



Food and Agriculture
Organization of the
United Nations



The International Treaty

ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE

Second Reporting Cycle
Report on the implementation of the International
Treaty on Plant Genetic Resources for Food and
Agriculture (ITPGRFA)

CROATIA

(30 April 2021)

STANDARD REPORTING FORMAT
COUNTRY REPORT ON COMPLIANCE – ITPGRFA

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Article 4: General Obligations

1. Are there any laws, regulations procedures or policies in place in your country that implement the Treaty?

Yes

If your answer is 'yes', please provide details of such laws, regulations, procedures or policies:

The Law on Ratification of the International Treaty On Plant Genetic Resources for Food and Agriculture, Official Gazette of HR, International Agreements, No. 01/2009.

2. Are there any other laws, regulations, procedures or policies in place in your country that apply to plant genetic resources?

Yes

If your answer is 'yes', please provide details of such laws, regulations, procedures or policies:

Act on Seeds, Planting Material and Registration of Varieties of Agricultural Plants (Official Gazette No.140/05, 35/08, 25/09, 124/10, 55/11, 14/14, 115/18, 32/20);

Nature Protection Act (Official Gazette, No. 80/13, 15/18);

Strategy and Action Plan for Nature Protection of the Republic of Croatia for the period 2017 - 2025 (Official Gazette, No. 72/17),

Regulation on the Conservation and Sustainable Use of Plant Genetic Resources (Official Gazette 89/09 and 4/14);

Regulation on the Registration of Varieties on the Variety List (Official Gazette, Nos. 45/08, 84/08, 77/13, 136/15, 57/17, 70/18, 75/19);

Regulation of the marketing of seeds of conservation varieties (Official Gazette 43/13 and 40/14);

Regulation on the conditions for the use of harvested material of a protected variety on one's own farm and the criteria for determining small agricultural producers (Official Gazette 145/11);

National Program for conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture in the Republic of Croatia for the period 2021-2027.

3. Is there any law, regulation, procedure or policy in place in your country that needs to be adjusted

Yes

If your answer is 'yes', please provide details of such adjustments and any plans to make those adjustments:

The new Act on Seeds, Planting Material and Registration of Varieties of Agricultural Plants is at the moment in the procedure in the parliament.

Article 5: Conservation, Exploration, Collection, Characterisation, Evaluation and Documentation of Plant Genetic Resources for Food and Agriculture

4. Has an integrated approach to the exploration, conservation and sustainable use of plant genetic resources for food and agriculture (PGRFA) been promoted in your country?

Yes

5. Have PGRFA been surveyed and inventoried in your country?

Yes

If your answer is 'yes', please provide details of your findings, specifying species, sub-species and/or varieties, including those that are of potential use:

Although some institutions in the Republic of Croatia have long time dealt in different ways with the preservation of plant genetic resources for food and agriculture (maintenance of ex situ breeding collections for breeding, research, etc.), until the mid-2000s there was no systematic coordination of these activities at the national level.

During 2004, Croatia joined the regional program “South East European Development Network on Plant Genetic Resources” (SEEDNet), through which the connection of all institutions interested in the conservation of plant genetic resources began. Since 2007, in addition to funding from the SEEDNet program, funds from the State Budget of the Republic of Croatia have been provided for the implementation of these activities. In 2006, the first Commission for Plant Genetic Resources was established, which was in charge of coordinating the activities of conservation of plant genetic resources, with the support of the Institute of Seed and Seedlings Osijek (now part of the Croatian Agency for Agriculture and Food - Center for Seed and Seedlings).

In the first years of the implementation of coordinated activities, the emphasis was on staff training, procurement of necessary equipment, establishment of Working Groups for individual groups of plant species, setting priorities for work, forming new or identifying existing collections of plant genetic resources and the like. The Croatian Plant Genetic Resources Database (CPGRD) was built, in which the preserved plant genetic sources were documented and it is updated continuously.

