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SMALL-SCALE GRANTS FOR BIODIVERSITY IN ROMANIA *„FIRST COLLECTING MISSION"*

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Summary. The paper refers to the collecting of traditional (local) populations and varieties of cereals, vegetable and fruit trees species from historical Romanian regions - Dobrudja, Muntenia, Oltenia, Moldova and Transylvania, by the "Asociația Română pentru Agricultură Durabilă (A.R.A.D.)" in framework of the project *Small-Scale Grants for Biodiversity Actors in South-Eastern Europe* financed by the VEREIN ARCHE NOAH according to Grant Agreement of 21.07.2023. In this mission, ARAD identified and described, based on the inventory sheet, one or more species and varieties of 3 categories of cultivated species – field crops (cereals), vegetables and fruit trees. Thus, it was inventoried: at cereals, 5 varieties of maize (Zea mays L), at vegetables, 13 varieties, of which 8 of tomatoes (*Solanum lycopersicum*), 2 of potatoes (*Solanum tuberosum*), 2 of garlic (*Allium sativum*), annual and perennial and 1 of garden beans (*Phaseolus vulgaris*), as well as a pear (*Pyrus communis* L.) as fruit tree.

Keywords*:* mission, collecting, traditional (local) populations, old varieties, cereals, vegetable and orchard.

Introduction

Plants collecting and kept them for the purposes of consumption, cultivation, systematic research, or as a hobby is done, always, because collectors like them and they have proved to be valuable for them needs (Stoica Preda Godeanu, 2013).

Collecting mission of traditional varieties was a serious challenge in context of the depopulation of villages, Romanian economy globalization and presser of seeds companies on peasant agriculture, the lack of material and moral support for the preservation and conservation of traditional varieties. The species and varieties identified in this mission are, from our point of view, both a practical and scientific gain, but also a start in the design of innovative technological and sustainable business models regarding production of seeds from traditional populations and varieties. In this mission, A.R.A.D. was helped by the former and actualy members and supporter of ARAD, old varieties mainteiners and passionate people by cultivating of local (traditional) varieties (Table 1)

Very important, essential maybe, it was the cooperation agreement of A.R.A.D. with the Plant Genetic Resources Bank "Mihai Cristea" from Suceava, regarding the regions in Romania where old local varieties of cereals, vegetables and fruit trees are grown that are not in the Bank's database or are still in need of collection, as well as the official methods of collecting and describing old traditional varieties.

Table 1

The list of participants in ”Collecting Mission” of ARAD

Name	Position	Area of interest	E-mail address and/or phone number
Toncea Ion	President ARAD	”Cultivation of the local varieties” in organic farming	tonceaion@gmail.com (0040) 724 384 301
Gheorghe Gheorghe	Member of ARAD	”Cultivation of the tradițional varieties” in organic farming	adaflor_2001@yahoo.com (0040) 744 289 766
Dumitrache Traian	Mainteiner old varieties	”Cultivation of the tradițional varieties”	(0040) 749 065 661
Ionescu Alexandra	Member of ARAD	”Cultivation of the tradițional varieties”	alexandrastan86@yahoo.com (0040) 723 262 785
Velicu Mirela	Supporter of ARAD	”Cultivation of the tradițional varieties”	velicu.mirela@yahoo.com (0040) 725 238 556
Negoiță Gheorghe	Mainteiner old varieties	”Cultivation of the tradițional varieties” in Permaculture	(0040) 769 149 140 (0040) 745 217 794
Teodoreanu Adrian	Mainteiner old varieties	”Cultivation of the tradițional varieties”	ateoram@yahoo.com (+44) 7404 376 929
Buda Ioan	Mainteiner old varieties	”Cultivation of the tradițional varieties”	(0040) 745 107 261
Banc Niculae	Mainteiner old varieties	”Cultivation of the local varieties” in organic farming	(0040) 744 934 683

Materials and methods

The methodology was adapted to ARAD characteristic as nonprofit organization and its statutory activity of preserving and rehabilitating the natural and cultural values of the Romanian village, as well as of the national context, on the one hand, of disappearance of many traditional plant populations and varieties, and on the other hand, of increase in the number of consumers of traditional dishes.

