



# Wine, Beer, Snuff, Medicine, and Loss of Diversity – Ethnobotanical travels in the Georgian Caucasus

Rainer W. Bussmann, Narel Y. Paniagua Zambrana, Shalva Sikharulidze, Zaal Kikvidze, David Kikodze, Tamar Jinjikhadze, Tamaz Shanshiashvili, Dato Chelidze, Ketevan Batsatsashvili, and Nicki Bakanidze

## Photo Essay

### Context

Research was conducted in July 2013 as part of an ethnobotany research-training course in Georgia (საქართველო). After obtaining prior informed consent for interviews and photographs, semi-structured interviews were conducted with participants in local villages.

Images were taken of the physical environment (soils, water features, and other geographical context elements), biological environment (parts of plants used, whole plants, animals, ecosystems, landscapes), and cultural environment (artifacts, villages, crop fields, and other anthropogenic landscapes, individuals and groups interacting with each other or the researchers, and people conducting daily tasks of life). Most of the photographs were taken opportunistically and only Figures 79-81 were “staged.”

### Photos

The authors took all photos presented. In each case, permission was granted by those featured to use the photographs for research.

Photos were taken using Canon EOS5DIII and Canon 60D, with EF-S15-85mm, EF 24-70mm, EF 70-300mm zoom lenses, Canon 100mm, and Zeiss 17mm and 50mm lenses. Each photo was saved in the highest pixel Canon RAW format. Each original file was 35-40 megapixels in size.

The authors saved an original un-altered copy of each photo presented here. In addition, the authors keep on file approximately 5,000 more digital photos taken of all aspects of this project. The published and unpublished images may be requested from the authors for non-profit uses. Requests for profitable uses of the photos will re-

quire additional permission of the individuals featured in the images.

Each photograph has been altered using Adobe Lightroom 5.0 and Photoshop CS6 in the following ways:

1. Cropped.
2. Color balance altered toward warmer image tone.
3. Image size altered.
4. Image saved in slightly smaller (high quality) jpg format.

No data has been added nor removed from the images beyond the alterations listed above.

### *Traditional plant use in Georgia*

The territory of modern-day Georgia (Figure 1) has been continuously inhabited since the early Stone Age, and

### Correspondence

Rainer W. Bussmann, William L. Brown Center, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A. [rainer.bussmann@mobot.org](mailto:rainer.bussmann@mobot.org)

Narel Y. Paniagua Zambrana, Herbario Nacional de Bolivia, Instituto de Ecología-UMSA, Campus Universitario, Cota Cota Calle 27, Apdo. Postal 10077 correo central, La Paz, BOLIVIA.

Shalva Sikharulidze, David Kikodze, Tamar Jinjikhadze, Tamaz Shanshiashvili, Dato Chelidze, Ketevan Batsatsashvili, Nicki Bakanidze, Institute of Botany and Bakuriani Alpine Botanical Garden, Ilia State University, Botani-kuri St. 1, 0105 Tbilisi, GEORGIA

Zaal Kikvidze, 4-D Research Institute, Ilia State University, 5, Cholokasvili Ave. 0162 Tbilisi, GEORGIA.

Ethnobotany Research & Applications 12:237-313 (2014)

Published: 14 July 2014

[www.ethnobotanyjournal.org/vol12/i1547-3465-12-237.pdf](http://www.ethnobotanyjournal.org/vol12/i1547-3465-12-237.pdf)



**Figure 1.** Locations of research in the Georgian Caucasus: (A) Tbilisi თბილისი city, (B) Svetitskhoveli cathedral სვეტიცხოვლის საკათედრო ტაძარი, (C) Mtskheta-Mtianeti მცხეთა-მთიანეთი region, (D) Dusheti დუშეთი municipality, (E) Qazbegi ყაზბეგი district (a.k.a. Khevi ხევი), (1) Mount Kazbek ყაზბეგის მყინვარწვერი (a.k.a. Kazbeghi), (2) Stepantsminda სტეფანწმინდა (a.k.a. Stafantsminda), (3) Jutha village, (4) Roshka village, (5) Barisako village, (6) Kobulo village, (F) Samtskhe-Javakheti სამცხე-ჯავახეთი region, (7) Borjomi city, (8) Bakuriani village, and (9) Tsbatzqhuri village.

agriculture was developed during the early Neolithic era (Javakhishvili 1987). In Georgian the name of the country is “Sakartvelo,” and “Georgia” is semantically linked to Greek (γεωργία) meaning “agriculture” (Javakhishvili 1987). Human occupation however started in the Early Pleistocene. The 1.7-Myr-old hominid fossils of Dmanisi in Southern Georgia are from the earliest known hominid-site outside of Africa (Finlayson 2005, Gabunia & Vekua 1995, Gabunia *et al.* 2000). This specimen has been classified as Late Middle Paleolithic and Early Upper Neanderthal and modern human occupation is well documented (Adler & Bar-Oz 2009). Upper Paleolithic fossils of Dzudzuana Cave include remnants of wool (*Capra caucasica* Gldenstdt & Pallas, 1783) and dyed fibers of wild flax (*Linum usitatissimum* L.) dated to ~36–34 Ka BP (Adler & Bar-Oz 2009).

The Caucasus is counted as one of the global biodiversity hotspots, and Georgia has its fair share of the tremendous diversity of the region (Schatz *et al.* 2009). Botanical exploration of the Caucasus has a long history, yielding good recent treatments of the area’s vegetation, in particular with regard to Georgia (Nakhutsrishvili 1999). As such, Georgia has long been the center point of botanical exploration in the Caucasus, with Bakuriani Alpine Botanical Garden serving as a hub. The visitor’s log of the garden reads like a “who is who” of 20<sup>th</sup> century botany (Figure 2).

The archaeological findings from Neolithic and Early Bronze periods include plant fossils and seeds of both wild species and local landraces. Seven species of cultivated wheat (*Triticum aestivum* L., *Triticum carthlicum* Nevski, *Triticum compactum* Host, *Triticum dicoccon* (Schrnk) Schubl., *Triticum macha* Dekapr. & Menabde, *Triticum monococcum* L., *Triticum spelta* L.), one wild relative (*Aegilops cylindrica* Host.), as well as millet (*Panicum miliaceum* L.), barley (*Hordeum vulgare* L.), Italian millet (*Setaria italica* (L.) P. Beauv.), oats (*Avena sativa* L.), wild lentil (*Lens ervoides* (Brign. & Brunhoff) Grande), and pea (*Pisum sativum* L.) have been discovered in Arukhlo, dating back to the 6<sup>th</sup> to 2<sup>nd</sup> millennium BC (Melikishvili 1970). The earliest grapevine seeds indicating cultivation were excavated in southern Georgia and date to ~8,000 years BP (Ramishvili 1988). Due to its long tradition, agriculture in Georgia is characterized by endemic species of crops and a great diversity of landraces. These show a high level of adaptation to local climatic conditions and often-high disease resistance. Early research documented this great variety (Dekaprelevisch & Menabde 1929, Ketskhoveri 1928, 1957, Ketskhoveri *et al.* 1960, Menabde 1938, 1948), but a rapid loss of local cultivars of cereals, legumes, and flax began in the 1950s with Stalinist agricultural reform (Akhajatsi 2009, Akhalkatsi *et al.* 2010, 2012). Despite the long cultural history, recent studies on cultivated plants are rather scarce (e.g., Pistrick *et al.* 2009, Zhizhizlashvili *et al.* 1980).

26 Aug. 1912 A. Engler Berlin – Dahlen  
M. Rivier. Zürich II.  
Georg Rhets Heidelberg  
Theo. J. Stomps. Amsterdam.  
Friedrich Fedde (Fedde). Wilmsdorf  
Kurt Krause – Dahlen

**Figure 2.** Excerpt of Bakuriani Alpine Botanical Garden visitor log: International Caucasus Expedition 26 August, 1912. Adolf Engler, M. Rivier, Georg Rhets, Theo Stomps, Friedrich Fedde, Kurt Krause.

Georgia is one of the oldest Christian regions, adopting Christianity around 320 CE. A great example for early church construction is Gergeti Trinity Church, built in the 14<sup>th</sup> century, located at 2170 m at the base of Mount Kazbegi (5047 m), overlooking the narrow valley leading from Georgia to Ingushetia (Figure 3). However, ancestral shrines are still very common in many regions of Georgia (Figure 4).

Grapes (*Vitis vinifera* L.) show genetic diversity in Georgia, with about 500 varieties known (Javakhishvili 1987, Ketskhoveri *et al.* 1960, Ramishvili 1988, This *et al.* 2006), and in most regions the population takes great pride in producing their own wine and sharing it with visitors (Figure 5). Hardly any house in the Georgian lowlands is without at least some grapes in its garden or backyard (Figures 6 and 7). Today, forty-one cultivars of grapevine are used as commercial varieties in Georgia (Bedoshvili 2008), and good wine is readily available (Figure 8), but the history of grape cultivation and winemaking goes back millennia (McGovern 2003, Figure 9). Like in other parts of Europe, Georgian grapes were devastated by phylloxera (*Daktulosphaira vitifoliae* (Fitch 1855)), and after the infestation in the 1860s most Georgian grape varieties are now grafted on rootstocks of American grapes resistant to phylloxera.

Wheat (*Triticum* spp.) in the 1940s included 16 species, 144 varieties, and 150 forms registered in Georgia (Menabde 1948). This diversity has however greatly diminished, and most species had already disappeared by the 1960s when introduced cultivars were favored in Soviet **kolkhoz** systems. At present, none



**Figure 3.** Gergeti Trinity Church, Georgia, built in the 14<sup>th</sup> century, located at 2170 m at the base of Mount Kazbek ყაზბეგის მკინვარწვერი (5047 m) in the background.





**Figure 4.** Traditional ancestral shrine in Mtskheta-Mtianeti, Georgia.



**Figure 5.** Sampling the latest vintage in Bakuriani, Georgia.





**Figure 6.** Traditional grape in Mtskheta, Georgia.





**Figure 7.** Traditional grape in garden in Mtskheta, Georgia.



**Figure 8.** Modern vintage in Georgia.



**Figure 9.** Grape skulpture on façade of Svetitskhoveli Cathedral (10<sup>th</sup> century CE), Georgia.





**Figure 10.** *Lactuca sativa* L. (lettuce) in garden in Jutha, Khevi, Georgia.

of these species are sown in Georgian commercial agriculture. Pistrick *et al.* (2009) report some traditional varieties of bread wheat in Tusheti, Meskheti, Javakheti, and Svaneti.

Barley (*H. vulgare*) is also an ancient agricultural crop in Georgia and had particular importance in beer production as well a function in religious rituals and traditional medicine (Badr *et al.* 2000, Javakhishvili 1987).

Caucasian rye (*Secale cereale* L.) used to be cultivated in the high mountain regions of Georgia (1800-2200 m) and

entered into bread and beer production, although barley was preferred for beer.