Number of accessions in the CPGRD (January 2021):

Cereals & Maize: 521

Industrial Crops: 95

Vegetables: 310

Fodder Crops: 200

Fruit Crops: 431

Vitis: 147

Medicinal & Aromatic Plants: 2547

Total: 4251

Institutions:

Agricultural Institute Osijek: HRV021

Bc Institute for Breeding and Production of Field Crops, Zagreb: HRV015

Center for Seed and Seedlings (parent organization Croatian Agency for Agriculture and Food): HRV053

Center of Pomology and Vegetable Crops (parent organization Croatian Agency for Agriculture and Food): HRV054

College of Agriculture at Križevci: HRV044

Faculty of Agriculture, University of Zagreb: HRV041

Faculty of Agrobiotechnical Sciences Osijek, University J.J. Strossmayer in Osijek: HRV045

Institute for Adriatic Crops and Karst Reclamation, Split: HRV048

Institute of Agriculture and Tourism, Poreč: HRV050

Institute of Mediterranean Plants, University of Dubrovnik: HRV049

Accessions Cereals & Maize:

<i>Species</i>	Number of accessions					TOTAL
	HRV015	HRV021	HRV041	HRV045	HRV053	
<i>Avena sativa</i> L.	0	0	0	0	11	11
<i>Hordeum vulgare</i> L.	0	30	0	0	67	97
<i>Fagopyrum esculentumu</i> Moench	0	0	1	0	0	1
<i>Panicum miliaceum</i> L.	0	0	0	0	2	2
<i>Secale cereale</i> L.	0	0	0	0	1	1
<i>x Triticosecale</i>	0	0	0	0	5	5
<i>Triticum aestivum</i> L.	11	35	0	17	83	146
<i>Triticum durum</i> Desf.	0	0	0	1	5	6
<i>Zea mays</i> L.	0	24	228	0	0	252
Total	11	89	229	18	173	521

<i>Species</i>	Number of safety duplicated accessions					TOTAL
	HRV015	HRV021	HRV041	HRV045	HRV053	
<i>Avena sativa</i> L.	0	0	0	0	11	11
<i>Hordeum vulgare</i> L.	0	0	0	0	0	0
<i>Fagopyrum esculentum</i> Moench	0	0	0	0	0	0
<i>Panicum miliaceum</i> L.	0	0	0	0	0	0
<i>Secale cereale</i> L.	0	0	0	0	0	0
<i>x Triticosecale</i>	0	0	0	0	0	0
<i>Triticum aestivum</i> L.	11	0	0	0	0	11
<i>Triticum durum</i> Desf.	0	0	0	0	0	0
<i>Zea mays</i> L.	0	0	221	0	0	221
Total	11	0	221	0	11	243

Accessions Industrial Crops:

<i>Species</i>	Number of accessions				Number of safety duplicated accessions		
	HRV04	HRV04	HRV05	UKUPN	HRV041	HRV053	TOTAL
<i>Beta vulgaris</i> L.	1	5	3	0	0	0	0
<i>Brassica napus</i> L. subsp. <i>napus</i>	0	0	15	15	0	15	15
<i>Cannabis sativa</i> L.	0	0	0	0	0	0	0
<i>Cichorium intybus</i> L.	0	0	1	1	0	1	1
<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>	1	8	0	9	0	8	8
<i>Glycine max</i> Merril	0	0	28	28	0	28	28
<i>Helianthus annuus</i> L.	0	0	0	0	0	0	0
<i>Linum usitatissimum</i> L.	5	0	2	7	0	7	7
<i>Nicotiana tabacum</i> L.	0	0	0	0	0	0	0
<i>Papaver somniferum</i> L.	10	17	0	27	0	21	21
<i>Solanum tuberosum</i> L.	8	0	0	8	8	0	8
Total	24	25	46	95	8	80	88

Accessions of Vegetables:

