not enthusiastic about this form of preparation, because Kakheti



is also a region famous for its large agricultural production. In contrast, in Tori and Tusheti there are simply less products that can be pickled. Preferred species (of a total of 79) for pickles were mostly Amaranthaceae (*Amaranthus*, *Chenopodium*), Apiaceae (especially the stems of *Anthriscus*, *Chaerophyllum* and *Heracleum* were pickled, but also, stems of *Conium maculatum*), Amaryllidaceae (all *Allium* species), and Polygonaceae (*Polygonum* and *Rumex*). In addition, *Aruncus vulgaris* (Rosaceae), *Stapylelea colchica* (Staphyleaceae). All of these were more important as pickles than "traditional European style species (*Cucumis sativus*, *Capsicum* etc.). The fermentation of the ferns *Mattheucia struthiopteris* (Onocleaceae) and *Dryopteris filix-mas* (Dryopteridaceae) was similar to what we observed, e.g., in the Himalayas.

The participants clearly indicated that some plants (e.g., *Conium maculatum*, *Dryopteris filix-mas*, *Galanthus* sp., *Narcissus* sp.) needed careful preparations, due to possible toxicity. However, given that these species might have even higher toxicity in other regions, e.g., Central Europe, the authors decided to not elaborate any further on preparation methods, given that these might

not be sufficient to remediate toxicity of the same species outside the Caucasus.

In case of Pkhali, over 93% of all participants—from all regions—reported to use such boiled herbs, normally in Spring. This was surprising, as we had expected much more limited use in the climatically favorable regions. Nevertheless, Zemo Imereti (19% of all Pkhali preparations), Tori and Kvemo Racha (16% each), Tusheti (15%) and Khevsureti (14%)—all mountain regions with long winters, stood out as the real "herb eater" areas. In contrast to the pickled species, essentially only young leaves were used for pkhali, with great emphasis on the same families indicated in pickles. (All pickled plant species were also used for pkhali.) The overall number of species fused or pkhali was however much higher (197). The elaboration of pkhali often involves many steps to reduce the toxicity of species used, and in most cases a wide variety of herbs are included in each preparation. Interesting examples for the use of toxic species included the leaves of *Solanum tuberosum*, *Veratrum lobelianum* and *Viola* sp. *Solanum tuberosum* leaves for example are regarded as toxic worldwide, but are being eaten in the Caucasus and Albania [48]. *Veratrum album* (closely

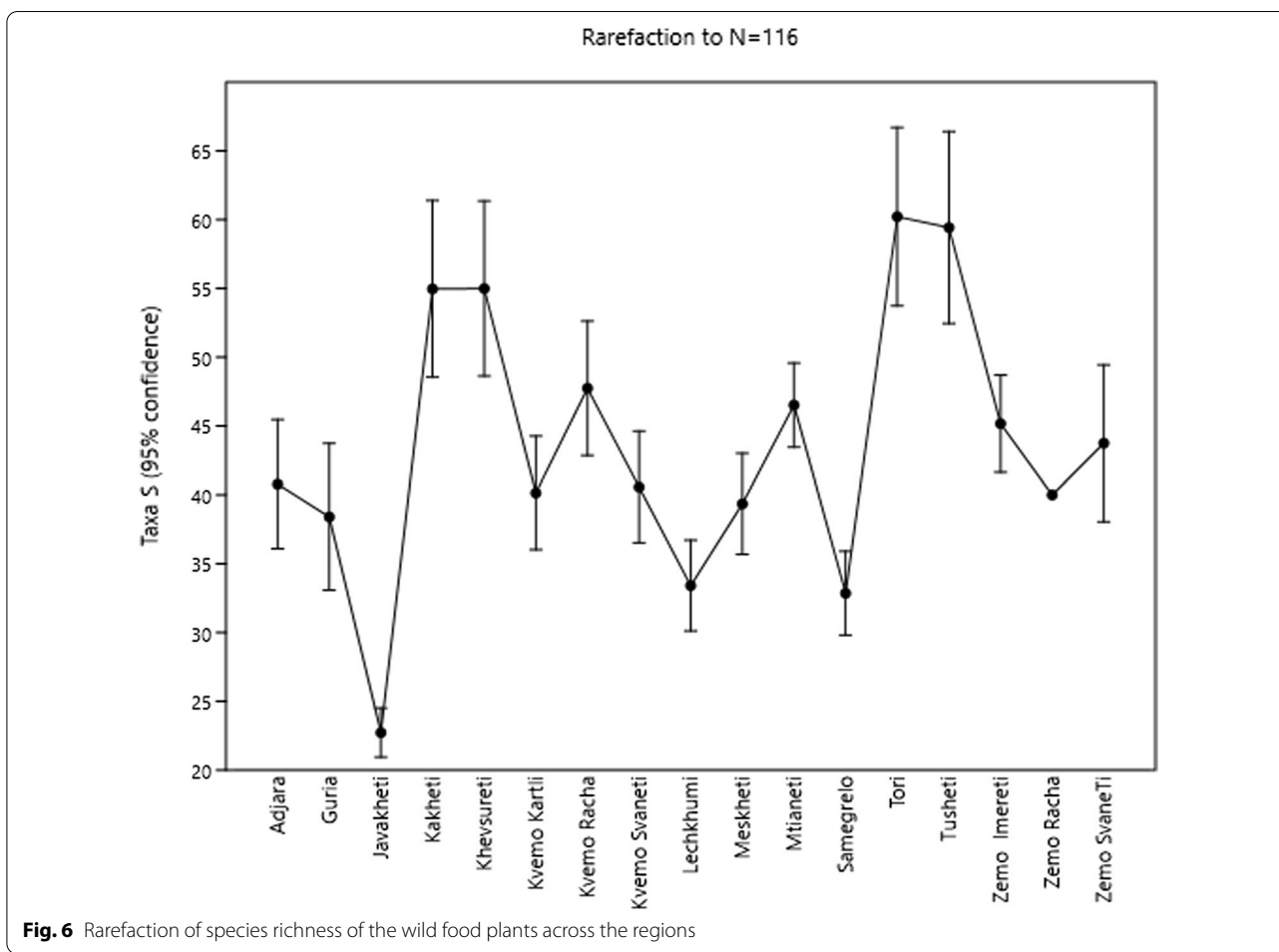


Fig. 6 Rarefaction of species richness of the wild food plants across the regions

related to *Veratrum lobelianum*, and growing especially in Europe, is highly toxic), and *Viola* sp. (although especially the flowers are widely used in gastronomy) contains toxic Saponins. In all cases careful preparation was mentioned to make these species palatable. The authors explicitly decided to not give any recipes, given that many of the species are widespread, and compound composition—and with it possible toxic effects—might vary across the distribution range, so that a preparation method that sufficiently reduces toxicity in the Caucasus might not necessary be applicable in other areas.

Discussion

The use of food plant in Georgia while varied showed distinct overlap with other studies. However, the number of food plant species used—both cultivated and foraged in this rather small territory—was far higher than in most published studies from either wider region or the Mediterranean and Eurasia. Of all species, 388 were wild/wild collected, although a few of them also occurred as weeds in gardens. Even when deducting the fungal species (95), the remaining 293 vascular plant species are a mostly a

much higher number than found in any other study in the wider region [73–106] (73:148 species; 74:87 species; 75:41 species; 76:40 species; 77:276 species; 78:119 species; 79:84 species; 80:68 species; 81:30–100 species for different European regions; 82:112 species; 83:139 species; 84:49 species; 85:15 species (although focusing on weeds only); 86:78 species; 87:419 species for all of Spain; 88:36; 89:77 species; 90:40 species; 91:11 species; 92:48 species; 93:83 species; 94:105 species; 95:73 species; 96:47 species; 97:115 species; 98:67 species; 99:78 species; 100:79 species; 101:35 species; 102:52 species; 103:63 species; 104:80 species; 105:88 species; 106:51 species).

