

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/332902136>

# An inventory of local varieties and landraces in the Albanian Alps

Poster · May 2019

DOI: 10.13140/RG.2.2.31309.69609

CITATIONS

0

READS

152

3 authors:



**Sokrat Jani**

Agricultural University of Tirana

29 PUBLICATIONS 14 CITATIONS

SEE PROFILE



**Liri Miho**

17 PUBLICATIONS 7 CITATIONS

SEE PROFILE



**Luan Dervishej**

Deutsche Gesellschaft für Internationale Zusammenarbeit

6 PUBLICATIONS 1 CITATION

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Baseline study on the status and use of native plant and animal landraces in the CABRA project area [View project](#)



Documentation of Plant Genetic Resources and quality of data in Albanian Genebank Database [View project](#)

# An inventory of local varieties and landraces in the Albanian Alps

SOKRAT JANI<sup>1\*</sup>, LIRI MIHO<sup>2</sup>, and LUAN DERVISHEJ<sup>3</sup>

1Institute of Plant Genetic Resources (IPGR), Agricultural University of Tirana (AUT), Albania.  
2 Department of Agro-Environment and Ecology, Faculty of Agriculture and Environment, AUT, Albania.  
3National Coordinator, Conservation of Agro Biodiversity in Rural Albania (CABRA)

\*Correspondence author. E-mail: [sjani@ubt.edu.al](mailto:sjani@ubt.edu.al)**Abstract:**

The study aimed to inventory and evaluate landraces and local varieties of cultivated plants, fruit trees and medicinal and aromatic plants in the Albanian alpine area. This study was conducted in 5 communes and 54 villages. Although a mountainous area and remote from urban areas, it is a rich area of agro-biodiversity, especially in cultivated plants. In the field were identified, collected and gathered the information on the maintainers and use of 46 landraces and local varieties, belonging to 12 species of arable and vegetable crops and 11 species of fruit trees. Thirty-four species of medicinal and aromatic plants were also identified, which, although growing in wild condition, are harvested and used by local residents. The situation of maintaining and preserving them is not good; the number of farms holding these landraces and local varieties, in relation to the total number of farms interviewed, ranges from 1-3% for vegetable crops, 3-20% for corn, 12-48% for beans, 1-5% for forage crops and 9-43% for fruit trees. This research has highlighted the fact that genetic diversity in our agricultural crops has been impoverished through the loss of many traditional varieties in the past. Both the urgent collection for *ex-situ* and *in-situ* conservation and the management of such landraces and local varieties are warranted, necessitating partnerships between concerned organizations and farmers, aligned with local and regional initiatives to conserve and provide access to plant genetic diversity.

**Key words:** local varieties, collection, documentation, evaluation, conservation**1. Introduction**

The overall and long term changes in structure and production system in agriculture are the most significant developments affecting the state of agrobiodiversity. The major part of farmers in the lowland zone, which is the main and most intensive zone of Albanian agriculture, uses modern commercial varieties and intensified production system. It means that the local varieties and landraces in this area have been replaced and actually is hardly to be found in commercial agriculture production. In the other two areas (namely the hilly and mountainous ones), in addition to modern commercial varieties, they also use local varieties and landraces and base their farming on traditional and non-intensified production methods (low input agricultural production systems). Local varieties and landraces are ideal for such production systems since they are adapted to the local environmental and climatic conditions. As results of the distance from the markets and poor road infrastructure, farmers in hilly and mountain areas have been able to preserve the local varieties and landraces based on the traditional knowledge for growing specific crops, mainly for their particular flavor and taste, characteristics related to their production such as harvest time and disease resistance, and cultural or personal reasons. Crop landraces and the indigenous knowledge about them form part of the local cultural heritage. But, the main difficulty, in order to continue the cultivation of these varieties and landraces, has been the fact that during the last years the young population of these areas has migrated to urban areas. Expanding the loss of crop genetic diversity related to the loss of local landraces and varieties is difficult to accurately estimate. Studies show that in Albania, both worldwide and in Europe, there has been a massive loss of local varieties and landraces, a significant loss of genetic diversity in the agricultural crops [Kell et al., 2009]. Studies of recent years have shown that although a large quantity has been lost, there is a significant wealth of the local varieties and landrace diversity of agricultural crops and horticulture in Albania, but it is often located in geographic elevation, remote zones and threatened with extinction. However, the current knowledge of their maintenance is limited; therefore, the project "Baseline study on the status and use of native plant and animal landraces in the CABRA project area" was conceived to initiate an inventory for the diversity of local landraces and varieties as a step to understanding what to be done to ensure this plant genetic resource for the benefit of future generations. This inventory is the result of the work on plant genetic resources, occurring in Albanian Alps area, focusing on agricultural and horticultural crops, carried out over the last three years by a collaboration of the Institute of Plant Genetic Resources and CABRA project.