Legumes, especially peas (*P. sativum*), lentils (*Lens culinaris* Medik.), chickpeas (*Cicer arietinum* L.), and faba beans (*Vicia faba* L.), are still commonly grown in home gardens, and green pea (*P. sativum*) is thought to have originated in the Southern Caucasus. Traditional vegetables such as garden lettuce (*Lactuca sativa* L., Figure 10), beans (*Phaseolus vulgaris* L., Figure 11), sweet basil (*Ocimum basilicum* L., Figure 12), peppermint (*Mentha x piperita* L., Figure 13), onions (*Allium cepa* L., Figure 14),



**Figure 11.** *Phaseolus vulgaris* L. (green beans) in garden in Jutha, Khevi, Georgia.





**Figure 12.** *Ocimum basilicum* L. (basil) in garden in Jutha, Khevi, Georgia.

spinach (*Spinacia oleracea* L.), carrots (*Daucus carota* L.), radishes (*Raphanus raphanistrum* subsp. *sativus* (L.) Domin), turnips (*Brassica rapa* var. *rapa* L.), Welsh onion (*Allium fistulosum* L., Figure 15), sugar beets (*Beta vulgaris* L., Figure 16), amaranth (*Amaranthus viridis* L., Figure 17), goosefoot (*Chenopodium album* L., Figure 17), leeks



**Figure 13.** *Mentha x piperita* L. (peppermint) in garden in Jutha, Khevi, Georgia.





**Figure 14.** *Allium cepa* L. (onions, with garlic, potatoes, beets, basil, lettuce, and peas) in garden in Jutha, Khevi, Georgia.



**Figure 15.** *Allium fistulosum* L. (Welsh onion) in garden in Jutha, Khevi, Georgia.





**Figure 16.** *Beta vulgaris* L. (beets) in garden in Jutha, Khevi, Georgia.





**Figure 17.** *Amaranthus viridis* L. (amaranth, left) and *Chenopodium album* L. (goosefoot, right) in garden in Jutha, Khevi, Georgia.

(*Allium ampeloprasum* L.), and garlic (*Allium sativum* L.) are still very common throughout the region. Herbs such as parsley (*Petroselinum crispum* (Mill.) Fuss.), coriander (*Coriandrum sativum* L.), tarragon (*Artemisia dracuncu-*

*lus* L.), savory (*Satureja hortensis* L.), garden cress (*Lepidium sativum* L.), dill (*Anethum graveolens* L., Figure 18), fennel (*Foeniculum vulgare* Mill.), celery (*Apium graveolens* L.), *A. fistulosum*, *B. rapa* subsp. *rapifera* Metzger,



**Figure 18.** *Anethum graveolens* L. (dill) in garden in Jutha, Khevi, Georgia.





**Figure 19.** *Cucurbita pepo* L. (zucchini) in garden in Jutha, Khevi, Georgia.

*Lathyrus sativus* L., *L. usitatissimus*, *Medicago sativa* L., *Onobrychis transcaucasica* Grossh., and *Trigonella caerulea* (L.) Ser. are cultivated almost everywhere. In addition, introduced species such as zucchini (*Cucurbita pepo* L., Figure 19), cucumber (*Cucumis sativus* L.), eggplant (*Solanum melongena* L.), marigold (*Tagetes erecta* L.), watermelon (*Citrullus lanatus* (Thunb.) Matsum. & Nakai), sunflower (*Helianthus annuus* L.), tomato (*Solanum*

*lycopersicum* (Mill.) Wettst.), pepper (*Capsicum annuum* L.), potato (*Solanum tuberosum* L., Figure 20), and maize (*Zea mays* L., Figure 21) and were found to be popular ingredients of local cuisine.

Tobacco or **tutui** (*Nicotiana rustica* L.) has been cultivated for a long time and is found in most regions, including high mountain areas, of Georgia. *Nicotiana tabacum* L.,



**Figure 20.** *Solanum tuberosum* L. (potato) in garden in Jutha, Khevi, Georgia.





**Figure 21.** *Zea mays* L. (maize) in garden in Jutha, Khevi, Georgia.

was only introduced during the Soviet period for commercial use.

A large number of additional species is traditionally also grown in home gardens, e.g., sour plum (*Prunus cera-*

*sifera* Ehrh. var. *divaricata* (Ledeb.) L. H. Bailey) is commonly used as sauce with meat, rose hips (*Rosa canina* L., Figure 22) are often used for tea and to make jam. ladernut (*Staphylea pinnata* L., Figure 23) inflorescences are a favorite pickle.



**Figure 22.** *Rosa canina* L. (wild rose) in garden in Jutha, Khevi, Georgia.



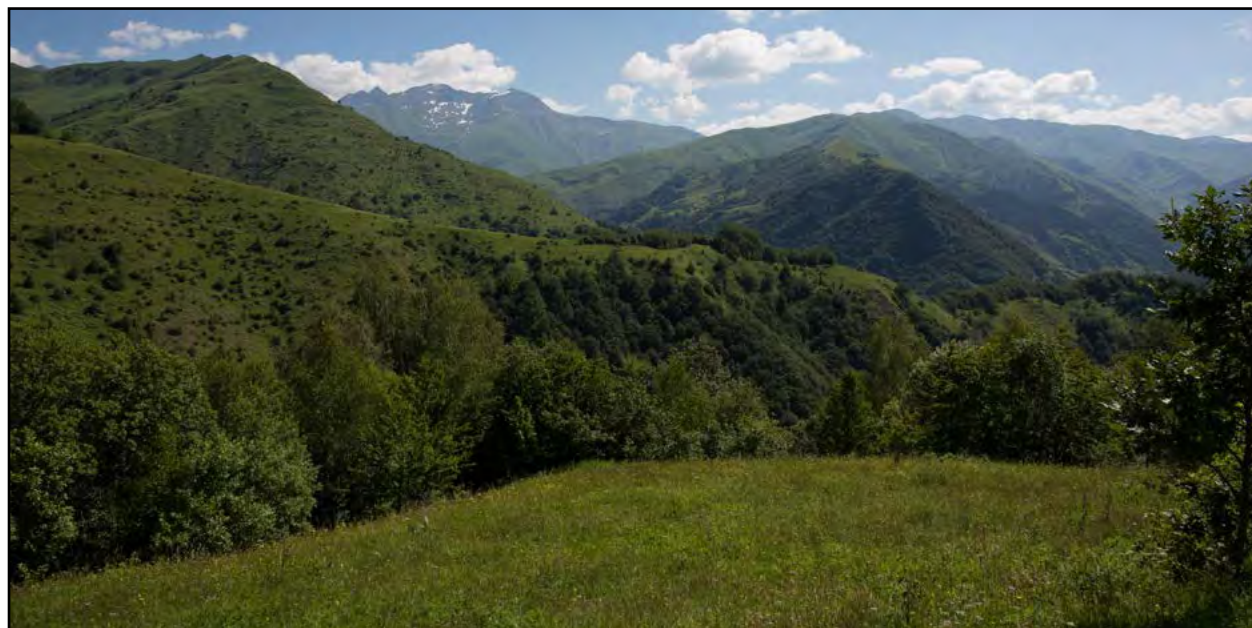


**Figure 23.** *Staphylea pinnata* L. (bladdernut) in garden in Jutha, Khevi, Georgia.

***Ethnobotanical travels in the Georgian  
Caucasus, July 8-17, 2013***

Fieldwork was conducted in Khevsureti (Figures 24-26), Khevi (Kazbeghi district, Figures 27-33), and Samtskhe-

Javakheti (Figures 34-38). Ethnobotanical interviews, or better said, any kind of conversations in the Caucasus, and in particular in Georgia, are an especially pleasant experience. No conversation can happen without at least tasting some wine or beer, and it is always accompanied