Interestingly, even studies conducted in pastoralist cultures well-known for their use of wild foraged plants for food, e.g., in relatively close-by Kurdistan [107, 108] (107:54 species; 108:65 species), and Turkey [109] with 74 species showed a much more limited use of plants for food, even when not considering the 20% of taxa found in Georgia that were fungi. In many areas of the same cultural space, e.g., Dagestan [110] with 24 species, Azerbaijan [111, 112] (111:72 species; 112:73 species)

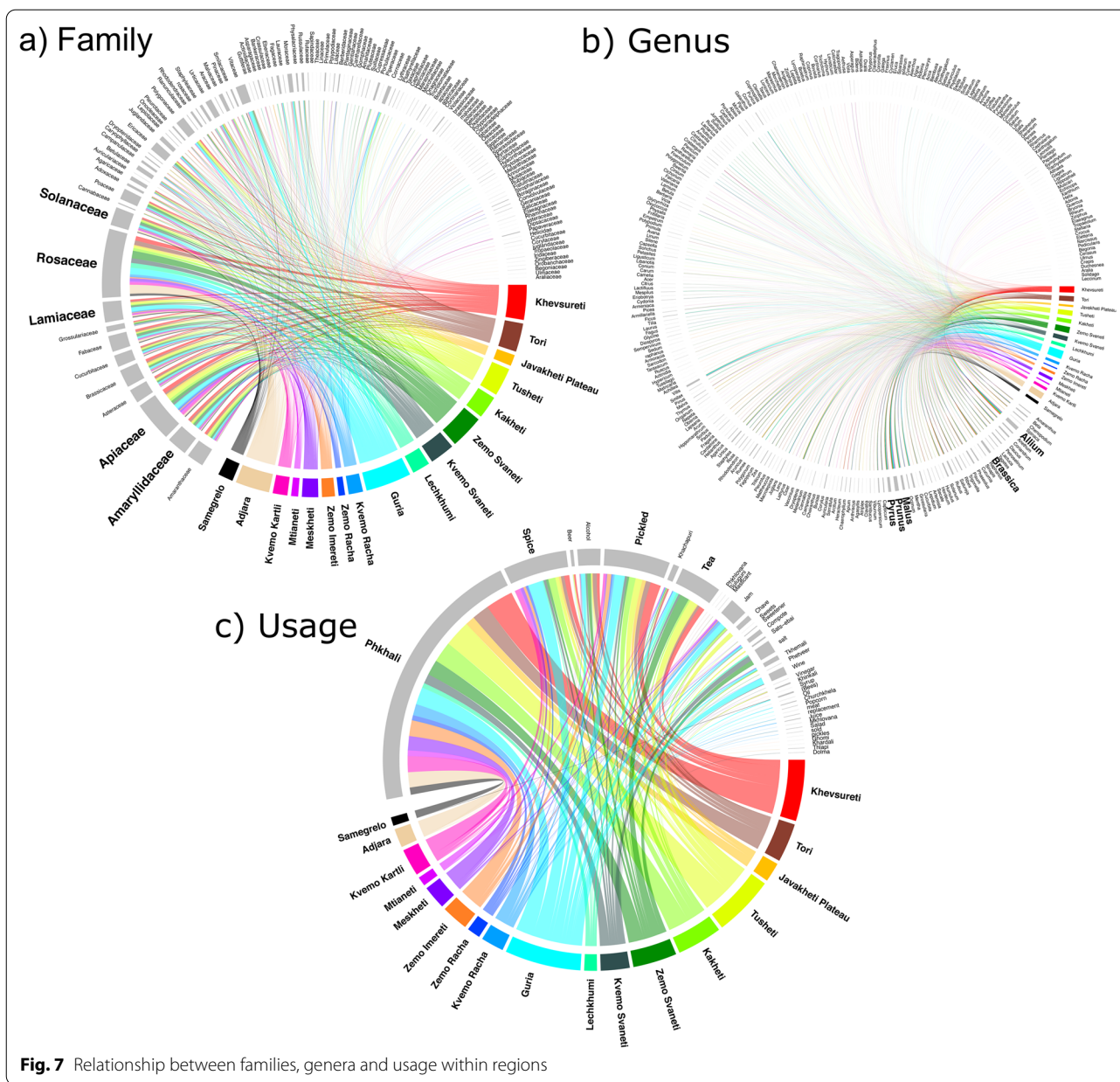


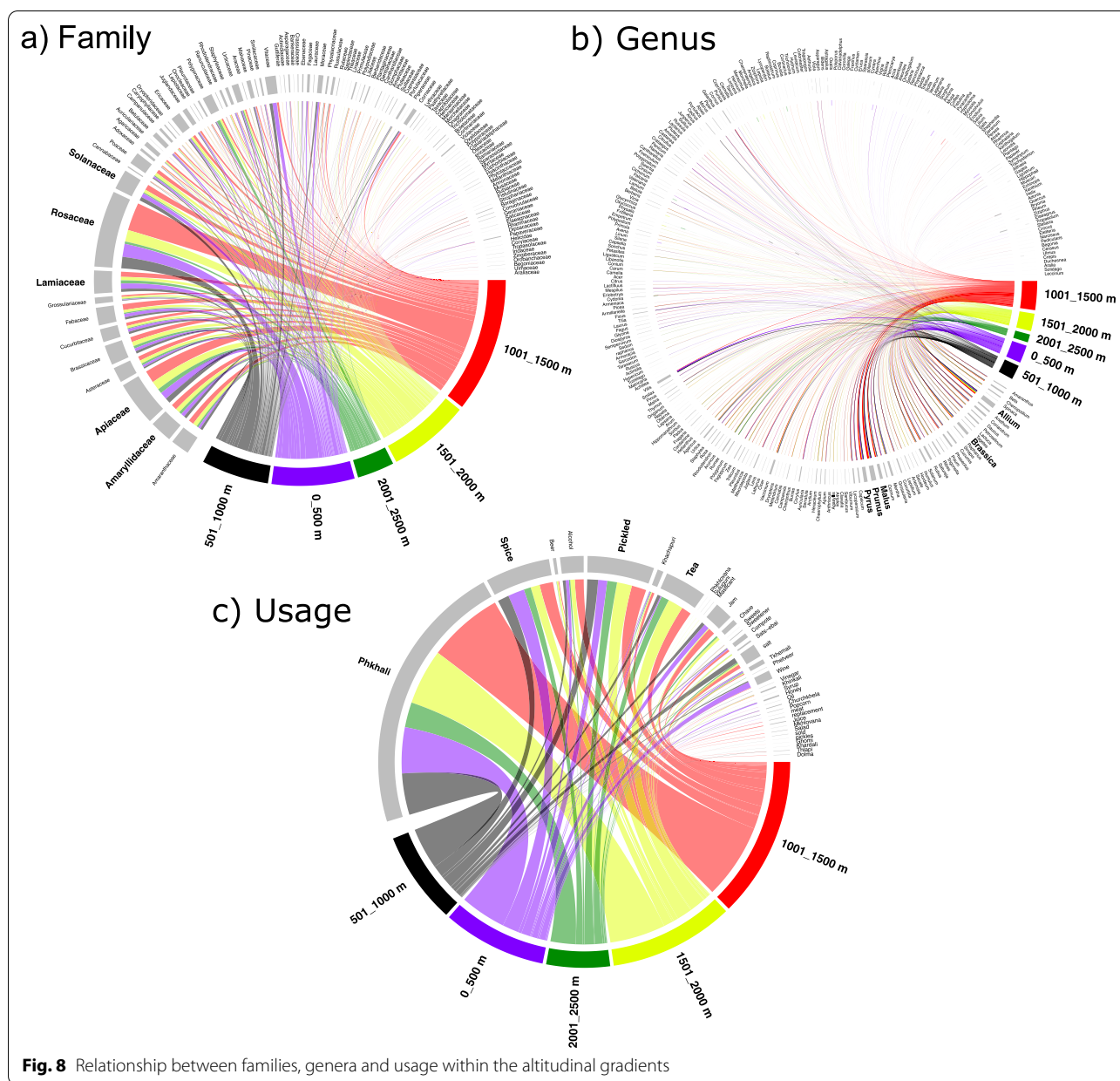
Fig. 7 Relationship between families, genera and usage within regions

and Armenia [113] with 66 species) the use of wild plants for food has been shown as in steep decline, although a strong signature of food plant use could still be found in markets of the Armenian capital Yerevan [114] with 148 species.

Outside the region, e.g., in China, it has been shown that typical agricultural communities use a very large number of wild species [115–117] (115: 185 vascular plant species and 17 fungal folk taxa; 116: 224 species; 117: 168 species). In many cases, however, wild plant use fell far short from the species numbers found in the Caucasus, e.g., [118–120] (118: 81 species; 119: 59 species; 120: 54 vascular plant species and 22 fungi).

The use of food species was not closely related to different vegetation zones in Georgia. This is a specific feature of food plants and differs from the use of plants in other categories, as has been previously shown [38–50].

The large number of species used in comparison with other areas confirmed our first hypothesis that given the long tradition of plant use, and the isolation under Soviet rule, plant use both based on home gardens and wild harvesting would be more pronounced in Georgia than in the wider region. In addition, the very large number of wild vegetables in Georgia might underline the hypothesis that the use of such wild "greens" is a byproduct of



the Neolithic revolution, given that the region is indeed a cradle of agriculture as indicated previously [9, 13, 14].