Therefore, this methodology consisted in:

- drafting and signing the collaboration contract with the Suceava Gene Bank, which helped us with information and practical recommendations regarding: areas with potential for growing populations and traditional varieties, the collection method and the seed requirement for registering populations in the gene bank ;
- adapting the inventory form of the Bank of Gene Suceava to the practical particularities of the inventory activity by developing the inventory sheets;
- identifing, with the help of current and former ARAD members and supporters, the areas and localities where traditional populations and varieties are cultivated, as well as the people who cultivate them;
- establishing and training the work team of inventory the populations and traditional varieties;
- inventory the populations and traditional varieties with the help of ARAD experts and even the maintainers of such traditional varieties;
- selecting of the traditional (local) populations and varieties by the ARAD experts;
- publishing the traditional local varieties collected within the project, in the website of A.R.A.D.
- delivering of the reports (narrative and financial), accompanied by photos and related information, to the Verein ARCHE NOAH.

Results and discussion

The traditional (local) populations and varieties identified by ARAD during *”Small- Scale Grants for Biodiversity Actors in South–Eastern Europe ”Collecting Mission”* project 2023 *(Table 2)* belong to 3 categories of the cultivated species – field crops (cereals), vegetables and fruit trees.

Each of cultivated plant categories is represented by one or more species, such as: maize *(Zea mays L)* in case of field crops (cereals) and pear tree *(Pyrus communis L)* in case of fruit trees, respectively by the tomatoes *(Solanum lycopersicum L)*, garden beans *(Phaseolus vulgaris L)*, garlic *(Allium sativum L)* and potatoes *(Solanum tuberosum L.)* in the vegetables case.

Another distinct characteristic of the identified crops populations and varieties is biodiversity, including in case of pear tree because we know other two very old pear trees in the ”Oltenia under the mountain” and in the Cluj/Transilvania area, but the owners of these still thinking to cooperate with ARAD.

Table 2

The Open List of traditional (local) populations and varieties identified by ARAD

Field crops (Cereals)			
Plant Species *(popular and scientific name)*	Variety *(local name)*	Maintainer	Contacts *(e-mail address and/or phone number)*
Maize *(Zea mays)*	Porumb Moldovenesc	Negoiță Gheorghe	(0040) 769 149 140 (0040) 745 217 794
	Moldovenesc sticlos	Teodoreanu Adrian	ateoram@yahoo.com (+44) 7404 376 929
	Ciocantin de la munte		
	De Maramureș	Buda Ioan	(0040) 745 107 261
	Mălai sticlos	Banc Niculaie	(0040) 744 934 683
Vegetables			
Tomatoes *(Solanum lycopersicum)*	”De la Bunica”	Gheoghe Gheorghe	adaflor_2001@yahoo.com (0040) 744 289 766
	Platagele ”de Greci”	Dumitrache Traian	(0040) 749 065 661
	”De la Toncea”	Frățilă Marian	(0040) 242 642 212
	Uriaș de Neamț	Negoiță Gheorghe	(0040) 769 149 140 (0040) 745 217 794
	”Roșii Freze”	Văcălie Nicolae și Văcălie Maria	velicu.mirela@yahoo.com (0040) 725 238 556
	”De glastră”		
	”Galbene Mari”		
	”Multe pe cracă”		
Garden beans *(Phaseolus vulgaris)*	”De Bistrița”	Sălăgean Ilie	(0040) 756 784 945
Garlic *(Allium sativum)*	”De Fălcoi”	Dumitrache Traian	(0040) 749 065 661
	” Usturoi Peren”	Negoiță Gheorghe	(0040) 769 149 140 (0040) 745 217 794
Potatoes *(Solanum tuberosum)*	Cartofi albi și roșii		
Fruit trees			
Pear tree *(Pyrus communis)*	Prăsad	Negoiță Gheorghe	(0040) 769 149 140 (0040) 745 217 794