**Figure 24.** Greater Caucasus landscape, Khevsureti, Georgia.



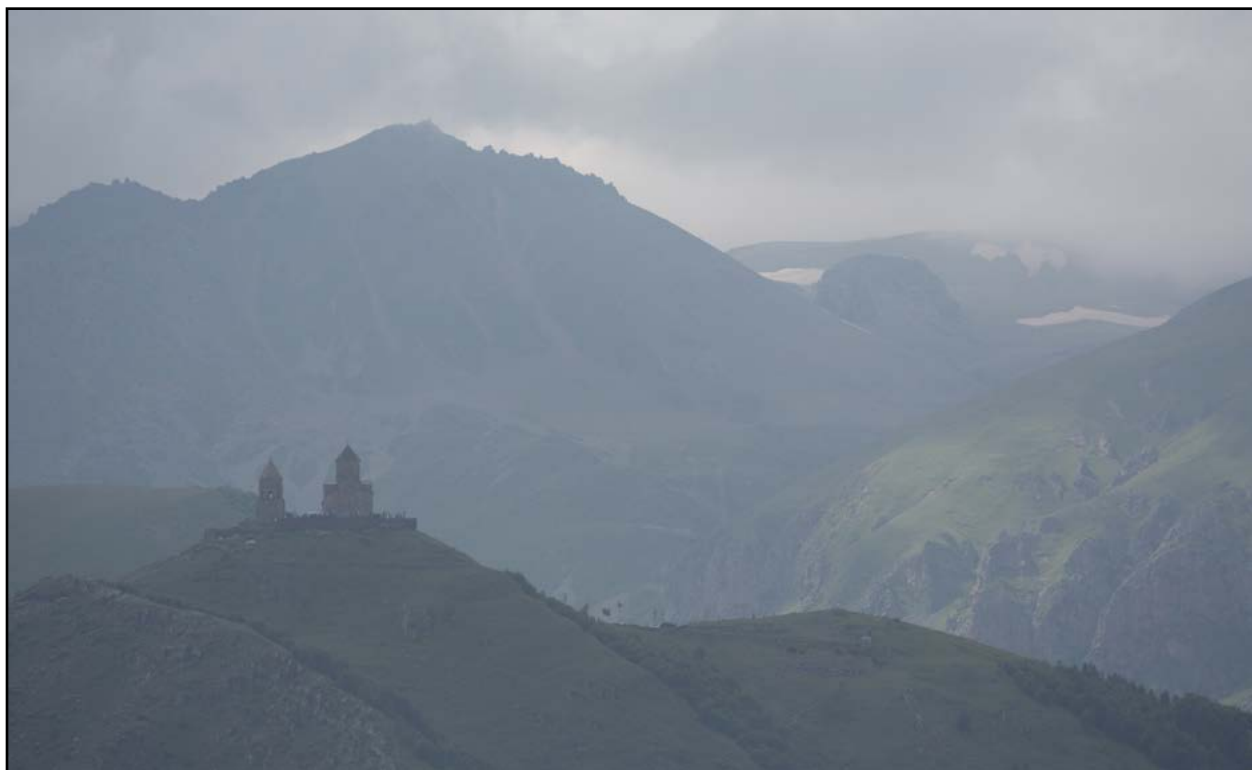


**Figure 25.** Greater Caucasus landscape, Khevsureti, Georgia, .



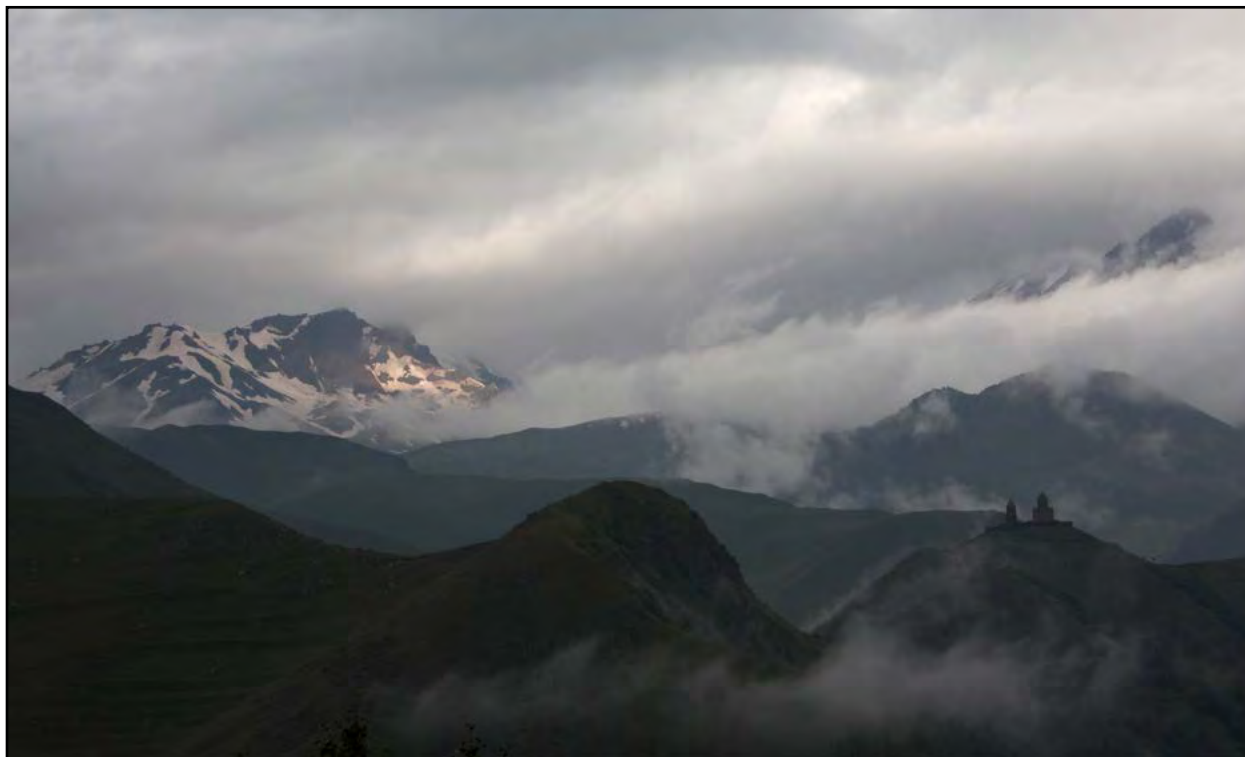


**Figure 26.** Roshka village, Khevsureti, Georgia.



**Figure 27.** Gergeti Trinity Church, Khevi, Georgia.





**Figure 28.** Kazbeghi Range, Khevi, Georgia.



**Figure 29.** Greater Caucasus Range, Khevi, Georgia.



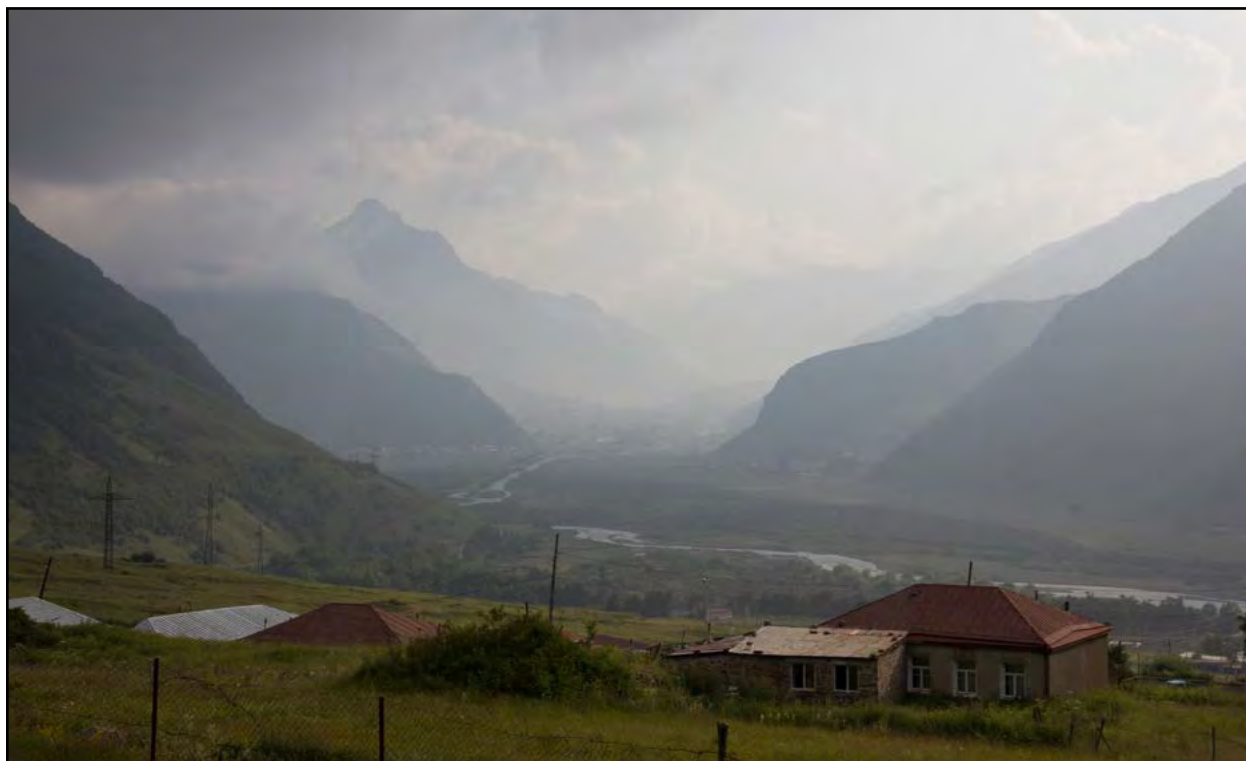


**Figure 30.** Jutha village, Khevi, Georgia.



**Figure 31.** Landscape around Stepantsminda, Khevi, Georgia.





**Figure 32.** Landscape around Stepantsminda, Khevi, Georgia.



**Figure 33.** Landscape around Stepantsminda, Khevi, Georgia.





**Figure 34.** Lesser Caucasus landscape around Bakuriani village, Samtskhe-Javakheti, Georgia.



**Figure 35.** Lesser Caucasus landscape around Bakuriani village, Samtskhe-Javakheti, Georgia.





**Figure 36.** Surroundings of the Armenian settler village of Tabatzqhuri, Samtskhe-Javakheti, Georgia.



**Figure 37.** The Armenian settler village of Tabatzqhuri, Samtskhe-Javakheti, Georgia.





**Figure 38.** Azeri nomads close to the Armenian settler village of Tabatzqhuri, Samtskhe-Javakheti, Georgia.

by local bread and food. White wine is normally home made, light, and served in sufficient quantity (Figure 39). In addition to white wine and bread, hazelnuts (*Corylus avellana* L.), walnuts (*Juglans regia* L.), red currant (*Ribes rubrum* L.), *S. pinnata* pickles, tomatoes, and cucumbers

(Figure 40) were particularly common in all interviews. However, in many cases **khinkali** (Figure 41), **phanduri**, and tasty stews (Figures 42 and 43), pickles (Figure 43), and fresh fruits were served (Figure 44).



**Figure 39.** Preparing for an interview in Barisako, Khevsureti, Georgia.





**Figure 40.** Interview table: white wine, hazelnuts (*Corylus avellana* L.), walnuts (*Juglans regia* L.), red currant (*Ribes rubrum* L.), *Staphylea pinnata* L. pickle, tomatoes, and cucumbers in Khevsureti, Georgia.



**Figure 41.** Khinkali (dumplings with meat, walnut, and spinach filling), Georgia.





**Figure 42.** Phanduri (herb-filled bread) and potato stew, Georgia.



**Figure 43.** Traditional black bean stew with pickled tomatoes, chilies, and *Staphylea pinnata* L. inflorescences.





**Figure 44.** Fresh from the garden – peaches, apricots, and plum sauce, Bakuriani Alpine Botanical Garden, Georgia.

Ethnobotanical conversations were initially focused on the preparation of beer and snuff. After that, the conversation followed the train of thought of the local participants. For that reason, all plants and descriptions are given in the same order as mentioned by the participants in the following record.

## Khevsureti Region

**July 8, 2013**

Interview with Mzekala Arabuli

**Snuff:** After harvest, tobacco (*N. tabacum* and *N. rustica*) is sun-dried for one day (two days may be allowed), then wrapped warm in a carpet for three days, then opened up and spread in a shaded place, then ground.

Tobacco should be allowed to grow one month and needs to be well-weeded; the tip bud needs to be removed every week so that the plant develops leaves. It grows in leaf axils- rip one leaf and another one grows, and so on; this can be done 4-5 times. Some people do not add anything to the final snuff while others add camphor, mint drops, or sometimes cologne.

Tobacco stems (**jokari**) are dried, the medulla is removed, the stems are cut into pieces, and **makhorka** (smoking tobacco) is prepared. The leaves of lower quality are mixed with this material, and cigarettes are rolled. Formerly this mass was wrapped in linden (*Tilia* sp.) peelings and was used for pipe tobacco.

## Aragvispiri village

Gogi Tsiklauri, Mzia Tsiklauri, and Nanuli Tsiklauri (Figure 45) were interviewed in the garden of their summer house (Figure 46) listed the following useful plants.

- Yarrow – **pharsmanduki** (*Achillea millefolium* L.)
- St. John's wort – **krazana** (*Hypericum perforatum* L.); an infusion of the inflorescences is used to treat everything. Sometimes St. John's wort and yarrow, sometimes St. John's wort and mint are combined.
- Oregano – **thavshava** (*Origanum vulgare* L.)
- Peppermint – **pitna** (*Mentha x piperita*; *Mentha longifolia* (L.) L.)
- Plantain – **mravaldzarghva** (*Plantago major* L.)
- Dog rose – **askili** (*R. canina*)
- Hawthorn (black) – **kuneli (shavi)** (*Crataegus pentagyna* Waldst. & Kit. ex Willd.); two tablespoonfuls in a pot with 2 liter capacity, is added boiling water. A four day course four times a year.
- Linden – **tsatskhvi** (*Tilia begoniifolia* Steven)
- Raspberry – **zholo** (*Rubus idaeus* L.) leaves
- Black currants – **shavi motskhari** (*Ribes nigrum* L.)
- Coltsfoot – **viristerpha** (*Tussilago farfara* L.)
- Elecampane – **kulmukho** (*Inula helenium* L.); for respiratory tract, gastro-intestinal system; 30 g roots in 0.5 liters strong alcohol (ca. 40%). Keep in a dark place for 2 weeks and take 1 teaspoonful before meals 3 times a day.