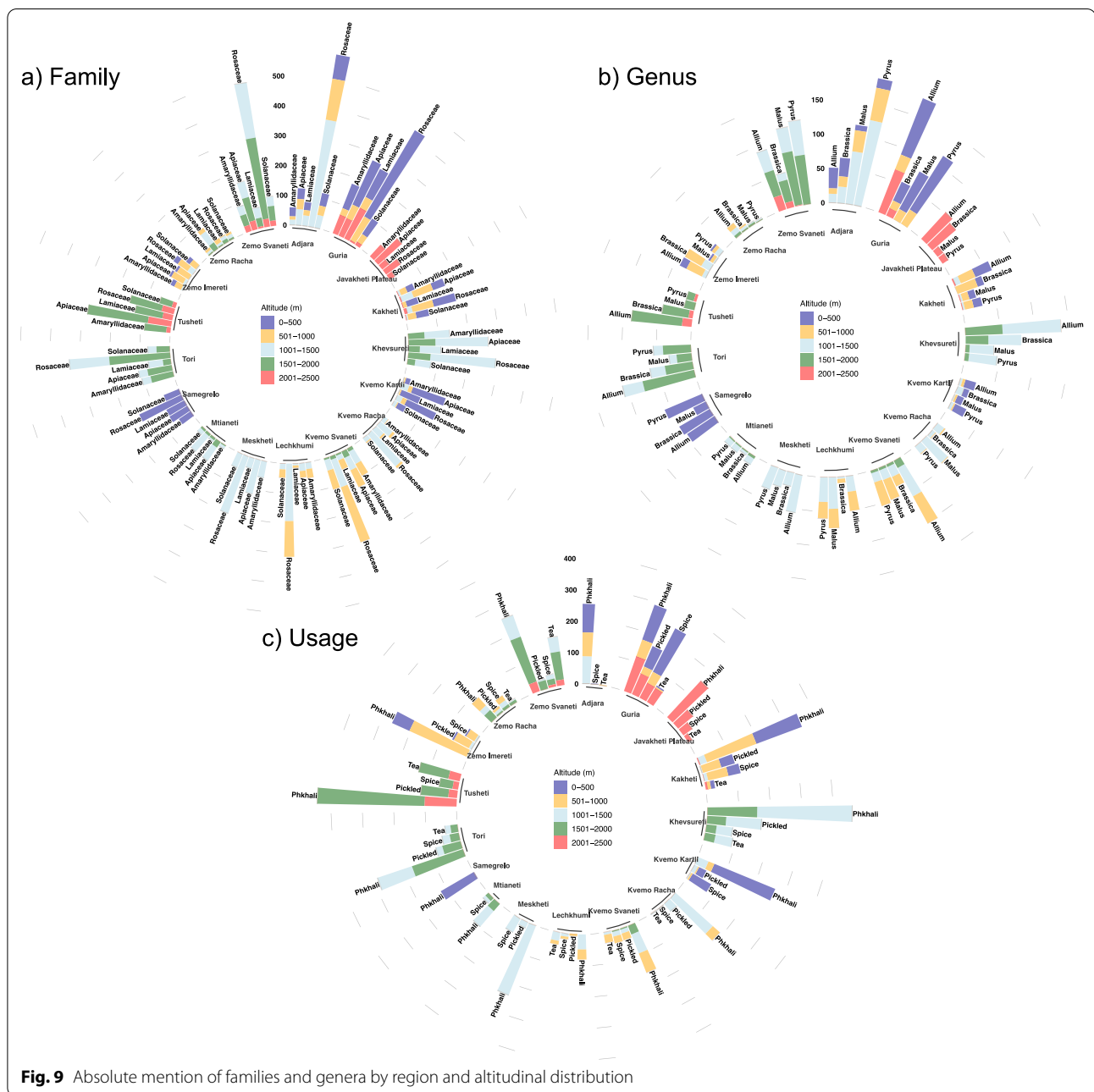
We found a rather widespread use of foodplants across Georgia, which can partly be explained by mixture of populations from varied regions through migration and Soviet population moves, which also confirmed our hypothesis that food plant use knowledge would be widely and equally spread in most of Georgia.

Finally, we indeed found that in the very fertile agricultural regions in Eastern (Kakheti) and Western (lower Ajara, Samegrelo) Georgia, plant use knowledge was indeed more limited. However, this does not explicitly

confirm our third hypothesis that such regions would show knowledge loss, as the limited use of plants may already have persisted a long time, and historic comparative data are not available.

Conclusions

This study reported on 535 plant and fungal taxa used in Georgia as food. As many mountain regions all over the world, the rural areas of the Georgian Caucasus have suffered a constant population decline for decades, due to harsh economic conditions and lack of modern infrastructure [1, 24, 121–124]. While this has greatly



accelerated the loss of traditional agricultural practices, it seems to have affected the use of wild gathered food plants as well as species grown in home gardens to a much more limited extent in Georgia. The home gardens in Georgia clearly continue serving as socio-ecological memory, and an irreplaceable part of Georgian culture, rather than the widely growing popularity of gardening and foraging found all over Europe [125]. The great variety of food plant species used in the Georgian Caucasus provides a reservoir for food security for the region, as well as a source of important food plant germplasm

for international agriculture. This greatly underlines the importance of Georgia as an ancient center of crop domestication and diversification, making Georgia clearly one of the most diverse food plant cultures in wider Eurasia, and the center of what we would like to coin as "Caucasus—Asia Minor—Balkans cultural complex."

Appendix

See Tables 5, 6, 7, 8, 9, 10 and 11.

Table 5 Species of identified food plants and fungi and the number of their mentions recorded

Plant / Fungal family	Plant / Fungal species	Mentions
Actinidiaceae	<i>Actinidia callosa</i> Lindl	28
Adoxaceae	<i>Sambucus ebulus</i> L	83
Adoxaceae	<i>Sambucus nigra</i> L	9
Adoxaceae	<i>Viburnum lantana</i> L	21
Adoxaceae	<i>Viburnum opulus</i> L	21
Agaricaceae	<i>Agaricus arvensis</i> Schaeff	165
Agaricaceae	<i>Agaricus campestris</i> L	4
Agaricaceae	<i>Agaricus tabularis</i> Peck	1
Agaricaceae	<i>Bovista</i> sp.	12
Agaricaceae	<i>Bovista</i> sp. / <i>Lycoperdon</i> sp.	4
Agaricaceae	<i>Clavatia gigantea</i> (Batsch) Rostk	14
Agaricaceae	<i>Coprinus comatus</i> (O.F. Müll.) Pers	2
Agaricaceae	<i>Lycoperdon perlatum</i> Pers. / <i>Lycoperdon pyriforme</i> Schaeff	2
Amanitaceae	<i>Amanita caesarea</i> (Scop.) Pers	15
Amanitaceae	<i>Amanita muscaria</i> (L.) Lam	1
Amaranthaceae	<i>Amaranthus palmeri</i> S. Watson	16
Amaranthaceae	<i>Amaranthus paniculatus</i> L	24
Amaranthaceae	<i>Amaranthus retroflexus</i> L	132
Amaranthaceae	<i>Amaranthus speciosus</i> L	1
Amaranthaceae	<i>Amaranthus spinosus</i> L	3
Amaranthaceae	<i>Atriplex hortensis</i> L	35
Amaranthaceae	<i>Beta vulgaris</i> L	311
Amaranthaceae	<i>Beta vulgaris</i> L. ssp. <i>cicla</i> (L.) Moq	36
Amaranthaceae	<i>Beta vulgaris</i> L. ssp. <i>esculenta</i> (Salisb.) Gürke var. <i>altissima</i> Rösig. = <i>Beta vulgaris saccharifera</i> Alef	3
Amaranthaceae	<i>Chenopodium album</i> L	203
Amaranthaceae	<i>Chenopodium bonus-henricus</i> L	1
Amaranthaceae	<i>Chenopodium foliosum</i> (Moench) Asch	35
Amaranthaceae	<i>Chenopodium</i> sp.	1
Amaranthaceae	<i>Spinacia oleracea</i> L	44
Amaryllidaceae	<i>Allium ampeloprasum</i> L	3
Amaryllidaceae	<i>Allium ascalonicum</i> L	7
Amaryllidaceae	<i>Allium atroviolaceum</i> Boiss	10
Amaryllidaceae	<i>Allium cepa</i> L	309
Amaryllidaceae	<i>Allium fistulosum</i> L	97
Amaryllidaceae	<i>Allium kunthianum</i> Vved	2
Amaryllidaceae	<i>Allium ponticum</i> Miscz	5
Amaryllidaceae	<i>Allium porrum</i> L	56
Amaryllidaceae	<i>Allium rotundum</i> L	20
Amaryllidaceae	<i>Allium sativum</i> L	340
Amaryllidaceae	<i>Allium</i> sp.	3
Amaryllidaceae	<i>Allium ursinum</i> L	54
Amaryllidaceae	<i>Allium victorialis</i> L	231
Amaryllidaceae	<i>Galanthus</i> sp.	10
Amaryllidaceae	<i>Galanthus woronowii</i> Losinsk	3
Amaryllidaceae	<i>Narcissus</i> sp.	5
Annonaceae	<i>Annona cherimola</i> Mill	1
Apiaceae	<i>Aethusa cynapium</i> L	1
Apiaceae	<i>Agasyllis latifolia</i> (Bieb.) Boiss	91
Apiaceae	<i>Anethum graveolens</i> L	301
Apiaceae	<i>Angelica tatarica</i> Bordz	2
Apiaceae	<i>Anthriscus cerefolium</i> (L.) Hoffm	4
Apiaceae	<i>Anthriscus nemorosus</i> (M. Bieb.) Spreng	16
Apiaceae	<i>Anthriscus sylvestris</i> L	15