2.1 Description of the **Maize** *(Zea mais) traditional populations and varieties*

The traditional maize populations and varieties were identifying in Moldovian and Transylvanian counties: Vaslui, Bacău and Neamț, respectively Cluj and Maramureș, at altitudes of 224 – 246 m, 334 – 355 m and 625 m. Also, each variety is known according local name: ”Moldovenesc” or ”Moldovnesc sticlos” in Moldova area, ”Mălai sticlos” or ”De Maramureș” in Transylvania area. Phenotypically, these varieties belong to the Indurata variety, which has the grains round at the top, smooth, glossy, hard and glassy. The Ciocantin corn found by Teodoreanu Adrian in a mountain village in Brusturoasa commune, has a round, small and glassy grains, similar to that of popcorn, which is call cincantin.

Also, most of the corn populations and varieties have cobs large, with a number of 12 - 14 rows of grains, and the grains are large, dark yellow in color and have a very variable content of moisture (15,8 – 21,8%), protein (7,96 – 11,3%), fat (2,61 – 4,43%), starch (59,08 – 62,67%) and ash (3,88 – 10,35%). This means that our maize traditional populations and varieties are a rich genetic germplasm source for their breeding, including for high yield and the proteins, fats, fibers, starch etc. content. It remains only to establish the innovative method of cultivation and, if necessary, the breeding methods of traditional populations and varieties with the maintainers participation.



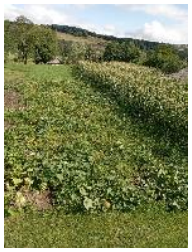
Porumb Moldovenesc



Ciocantin de la munte



Moldovenesc sticlos





Porumb ”De Maramureș”



”Mălai sticlos”

2.2 Description of the **Tomatoes** *(Solanum lycopersicum) traditional populations and varieties*

”Small – Grant for Biodiversity Actors” (SGBA) collection of tomatoes (Solanum lycopersicum) of ARAD is represented by 8 variety - ”De la Bunica”, ”Platagele de Greci”, ”De la Toncea”, ”Mare de Neamț”, ”Freze”, ”De Glastră”, ”Galbene Mari” and ”Multe pe cracă”. The maintainers cultivate these populations and varieties because they have indeterminate growth, fruits large or many in bunches, tasty, pulpy, pleasant color (red, pink, yellow) and fewer seeds, and are relatively resistant to pathogens and pests and are sought by buyers.





”De la Bunica”

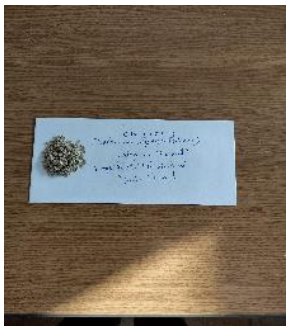




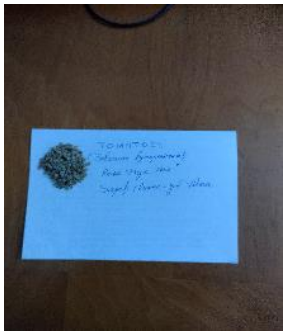
”De la Toncea”



Rosii ”De Greci”



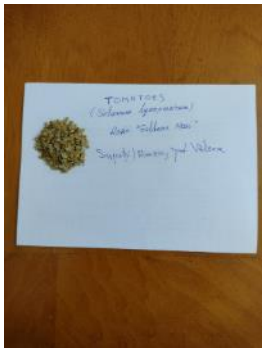
Roșii ”Uriaș de Neamț”



Roșii ”Freze Mari”



Roșii ”De Glastră”



Roșii ”Galbene Mari”



Roșii ”Multe pe cracă”

2.3 Description of the **Garden beans** *(Phaseolus vulgaris) traditional populations and varieties*

The green bean traditional variety is calling "De Bistrița" and it was identify in Fundulea city in garden of a maintainer originally from Transylvania. This variety has determinate growth, large and variegated pods that can be use fresh and frozen in various food preparations: soups and more than 30 other dishes. Its seeds are large, variegated and very vigorous whether grown in spring or as a second crop.