**Snuff:** *N. tabacum* and *N. rustica* (the latter is darker).

Tobacco is ground and mint drops are added. Snuff is good for hyperthyroidism, bronchial diseases, and arthritis. The tobacco must be allowed to dry under the hot sun,





**Figure 45.** Interview with Gogi Tsiklauri in Kobulo village close to Barisako village, Khevsureti, Georgia.



**Figure 46.** Summer-house of Gogi Tsiklauri in Kobulo village close to Barisako village, Khevsureti, Georgia.



and then it is dried further in the shade. The Khevsurians call snuff **burnithi**; its general name is **burnuthi**.

**Beer:** Gogi Tsiklauri explained beer production: A barmy cereal mass (malt) is prepared, beginning with wetting barley in sacks as the grain must germinate for a few days. When the barley becomes dry and sweet the sacks are opened, and the barley is finally dried up and ground. Afterwards more rye (or barley) is mixed with the ground-up mass, then boiled in a big pot, and drained in sacks made of goat hair. These sacks have pores, and the liquid drains in gutters and is poured into long wooden tubs called **lathibas**. Afterwards it is again poured into sacks in rotation with pouring it into **chkhuti** (a wooden vessel) and then poured into a pot, and common hops (*Humulus lupulus* L.) are added. Then the mass is boiled again, and pine twigs with needles are added to it in a **lathiba**. The liquid is left to flow out into a vessel (the liquid was called **sistsveni** perhaps from **sviis tsveni** meaning “common hop juice”). After cooling this was already a good beverage. Normally the liquid was poured into wooden barrels called **kodebi**, then more malt was added, the liquid was fermented, and beer was produced.

According to Imeda Likokeli from Kobulo village, wheat beer was also produced and was good, but rye beer is bad. Barley beer is the best.

Shota Korsheli told us in Ortskali village that his father used meadow sedge (**dajira**; *Salvia verticillata* L.) for

wounds as well as yarrow. He chewed the leaves and put them into the wound. He also used plantain (*Plantago lanceolata* L.) for wounds.

Nazi Arabuli from Mkhlovani village showed us varieties of leaf beets – **tsitheli mkhali**, **phothlovani charkhali**, and **mangoldi** (*B. vulgaris* ssp. *cicla* (L.) Moq.).

Petre Atabioni from Atabe village said that peach (*Prunus persica* (L.) Batsch) leaves are used as an anthelmintic.

Mamuka Arabuli indicated that the Khevsur history museum **korsha** (fence) is made of hazel. The Georgian name **thkhilamuri** comes from the vernacular name of hazel, **thkhili**. The small wooden items in the museum are made of common pear, **panta** (*Pyrus communis* L.).

The wayfaring tree-**uzani**, or **urdzani** (*Viburnum lantana* L.)- was regarded as a sacred tree. When one holds a *Viburnum* stick, evil spirits won't pounce on you. It was put into babies' hands and stuck on their cradle, and a spell was put on it, so that it was thought to be stronger. The tree has hard but at the same time flexible wood, which does not break even when fully bent. A small stick of **uzani** wood was used for yokes. *Viburnum* gives warmth in winter and coolness in summer. Shota Tsiklauri said that when vodka was poorly made, a wayfaring-tree stick was put in it and the vodka got better. *Viburnum* beads were tied to cows tails when they had a big udder, to protect against evil eye.



**Figure 47.** Interview with Imeda Likokeli in Kobulo village close to Barisako village, Khevsureti, Georgia.



**Barisakho town**

Imeda Likokeli was born in 1950 and studied philosophy (self-education). His summer-house was visited in Kobulo village (Figure 47). Imeda provided a long hand written description for beer production as "Rules for brewing and using beer." We only provide a Georgian copy here because it is a very peculiar dialect and we cannot reproduce it well in English. The process is the same as the one described above by Gogi Tsiklauri.

**ლუდის ხდისა და ხმარების წესები**

ლუდისათვის შეიძლება გამოყენებული იქნას სხვადასხვა მარცვლეული კულტურები, ქერი, დიკა, სვილი (ჭვავი) ტრუპკა, სიმინდი აქედან საუკეთესო მასალა ქერია.

ქერს გასცხრილავენ გაარჩევენ ჩაპყრიან სარაყე ქვაბში დაუსხამენ წყალს და ორი სუტკა წყალში ამყოფებენ კარგად რომ დაღებება 48 საათის შემდეგ ტომარაზედ გასწურავენ მემრე ამ ტომარას თბილად შეფუთავენ დაუგებენ ჩალას თივას დააფარებენ ფარდაგს საზნებს ან ტყავებს და ამყოფებენ მანამ სანამ არ გამოვა 3-4-5 დღე თუ თბილადაა ადრე გაღვივდება თუ არა 5-6 დღე უნდა გაშლიან დალივების შემდეგ ფარდაგებზედ რაც უფრო თხლად გააფენენ უფრო ჩქარად გახმება უკეთესია თავიდან სამი დღე ჩრდილში გაიფინოს რომ ნიაფი უვლიდეს სამი დღის მერე მზეზე გააქვს ფარდაგით და მზის სხივებზე დახმობენ დასაფეკვად ამზადებენ რაც მთავარია კარგად უნდა გახმეს დამშრალად უნდა დაიფეკვს ორსამად დაღერლილიც არვარგა ვერ დაამსყარებს არც მბილად დაფქული ვარგა დახპაპვლავს (ძირზედ მიიწვება).

წინა დღეს ახერევენ წყალს და ჩახყრიან ფქვილს ცივ წყალში ამას ჩაფორწყვლას ემახიან. მეორე დღეს დილით დაუთნებენ ცეცხლს და სანამ ურევენ სარევიტ სანამ არ ამოდულდება თუ არ გაურევენ მიიწვება, ლუდს ნატუსის სუნი ექნება. ამოდულების.

შემდეგ ნელ ცეცხლზედ 2-საათი კიდევ უნდა ხარშვა თუთხელია 3 საათი და მეტიც უნდა იხარშოს რომ შესქელდეს და ადარკობენ (დეგუსტაცია) არის თუ არა მოხარშული და შემდეგ ჩამაით ან კოვშიტ ჩხუტში ამოასხამენ ჩხუტი ხისა უნდა იყვას რომ არ გაცხელდეს და გადაასხამენ წინასწარ ჭერში ჩამომბულ თხის ბალნისაგან მოქსოვილ ე.წ. "ბალნისტომარაში" თუ კარგი ფორია 9-10 წუთში გაიწურება ტომარას ჯერ პირზედ.

ჭუჭკას მოაკრავენ მემრე კედს მოუჭერენ ორი გარაა ხისა წნელით გადამბული ამას აქვს წნულის რგოლი ამ რგოლს ტომარისკენ მისწევენ და უფრო და უფრო უჭერენ ამის მერე.

ტომარაში მხოლოდ პოტილა დარჩება ტკბილი სულ გაიწურება მერე ამ ტკბილს გარეცხილ ქვაბში ჩაასხამენ

ცეცხლს დაანთებენ და სვიას ჩაყრიან სვია ასე ნაწილდება მაგ 200 ლიტრა წყალზედ 120 ფოთოლი 10 ვედრა ფორის ფქვილი უნდა ერთ ვედრა ფქვილს 40 ლიტრა წყალში ყრიან -4 ვედრა წყალი და ერთი ვედრა ალაო (ფორისფქვილი) სვიასა და ტკბილს ერთი საათი კიდევ ხარშავენ ოდონდ სვია ორ ვედრა ფქვილ ნაყარზედ ერთი ვედრა უნდა იყოს. თუ სვია სლაბია მაშინ ფქვილს წყედ აყრიან რაც უარყოფითად.

აისახება ლუდზედ ბევრ წვენს მაიშრობს და ლუდი ცოტადა რჩება ამიტომ ფურნის სვეს ამჯობინებენ სვიის წვენს გააციებენ ზაფხულში რაც შეიძლება ცივი უნდა შეიყაროს რომ ჩქარა არ იფუვლოს და არ დამყავდეს.

საფუვრის მომზადება: წინა წელს გამხმარ ჭიჭის წყალში დაალბობენ თბილ წყალში შემდეგ გადასწურავენ ამ წყალს და ნელთბილ სვიის წვენს დაასხამენ და თბილად შეფუთავენ - 2-3 საათის შემდეგ აფუვდება მოიქაფება ამ საფუარს ცოტ-ცოტას წვენს უმატებენ ასე 300 გრამადის ტევადობის სპილენძის თასში მერე გააცივებენ ამ საფუარს და სვისწვნით სავსე კოდს ხელით გასინჯავენ ხელზე თბილი უნდა იყვას და მაჯაზე ცივი ასეთ სვისწვნიან სპილენძის კოდსდაახ. 100-150 ლიტრის ტევადობისას ჩასხამენ კრუშკით საფუარს თუ საფუარი ძლიერია ნაპირით მოაპკურებენ წრიულად და ასხამენ თუ სუსტი საფუარია შუაგულში ჩაასხამენ თუ ზამთარია და ცივა კოდს თბილად შეფუთავენ ზაფხულში კი მხოლოდ ბრეზენტს გადააფარებენ და გარედან თოკს მოაკრავენ რომ არ ამოქრეს 24 საათის შემდეგ ოდნავ გადასწევენ საფარებელს წესით საფუარი უნდა ამოქმედდეს ლუდმა ფული უნდა დაიწყოს "ყამზე" ერთი დღეამის შემდეგ თუ არ აფუვდა ხელთქვაბში ამოიღებენ შეათბობენ და განმეორებით მისცემენ საფუარს ისეთივე წესით როგორც პირველად ჩაუსხეს.

მემრე აფუვდება და აღმა ამოიწევენ ქაფი. როცა დაიფუთილებს თავქვე წავა და დალივდება (ქაფი ჩაქრება) და მაღლიდან ჭიჭს მოიდგამს მემრე ამ ჭიჭს ჩრაქვით მოხდიან (ან ქაფქირით თუ ქაფქირი არა აქვთ ჩრაქვით ეს ჯვარში ხდება სადაც კოდი დგას იქ დასტურის გარდა (ე.ი.) საკოდეში) სხვას იქ შესვლის უფლება არა აქვს.

დასტურსაც კი არა აქვს იმ შემთხვევაში საკოდეში შესვლის უფლება თუ ხელმხარი არ აქვს ნანათლი ეს ხდება იმ შემთხვევაში ახალწლის დღეებში ჯერ დოლი არაა და ბატკანს ვერ შოულობენ ვერსად მაშინ დასტური იძულებულია ლუდი საჭობებში შეყაროს (რაც საშიშია რადგან საჭობებში (სადედებში) ყველას შეუძლია შესვლა და დალევა არის ლუდის ქურდობის მრავალი შემთხვევა.

**Snuff: Tzeko** is a mixture of stems and low quality leaves, cut thin for a low grade smoking tobacco. Many farmers keep their own tobacco plantations. A few plants are left to grow flowers and produce seeds. For snuff production, farmers cut off flowers and small leaves to let big leaves grow larger; those leaves are used for producing the snuff.