<i>Species</i>	Number of accessions				
	HRV044	HRV053	HRV048	HRV050	HRV045
<i>Allium cepa</i> L.		2	4	6	
<i>Allium</i> × <i>cornutum</i>				6	
Clementi ex Vis.				6	
<i>Allium sativum</i> L.	4		20	24	
<i>Brassica oleracea</i> L.	7	1	5	3	
<i>Brassica rapa</i> L.	1				
<i>Capsicum annuum</i> L.	56				1
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	1				
<i>Cucurbita pepo</i> L.	1				
<i>Lactuca sativa</i> L.	51				
<i>Pastinaca sativa</i> L.	1				
<i>Petroselinum crispum</i> (Mill.) Fuss	1				
<i>Phaseolus coccineus</i> L.	3				
<i>Phaseolus vulgaris</i> L.	42				1
<i>Pisum sativum</i> L.	15			1	
<i>Rheum rhabarbarum</i> auct. E. Asian	1				
<i>Solanum lycopersicum</i> L.	36				
<i>Valerianella locusta</i> L.	8				
<i>Vicia faba</i> L.	8				
Total	236	3	29	40	2

Accessions of Fodder Crops:

<i>Species</i>	HRV021	Number of accessions		Total
		HRV041	HRV053	
<i>Arrhenatherum elatius</i> (L.) P. Beauv. ex J. Presl & C. Presl		11		11
<i>Beta vulgaris</i> L.			3	3
<i>Brassica napus</i> L. subsp. <i>napus</i>			1	1
<i>Brassica napus</i> L. subsp. <i>rapifera</i> Metzg.			2	2
<i>Brassica oleracea</i> L.			1	1
<i>Cicer arietinum</i> L.	4			4
<i>Dactylis glomerata</i> L.		26		26
<i>Daucus carota</i> L.			1	1
<i>Festuca arundinacea</i> Schreb.		10	1	11
<i>Festuca pratensis</i> Huds.		2		2
<i>Festuca rubra</i> L.		1		1
<i>Lathyrus sativus</i> L.	4			4
<i>Lolium multiflorum</i> Lam.		4		4
<i>Lolium perenne</i> L.		1		1
<i>Lotus corniculatus</i> L.		3	1	4
<i>Lupinus albus</i> L.			2	2
<i>Medicago falcata</i> L.		3		3
<i>Medicago x varia</i> Martyn		1		1
<i>Medicago sativa</i> L.		10	7	17
<i>Phalaris canariensis</i> L.		1		1
<i>Phaseolus vulgaris</i> L.	2			2
<i>Phleum pratense</i> L.		2		2
<i>Pisum sativum</i> L.	4		10	14
<i>Raphanus sativus</i> L.			1	1
<i>Trifolium pratense</i> L.		59	3	62
<i>Trifolium repens</i> L.		3	1	4
<i>Trisetum flavescens</i> (L.) P. Beauv.		10		10
<i>Vicia faba</i> L.	2			2
<i>Vigna radiata</i> (L.) R. Wilczek	1			1
<i>Vigna unguiculata</i> (L.) Walp.	2			2
Total	19	147	34	200

Accessions of Fruit Crops:

Continental Fruit

Species	Number of accessions				Number of safety duplicated accessions			
	HRV041	HRV045	HRV054	Total	HRV041	HRV045	HRV054	Total
<i>Corylus</i> spp.	0	0	9	9	0	0	0	0
<i>Juglans regia</i> L.	0	0	5	5	0	0	0	0
<i>Malus domestica</i> Borkh.	39	0	130	169	22	88	0	110
<i>Prunus armeniaca</i> L.	0	0	3	3	0	3	0	3
<i>Prunus avium</i> (L.) L.	0	0	12	12	0	12	0	12
<i>Prunus cerasus</i> L.	0	0	4	4	0	1	0	1
<i>Prunus domestica</i> L.	0	0	32	32	0	20	0	20
<i>Prunus persica</i> (L.) Batsch	0	0	2	2	0	1	0	1
<i>Pyrus communis</i> L.	0	0	53	53	0	50	0	50
<i>Ribes nigrum</i> L.	0	0	1	1	0	0	0	0
<i>Ribes uva-crispa</i> L.	0	0	2	2	0	0	0	0
Total	39	0	253	292	22	175	0	197