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Apiaceae	<i>Apium graveolens</i> L.	128
Apiaceae	<i>Carum carvi</i> L.	60
Apiaceae	<i>Chaerophyllum aureum</i> L.	16
Apiaceae	<i>Chaerophyllum bulbosum</i> L.	10
Apiaceae	<i>Chaerophyllum caucasicum</i> (Fisch.) B. Schischk	95
Apiaceae	<i>Conium maculatum</i> L.	10
Apiaceae	<i>Coriandrum sativum</i> L.	348
Apiaceae	<i>Daucus carota</i> L. ssp. <i>sativus</i>	251
Apiaceae	<i>Falcaria sioides</i> Asch	1
Apiaceae	<i>Falcaria vulgaris</i> Bernh	25
Apiaceae	<i>Foeniculum vulgare</i> Mill	79
Apiaceae	<i>Heracleum asperum</i> M. Bieb	30
Apiaceae	<i>Heracleum leskovii</i> Grossh	5
Apiaceae	<i>Heracleum</i> sect. <i>villosum</i>	2
Apiaceae	<i>Heracleum sosnowskyi</i> Manden	59
Apiaceae	<i>Heracleum</i> sp.	36
Apiaceae	<i>Heracleum wilhelmsii</i> Fisch. & Ave-Lall	30
Apiaceae	<i>Hippomarathrum crispum</i> (Pers.) Boiss	4
Apiaceae	<i>Hippomarathrum microcarpum</i> Petrov	1
Apiaceae	<i>Levisticum officinale</i> W.D.J. Koch	2
Apiaceae	<i>Libanotis transcaucasica</i> Schischk	15
Apiaceae	<i>Ligusticum alatum</i> Spreng	4
Apiaceae	<i>Petroselinum crispum</i> (Mill.) Fuss	268
Apiaceae	<i>Xanthogalum purpurascens</i> Avé-Lall	3
Araceae	<i>Arum albispatum</i> Stev. ex Ledeb	2
Araceae	<i>Arum orientale</i> M. Bieb	7
Araceae	<i>Arum</i> sp.	20
Araliaceae	<i>Aralia spinosa</i> L.	1
Asparagaceae	<i>Asparagus officinalis</i> L.	30
Asparagaceae	<i>Asparagus</i> sp.	4
Asparagaceae	<i>Muscari sosnowskyi</i> Schchian	2
Asparagaceae	<i>Ornithogalum woronowii</i> Kasch	2
Asparagaceae	<i>Polygonatum glaberrimum</i> C. Koch	13
Asparagaceae	<i>Ruscus colchicus</i> Yeo	1
Asparagaceae	<i>Ruscus hypophyllum</i> L.	2
Asparagaceae	<i>Scilla siberica</i> Andrews	6
Asparagaceae	<i>Scilla</i> sp.	6
Asteraceae	<i>Achillea grandiflora</i> M. Bieb	1
Asteraceae	<i>Achillea millefolium</i> L.	5
Asteraceae	<i>Arctium lappa</i> L.	32
Asteraceae	<i>Artemisia absinthium</i> L.	8
Asteraceae	<i>Artemisia dracunculus</i> L.	125
Asteraceae	<i>Artemisia vulgaris</i> L.	3
Asteraceae	<i>Bidens tripartida</i> L.	4
Asteraceae	<i>Cichorium intybus</i> L.	11
Asteraceae	<i>Cirsium incanum</i> (S.G. Gmel.) Fisch. ex M. Bieb	13
Asteraceae	<i>Cirsium</i> sp.	5
Asteraceae	<i>Cirsium vulgare</i> L.	3
Asteraceae	<i>Crepis</i> sp.	3
Asteraceae	<i>Cynara cardunculus</i> L.	6
Asteraceae	<i>Echinops</i> sp.	2
Asteraceae	<i>Eruca sativa</i> Mill	12
Asteraceae	<i>Helianthus annuus</i> L.	17

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Asteraceae	<i>Helianthus tuberosus</i> L.	17
Asteraceae	<i>Lactuca sativa</i> L.	165
Asteraceae	<i>Lactuca sativa</i> L. "greek"	1
Asteraceae	<i>Lactuca serriola</i> L.	17
Asteraceae	<i>Lapsana communis</i> L.	9
Asteraceae	<i>Lapsana grandiflora</i> M. Bieb.	2
Asteraceae	<i>Matricaria chamomilla</i> L.	5
Asteraceae	<i>Petasites albus</i> (L.) Gaertn.	14
Asteraceae	<i>Petasites hybridus</i> (L.) G. Gaert, B. Mey. & Scherb.	51
Asteraceae	<i>Serratula quinquefolia</i> Bieb. ex Willd.	20
Asteraceae	<i>Solidago canadensis</i> L.	4
Asteraceae	<i>Sonchus asper</i> (L.) Hill.	7
Asteraceae	<i>Stevia</i> sp.	2
Asteraceae	<i>Tagetes patula</i> L.	114
Asteraceae	<i>Taraxacum confusum</i> Schischk.	2
Asteraceae	<i>Taraxacum officinale</i> Wigg.	41
Asteraceae	<i>Tragopogon</i> sp.	19
Asteraceae	<i>Tussilago farfara</i> L.	1
Asteraceae	<i>Xanthium strumarium</i> L.	3
Auriculariaceae	<i>Auricularia auricula-judae</i> (Bull.) Quéf.	10
Bankeraceae	<i>Hydnum repandum</i> Fr.	2
Bankeraceae	<i>Sarcodon imbricatus</i> (L.) P. Karts.	8
Begoniaceae	<i>Begonia rex</i> Putz.	10
Berberidaceae	<i>Berberis vulgaris</i> L.	54
Betulaceae	<i>Alnus barbata</i> C.A. Mey.	1
Betulaceae	<i>Betula litwinowii</i> Doluch.	3
Betulaceae	<i>Betula</i> sp.	2
Betulaceae	<i>Corylus avellana</i> L. / <i>C. pontica</i> K. Koch.	200
Betulaceae	<i>Corylus iberica</i> L.	4
Boletaceae	<i>Boletus edulis</i> Bull.	16
Boletaceae	<i>Neoboletus erythropus</i> (Pers.) C. Hahn.	2
Boletaceae	<i>Leccinum scabrum</i> (Bull.) Gray.	3
Boraginaceae	<i>Myosotis</i> sp.	2
Boraginaceae	<i>Symphytum grandiflorum</i> DC.	14
Boraginaceae	<i>Trachystemon orientalis</i> (L.) G. Don.	6
Brassicaceae	<i>Armoracia rusticana</i> (G. Gaertn.) B. Mey. & Scherb.	33
Brassicaceae	<i>Brassica campestris</i> L.	1
Brassicaceae	<i>Brassica campestris</i> L. ssp. <i>oleifera</i> DC.	9
Brassicaceae	<i>Brassica juncea</i> (L.) Czern.	3
Brassicaceae	<i>Brassica montana</i> Pourr.	36
Brassicaceae	<i>Brassica oleracea</i> L.	361
Brassicaceae	<i>Brassica oleracea</i> L. red.	9
Brassicaceae	<i>Brassica oleracea</i> L. var. <i>botrytis</i> cauliflower	25
Brassicaceae	<i>Brassica oleracea</i> L. var. <i>gemmifera</i> Brussels Sprouts	1
Brassicaceae	<i>Brassica oleracea</i> L. var. <i>gongylodes</i>	47
Brassicaceae	<i>Brassica oleracea</i> L. var. <i>italica</i>	21
Brassicaceae	<i>Brassica rapa</i> L. subsp. <i>rapifera</i> Metzger.	67
Brassicaceae	<i>Brassica rapa</i> var. <i>rapa</i> L.	45
Brassicaceae	<i>Bunias orientalis</i> L.	27
Brassicaceae	<i>Capsella bursa-pastoris</i> L.	26
Brassicaceae	<i>Cardamine hirsuta</i> L.	10
Brassicaceae	<i>Cheiranthus cheiri</i> L.	1
Brassicaceae	<i>Lepidium sativum</i> L.	52