2. 4 Description of the **Garlic** *(Allium sativum) traditional populations and varieties*

The garlic varieties identified are two: ”De Fălcoi”, an annual spring variety cultivated in Fălcoiu commune from Olt county and ”Usturoi peren”, cultivated in ”Negoiță” permaculture farm of the Negrițești village of Podoleni commune, Neamț county. The variety "De Falcoi" has large and white bulbs and bulbils, and the bulbils have a strongly garlicky taste.

”Usturoi peren” variety is a perennial garlic variety with a good productivity, the 30-40 g head is formed of 4 white bulbs with lightly garlicky taste. If these are left in the ground in the fall, it sprouts again and in the spring produce seed stalks with a height of 1-1.2 m. In the first year, it produces only green garlic, pupae with bulbils are formed in the second year. It multiplies from year to year, facilitating multiplication, both by the bulbils on the head and, especially, by the bulbils of the seed stalk which are light and can be scattered by the wind.





Usturoi ”De Fălcoi”



”Usturoi Peren”

2.5 Description of the **Potatoes** *(Solanum tuberosum) traditional populations and varieties*

The ancestral varieties of potatoes belong to the Negoiță permaculture farm and are white and red.





White and red potatoes

These potatoes are small (60 – 75 g/tubercle in driest year 2023), but they are highly valued for taste and turgidity by consumers.

2.6 Description of the **Pear tree** *(Pyrus communis) traditional variety*

The pear tree of Negoiță household is inherited of parents and is recognized for its yield stability, tasty and aromatic fruits and resistance to the diseases and pests.



Păr de Negrițești
(08.12.2023)

3. **Selection of the traditional (local) populations and varieties;**
This activity was carried out in 3 stages:

1. Selection by owners of the population and/or variety, by choosing fruits specific to the cultivated variety, phenotypically uniform and healthy.
2. Selection by the ARAD experts, who eliminated atypical reproductive materials, uneven in shape, size, colour, vigor etc.
3. Selection by the experts of the Suceava Gene Bank and the interested field crops and vegetable research units, according to their own selection standards and rules.

2.7 Delivery of the Inventory sheets, as well collected traditional populations and varieties, accompanied by photos and related information, to the Suceava Gene Bank, in order to store/preserve and complete the Database with scientific information, in accordance with FAO standards regarding Gene Banks.
Also, part of the collected biological material will be delivery to the research units interested, such the vegetable research station Buzău and INCDA (NARDI) Fundulea.

2.8. Publishing in the website of A.R.A.D. of traditional local varieties collected within the project.
The results of the project ”Small-Scale Grant for Biodiversity Actors in South-Eastern Europe” are published on site www.agriculturadurabila.ro of ARAD, in Romanian and English, in chapter Achievements, and ”The Open List of populations and local (traditional) varieties identified by ARAD” in chapter ”Home”.

Conclusions

1. Collecting Mission of traditional varieties was a serious challenge in context of the depopulation of villages, Romanian economy globalization and presser of seeds companies on peasant agriculture, the lack of material and moral support for the preservation and conservation of traditional varieties.
2. The key words of the ”Collecting Mission” of ARAD are: Diversity/Biodiversity as landforms *(plains, hills and mountains)*, agriculture crops *(field crops, vegetable and fruit trees)* and traditional populations and varieties.
3 The species and varieties identified in this mission are, from our point of view, both a practical and scientific gain, but also a start in the design of innovative technological and business models regarding the production of seed from traditional populations and varieties

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