Mediterranean fruit

Species	Number of accessions					TOTAL
	HRV041	HRV048	HRV049	HRV050	HRV054	
<i>Ceratoni siliqua</i> L.	0	1	0	0	0	1
<i>Ficus carica</i> L.	0	16	0	6	0	22
<i>Olea europaea</i> L.	30	30	4	20	4	88
<i>Prunus avium</i> L.	0	3	0	0	0	3
<i>Prunus cerasus</i> L.	0	13	0	0	0	13
<i>Prunus dulcis</i> Mill.	0	3	0	0	0	3
<i>Punica granatum</i> L.	0	9	0	0	0	9
Total	30	75	4	26	4	139

Species	Number of safety duplicated accessions					TOTAL
	HRV041	HRV048	HRV049	HRV050	HRV054	
<i>Ceratoni siliqua</i> L.	0	0	0	0	0	0
<i>Ficus carica</i> L.	0	0	12	0	0	12
<i>Olea europaea</i> L.	0	0	0	0	0	0
<i>Prunus avium</i> L.	0	0	0	0	0	0
<i>Prunus cerasus</i> L.	0	0	12	0	0	12
<i>Prunus dulcis</i> Mill.	0	0	0	0	0	0
<i>Punica granatum</i> L.	0	0	9	0	0	9
Total	0	0	33	0	0	33

Accessions of Vitis

Organization	Number of accessions	Number of safety duplicated accessions
HRV041	118	72
HRV050	15	15
HRV048	14	14
Total	147	101

Accessions of Medicinal & Aromatic Plants

<i>Species</i>	Number of accessions HRV 041
<i>Tanacetum cinerariifolium</i> (Trevir.) Sch. Bip.	143
<i>Hypericum perforatum</i> L.	123
<i>Ocimum basilicum</i> L.	119
<i>Salvia officinalis</i> L.	119
<i>Asparagus acutifolius</i> L.	69
<i>Helichrysum italicum</i> (Roth) G. Don	63
<i>Origanum vulgare</i> L.	53
<i>Mentha</i> ssp.	40
<i>Althaea officinalis</i> L.	36
<i>Cichorium intybus</i> L.	35
<i>Salvia sclarea</i> L.	34
<i>Achillea millefolium</i> L.	33
<i>Angelica archangelica</i> L.	31
<i>Foeniculum vulgare</i> Mill.	31
<i>Centaurium erythraea</i> Rafn	30
Ostalih 220 vrsta	1588
Total	2547

6. Has any threat to PGRFA in your country been identified?

Yes

If your answer is 'yes', please indicate:

The species, subspecies and/or varieties subject to such threats;

The sources (causes) of these threats;

Any steps taken to minimise or eliminate these threats;

Any difficulties encountered in implementing such steps:

Within National program for conservation and sustainable use of plant genetic resources for food and agriculture in the Republic of Croatia we follow threats to PGRFA. For accessions of CPGRD there is a number of safety duplications provided. Also in National program there is a plan to prepare and send the most important accessions to the Swabard. All accessions in CPGRD are related to original and traditional agricultural plants threatening to disappear.

Industrial crops:

One of the main goals of conserving plant genetic resources of industrial crops is the availability of genetic diversity for their current and future use. The biggest threats to food production are climate change, environmental disasters, the disappearance of small food producers and various pests. Collecting, conserving and using different populations and / or old varieties of plant species of industrial crops is one of the most important ways to improve biodiversity that will ultimately affect the production of healthy food. Industrial plants are engaged in collecting seeds and maintaining an active collection of industrial plants (sugar beet, oilseed rape, hemp, oil pumpkin, soybean, sunflower, flax, poppy, potato and tobacco) and a collection of varieties deleted from the variety list of the Republic of Croatia to conserve plant genetic resources and biodiversity. In the previous programming period (2017-2020), seeds of domestic (local) populations of oil pumpkin, flax, poppy and potatoes were collected. For other types of industrial plants there is little possibility of finding because their cultivation is carried out using certified seeds of modern varieties and hybrids mainly

from "imports" (except soybeans). There are at the moment 10 species that are defined as priority. The future activities are depending on funds.