**Figure 48.** Interview with Gaga Arabuli in Barisako village, Khevsureti, Georgia.

Big, high quality leaves are moisturized, wrapped in blankets, and left to ferment. Then the leaves are dried, cut, and ground using stone grinders. The powder is ready to use as snuff. No additions were used traditionally.

*Tilia* bark was used to make ropes from the strings of wet bark. Leftover timber was dried and cut in very thin but wide strips, which coiled while cutting. These coils were used to wrap **tzeko** for smoking.

**July 9, 2013**

**Barisakho town**

Gaga Arabuli (Figure 48), born 1954, graduated from the Geography Faculty and keeps a traditional Khevsureti house (Figure 49). A “small” brown bear pelt on the outside showed that the Caucasus still teems with large wildlife (Figure 50).



**Figure 49.** Traditional Khevsureti home of Gaga Arabuli, Barisakovillage, Khevsureti, Georgia.





**Figure 50.** “Small” brown bear (*Ursus arctos* L., 1758) killed by Gaga Arabuli, Barisakovillage, Khevsureti, Georgia.





**Figure 51.** Traditional Khevsureti home of Gaga Arabuli, Barisako village, Khevsureti, Georgia. Roof detail of oak-poplar frame with schist tiles.

**House construction:** A traditional Khevsureti house is built with a roof of schist pieces (Figure 51). Trees are used as supports and beams. Supports are of **mukha** (*Quercus petraea* subsp. *iberica* (Steven ex M.Bieb.) Krassiln.). The **kezi** (major roof rafters) are also made of oak. **Ghirphkia** (a small insect) cannot get into the oak core. Originally the rafters were made of alternating oak and poplar (*Populus tremula* L.).

*Quercus* and *Populus* are used for the beams. The saying is: მუხას უთქვამს: არ გავტყდები, წელს მივცემო. ვერხვს უთქვამს: გავტყდები, მაგრამ წელს არ მივცემო. "The oak says: I will bend but will not break." [It is flexible.] "The *Populus* says: I will break but will not bend." [It is rigid.] The beams of oak and poplar are placed in intervals by the builders who believe that this way makes a good balance between rigidity and flexibility (Figure 52). Alternatively oak beams can be used alone. To begin, logs from the forest were dried. Sometimes birch (*Betula litwinowii* Doluch.) was used instead of oak. Birch is however sensitive to moisture and needs to be replaced after two years. Dry, entirely debarked logs were used for construction. Oak logs need to have dark timber; light timber is not good. Smoke passing through the roof prevents attacks of pests on timber. Twigs usually of **ieli** (*Rhododendron luteum* Sweet), were laid over the beams (Figure 53). Above

that, a 40 cm thick layer of clay was placed. The lower floor was built without rhododendron layers, and schist pieces were laid directly on the beams. **Tela** (*Ulmus glabra* Huds.) also could be used. The bark of young linden trees was peeled and soaked in water to make strings to connect the roof parts.

Irakli Arabuli "Zubnoi" (Figure 54), born 1949, graduated from the Faculty of Dentistry in 1966. He now complains of glaucoma and is almost blind. We interviewed him in front of the old Barisakho School, at the spring where he used to sit and chat with locals. His knowledge about plants was obtained from his neighbor, Giorgi Arabuli. Later he started to accumulate knowledge by himself because he had special interest in plants.

**Beer:** The technology Irakli described is the same as described by Imeda Likokeli. No additives besides *H. lupulus* (for a nice taste) are used. Caucasian rhododendron (*Rhododendron caucaseum* Sims, Figure 55) was used sometimes to give color to beer, as was roasted barley, which gave a darker, almost black color to beer. On other occasions burned barley flour was added with the same aim.





**Figure 52.** Interior of Gaga Arabuli's home, Barisako village, Khevsureti, Georgia.



**Figure 53.** Interior of Gaga Arabuli's home, Barisako, Khevsureti. Roof detail with *Rhododendron luteum* Sweet webbing above oak and poplar frame.





**Figure 54.** Interview with Irakli Arabuli at the main well in Barisako village, Khevsureti, Georgia.



**Figure 55.** *Rhododendron caucaseum* Sims leaves are used for clearing beer and giving it a darker color in Georgia.



**Snuff:** (Coincides with the narrative from Imeda Likokeli.) Snuff was made of **tseko** (**tsekva** in Khevsurian dialect). Formerly nothing was added to snuff. Now mint, camphor, etc. are sometimes added. Tobacco was finely ground with stones, then poured and sieved until it was equally fine. Originally women used snuff while men smoked. Nowadays snuff is also used by men (Figure 56).

#### Medicinal plants:

- A hot water extract of tobacco (*N. tabacum*) is good for digestive and skin diseases.
- **Shupqha** (*Heracleum asperum* M.Bieb.) are chewed to alleviate toothache (bears apparently also chew it for the same purpose). **Shupqha** stems are sweet and edible.
- **Khokhnuta** (*Bunias orientalis* L.) can be eaten (flowers and young leaves). It is used as a detoxicant (even against snake bites). It can be dried and then a tea produced that is recommended for hangovers.
- **Zaravandi** or **majaghveri** (*Daphne caucasica* Pall.) treats periodontitis. Stem bark needs to be chewed for a short time, avoiding swallowing because it is highly toxic. The water extract has a lighter effect, and a hot water extract is used to kill ticks on cattle.
- **Abzinda** (*Artemisia absinthium* L.) helps against tonsil infections. (It has the same effect as goat fat.)
- **Dutsi** or **lagi** (*Heracleum leskovii* Grossh.) bark strips help to treat asthma (the stem is edible).
- **Kulmukho** (*I. helenium*) can replace tobacco for smoking. The root extract helps asthma.
- **Qristesiskhla** (*Chelidonium majus* L.) is the Prometheus herb.
- **Shkhama** (*Veratrum lobelianum* Bernh.) is used as a hot water extract to free cattle from ticks.
- **Matitela** or **tchitchishvili** (*Persicaria bistorta* (L.) Samp., *Polygonum carneum* C. Koch) flowers and rhizomes can be dried and stored and made into a tea or hot water extract to treat lung diseases.
- **Mravaldzargva** or **tskhradzargva** (*P. lanceolata*) helps treat wounds. The juice obtained from pressing many leaves can be applied directly to the wound.
- **Kldisduma** (*Sedum maximum* subsp. *ruprechtii* (Jalas) Soó, *Sedum spurium* M.Bieb.) leaves are burned slightly using the flame of a lighter or matches. Then they are skinned and applied to boils. This will take away the boil within 1-2 hours.
- **Lashqara** (*Symphytum caucasicum* M. Bieb.) is used like *Sedum*.
- Propolis can be used as well as *Sedum* and *Symphytum*.
- **Arqhi** (*B. litwinowii*) cones are boiled for a long time and then put on wounds.
- **Seli** or **qumela** (or **selis qumeli** for locals) (*L. usitatissimum*) seeds are boiled into a porridge. Betsina (a local healer) used to cover the patient's head with this after some trauma. The mass would dry except on the damaged area. This area was then opened (trepanation) by the healer.

- Elecampane (*I. helenium*) roots were used to treat cough and asthma; perhaps it was smoked for the same reason.

**Poem:** Why do you need a smoking pipe? You have not left even a crumb of elecampane and you don't have tobacco crumble.

**Musical instruments:** **Balamtsara** (*Prunus avium* (L.) L.) and **verkhvi** (*Populus tremuloides* Michx.) were used to make **phanduri**. A tree standing in a dry, sunny place far from any water body was selected for **phanduri**. The upper part of the log (1 m from the ground) was used. *Prunus*-made **phanduri** improved their sound with passing years. The **maliki** (small rods placed on the roof) were made from the same tree.

A small poem about **phanduri** made of *Prunus*:

იმახე ჩემო ფანდურო,  
გამოთლილი ხარ ზალიო,  
ვიცი, წელ-წელა  
იმატებ, ზალი მით  
გამოგთაღეო  
“Your sound is improving little-by-little”

A poem on **phanduri** made of *Populus*:

იმახე ჩემო ფანდურო,  
ლელებ გათლილო  
ვერხვისაჲ, სანამ  
პატრონ გყავ ცოცხალი,  
ლექსებს ყოველთვის გეტყვისა  
“While I am alive, I will give you poems”

**Ritual plants:** **Urdzani**, **uzani**, or **dzaxveli** (*Viburnum opulus* L.) peelings were hung on kids or small rods were given to them to hold to protect from evil eye.

July 10, 2013

#### Roshka village

Mindia Tsiklauri (Figure 57) was born in 1952 and studied three years in the Faculty of Energy Generation. He indicated that knowledge about plants was common among children.

**Beer:** (The technology is the same as mentioned by Imeda Likokeli.) The beer was brewed in the usual way, and no additions were needed if the beer was well brewed. The residue after brewing alcohol was distilled. Barley seeds that separated easily from the stems were the best grain and were used for brewing beer. Medium weight grain (such as wheat) was used to distill alcohol, and light grain (such as oats) was fed to the cattle. (*Rhodoendron luteum* is dangerous because sometimes cattle eat it and it is toxic.) Feasts lasted usually three days, and the whole village took part. The guests moved from house to house, and only on the last day they feasted at the real host's.





**Figure 56.** Sampling local snuff in Kobulo and Roshka villages, Khevsureti, Georgia.





**Figure 57.** Interview with Mindia Tsiklauri, Roshka village, Khevsureti, Georgia.

Barley seeds are viable only for two years, and the last barley was sown in the village about 30 years ago.

Giorgi “Sumbat” Tsiklauri (Figures 58 and 59) was born in 1935 and graduated from Barisakho school. In 1951 his family was forcibly moved to the lowlands (Bazaleti, Dusheti district) but returned back after three years. He was the only host serving local beer (Figures 60 and 61).

**Beer:** (The technology is the same as mentioned by Imeda Likokeli.) Eight to 10 days were needed to brew good beer, which was clear and with dark color, and there was no need to add *R. caucaseum* leaves or burned flour. Barley beer brews faster while wheat beer needs more time. Barley beer is light and “better” than wheat. Adding burned flour for getting better color and transparency harms its taste. The last time barley was cropped was 30 years ago.

**Snuff:** Made in usual way (as told by Imeda Likokeli). Adding aromatic substances (i.e., camphor spirit, mint

drops, etc.) started later when they become available from the drugstores. (არომატული წვეთების ჩამატება გვიანდელია, ქაფურის სპირტი, პიტნის წვეთები და სხვ.)

**Medicinal plants:** *Mravaldzarghva* or *tskhradzarghva* (*P. lanceolata*) is used for wounds.

**House construction:** It is better to use **thkhili** (*C. avellana*) shoots instead of *R. luteum* twigs for covering the beams.

In Giorgi’s storage room we found copious quantities of pickled *Allium victorialis* L. (Figure 62), strawberries, and peaches (Figure 63).





**Figure 58.** Interview with Giorgi Tsiklauri, Roshka village, Khevsureti, Georgia.



**Figure 59.** Interview with Giorgi Tsiklauri, Roshka village, Khevsureti, Georgia.





**Figure 60.** Interview with Giorgi Tsiklauri, Roshka village, Khevsureti, Georgia. Details of beer, bread, watermelon, and potato stew.