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Brassicaceae	<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin	17
Brassicaceae	<i>Raphanus sativus</i> L. var. <i>major</i>	179
Brassicaceae	<i>Raphinastrium rugosum</i> L. All	13
Brassicaceae	<i>Sinapis arvensis</i> L.	15
Campanulaceae	<i>Campanula alliariifolia</i> Wild	2
Campanulaceae	<i>Campanula biebersteiniana</i> Roem. & Schult	1
Campanulaceae	<i>Campanula glomerata</i> L.	7
Campanulaceae	<i>Campanula lactiflora</i> M. Bieb	70
Campanulaceae	<i>Campanula latifolia</i> L.	11
Campanulaceae	<i>Campanula rapunculoides</i> L.	20
Cannabaceae	<i>Cannabis sativa</i> L.	30
Cannabaceae	<i>Humulus lupulus</i> L.	22
Cantharellaceae	<i>Cantharellus cibarius</i> Fr.	36
Caprifoliaceae	<i>Lonicera caucasica</i> Pall	3
Caryophyllaceae	<i>Melandrium balansae</i> Boiss	5
Caryophyllaceae	<i>Melandrium boissieri</i> Schischk	9
Caryophyllaceae	<i>Melandrium</i> sp.	5
Caryophyllaceae	<i>Oberna wallichiana</i> (Klotzsch) Ikonn	3
Caryophyllaceae	<i>Silene lacera</i> Steven	15
Caryophyllaceae	<i>Silene sibirica</i> (L.) Pers	2
Caryophyllaceae	<i>Silene wallachiana</i> Klotzsch	9
Caryophyllaceae	<i>Stellaria media</i> (L.) Vill	9
Clavariadelphaceae	<i>Clavariadelphus pistillaris</i> (L.) Donk	5
Convolvulaceae	<i>Convolvulus arvensis</i> L.	17
Cornaceae	<i>Swida australis</i> (C.A. Mey.) Pojark ex Grossh	5
Cortinariaceae	<i>Cortinarius violaceus</i> (L.) Fr. Gray	1
Crassulaceae	<i>Sedum caucasicum</i> Boriss	8
Crassulaceae	<i>Sedum oppositifolium</i> Sims	5
Crassulaceae	<i>Sedum stoloniferum</i> Gmel	5
Crassulaceae	<i>Sempervivum caucasicum</i> Rupr. ex Boiss	14
Cucurbitaceae	<i>Bryonia dioica</i> Jacq	3
Cucurbitaceae	<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	16
Cucurbitaceae	<i>Cucumis melo</i> L.	4
Cucurbitaceae	<i>Cucumis sativus</i> L.	363
Cucurbitaceae	<i>Cucurbita maxima</i> L.	14
Cucurbitaceae	<i>Cucurbita pepo</i> L.	201
Cucurbitaceae	<i>Cucurbita pepo</i> L. var. <i>giromontia</i>	39
Cucurbitaceae	<i>Cucurbita pepo</i> L. var. <i>patisson</i>	9
Cucurbitaceae	<i>Cucurbita</i> sp.	14
Cucurbitaceae	<i>Lagenaria siceraria</i> (Molina) Standl	2
Cupressaceae	<i>Juniperus sabina</i> L.	2
Dipsacaceae	<i>Cephalaria gigantea</i> (Ledeb.) Bobrov	1
Dryopteridaceae	<i>Dryopteris filix-mas</i> (L.) Schott	35
Ebenaceae	<i>Diospyros lotus</i> L.	54
Ebenaceae	<i>Diospyros</i> sp.	4
Ebenaceae	<i>Diospyros virginiana</i> L.	5
Elaeagnaceae	<i>Elaeagnus</i> sp.	3
Elaeagnaceae	<i>Hippophaë rhamnoides</i> L.	3
Elaeagnaceae	<i>Shepherdia argentea</i> Nutt	1
Elaeagnaceae	<i>Shepherdia</i> sp.	3
Ericaceae	<i>Empetrum hermaphroditum</i> Hagerup	21
Ericaceae	<i>Oxycoccus quadripetalus</i> Gilib	1
Ericaceae	<i>Vaccinium arctostaphylos</i> L.	190

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Ericaceae	<i>Vaccinium myrtillus</i> L	209
Ericaceae	<i>Vaccinium</i> sp.	4
Ericaceae	<i>Vaccinium uliginosum</i> L	2
Ericaceae	<i>Vaccinium vitis-idaea</i> L	49
Euphorbiaceae	<i>Aleurites moluccana</i> (L.) Willd	1
Fabaceae	<i>Astragalus caucasicus</i> Pall	1
fabaceae	<i>Cicer arietinum</i> L	25
Fabaceae	<i>Coronilla varia</i> L	5
Fabaceae	<i>Galega orientalis</i> Lam	9
Fabaceae	<i>Glycine max</i> (L.) Merr	35
Fabaceae	<i>Glycyrrhiza glabra</i> L	1
Fabaceae	<i>Lathyrus roseus</i> Steven	42
Fabaceae	<i>Lathyrus tuberosus</i> L	3
Fabaceae	<i>Lens cornicularis</i> L	16
Fabaceae	<i>Phaseolus sativus</i> L	270
Fabaceae	<i>Phaseolus vulgaris</i> L	86
Fabaceae	<i>Pisum sativum</i> L	66
Fabaceae	<i>Robinia pseudoacacia</i> L	45
Fabaceae	<i>Trifolium</i> sp.	5
Fabaceae	<i>Trigonella caerulea</i> (L.) Ser	173
Fabaceae	<i>Vicia faba</i> L	54
Fabaceae	<i>Vicia sativa</i> L	1
Fabaceae	<i>Vigna angularis</i> (Willd.) Ohwi & H. Ohashi	1
Fagaceae	<i>Castanea sativa</i> Mill	79
Fagaceae	<i>Fagus orientalis</i> Lipsky	53
Fagaceae	<i>Quercus iberica</i> M. Bieb	9
Fistulinaceae	<i>Fistulina hepatica</i> (Schaeff.) With	6
Fungi	Unidentified fungus	227
Gentianaceae	<i>Swertia iberica</i> Fisch & C.A. Mey	1
Geraniaceae	<i>Erodium cicutarium</i> (L.) L'Hér. ex Aiton	4
Geraniaceae	<i>Geranium robertianum</i> L	3
Geraniaceae	<i>Geranium</i> sp.	6
Grossulariaceae	<i>Grossularia reclinata</i> (L.) Mill	27
Grossulariaceae	<i>Ribes biebersteinii</i> Berl. ex DC	59
Grossulariaceae	<i>Ribes grossularia</i> L	22
Grossulariaceae	<i>Ribes nigrum</i> L	73
Grossulariaceae	<i>Ribes orientale</i> Desf	4
Grossulariaceae	<i>Ribes rubrum</i> L	103
Grossulariaceae	<i>Ribes</i> sp.	24
Grossulariaceae	<i>Ribes uva-crispa</i> L	13
Guttiferae	<i>Hypericum perforatum</i> L	22
Hericiaceae	<i>Hericium erinaceus</i> (Bull.) Pers	1
Iridaceae	<i>Crocus sativus</i> L	9
Juglandaceae	<i>Juglans mandshurica</i> Maxim	7
Juglandaceae	<i>Juglans regia</i> L	235
Juglandaceae	<i>Pterocarya pterocarpa</i> (Michx.) Kunth ex Iljinsk	7
Lamiaceae	<i>Lamium album</i> L	32
Lamiaceae	<i>Lamium purpureum</i> L	6
Lamiaceae	<i>Leonotis leonurus</i> (L.) R. Br	1
Lamiaceae	<i>Mentha aquatica</i> L	3
Lamiaceae	<i>Mentha longifolia</i> (L.) L	158
Lamiaceae	<i>Mentha pulegium</i> L	81
Lamiaceae	<i>Mentha</i> sp.	8

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Lamiaceae	<i>Mentha x piperita</i> L.	143
Lamiaceae	<i>Nepeta mussinii</i> Spreng	2
Lamiaceae	<i>Ocimum basilicum</i> L.	198
Lamiaceae	<i>Ocimum basilicum</i> var. <i>purpurascens</i> Benth	8
Lamiaceae	<i>Origanum vulgare</i> L.	50
Lamiaceae	<i>Salvia verticillata</i> L.	3
Lamiaceae	<i>Satureja hortensis</i> L.	92
Lamiaceae	<i>Satureja laxiflora</i> K. Koch	7
Lamiaceae	<i>Satureja spicigera</i> Boiss	31
Lamiaceae	<i>Thymus caucasicus</i> Willd. ex Benth	30
Lamiaceae	<i>Thymus colinus</i> Bieb	21
Lamiaceae	<i>Thymus</i> sp.	29
lamiaceae	<i>Thymus transcaucasicus</i> Ronninger	17
Lamiaceae	<i>Ziziphora pushkinii</i> Adams	18
Lamiaceae	<i>Ziziphora serpyllacea</i> M. Bieb	16
Lauraceae	<i>Laurus nobilis</i> L.	25
Lauraceae	<i>Persea americana</i> Mill	2
Lepiotaceae	<i>Macrolepiota procera</i> (Scop.) Springer	51
Liliaceae	<i>Fritillaria lutea</i> Mill	11
Liliaceae	<i>Gagea</i> sp.	3
Liliaceae	<i>Lilium</i> sp.	1
Liliaceae	<i>Lilium szovitsianum</i> Fisch. & Avé-Lall	11
Liliaceae	<i>Ornithogalum woronowii</i> Kasch	6
Linaceae	<i>Linum usitatissimum</i> L.	7
Lythraceae	<i>Punica granatum</i> L.	32
Malvaceae	<i>Alcea rosea</i> L.	1
Malvaceae	<i>Althaea</i> spp.	11
Malvaceae	<i>Malva neglecta</i> L.	38
Malvaceae	<i>Malva sylvestris</i> L.	10
Malvaceae	<i>Malva sylvestris</i> L. / <i>M. neglecta</i> L.	59
Malvaceae	<i>Tilia begonifolia</i> Stev	2
Malvaceae	<i>Tilia caucasica</i> Rupr	49
Marasmiaceae	<i>Marasmius oreades</i> (Bolton) Fr	12
Melanthiaceae	<i>Veratrum lobelianum</i> Bernh	5
Moraceae	<i>Ficus carica</i> L.	142
Moraceae	<i>Morus alba</i> L.	99
Moraceae	<i>Morus nigra</i> L.	7
Morchellaceae	<i>Morchella conica</i> Pers	1
Morchellaceae	<i>Morchella esculenta</i> (L.) Pers	12
Musaceae	<i>Musa x paradisiaca</i> L.	3
Myrtaceae	<i>Acca sellowiana</i> (O. Berg.) Burret	11
Oleaceae	<i>Fraxinus excelsior</i> L.	5
Oleaceae	<i>Ligustrum vulgare</i> L.	2
Onagraceae	<i>Chamaenerion angustifolium</i> (L.) Holub	1
Onocleaceae	<i>Mattheuccia struthiopteris</i> (L.) Todd	35
Orobanchaceae	<i>Pedicularis</i> sp.	5
Oxalidaceae	<i>Averrhoa carambola</i> L.	1
Oxalidaceae	<i>Oxalis acetosela</i> L.	1
Oxalidaceae	<i>Oxalis corniculata</i> L.	1
Papaveraceae	<i>Papaver somniferum</i> L.	32
Physalacriaceae	<i>Armillariella mellea</i> (Vahl) P. Kumm	93
Phytolaccaceae	<i>Phytolacca americana</i> L.	12
Pinaceae	<i>Abies nordmanniana</i> (Steven) Spach	7