Fodder crops:

In the period from 2021 to 2027, special attention will be dedicated to the economic evaluation of the most significant fodder plant receipts through their assessment in different environmental conditions. The plan is to establish a system for assessing the economic potential of fodder plant receipts with regard to different environmental and breeding conditions, and in accordance with climate change. This system will make an important contribution to improving sustainable production in rural areas. It is planned to establish a network of experimental facilities for targeted testing of the impact of environmental stress (biotic and abiotic) on the most important receipts of the genera *Medicago*, *Trifolium*, *Lotus*, *Vicia*, *Pisum*, etc., and the most significant receipts of grasses from the family *Poaceae*, collected within RS Forage. Multilocation experiments would assess the risks of survival of wild relatives and local populations that are the main source of allelic wealth and would assess the risks of endangerment of individual species. By inducing biotic and abiotic stress under controlled conditions and measuring antioxidant stress through bioactive components, valuable accessions would be selected that are carriers of desirable genes needed to further maintain agrobiocenoses of extensive crops and natural habitats used for production.

Given the decades-long trend of increasing carbon dioxide concentration in the atmosphere, it is planned to begin the development of procedures and testing of wild relatives of domesticated forage taxa in a simulated environment of increased carbon dioxide concentration in order to isolate those taxa, varieties or populations that could enable more efficient production of fodder crops. There are at the moment 21 species that are defined as priority. The all future activities are depending on funds.

Medicinal & Aromatic Plants:

On the basis of analysis the main threats generally are a lot of pressure on natural resources, migration processes-trend of emigration of young people and educated people from rural areas, danger of disturbance biodiversity. Croatia has great wealth and diversity of medicinal plant species. The quality of the plants is above average European values. There are 20 species that are defined as priority. Collection expeditions will continue to be organized in order to supplement the collection with populations of medicinal and aromatic plants, especially in regions where there has been no systematic collection so far, as well as in those that have proved interesting based on previous analyzes. In coming period the DNA bank of medicinal and aromatic plant species will be established in which isolated DNA of individuals that have so far been used in genetic research of the receipts of the collection of medicinal and aromatic plants will be stored. The all future activities are depending on funds.

Vegetables:

Climate change, especially water deficit and high temperatures, affect changes in the habitats of natural species and potentially threaten their survival and have a negative impact on biodiversity. Reducing biodiversity also reduces the level of genetic diversity, especially in isolated populations such as those living on our Adriatic islands. Therefore, it is important to preserve the genetic material of particularly isolated populations by collecting and storing semen where permitted, which can then also be used for reintroduction into the environment and as a source of genetic material for further breeding programs. Except 32 species defined as priority, the important is inventory of wild relatives and wild vegetable species of importance for certain areas of the Republic of Croatia with emphasis on species: *Brassica incana*, *Portulaca oleracea* L., *Diplotaxis* spp., *Allium commutatum* L., *Allium ursinum* L., *Urtica dioica* L., *Chenopodium album* L., *Amaranthus*, *Crithmum maritimum* L., etc. and also assessment of endangerment of selected wild relatives and wild vegetable species and action plan for in-situ protection. The all future activities are depending on funds.

Vitis:

The grapevine or Eurasian vine (*Vitis vinifera* L.) includes two subspecies: wild (*Vitis vinifera* L. subsp. *Sylvestris* Hegi Gmelin) and cultivated vine (*Vitis vinifera* L. subsp. *Vinifera*). Both subspecies are diploid, sexually compatible and prefer foreign insemination. The wild vine is dioecious and is considered to be the ancestor of cultivated vines, and is of exceptional importance for the conservation of grapevine biodiversity. Although it has no economic importance, there is a high possibility that it still contains adaptability factors and other useful genes that could be exploited in modern breeding.

Necessity of preserving genetic resources of *V. vinifera* subsp. *sylvestris* is recognized as a high priority in many European countries, including the Republic of Croatia. Through several national and regional projects

and the international ECPGR project InWiGrape, significant efforts have been made to find and preserve natural vinjaga populations in the Republic of Croatia. Several localities with natural populations have been found and research is being carried out with the aim of determining their genetic and morphological characteristics in detail.