**Figure 61.** Interview with Giorgi Tsiklauri, Roshka village, Khevsureti, Georgia. Toasting to the ancestors.





**Figure 62.** *Allium victorialis* L. pickles in the house of Giorgi Tsiklauri, Roshka village, Khevsureti, Georgia.





**Figure 63.** Strawberry and peach pickles in the house of Giorgi Tsiklauri, Roshka village, Khevsureti, Georgia.



## Samtskhe-Javakheti Region

July 12, 2013

### Bakuriani town

Ineza Philieva (Figure 64) was born in 1941 and graduated from the secondary school in her village, Patara Mitarbi. She works in Bakuriani Alpine Botanical Gardens and her knowledge of plants was acquired from her parents.

**Beer:** (Ineza is Ossetian but uses the same technology as described above by Imeda Likokeli). Some differences from Khevsurian beer are: Ossetian beer is produced from wheat, and sugar is added to the malt to increase fermentation intensity. Also, burned malt or sugar is added to give a dark color. Beer is brewed whenever one wants it, not only for special feasts. Wheat is not cropped, but bought.

#### Food plants:

- **Ghandzili** ღანძილი (*A. victorialis*) is pickled and used in pies (**phkhlovana**). About 20 kg is collected annually.
- **Diqhi** or **qekhi** for locals (დიგი, ქეხი) (*Heracleum wilhelmsii* Fisch. & C.A.Mey.), up to 50 cm tall plants are used. The plants are collected using gloves, washed, boiled, and left in cold water for 1-2 days.

Then the material is pickled. A hot water extract of the roots can be used to treat stomach diseases.

- **Irmis rqa** ირმისრქა ("deer horn") (*Aruncus vulgaris* (Maxim.) Raf. ex Pojark.) young plants are collected, boiled, and left in cold water for 1-2 days. Then they are pickled.
- **Qarqveta** კარკვეტა (*Hippomarathrum crispum* Koch) young plants are collected, boiled, and left in cold water for 1-2 days. Then they are pickled.
- **Qondari** ზეგონდარა (*Thymus collinus* M.Bieb.) is used as a spice. The dried plant is used to make an herbal tea and can treat cough and hypertension.
- **Tchintchari** ტინჭარი (*Urtica dioica* L.) is edible (as **phkhali**) and is boiled and mixed with spices.
- **Natsarqathama** ნაცარკათამა (literally "gray chicken") (*C. album*) is edible (as **phkhali**) and is boiled and mixed with spices.
- **Tchritchina** ტრიტჩინა (literally "darker") (*Oberna wallichiana* (Klotzsch) Ikonn.) is used to fill **phkhlovana**, mixed with cheese.
- **Balba** ბალბა (*Malva sylvestris* L.) is used for **phkhali**.
- **Vazisdzira** ვაზისძირა (*Lapsana communis* L.) is used for **phkhali**.
- **Niakhuri** ნიახური (*A. graveolens*) is used for **phkhali**.
- **Ekala** or **ekalghitzi** ეკალა ანუ ეკალღიჭი (*Smilax excelsa* L.) is used for **phkhali**.
- **Panta** პანტა (*Pyrus* spp.) fruits are used to distill alcohol.



Figure 64. Interview with Ineza Philieva, Bakuriani village, Samtskhe-Javakheti, Georgia.



- **Tsittsveli** or **tchnavi** ცირცელი ანუ ჭნავი (*Sorbus caucasigena* Kom.) fruit are used to distill alcohol.
- **Antzli** ანწლი (*Sambucus ebulus* L.) fruit are used to distill alcohol.
- **Qalakoda** ქალაკოდა (*Arum orientale* M.Bieb.) is used for **phkhali**.
- Cone jam (of pines): 12 green cones (up to 10 cm long) are boiled in 2 liters water until the volume reduces to 1 liter. This is then filtered using gauze tissue, and 1 kg sugar is added and the mixture is boiled until the volume reduces to 0.8 liters. This syrup is called “cone honey.”

#### Medicinal plants:

- **Pitna** პიტნა (*Nepeta racemosa* Lam.) is used as an herbal tea.
- **Krazana** კრაზანა (*Hypericum* sp.)
- **Thavshava** თავშავა (*O. vulgare*)
- **Deka** დეკა (*R. caucasicum*)
- **Askili** ასკილი (*R. canina*)
- **Kulmukho** კულმუხო (*I. helenium*) treats pig plague.
- **Ukvdava** ორ **nego** უკვდავა ანუ ნეგო (*Helichrysum* sp.) is used as a diuretic.
- **Katabalakha** კატაბალახა (literally “cat’s herb”) (*Valeriana officinalis* L.)
- **Shkhama** შხამა (*V. lobelianum*) is used to wash cattle to get rid of ticks. It is considered better to use

roots collected in the autumn (boiled to get hot water extract). Before autumn above ground parts can also be used but are less effective.

- **Phurisula** ფურისულა (*Primula veris* subsp. *macrocalyx* (Bunge) Lüdi) flowers and leaves are used to help coughing and clean kidneys.
- **Kldisduma** კლდისდუმა (*S. maximum* subsp. *ruprechtii*) is used to get rid of boils and treat wounds.
- **Arqhi** არყი (*B. litwinowii*) bark spirit extract is used against hair loss, dandruff, and toothache.
- **Dzaxveli** ძახველი (*V. opulus*) is used to treat coughs.
- **Phitchvi** ფიჭვი (*Pinus sylvestris* var. *hamata* Steven) pollen is mixed with honey to treat lungs and bronchioles (Figure 65).

#### Other plant names:

- **Viristerfa** ვირისტერფა (*T. farfara*)
- -ცაცხვი (*T. begonifolia*)
- -მჟაუნა (*Rumex acetosa* L.)

July 13, 2013

#### Tabatzqhuri (village of Armenian settlers)

Kaloyan Manush (Figures 66 and 67), housewife, was born in 1960 and knows plants from her parents. Asya Galoyan (Kaloyan’s mother-in-law) was born in 1935.



**Figure 65.** Hitchvi ფიჭვი (*Pinus sylvestris* var. *hamata* Steven) pollen mixed with honey helps to treat lungs and bronchioles, Tabatzqhuri village, Samtskhe-Javakheti, Georgia.





Figure 66. Interview with Kaloyan Manush, Tabatzqhuri village, Samtskhe-Javakheti, Georgia.

Medicinal plants:

- **Romashka** გვირილა (*Matricaria chamomilla* L.) (Russian **ромашка**) is used for stomach and intestines.
- **Kalasjothi** is used for pancreatitis.
- **Gholo** ღოღო (*Rumex crispus* L.) (Armenian **Avelug**) is used in **phkhali**.
- **Antharan** (in Armenian) is used for liver and gall bladder.
- Green pine cones and pollen together with honey are used for kidneys, asthma, and bronchioles.
- **Diqhi** or **qekhi** for locals დიყი ანუ ქეხი (*H. wilhelmsii*) is used in pickles.

Aspet Martirosyan (husband) was born in 1959. Anait Tonoyan (wife) was born in 1960. Knarik Adamyan (Figure 67) was born in 1920. They are farmers with livestock (8 cows) as the base for their farming activity. Barley was cropped in early times (50 years ago) but not any more. Now villagers buy wheat to distill alcohol. Their favorite food is **qekhi** pickles (*H. wilhelmsii*, Figure 68)

Most important medicinal plants:

- **Meletnik** ვარსმანდუკი (*A. millefolium*) (Russian **Мелетник**)



Figure 67. Interview with Kaloyan Manush, Tabatzqhuri village, Samtskhe-Javakheti, Georgia.



**Figure 68.** Sampling **qekhi** pickles (*Heracleum wilhelmsii* Fisch. & C.A.Mey.) with Anait Tonoyan, Tabatzqhuri village, Samtskhe-Javakheti, Georgia.



- **Diqhi** or **gekhi** დიყი ან გეხი (*H. wilhelmsii*) (Armenian **ghmi**)
- **Ghandzili** ღანძილი (*A. victoralis*)

Young villagers know only plants that grow in the village. The plant knowledge is concentrated in women, and men rely on that knowledge when needed.

Borjomi is a spa city famous during Tsarist-Russian times (Pushkin was a frequent visitor) featuring hot springs and also a vibrant market of plant products. Venders cater to local Georgian customers, but many signs are also in Russian, indicating wide-spread herb tourism. We could not find any fresh plants; all venders sell single herb preparations, including anything from black henbane (*Hyoscyamus niger* L., Figure 69) to *Helleborus niger* L. roots sold for weight loss in the Borjomi market (Figures 70 and 71). The use of the normally highly toxic *Helleborus* appeared interesting.

According to Amiran Mchedlishvili and Mr. Japharashvili, *H. niger* is an infallible medicine to lose weight. It:

1. is recognized as the most effective plant by international traditional medicine.
2. cleans and renovates cells in the organism.
3. is used to clean entire organisms (from toxins, wastes, radioactive elements, heavy metals).
4. expels salts.
5. reduces sugar content in blood.
6. crushes stones.
7. helps paralysis and joint pains.
8. improves heart functions and circulation.
9. treats bronchitis, gastritis, ulcers, and polyps.
10. treats chronic inflammation of ovaries.
11. treats hemorrhoids and colitis.
12. calms the neural system and psychic disorders.
13. enhances hair growth.
14. stops bleeding from gums.
15. brings metabolism in order.
16. promotes weight loss.

*Helleborus niger* roots are prepared by putting ¼ of a very small spoonful ("mustard spoon") in previously boiled and cooled 50 ml water. At 5.00AM: the next morning stir well and take all. Wait at least 4 hours until breakfast. The best result is achieved after three treatments of one month long each with a one-month pause between them. They wish you health and long life! The treatment is forbidden for breastfeeding mothers, during pregnancy, and after gallbladder surgery and heart attacks.

More common than such herbal preparations are a wide variety of mixtures containing pine pollen and honey (Figures 72 and 73). Male *Pinus* cones were frequently found dried in the market (Figure 74). Pine resin was sold as chewing gum (Figure 75). Pine cones in honey were always available for sampling (Figure 76).



**Figure 69.** *Hyoscyamus niger* L. in Tabatzqhuri village, Samtskhe-Javakheti, Georgia.



**Figure 70.** Medicinal plant stall in Borjomi city, Samtskhe-Javakheti, Georgia.





**Figure 71.** Plant market in Borjomi city, Samtskhe-Javakheti, Georgia.



**Figure 72.** *Pinus sylvestris* var. *hamata* Steven products in the market of Borjomi city, Samtskhe-Javakheti, Georgia. Male cones in honey and pollen are used to treat cough and bronchitis.





**Figure 73.** *Pinus sylvestris* var. *hamata* Steven products in the market of Borjomi city, Samtskhe-Javakheti, Georgia. Male cones in honey and pollen are used to treat cough and bronchitis.



**Figure 74.** Male *Pinus sylvestris* var. *hamata* Steven cones drying to collect pollen, Bakuriani village, Samtskhe-Javakheti, Georgia.