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Pinaceae	<i>Cedrus</i> sp.	3
Pinaceae	<i>Picea orientalis</i> (L.) Peterm	17
Pinaceae	<i>Pinus kochiana</i> Klotzsch ex K. Koch	10
Pinaceae	<i>Pinus sosnowskyi</i> Nakai	8
Piperaceae	<i>Piper nigrum</i> L.	4
Plantaginaceae	<i>Plantago major</i> L.	2
Plantaginaceae	<i>Valeriana officinalis</i> L.	1
Pleurotaceae	<i>Pleurotus cornicopiae</i> (Paulet) Rolland	4
Pleurotaceae	<i>Pleurotus ostreatus</i> (Jacq. ex Fr.) P. Kumm	90
Pluteaceae	<i>Pluteus cervinis</i> (Schaeffer ex Fr.) P. Kumm	28
Poaceae	<i>Avena sativa</i> L.	42
Poaceae	<i>Bambusa</i> sp.	4
Poaceae	<i>Hordeum vulgare</i> L.	97
Poaceae	<i>Hordeum vulgare</i> L. ssp. <i>vulgare</i> L. var. <i>coelestre</i> L.	5
Poaceae	<i>Panicum crus-calli</i> L.	2
Poaceae	<i>Panicum milanjanum</i> Rendle	38
Poaceae	<i>Secale cereale</i> L.	65
Poaceae	<i>Setaria italica</i> (L.) P. Beauv	16
Poaceae	<i>Sorghum bicolor</i> (L.) Moench	2
Poaceae	<i>Triticum aestivum</i> L.	144
Poaceae	<i>Triticum carthlicum</i> Nevski	4
Poaceae	<i>Triticum dicoccum</i> Schrank	2
Poaceae	<i>Triticum</i> sp.	2
Poaceae	<i>Zea mays</i> L.	195
Polygonaceae	<i>Fagopyrum tataricum</i> (L.) Gaertn	9
Polygonaceae	<i>Polygonum alpinum</i> All.	57
Polygonaceae	<i>Polygonum aviculare</i> L.	9
Polygonaceae	<i>Polygonum carneum</i> C. Koch	74
Polygonaceae	<i>Polygonum panjutini</i> Kharkev	5
Polygonaceae	<i>Polygonum</i> sp.	6
Polygonaceae	<i>Rheum rhabarbarum</i> L.	3
Polygonaceae	<i>Rumex acetosa</i> L.	77
Polygonaceae	<i>Rumex acetosella</i> L.	19
Polygonaceae	<i>Rumex alpinus</i> L.	84
Polygonaceae	<i>Rumex crispus</i> L.	44
Polygonaceae	<i>Rumex scutatus</i> L.	6
Polygonaceae	<i>Rumex</i> sp.	20
Polygonaceae	<i>Rumex tuberosus</i> L.	1
Polypodiaceae	<i>Polypodium vulgare</i> L.	10
Polyporaceae	<i>Polyporus squamosus</i> (Huds.) Fr.	9
Portulacaceae	<i>Portulaca oleracea</i> L.	85
Primulaceae	<i>Cyclamen vernalis</i> Sweet	5
Primulaceae	<i>Primula luteola</i> Rupr.	1
Primulaceae	<i>Primula macrocalyx</i> Bunge	24
Primulaceae	<i>Primula</i> sp.	4
Primulaceae	<i>Primula vulgaris</i> subsp. <i>rubra</i> (Sm.) Arcang	3
Primulaceae	<i>Primula woronowii</i> Losinsk	18
Psathyrellaceae	<i>Coprinopsis atramentaria</i> (Bull.) Redhead, Vilgalys & Moncalvo	24
Ramariaceae	<i>Ramaria flava</i> (Schaeff.) Quéf	18
Ranunculaceae	<i>Adonis aestivalis</i> L.	2
Ranunculaceae	<i>Clematis vitalba</i> L.	11
Ranunculaceae	<i>Ranunculus repens</i> L.	2
Rhamnaceae	<i>Rhamnus imeretina</i> Booth, Petz. & Kirchn	1

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Rhamnaceae	<i>Ziziphus jujuba</i> Mill	2
Rhododendraceae	<i>Rhododendron caucasicum</i> Pall	79
Rhododendraceae	<i>Rhododendron luteum</i> Sweet	15
Rhododendraceae	<i>Rhododendron ponticum</i> L	27
Rosaceae	<i>Armeniaca vulgaris</i> Lam	2
Rosaceae	<i>Aruncus vulgaris</i> Raf	31
Rosaceae	<i>Cornus mas</i> L	135
Rosaceae	<i>Cotoneaster multiflorus</i> Bunge	4
Rosaceae	<i>Crataegus curvisepala</i> Lindm	34
Rosaceae	<i>Crataegus pentagyna</i> Waldst	48
Rosaceae	<i>Crataegus</i> sp.	13
Rosaceae	<i>Cydonia oblonga</i> L	80
Rosaceae	<i>Duchesnea indica</i> (Andrews) Teschem	6
Rosaceae	<i>Eriobotrya japonica</i> (Thunb.) Lindl	27
Rosaceae	<i>Fragaria vesca</i> L	74
Rosaceae	<i>Fragaria vesca</i> L. "Alibaba"	1
Rosaceae	<i>Fragaria virginiana</i> Mill	12
Rosaceae	<i>Fragaria x ananassana</i> Duchesne ex Rozier	35
Rosaceae	<i>Malus orientalis</i> Uglizk	685
Rosaceae	<i>Malus pumila</i> Mill. var. <i>paradisiaca</i> C.K. Schneid	3
Rosaceae	<i>Mespilus germanica</i> L	81
Rosaceae	<i>Padus racemosa</i> (Lam.) Gilib	27
Rosaceae	<i>Prunus amygdalus</i> Batsch	1
Rosaceae	<i>Prunus armeniaca</i> L	30
Rosaceae	<i>Prunus avium</i> (L.) L	187
Rosaceae	<i>Prunus cerasus</i> L	78
Rosaceae	<i>Prunus divaricata</i> Ledeb	282
Rosaceae	<i>Prunus insititia</i> L	62
Rosaceae	<i>Prunus laurocerasus</i> L	63
Rosaceae	<i>Prunus padus</i> L	2
Rosaceae	<i>Prunus persica</i> (L.) Batsch	74
Rosaceae	<i>Prunus</i> sp.	33
Rosaceae	<i>Prunus spinosa</i> L	41
Rosaceae	<i>Prunus vachuschtii</i> Bregaze	20
Rosaceae	<i>Prunus vulgaris</i> Mill	4
Rosaceae	<i>Prunus x domestica</i> L	296
Rosaceae	<i>Pyracantha coccinea</i> M. Roem	3
Rosaceae	<i>Pyrus caucasica</i> Fed	232
Rosaceae	<i>Pyrus communis</i> L	628
Rosaceae	<i>Rosa canina</i> L	11
Rosaceae	<i>Rosa pimpinellifolia</i> Boiss	13
Rosaceae	<i>Rosa</i> sp.	140
Rosaceae	<i>Rubus caesius</i> L	27
Rosaceae	<i>Rubus fruticosus</i> L	104
Rosaceae	<i>Rubus idaeus</i> L	268
Rosaceae	<i>Rubus saxatilis</i> L	19
Rosaceae	<i>Rubus</i> sp.	60
Rosaceae	<i>Sorbus aucuparia</i> K. Koch	18
Rosaceae	<i>Sorbus boissieri</i> C.K. Schneid	2
Rosaceae	<i>Sorbus caucasigena</i> Kom	57
Rosaceae	<i>Sorbus torminalis</i> C.Crantz	20
Rubiaceae	<i>Coffea arabica</i> L	1
Russulaceae	<i>Lactarius deliciosus</i> (L. ex Fr.) S.F. Grey	31

Table 5 (continued)