Conservation measures for vinjaga include its conservation in natural habitats (in situ), as well as storage in gene bank collections (ex situ). Conservation in natural habitats depends on a long-term policy of conservation of overall biodiversity and ecosystems and requires the commitment of the entire system that cares about nature and the ecosystem. In contrast, conservation in the gene bank collection can rely to a large extent on the standard knowledge and procedure for the conservation of cultivated vine genotypes that exists within existing ex situ collections under the National Program.

Previous research has shown that wild vine contains many useful properties. Some populations showed tolerance to soil salinity and tolerance to extremely dry conditions, and some showed tolerance to elevated lime content in the soil. Also, vinjaga contains some genes resistant to fungal diseases (powdery mildew), and an important aspect of grapevine breeding includes berry skin color and anthocyanins (color substances). A recent study of wild grape population has shown that some wild grape receipts do not contain acylated anthocyanins, which is rare in cultivated varieties, although it is not completely absent. All this can be very useful for grapevine breeding. The all future activities are depending on funds.

Fruits:

Unlike cultivated fruit species, for which the most important genotypes are already stored in the collections, wild and underused fruit species have not been yet systematically inventoried or collected for inclusion in ex situ collections. Due to limited human and organizational capacities, so far the emphasis in the work has been on the conservation of endangered cultivated species. In the coming period, it is planned to intensify activities on the conservation of wild and underused fruit species from the list of priority species and wild relatives of fruit species, all with the aim of better knowledge and coverage of the greatest possible diversity and possibilities of their sustainable use in Croatia.

Inventory and collection of wild fruit species and wild relatives of fruit species will be carried out throughout the Republic of Croatia. They will be multiplied and included in ex situ collections. The all future activities are depending on funds.

Cereals & Maize

The main identified threat is that unlike cultivated cereal species, which are represented in large numbers in the National Collection, their wild relatives have not yet been systematically inventoried or collected for inclusion in the ex situ collection and there is a great possibility of their disappearance. Wild relatives of cereals are a source of great variability and are often carriers of important genes responsible for resistance to biotic and abiotic stresses as well as genes for improved grain nutritional value. In order to determine the prevalence of receipts of wild relatives of cereals in the Republic of Croatia and to take measures for their in situ conservation, the following will be performed:

inventory of wild relatives of cereals in the territory of the Republic of Croatia - number, distribution, and areas of greatest representation;

inclusion of receipts of wild relatives of cereals collected in the field (in situ) and in foreign gene banks in ex situ collections;

characterization of wild relatives of cereals at the morphological, molecular, biochemical and agronomic levels with the aim of determining their genetic diversity and use value for food and agriculture;

compiling priority lists of wild relatives of cereals - species of wild relatives, which are particularly important for conservation due to the properties they possess. The all future activities are depending on funds.

7. Has the collection of PGRFA and relevant associated information on those plant genetic resources that are under threat or are of potential use been promoted in your country?

Yes

If your answer is 'yes', please provide details of the measures taken:

In Croatia we promote the use of conservation varieties that are under threat within the National Program for conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture in the Republic of Croatia and also within the Rural Development Program.

8. Have farmers and local communities' efforts to manage and conserve PGRFA on-farm been promoted or supported in your country?

Yes

If your answer is 'yes', please provide details of the measures taken:

In Croatia the farmers and local communities to manage and conserve plant genetic resources on-farm are supported through the National Program for conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture in the Republic of Croatia and also the Rural Development Program.

9. Has in situ conservation of wild crop relatives and wild plants for food production been promoted in your country?

No

Activities are planned in coming period within working groups of species and in cooperation of farmers associations and local communities.