**2. Material and methods**

The study was conducted in 5 communes and 54 villages situated in the Northern Albanian Alps. It is a large area of a mountainous landscape with numerous contrasts, mostly hilly and mountainous with valleys and small plains in some places, crossed by river valleys with crystal waters, gorges and mountain saddles, and rich vegetation. The area has ample quantity of rainfall (2500 -3000 mm, in Thethi and Boga respectively 2921 and 3093 mm) mostly in the cold half of the year. The temperatures range from +20° C to +26° C in July and go down to -14° C and -20° C in the freezing winters. Winter is very cold with snowfall and severe frost from November to March and to April sometime (Kabo, 1991; Marka, 2014). The method used was the gathering the dates through literature review (the identification of local crop varieties and landraces by reviewing of all available information) and the taxon information, and then are performed field surveys, through which are gathered information about the crop varieties and landraces studied, and their geographic distribution in the local territory. During the field surveys (growers, traders, retired specialist and farmers, relatives of growers, etc) are recorded the dates and information for their localization in the local territory and also about the population, site, farmer, local name of landraces, agricultural production systems, indigenous knowledge, conservation and monitoring. At each collecting site a passport data sheet was filled in, using data from a hand-held GPS system. The information was collected in the form of descriptor sheets which were created for this purpose (Lagheti G., et al, 2004).

**3. Results and discussions**

The five communes and their villages, included in this study, extending in great geographic area, are situated in difficult and remote mountainous terrain. In the area of 1360 km<sup>2</sup>, there are about 10 thousand inhabitants (8.8 inhabitants/km<sup>2</sup>) who provide their material goods from their work and production made in about 3100 ha of arable land (Table 1).

The community of the five communes involved in the study, cultivates, harvest and uses 57 plant species. In the fact, the number of species that grow in these areas is even greater, but that is the part of those species that are represented by indigenous varieties and landraces. From the data obtained and recorded by field surveys (from meetings, inspections and interviews with farmers, agricultural input traders and medicinal and aromatic plant collectors), the largest number of species belongs to the MAP (34 species or 58.9%), followed by arable and vegetable crops (12 species, or 21.4%), and then fruit trees (11 species, or 19.6%). As is shown in Fig 1, the richest areas in plant species, important for agriculture and food (growing or gathering) are Shala (43 species) and Lekbibaj (40 species). Relatively few species are recorded in Shkrel, only 24 species, of which 12 are medicinal and aromatic plant (MAPs) and only 3 species are arable and vegetable crops. One of the causes of this situation in the Shkrel area is the difficult conditions of farming, where, among other things, the water resources that can be used for plant irrigation in the area, mainly for the dry season of the year (May-September), are missing or are insufficient.