Plant / Fungal family	Plant / Fungal species	Mentions
Russulaceae	<i>Lactarius piperatus</i> (L.) Pers	27
Russulaceae	<i>Lactifluus piperatus</i> (L.) Roussel	18
Russulaceae	<i>Lactifluus volemus</i> (Fr.) Kuntze	14
Russulaceae	<i>Russula adusta</i> Pers. Fr	6
Russulaceae	<i>Russula emetica</i> (Schaeff.) Pers	6
Russulaceae	<i>Russula rosea</i> Pers	23
Russulaceae	<i>Russula virescens</i> (Schaeff.) Fr	2
Rutaceae	<i>Citrus limon</i> (L.) Burm. f	15
Rutaceae	<i>Citrus reticulata</i> Blanco	5
Rutaceae	<i>Citrus sinensis</i> Osbeck	8
Rutaceae	<i>Citrus unshiu</i> Marcov	4
Rutaceae	<i>Citrus x paradisi</i> Macfad	2
Salicaceae	<i>Salix caprea</i> L	1
Sapindaceae	<i>Acer pseudoplatanus</i> L	2
Smilacaceae	<i>Smilax excelsa</i> L	91
Solanaceae	<i>Capsicum annuum</i> L	204
Solanaceae	<i>Capsicum annuum</i> L. "Sweet Bulgarian"	100
Solanaceae	<i>Lycopersicon esculentum</i> L	316
Solanaceae	<i>Physalis alkekengi</i> L	7
Solanaceae	<i>Solanum melogena</i> L	63
Solanaceae	<i>Solanum pseudocapsicum</i> L	2
Solanaceae	<i>Solanum tuberosum</i> L	347
Sparassidaceae	<i>Sparassis crispa</i> Wulfen	6
Staphyleaceae	<i>Staphylea colchica</i> Steven	116
Strophariaceae	<i>Hypholoma fasciculare</i> (Huds.) P. Kumm	6
Suillaceae	<i>Suillus granulatus</i> (L.) Roussel	14
Suillaceae	<i>Suillus luteus</i> (L.) Roussel	17
Taxaceae	<i>Taxus baccata</i> L	12
Theaceae	<i>Camelia sinensis</i> L	2
Tricholomataceae	<i>Lepista sordida</i> (Schumach.) Singer	18
Tricholomataceae	<i>Tricholoma aurantium</i> (Schaeff.) Ricken	1
Tricholomataceae	<i>Tricholoma portentosum</i> (Fr.) Quél	17
Tropaeolaceae	<i>Tropaeolum majus</i> L	1
Ulmaceae	<i>Ulmus glabra</i> Huds	3
Unidentified	Unidentified species	153
Urticaceae	<i>Urtica dioica</i> L	289
Violaceae	<i>Viola arvensis</i> L	1
Violaceae	<i>Viola</i> sp.	41
Vitaceae	<i>Vitis labrusca</i> L	26
Vitaceae	<i>Vitis sylvestris</i> W. Bartram	2
Vitaceae	<i>Vitis vinifera</i> L	538
Zingiberaceae	<i>Elatteria cardamomum</i> (L.) Maton	4

Table 6 Distribution of mentions in plant families between garden and wild plants

Families	Garden	Wild	Families	Garden	Wild
Actinidiaceae	28	0	Liliaceae	6	39
Adoxaceae	6	128	Linaceae	0	1
Agaricaceae	6	225	Lythraceae	19	13
Amanitaceae	0	16	Malvaceae	14	157
Amaranthaceae	497	350	Marasmiaceae	0	12

Table 6 (continued)

Families	Garden	Wild	Families	Garden	Wild
Amaryllidaceae	853	302	Melanthiaceae	0	5
Annonaceae	1	0	Moraceae	237	11
Apiaceae	1422	490	Morchellaceae	0	13
Araceae	10	19	Musaceae	3	0
Araliaceae	1	0	Myrtaceae	11	0
Asparagaceae	7	52	Oleaceae	0	7
Asteraceae	492	252	Onagraceae	0	1
Auriculariaceae	0	10	Onocleaceae	4	31
Bankeraceae	0	10	Orobanchaceae	0	5
Begoniaceae	10	0	Oxalidaceae	2	1
Berberidaceae	10	42	Papaveraceae	4	28
Betulaceae	81	127	Physalacriaceae	0	93
Boletaceae	0	21	Phytolaccaceae	0	12
Boraginaceae	2	20	Pinaceae	3	44
Brassicaceae	899	99	Plantaginaceae	1	2
Campanulaceae	1	110	Pleurotaceae	2	92
Cannabaceae	39	13	Pluteaceae	0	28
Cantharellaceae	0	36	Poaceae	609	9
Caprifoliaceae	0	3	Polygonaceae	29	385
Caryophyllaceae	7	50	Polypodiaceae	0	10
Clavariadelphaceae	0	5	Polyporaceae	0	9
Convolvulaceae	15	2	Portulacaceae	6	79
Cornaceae	22	117	Primulaceae	0	55
Cortinariaceae	0	1	Psathyrellaceae	0	24
Corylaceae	1	3	Ramariaceae	0	12
Crassulaceae	0	32	Ranunculaceae	5	22
Cucurbitaceae	662	3	Rhamnaceae	1	2
Cupressaceae	0	2	Rhododendraceae	1	120
Dipsacaceae	0	1	Rosaceae	2683	1249
Dryopteridaceae	0	35	Rubiaceae	1	0
Ebenaceae	53	10	Russulaceae	3	124
Elaeagnaceae	1	9	Rutaceae	34	0
Ericaceae	4	472	Salicaceae	0	1
Euphorbiaceae	1	0	Sapindaceae	0	2
Fabaceae	738	101	Smilacaceae	0	91
Fagaceae	11	128	Solanaceae	1020	19
Fistulinaceae	0	6	Sparassidaceae	0	6
Fungi	2	225	Staphyleaceae	29	87
Gentianaceae	0	1	Strophariaceae	0	6
Geraniaceae	0	13	Suillaceae	0	31
Gomphaceae	0	6	Taxaceae	0	12
Grossulariaceae	226	99	Theaceae	2	0
Guttiferae	1	11	Tricholomataceae	0	36
Hericiaceae	0	1	Tropaeolaceae	1	0
Indet	24	126	Ulmaceae	0	3
Iridaceae	9	0	Urticaceae	31	258
Juglandaceae	222	27	Violaceae	0	42
Lamiaceae	550	403	Vitaceae	553	8
Lauraceae	23	4	Zingiberaceae	4	0
Lepiotaceae	0	24			

Table 7 Pairwise comparisons with FDR *p*-value adjustment method of plant family usage between regions after significant PERMANOVA analysis (Table Permanova)

	Adjara	Guria	Javakheti Plateau	Kakheti	Khevsureti	Kvemo Kartli	Kvemo Racha	Kvemo Svaneti	Lechkhumi	Meskheti	Mtianeti	Samegrelo	Tori	Tusheti	Zemo Imereti	Zemo Racha
Guria	0.0019															
Javakheti Plateau	0.0019	0.0031														
Kakheti	0.0019	0.0019	0.0159													
Khevsureti	0.0019	0.0019	0.0044	0.0019												
Kvemo Kartli	0.0019	0.0072	0.0019	0.0370	0.0031											
Kvemo Racha	0.0117	0.0362	0.0019	0.0019	0.0019	0.0019										
Kvemo Svaneti	0.0209	0.0031	0.0019	0.0044	0.0019	0.0019	0.0044									
Lechkhumi	0.0608	0.0031	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019								
Meskheti	0.0209	0.0378	0.0019	0.0031	0.0031	0.0082	0.0159	0.0126	0.0019							
Mtianeti	0.0290	0.1400	0.0019	0.0290	0.0044	0.0544	0.0209	0.0095	0.0019	0.1068						
Samegrelo	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019					
Tori	0.0107	0.0229	0.0019	0.0019	0.0019	0.0031	0.0117	0.0031	0.0019	0.0393	0.0107	0.0019				
Tusheti	0.0019	0.0019	0.0031	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0031	0.0019	0.0019			
Zemo Imereti	0.0031	0.0685	0.0019	0.0290	0.0019	0.0058	0.0019	0.0019	0.0019	0.0126	0.0082	0.0019	0.0019	0.0019		
Zemo Racha	0.0044	0.0710	0.0082	0.0229	0.0019	0.0386	0.0159	0.0019	0.0019	0.0117	0.0561	0.0019	0.0031	0.0126	0.0181	
Zemo Svaneti	0.0299	0.0019	0.0019	0.0019	0.0019	0.0019	0.0058	0.0082	0.0031	0.0474	0.0181	0.0019	0.0209	0.0019	0.0031	0.0019

Analyses were based on Euclidean distance and 999 permutations

Table 8 Pairwise comparisons with FDR *p*-value adjustment method of plant genus usage between regions after significant PERMANOVA analysis (Table Permanova)