10. Are there any ex situ collections of PGRFA in your country?

Yes

If your answer is 'yes', please provide information on the holder and content of such collections:

Ex situ conservation, description and assessment of the characteristics of plant genetic resources for food and agriculture are carried out within the National Plant Gene Bank, which is an integral part of the National Program. The National Plant Gene Bank is decentralized. It consists of a large number of collections that are kept by different subjects, in the form of seeds, planting material and field collections. Coordination of the work of all entities involved in the National Bank of Plant Genes is carried out by the Commission on Plant Genetic Resources. The Ministry of Agriculture designates entities for the maintenance of collections of certain plant species or groups of species that are part of the National Plant Gene Bank. The designation of entities by the Ministry is regulated by the signing of an Agreement which clearly defines which plant species the entity is responsible for and what its rights and obligations are. The Ministry also enters into agreements with entities that participate in the collection, reproduction or description of receipts for the needs of the National Plant Gene Bank. By signing the Agreement, the entities commit to long-term participation in the work on the conservation of plant genetic resources.

The ex situ collections are in following institutions:

Agricultural Institute Osijek: fodder crops and cereals.

Bc Institute for Breeding and Production of Field Crops, Zagreb: cereals.

Center for Seed and Seedlings (parent organization Croatian Agency for Agriculture and Food): industrial crops, fodder crops, cereals and maize, safety collections, collection of deleted varieties from Croatian Variety List.

Center of Pomology and Vegetable Crops (parent organization Croatian Agency for Agriculture and Food): continental fruit.

College of Agriculture at Križevci: vegetables.

Faculty of Agriculture, University of Zagreb: cereals and maize, industrial crops, fodder crops, continental fruit, mediterranean fruit, vitis, medicinal and aromatic plants; safety collections.

Faculty of Agrobiotechnical Sciences Osijek, University J.J. Strossmayer in Osijek: cereals, industrial crops, vegetables, safety collection of continental fruit.

Institute for Adriatic Crops and Karst Reclamation, Split: vegetables, mediterranean fruit and vitis.

Institute of Agriculture and Tourism, Poreč: vegetables, mediterranean fruit and vitis.

Institute of Mediterranean Plants, University of Dubrovnik: mediterranean fruit.

11. Has the development of an efficient and sustainable system of ex situ conservation of PGRFA been promoted in your country?

Yes

If your answer is 'yes', please indicate the measures taken to promote ex situ conservation, in particular any measures to promote the development and transfer of technologies for this purpose:

The ex situ conservation system of PGRFA is fully supported by the Croatian government and also through the participation in activities of ECPGR. Within the National program the promotion is activity within is defined cooperation with educational institutions, associations and units of local self-government, education and encouragement of cultivation of traditional varieties of fruit species in school gardens and other areas of public interest with the aim of preserving plant genetic resources.

As part of this activity, the working groups plan to present the results of research at domestic and international scientific conferences and workshops important for the work and improvement of work on plant genetic resources.

12. Has the maintenance of the viability, degree of variation, and the genetic integrity of ex situ collections of PGRFA been monitored in your country?

Yes

If your answer is 'yes', please provide details of the main conclusions of these monitoring activities:

In Croatia the maintenance of the viability, degree of variation, and the genetic integrity of ex situ collections of PGRFA have been monitored on annual basis through plans and reports of every working group and also through some international and national projects.

13. Has your country cooperated with other Contracting Parties, through bilateral or regional channels, in the conservation, exploration, collection, characterization, evaluation or documentation of PGRFA?

Yes

If your answer is 'yes', please indicate the other Contracting Parties with whom the cooperation was undertaken (where additional to cooperation through the Governing Body or other Treaty mechanisms) and, where possible, details of any relevant projects:

Croatia is a member of ECPGR and the members of Croatian National program actively participate in some of ECPGR working groups, calls and projects.

Article 6: Sustainable Use of Plant Genetic Resources for Food and Agriculture

14. Are there any policy and legal measures¹ in place in your country that promote the sustainable use of PGRFA?

Yes

If your answer is 'yes', please indicate whether such policy and legal measures include:

- Pursuing fair agricultural policies that promote the development and maintenance of diverse farming systems that enhance the sustainable use of agricultural biological diversity and other natural resources;
- Strengthening research that enhances and conserves biological diversity by maximizing intra- and inter-specific variation for the benefit of farmers;
- Promoting plant breeding efforts, with the participation of farmers, that strengthen the capacity to develop varieties particularly adapted to social, economic and ecological conditions, including in marginal areas;
- Broadening the genetic base of crops and increasing the range of genetic diversity available to farmers;
- Promoting the expanded use of local and locally adapted crops, varieties and underutilised species;
- Supporting the wider use of diversity of varieties and species in on-farm management, conservation and sustainable use of crops and creating strong links to plant breeding and agricultural development;
- Reviewing and adjusting breeding strategies and regulations concerning variety release and seed distribution.