In addition to fruit trees, two are the most common plant species in the all areas; common beans (*Phaseolus vulgaris* L.), which are known as dry beans, with 110 registrations (or 49.3% of total records in arable crops), and corn (*Zea mays* L.) for grain used for consumption, for preparing of a special bakery product and for various dishes in the family, with 76 registrations (or 34.1%). In these agricultural crops we have also registered the largest number of local varieties and landraces, which maintains, preserves and cultivates the farmers community in those areas, respectively 5 and 8. While in fruit trees more are recorded for apples, pears, plum and vine, respectively 2, 2, 3, and 4. In vegetable crops more local varieties and landraces have been registered for tomato and winter squash, respectively 4 and 2 such (Table 2 and 3). In total, in the territory of the five communes we have found and registered 46 local varieties and landrace, respectively 27 for arable crops and 19 for fruit trees.

The communes, extending into the alpine mountainous area and the great distance between the villages, are distinguished for their traditional agricultural knowledge. Even the farmers of each commune have maintained for many years and decades and have grown and used the varieties of their area. In contrast to fruit trees, cultivars of which have spread throughout the communes, for arable and vegetable crops, it has rarely been the case that the same variety is grown in other areas. Consequently, in all five communes, we have recorded different number and native varieties and landraces. Thus in the commune of Kelmendi we have registered 9 local varieties and landraces, held by 36 farmers (9/36), and following: in Lebibaj 8/2, in Margegaj 12/48, in Shale 13/38 and finally in Shkrel 6/19. But, as we said above, 80% of farmers are good maintainers of local varieties and landraces of maize and beans, while for vegetable crops they are decreasing year after year.

**4. Conclusions**

\*We already know that many old varieties of arable and vegetable crops have been lost, largely due to their replacement with modern and high yield varieties, although it is not known exactly because there is no consolidated list.

\*In the hilly and mountain areas (notably in remote areas of the Albanian Alps), the main causes of the lost are demographic migration and abandonment of rural areas. In the wild flora, mainly for aromatic and medicinal plants, one of the main causes of erosion is over harvest, particularly when harvesting occurs without respecting the plant biological criteria for natural regeneration. Fires also may cause irreparable damages, if occur during certain phenological stages.

\*If the loss of a given variety does not necessarily mean loss of crop genetic diversity (due to potential synonymy, which in the remote mountainous areas is a known phenomenon), in the absence of solid evidence (i.e., the results of genetic diversity analysis to compare genetic diversity between varieties), as the other author concludes (Kell, et al, 2009), we have to assume to a certain extent that the loss of the mentioned variety will be equated with a loss of genetic diversity. This is essentially the catalyst for inventory of local varieties and landraces, because if we do not create an inventory of diversity present at the regional and national level, we will not be able to monitor their maintenance and to ensure that they will not have further loss of diversity.

\*The inventory of local varieties and landraces, carried out in the Albanian Alps area, will serve as a model for a more complete inventory of the situation at the country level.