	Adjara	Guria	Javakheti Plateau	Kakheti	Khevsureti	Kvemo Kartli	Kvemo Racha	Kvemo Svaneti	Lechkhumi	Meskhethi	Mtianeti	Samegrelo	Tori	Tusheti	Zemo Imereti	Zemo Racha
Guria	0.0012															
Javakheti Plateau	0.0012	0.0012														
Kakheti	0.0012	0.0012	0.0012													
Khevsureti	0.0012	0.0012	0.0012	0.0012												
Kvemo Kartli	0.0012	0.0012	0.0012	0.0012	0.0012											
Kvemo Racha	0.0012	0.0022	0.0012	0.0012	0.0012	0.0012										
Kvemo Svaneti	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012									
Lechkhumi	0.0012	0.0065	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012								
Meskhethi	0.0012	0.0022	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012							
Mtianeti	0.0055	0.0670	0.0012	0.0153	0.0012	0.0022	0.0073	0.0073	0.0012	0.0264						
Samegrelo	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012					
Tori	0.0012	0.0022	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0022	0.0012	0.0012				
Tusheti	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012			
Zemo Imereti	0.0012	0.0073	0.0012	0.0022	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0083	0.0012	0.0012	0.0012		
Zemo Racha	0.0033	0.0584	0.0012	0.0073	0.0012	0.0022	0.0065	0.0012	0.0012	0.0022	0.0103	0.0012	0.0012	0.0012	0.0033	
Zemo Svaneti	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0022	0.0012	0.0012	0.0012	0.0012	0.0012

Analyses were based on Euclidean distance and 999 permutations

Table 9 Pairwise comparisons with FDR *p*-value adjustment method of different plant system used (root, shoot, or both) between regions after significant PERMANOVA analysis (Table Permanova)

	Adjara	Guria	Javakheti Plateau	Kakheti	Khevsureti	Kvemo Kartli	Kvemo Racha	Kvemo Svaneti	Lechkhumi	Meskheti	Mtianeti	Samegrelo	Tori	Tusheti	Zemo Imereti	Zemo Racha
Guria	0.0065															
Javakheti Plateau	0.0187	0.0038														
Kakheti	0.4754	0.0121	0.2596													
Khevsureti	0.4093	0.0038	0.0121	0.5112												
Kvemo Kartli	0.4093	0.0139	0.0865	0.9340	0.4054											
Kvemo Racha	0.0038	0.1808	0.0038	0.0139	0.0038	0.0065										
Kvemo Svaneti	0.5393	0.0038	0.0231	0.7329	0.5763	0.6930	0.0038									
Lechkhumi	0.2596	0.2546	0.0038	0.1539	0.0744	0.0544	0.0252	0.0415								
Meskheti	0.5393	0.1396	0.0038	0.3965	0.3660	0.1808	0.0065	0.2546	0.2343							
Mtianeti	0.7807	0.2720	0.0038	0.5731	0.5139	0.4038	0.0691	0.4871	0.2629	0.6245						
Samegrelo	0.0038	0.0038	0.0065	0.0209	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038					
Tori	0.0038	0.5112	0.0038	0.0038	0.0038	0.0038	0.2343	0.0038	0.0139	0.0038	0.0358	0.0038				
Tusheti	0.4054	0.0038	0.0647	0.7222	0.7025	0.6091	0.0038	0.7323	0.0375	0.2629	0.4559	0.0065	0.0038			
Zemo Imereti	0.0774	0.7439	0.0038	0.0680	0.0139	0.0340	0.2125	0.0321	0.3001	0.1104	0.2510	0.0038	0.4334	0.0163		
Zemo Racha	0.6609	0.4054	0.0038	0.5273	0.4054	0.4038	0.1247	0.4054	0.6800	0.6800	0.7444	0.0065	0.1060	0.4054	0.4054	
Zemo Svaneti	0.3660	0.1060	0.0038	0.1554	0.1396	0.1168	0.0038	0.1248	0.7108	0.6622	0.6887	0.0038	0.0095	0.1168	0.2149	0.7807

Analyses were based on Euclidean distance and 999 permutations

Table 10 Pairwise comparisons with FDR p -value adjustment method of different general plant parts used (vegetative, reproductive, or both) between regions after significant PERMANOVA analysis (Table Permanova). Analyses were based on Euclidean distance and 999 permutations

	Adjara	Guria	Javakheti Plateau	Kakheti	Khevsureti	Kvemo Kartli	Kvemo Racha	Kvemo Svaneti	Lechkhumi	Meskheti	Mtianeti	Samegrelo	Tori	Tusheti	Zemo Imereti	Zemo Racha
Guria	0.0020															
Javakheti Plateau	0.0020	0.0054														
Kakheti	0.0020	0.0086	0.4630													
Khevsureti	0.0020	0.0115	0.0115	0.3372												
Kvemo Kartli	0.0020	0.0071	0.6074	0.6437	0.1026											
Kvemo Racha	0.0020	0.3166	0.0020	0.0020	0.0020	0.0020										
Kvemo Svaneti	0.6074	0.0071	0.0020	0.0101	0.0020	0.0020	0.0020									
Lechkhumi	0.0020	0.0054	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020								
Meskheti	0.0302	0.3671	0.0020	0.1709	0.1593	0.0158	0.0158	0.0517	0.0020							
Mtianeti	0.0915	0.4792	0.0020	0.5124	0.6437	0.1560	0.0666	0.0915	0.0020	0.7760						
Samegrelo	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020	0.0020					
Tori	0.0020	0.1593	0.0020	0.0020	0.0020	0.0020	0.4439	0.0020	0.0020	0.0020	0.0038	0.0020				
Tusheti	0.0020	0.0038	0.1885	0.3411	0.0857	0.5533	0.0020	0.0020	0.0020	0.0130	0.1676	0.0020	0.0020			
Zemo Imereti	0.0020	0.5440	0.0038	0.0783	0.0260	0.0558	0.0920	0.0020	0.0020	0.0915	0.1916	0.0020	0.0020	0.0508		
Zemo Racha	0.0020	0.2997	0.0526	0.3309	0.0915	0.2964	0.0535	0.0054	0.0020	0.0581	0.1511	0.0020	0.0020	0.4792	0.3992	
Zemo Svaneti	0.2802	0.0260	0.0020	0.0020	0.0020	0.0020	0.0086	0.1119	0.0020	0.0250	0.0645	0.0020	0.0101	0.0020	0.0038	0.0020

Table 11 Pairwise comparisons with FDR *p*-value adjustment method of specific plant parts used (bark, branches, buds, bulb, cones, flowers, fruit, latex, leaves, resin, roots, seeds, shoots, silk, stem, timber, tuber, whole plant) between regions after significant PERMANOVA analysis (Table Permanova)

	Adjara	Guria	Javakheti Plateau	Kakheti	Khevsureti	Kvemo Kartli	Kvemo Racha	Kvemo Svaneti	Lechkhumi	Meskheti	Mtianeti	Samegrelo	Tori	Tusheti	Zemo Imereti	Zemo Racha
Guria	0.0018															
Javakheti Plateau	0.0018	0.0018														
Kakheti	0.0018	0.0018	0.0267													
Khevsureti	0.0018	0.0018	0.0033	0.0697												
Kvemo Kartli	0.0018	0.0033	0.0057	0.3999	0.0057											
Kvemo Racha	0.0018	0.1692	0.0018	0.0018	0.0018	0.0018										
Kvemo Svaneti	0.2045	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018									
Lechkhumi	0.0057	0.0057	0.0018	0.0018	0.0018	0.0018	0.0046	0.0018								
Meskheti	0.0046	0.1608	0.0018	0.0603	0.0018	0.0018	0.0046	0.0173	0.0018							
Mtianeti	0.0267	0.3522	0.0018	0.3078	0.0096	0.0057	0.0324	0.0537	0.0018	0.6410						
Samegrelo	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018					
Tori	0.0018	0.0355	0.0018	0.0018	0.0018	0.0018	0.1349	0.0018	0.0033	0.0033	0.0046	0.0018				
Tusheti	0.0018	0.0018	0.0148	0.0633	0.0433	0.0714	0.0018	0.0018	0.0018	0.0018	0.0071	0.0018	0.0018			
Zemo Imereti	0.0018	0.2145	0.0018	0.0870	0.0033	0.0109	0.0222	0.0018	0.0018	0.0222	0.1272	0.0018	0.0033	0.0046		
Zemo Racha	0.0018	0.1711	0.0018	0.2492	0.0083	0.1305	0.0267	0.0018	0.0018	0.0324	0.0668	0.0018	0.0018	0.0413	0.2493	
Zemo Svaneti	0.0083	0.0057	0.0018	0.0018	0.0018	0.0018	0.0018	0.0787	0.0046	0.0334	0.0668	0.0018	0.0018	0.0018	0.0018	0.0046

Analyses were based on Euclidean distance and 999 permutations

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Authors' contributions

RWB, NYPZ, SS, ZK, DK, MK, DT, and KB designed the study; RWB, NYPZ, SS, ZK, DT, MK, and KB conducted the fieldwork, ZK and IUR conducted the main statistical analysis; RBU, NYPZ, and ZK analyzed the data and wrote the manuscript; all authors read, corrected and approved the manuscript.

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Availability of data and materials

The anonymized raw data are deposited under Open Science Network: https://osf.io/9kdtw/?view_only=93a8748c003f4770bc4a2bb332647429

Declarations

Ethics statement

Before conducting interviews, prior informed consent was obtained from all participants. No further permits or ethics approval were required.

Consent for publication

This manuscript does not contain any individual person's data, and further consent for publication is not required.

Competing interests

The authors declare that they have no competing financial interest.

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