**Figure 75.** *Pinus sylvestris* var. *hamata* Steven resin chewing gum in the market of Borjomi city, Samtskhe-Javakheti, Georgia.



**Figure 76.** *Pinus sylvestris* var. *hamata* Steven cones in honey in the market of Borjomi city, Samtskhe-Javakheti, Georgia.





Figure 77. Interview on the way to Stefantsminda, Georgia.

## Khevi Region

July 17, 2013

### Jutha village

Darejan Tchintcharauli (housewife) was born in 1953. She moved to Jutha from Arkhoti. Darejan keeps wonderful

traditional Khevsur wedding dresses in traditional materials made with plant dyes that are over 100 years old (Figures 79-81).

Beer: (Darejan uses the same technology as described above by Imeda Likokeli.) She keeps a conical boiler from Dagestan for brewing beer (Figures 82-84). This however has not been used for decades as local barley produc-



Figure 78. Interview with Darejan Tchintcharauli, Jutha village, Khevi, Georgia.





**Figure 79.** Traditional 19<sup>th</sup> century Khevsur wedding dress, Jutha village, Khevi, Georgia.





**Figure 80.** Traditional 19<sup>th</sup> century Khevsur wedding dress, Jutha village, Khevi, Georgia.





**Figure 81.** Traditional 19<sup>th</sup> century Khevsur wedding dress, Jutha village, Khevi, Georgia.





**Figure 82.** Copper beer vat from Daghestan, Jutha village, Khevi, Georgia.



**Figure 83.** Copper beer vat from Daghestan, Jutha village, Khevi, Georgia.





**Figure 84.** Copper beer vat from Daghestan, Jutha village, Khevi, Georgia.

tion ceased about 50 years ago. Thin *Tilia* timber coils are used to wrap **tzeko** (tobacco) for smoking

#### Plants in her home garden:

- **Ghandzili** or **shibu** ღანძილი ანუ შიბუ ანუ მთის ნიორი (*A. victoralis*) Mountain garlic
- **Pitna** პიტნა (*N. racemosa*)
- **Krazana** კრაზანა (*H. perforatum*)
- **Thavshava** თავშავა (*O. vulgare*)
- **Viristerpha** ვირისტერფა (*T. farfara*)
- **Pharsmanduki** ფარსმანდუკი (*A. millefolium*)
- *Matricaria* გვირილა (*Matricaria* sp.)
- **Tchintchari** (*U. dioica*) is used to burn skin of patients with heart problems.

### Conclusions - Threats to diversity

The process of genetic erosion of ancient crop varieties was originally of little concern for the mountain areas of Georgia, which until the 1990s acted as a repository of ancient crops. Nowadays the main reason for genetic erosion of ancient crop varieties is the demographic decline in mountain regions due to harsh economic conditions and lack of modern infrastructure (Nakhutsrishvili *et al.* 2009). The shift from ancient cultivars to modern high-yielding crops such as maize and potato, which took place in the lowland areas much earlier, began in mountain villages

after the end of Soviet occupation when local inhabitants who had been forced to the lowlands returned to their original villages. However, many villages in high altitude Georgia were abandoned under pressure during Soviet occupation, and while some families have returned at least for the summer, many villages were completely abandoned in the 1980s and remain in ruins (Figures 85 and 86). In occupied villages old household utensils such as butter barrels (Figures 87 and 88) are often to be found in storage, but not used anymore. Small bridges are still made from wood (Figure 89), but many other wooden household items such as beautiful bed-headboards (Figure 90) are simply discarded. Some implements, e.g., snowshoes (Figure 91) or brooms (Figure 92), are still maintained. Agricultural tools such as hay rakes (Figure 93) are a common sight in abandoned barns, but more sought after items such as ox-drawn threshing sledges could only be found in museums (Figures 94 and 95). While sheep were produced on a large scale during Soviet times, leading to widespread overgrazing, nowadays only a few scattered herds remain, and traditional wool items are getting more difficult to find (Figure 96), while tourist products abound along roadsides especially in the outskirts of Tbilisi and resort areas like Borjomi and Barisako (Figure 97). Sadly we could not find grain cultivation anywhere, although old landraces of wheat and barley were formerly preferred to prepare bread and beer for religious rituals. Around





**Figure 85.** Abandoned village in Khevi, Georgia.



**Figure 86.** Abandoned village in Khevi, Georgia.





**Figure 87.** Wooden butter barrel (*Fagus orientalis* Lipsky) above, Kobulo village, Khevsureti, Georgia.

**Figure 88.** Copper butter barrel below, Roshka village, Khevsureti, Georgia.







**Figure 89.** Wooden bridge, Roshka village, Khevsureti, Georgia.





**Figure 90.** Discarded wooden bed head-boards, Roshka village, Khevsureti, Georgia.





**Figure 91.** Snow-shoes (*Salix* sp.) with wire binding, Roshka village, Khevsureti, Georgia.



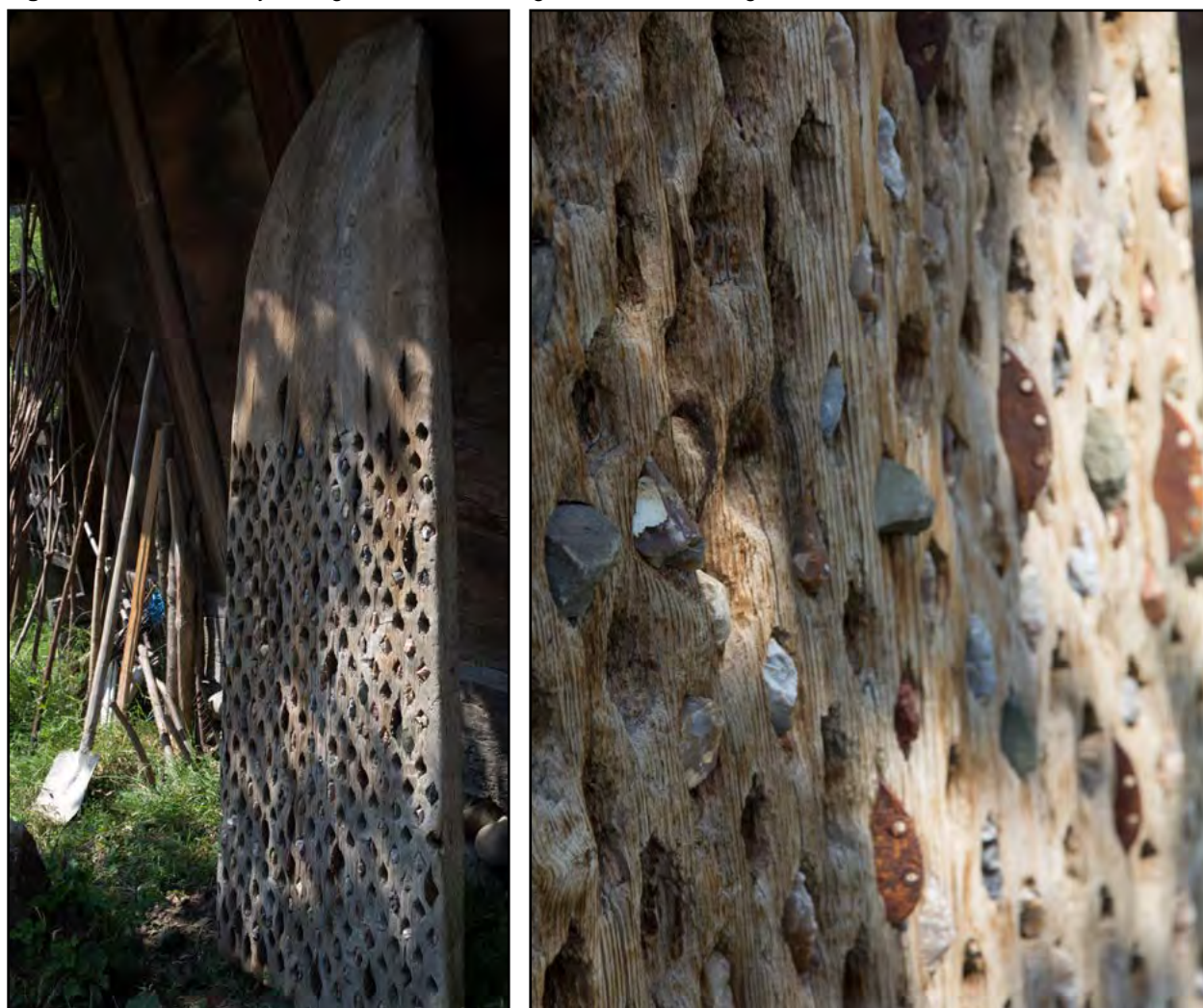


**Figure 92.** *Sorghum* brooms, Barisako village, Khevsureti, Georgia.





**Figure 93.** Discarded haymaking rake, Roshka village, Khevsureti, Georgia.



**Figures 94, 95.** Threshing sled (left) and detail (right), Ethnographic Museum in Tbilisi, Georgia.



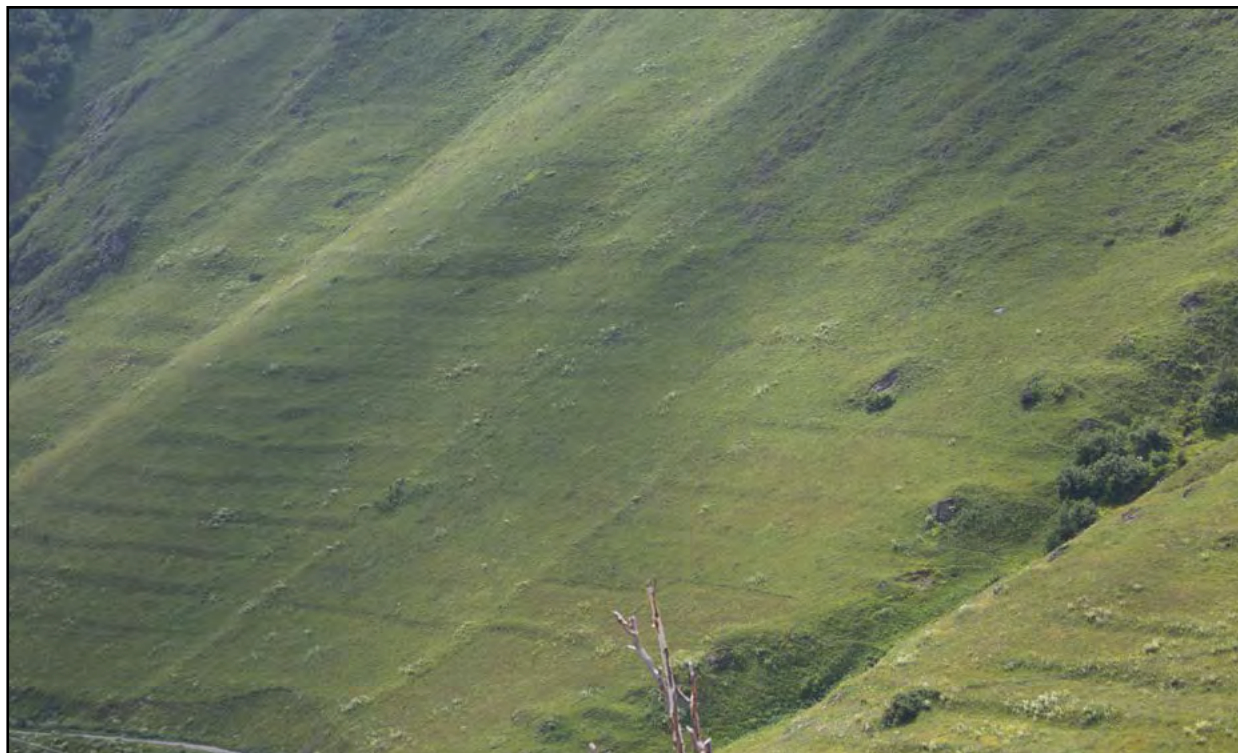


**Figure 96.** Local wool socks, Jutha village, Khevi, Georgia.



**Figure 97.** Tourist products made from walnut (*Juglans regia* L.) in Bakuriani village, Samtskhe-Javakheti, Georgia.





**Figure 98.** Abandoned terraces around Jutha village, Khevi, Georgia.

Jutha village, Khevi, as well as in Khevsureti, many abandoned terraces indicate where grain was formerly grown (Figure 98). However, fallow fields were long overgrown there as well as around Tabatzqhuri village, Samtskhe-Javakheti (Figure 99). Many old barns still contain clay-lined grain storage baskets made from *Salix* sp. (Figures