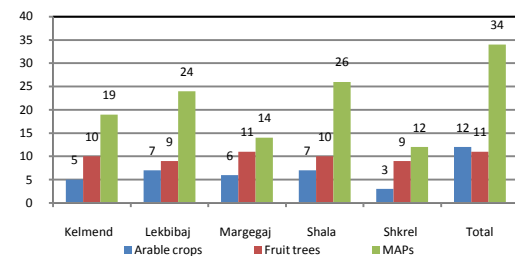
**5. References**

- CBQ Fourth National Report – Albania, December 2010.  
CBQ Strategy and Action Plan. Document of Strategic Policies for the Protection of Biodiversity in Albania, Tirana, December 2015.  
Cardona, M. Local varieties of agricultural plants and their crop wild relatives - their importance and use. Seminar: Conservation and Protection of Local Plants. Plant Health Directorate, Malta, 20<sup>th</sup> October, 2015.  
ECPRG. 2017. ECPRG Concept for on-farm conservation and management of plant genetic resources for food and agriculture. January 2017  
IPGR. Regjistri i koleksioneve ex-situ në bankën gjenetike të bimëve. Tiranë, 2017.  
Kabo M; Gjeografia Fizike e Shqipërisë (Vollimi II). Akademia e Shkencave, Qendra e Studimeve Gjeografike, Tiranë, 1991.  
Kell et al., 2009 Vegetable Landrace Inventory of England and Wales. The University of Birmingham, UK. [www.efra.org.uk/publications/plants](http://www.efra.org.uk/publications/plants)  
Lagheti G., Sciduna-Spiteri, A., Attard E., Perrino P., Cifarrelli S., Hammer K., 2004. Collecting crop genetic resources in the Mediterranean agricultural islands: the Maltese Archipelago. Plant Genetic Resources Newsletter 139:11-16.  
Marka J; Bërthe të Shqipërisë: studim historik dhe ekologjik. PhD Dissertation. Fakulteti Shkencave të Natyrës. Dept. Biologjisë Universitetit Tiranë, 2014.  
Maria Scholten, Nigel Maxwell & Brian Ford-Lloyd. UK National Inventory of Plant Genetic Resources for Food and Agriculture. 2011.  
Negri V, Pacico L, Bodesmo M, Torricelli R. 2013. The first Italian inventory of in situ maintained landraces. On CD ROM. ISBN 978-88-6074-279-7. Morlacchi Editrice, Perugia. Also available at <http://vnr.unipg.it/PGRSecure/start.html/>  
Osman, A; and Chable, V. Inventory of initiatives on seeds of landraces in Europe. Journal of Agriculture and Environment for International Development 2009, 103 (1/2): 95-130.

**Table 1. Communes, nr of villages, population and territory' areas**

Communes	Nr. villages	Population(*)	Area(**)	
			Total, km <sup>2</sup>	Arable land, ha
Kelmend	9	3056	384.5	304
Shale	11	1804	215.1	834
Shkrel	12	3520	297.2	659
Lekbibaj	12	1207	193.3	636
Margegaj	10	2346	269.4	660
Total	54	11933	1359.5	3093

Source: (\*)Census 2011; (\*\*)INSTAT, 2014

**Fig 1. Number of species found in each area****Table 2. Local varieties and landraces (arable and vegetable crops)**

Nr	Crops	Scientific name	Local name	No. of local LR and cv collected
1	Maize (Corn)	<i>Zea mays</i> L.	Misë	8
2	Beans	<i>Phaseolus vulgaris</i> L.	Fasule	5
3	Tomato	<i>Solanum lycopersicum</i> L.	Domate	4
4	Squash	<i>Cucurbita maxima</i> L.	Kungull dimri	2
5	Red cabbage	<i>Brassica oleracea</i> var. <i>rubra</i> L.	Lakër koke	1
6	Cabbage	<i>Brassica oleracea</i> var. <i>capitata</i> L.	Lakër kokë	1
7	Turnip	<i>B. rapa</i> L. subsp. <i>rapa</i> Thell	Repë	1
8	Cucumber	<i>Cucumis sativus</i> L.	Kastravec	1
9	Pepper	<i>Capiscum annum</i>	Spec	1
10	Onion	<i>Allium cepa</i> L.	Qepë	1
11	Potato	<i>Solanum tuberosum</i>	Patate	1
12	Alfalfa	<i>Medicago sativa</i> L.	Jonxhë	1

**Table 3. Local landraces with region-wide distribution (fruit tree)**

Nr	Name	Scientific name	Local name	No. of local LR collected
1	Quince	<i>Cydonia oblonga</i>	Ftoj	1
2	Persimmon	<i>Diospyros kaki</i>	Hurma	1
3	Figs	<i>Ficus carica</i>	Fik	1
4	Apple	<i>Malus pumila</i> Mill.	Molle	3
5	Mulberry	<i>Morus spp</i>	Mani	2
6	Plum	<i>Prunus domestica</i>	Kumbull	1
7	Plum (Mirabolana)	<i>Prunus cerasifera</i>	Kumbull vendi	2
8	Cherry (sweet)	<i>Prunus avium</i>	Qersh	1
9	Apricot	<i>Prunus armenica</i> .	Kajsi	1
10	Pear	<i>Pyrus sp. L.</i>	Dardha	2
11	Grapevine	<i>Vitis vinifera</i>	Hardhi	4