100-102), which quite often contain old grains. However, no grain has been grown in the region for decades. Giorgi Tsiklauri from Roshka indicated that the last time barley was cropped was 30 years ago and gave us the last remaining grains from that harvest (Figure 103). Similarly, Anait Tonoyan from Tabatzqhuri village said that barley



**Figure 99.** Fallow fields around Tabatzqhuri village, Samtskhe-Javakheti, Georgia.





**Figure 100.** Old grain storage basket and yoke in abandoned barn in Roshka village, Khevsureti, Georgia.





**Figure 101.** Old grain storage basket in abandoned barn in Roshka village, Khevsureti, Georgia.





**Figure 102.** Old grain storage basket, clay-lined interior, in abandoned barn in Roshka village, Khevsureti, Georgia.



**Figure 103.** Barley harvested in the 1980s from Giorgi “Sumbat” Tsiklauri, Roshka village, Khevsureti, Georgia.





**Figure 104.** Oats harvested in the 1970s, from old, abandoned storage basket, Roshka village, Khevsureti, Georgia.

was cropped “in early times” when she was a child (50 years ago), but not any more. One old storage chest in an abandoned barn was still half-full of oats (Figure 104), harvested in the 1970s, and some wheat bran was still found in an abandoned house (Figure 105). Now villagers buy wheat to distill alcohol or to bake bread (Figure 106) or buy commercial beer-making mixtures to brew their own beer.

The National Botanical Garden in Tbilisi runs a large seed bank and *in-situ* growing program for rare local species

and varieties of *Triticum* (Figures 107-111), *Panicum* (Figures 112 and 113), and *Sorghum* (Figures 114 and 115), and some material is grown at the Ethnographic Museum in Tbilisi, where *Sorghum* is grown and dried (Figure 116) and gruel with *Prunus* sauce is available to visitors (Figure 117).

Ethnobotanical knowledge in Georgia is still widespread and not sufficiently documented. A more detailed follow-up expedition to more remote regions in Georgia (Svaneti, Tusheti) is already planned.



**Figure 105.** Wheat remnants from storage box in abandoned village (c. 1980s) in Khevi, Georgia.





**Figure 106.** Mindia Tsiklauri, (Roshka village, Khevsureti, Georgia) baking bread with purchased wheat.



**Figure 107.** Local wheat (*Triticum* species) and varieties in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 108.** Local wheat (*Triticum* species) varieties in the collection of the National Botanic Garden in Tbilisi, Georgia.



**Figure 109.** Local wheat (*Triticum* species) varieties in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 110.** Local wheat (*Triticum* species) varieties in the collection of the National Botanic Garden in Tbilisi, Georgia.



**Figure 111.** Local wheat (*Triticum* species) varieties in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 112.** Local *Panicum* in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 113.** Local *Panicum* in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 114.** Local *Sorghum* in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 115.** Local *Sorghum* in the collection of the National Botanic Garden in Tbilisi, Georgia.





**Figure 116.** *Sorghum* drying in the Ethnographic Museum, Tbilisi, Georgia.





**Figure 117.** *Sorghum* gruel with *Prunus* sauce, in the Ethnographic Museum in Tbilisi, Georgia.

## Acknowledgments

The authors thank all participants for their generous hospitality and friendship. We thank the communities in Khevsureti, Kazbeghi, and Samtskhe-Javakheti for their cooperation and contributions to the success of this initial investigation on ethnobotany in Georgia. We are hopeful that this and subsequent work in the area will help the communities meet their needs and aspirations.

## Literature Cited

- Adler, D.S. & G. Bar-Oz. 2009. Seasonal patterns of prey acquisition during the Middle and Upper Paleolithic of the southern Caucasus. Pp. 127–140 in *The Evolution of Hominid Diets: Integrating approaches to the study of Palaeolithic subsistence*. Edited by J.-J. Hublin & M. Richards, Springer, Leipzig, Germany.
- Akhalkatsi, M. 2009. *Conservation and Sustainable Use of Crop Wild Relatives in Samtskhe- Javakheti. Final Report*. Elkana, Tbilisi, Georgia.
- Akhalkatsi, M., J. Ekhvaia, M. Mosulishvili, G. Nakhutsrishvili, O. Abdaladze & K. Batsatsashvili. 2010. Reasons and processes leading to the erosion of crop genetic diversity in mountainous regions of Georgia. *Mountain Research and Development* 30(3):304–310.
- Akhalkatsi, M., J. Ekhvaia & Z. Asanidze. 2012. Diversity and genetic erosion of ancient crops and wild relatives of agricultural cultivars for food: Implications for nature conservation in Georgia (Caucasus). Pp. 51-92 in *Perspectives on Nature Conservation - Patterns, pressures and prospects*. Edited by J. Tiefenbacher, InTech, Croatia.
- Badr, A., K. Müller, R. Schäfer-Pregl, H. El Rabey, S. Effgen, H.H. Ibrahim, C. Pozzi, W. Rohde & F. Salamini. 2000. On the origin and domestication history of barley (*Hordeum vulgare*). *Molecular Biology and Evolution* 17(4):499–510.
- Bedoshvili, D. 2008. *National Report on the State of Plant Genetic Resources for Food and Agriculture in Georgia*. [www.pgafa.org/gpa/geo/Georgian\\_report\\_on\\_State\\_of\\_PGR\\_Sep\\_29\\_2008.pdf](http://www.pgafa.org/gpa/geo/Georgian_report_on_State_of_PGR_Sep_29_2008.pdf)
- Dekapreleovich, L. & V. Menabde. 1929. Kizucheni polevykh kultur zapadnoi Gruzii. I. Racha. [Study of cereal cultivars in Georgia. I. Racha.] *Scientific Papers of the Applied Sections of the Tbilisi Botanical Garden* 6(2):219-252.



- Finlayson, C. 2005. Biogeography and evolution of the genus *Homo*. *Trends in Ecology and Evolution* 20(8):457–463.
- Gabunia, L. & A.A. Vekua. 1995. Plio-Pleistocene hominid from Dmanisi, East Georgia, Caucasus. *Nature* 373(6514):509–512.
- Gabunia, L., A. Vekua, C.C. Swisher, R. Ferring, A. Justus, M. Nioradze, M. Ponce de Leon, M. Tappen, M. Tvachrelidze & C. Zollikofer. 2000. Earliest Pleistocene hominid cranial remains from Dmanisi, Republic of Georgia: Taxonomy, geological setting, and age. *Science* 288(5578):85–89.
- Javakhishvili, I. 1987. *Sakartvelos Ekonomiyi Istorია*. [Economic History of Georgia.] Second edition. Volume 5. Metsniereba, Tbilisi, Georgia.
- Ketskhoveri, N. 1928. *Masalebi Kulturul Mtsenareta Zonalobis Shesastsavlad Kavkasionze*. [Materials on Zonal Distribution of Cultivated Plants in the Greater Caucasus.] Agricultural National Committee Press, Tbilisi, Georgia.
- Ketskhoveri, N. 1957. *Kulturul Mtsenareta Zonebi Sakartveloshi*. [Zones of Cultivated Plants in Georgia.] Georgian Academy of Sciences Press, Tbilisi, Georgia.
- Ketskhoveri, N., M. Ramishvili & D. Tabidze. 1960. *Sakartvelos Ampelografia*. [Amphelography of Georgia.] Georgian Academy of Sciences Press, Tbilisi, Georgia.
- McGovern, P.E. 2003. *Ancient Wine: The search for the origins of viniculture*. Princeton University Press, Princeton, New Jersey, U.S.A.
- Melikishvili, G. 1970. Editor of *Sakartvelos Istoriis Narkvevebi*. [Historical Essays of Georgia]. Tbilisi, Georgia.
- Menabde, V. 1938. *Sakartvelos Kerebi*. [Barleys of Georgia.] Georgian Academy of Sciences Press, Tbilisi, Georgia.
- Menabde, V. 1948. *Pshenitsi Gruzii*. [Wheats of Georgia.] Georgian Academy of Sciences Press, Tbilisi, Georgia.
- Nakhutsrishvili, G. 1999. The vegetation of Georgia (Caucasus). *Braun-Blanquetia* 15:1–74.
- Nakhutsrishvili, G., M. Akhalkatsi & O. Abdaladze. 2009. Main threats to the mountain biodiversity in Georgia (the Caucasus). *Mountain Forum Bulletin* 9(2):18–19.
- Pistrick, K., M. Akhalkatsi, T. Girgvliani & T. Shanshiashvili. 2009. Collecting plant genetic resources in Upper Svaneti (Georgia, Caucasus Mountains). *Journal of Agriculture and Rural Development in the Tropics and Subtropics, Supplement* 92:127–135.
- Ramishvili, R. 1988. *Dikorastushii Vinograd Zakavkazia*. [Wild Grape of the South Caucasus.] Ganatleba, Tbilisi, Georgia.
- Schatz, G., T. Shulkina, G. Nakhutsrishvili, K. Batsatsashvili, K. Tamanyan, V. Ali-zade, D. Kikodze, D. Geltman & T. Ekim. 2009. Development of plant red list assessments for the Caucasus Biodiversity Hotspot. Pp. 188–192 in *Status and Protection of Globally Threatened Species in the Caucasus*. Edited by N. Zazanashvili & D. Mallon, Contour Ltd., U.S.A.
- This, P., T. Lacombe & M.R. Thomas. 2006. Historical origins and genetic diversity of wine grapes. *Trends in Genetics* 22(9):511–519.
- Zhizhizlashvili, K. & T. Berishvili. 1980. Zemo Svanetis kulturul mtsenareta shesavlisatvis. [Study of cultivated plants in Upper Svaneti.] *Bulletin of Georgian Academy of Sciences* 100(2):417–419.