If such policy and legal measures are in place, please provide details of the measures taken and any difficulties encountered in implementing them:

Regulation on the marketing of seeds of conservation varieties (Official Gazette 43/13 and 40/14);

Act on Seeds, Planting Material and Registration of Varieties of Agricultural Plants (Official Gazette No.140/05, 35/08, 25/09, 124/10, 55/11, 14/14, 115/18, 32/20);

National Program for conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture in the Republic of Croatia for the period 2021-2027.,Chapter 4.4 Promotion of sustainable use;

Rural development measures envisaged by the Program of Rural development of the Republic of Croatia, Basic payments: greening payment; Payments for state aid measures from State budget, Extremely sensitive sectors - conservation of traditional and protected species and cultivars of agricultural plants.

¹ For the purpose of this report, legal measures may include regulations.

Article 7: National Commitments and International Cooperation

15. Has the conservation, exploration, collection, characterization, evaluation, documentation and sustainable use of PGRFA been integrated into your country's programmes and policies?

Yes

If your answer is 'yes', please provide details of the integration of such activities:

- Conservation
- Exploration
- Collection
- Characterization
- Evaluation
- Documentation
- Sustainable use

Please indicate into which type of programmes and policies:

- Agriculture and rural development
- Food security
- Biodiversity conservation
- Climate change
- Other

Additional details:

16. Has your country cooperated with other Contracting Parties, through bilateral or regional channels, in the conservation and sustainable use of PGRFA?

Yes

If your answer is 'yes', please indicate whether the aim of such cooperation is to:

- Strengthen the capability of developing countries and countries with economies in transition with respect to conservation and sustainable use of PGRFA;
- Enhance international activities to promote conservation, evaluation, documentation, genetic enhancement, plant breeding, seed multiplication, and sharing, providing access to and exchanging PGRFA and appropriate information and technology, in conformity with the Multilateral System of Access and Benefit-Sharing under the Treaty.

If, in addition to cooperation through the Governing Body or other Treaty mechanisms, your country has cooperated with other Contracting Parties directly or through FAO and other relevant international organizations, please indicate such other Contracting Parties and, where possible, details of any relevant projects:

Croatia is a member of ECPGR and participate in some working groups and projects. Also data from CPGRD are yearly migrated to EURISCO. Cooperation also with Association of Medicinal and Aromatic Plants of Southeast European Countries.

Article 8: Technical Assistance

17. Has your country promoted the provision of technical assistance to developing countries and countries with economies in transition, with the objective of facilitating the implementation of the Treaty?

No

18. Has your country received technical assistance with the objective of facilitating the implementation of the Treaty?

Yes

No

Not applicable

If your answer is 'yes', please provide details of such technical assistance:

- Exchange of information
- Access to and transfer of technology
- Capacity building

Within SEEDNet program (South East European Development Network on Plant Genetic Resources) the regional network was established in 2004 and the members were institutions from the South East Europe. In Croatia activities for conservation of plant genetic resources were financed from 2004-2010 through SEEDNet, provided by the Swedish International Development Agency (SIDA). Croatia has technical assistance through ECPGR network.

Article 9: Farmers' Rights

19. Subject to national law, as appropriate, have any measures been taken to protect and promote farmers rights in your country?

Yes

If your answer is 'yes', please indicate whether such measures were related to:

- Recognition of the enormous contribution that local and indigenous communities and farmers of all regions of the world have made and will continue to make for the conservation and development of plant genetic resources;
- The protection of traditional knowledge relevant to PGRFA;
- The right to equitably participate in sharing benefits arising from the utilisation of PGRFA;
- The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA;
- Any rights that farmers have to save, use, exchange, and sell farm-saved seed / propagating material.

If such measures were taken, please provide details of the measures taken and any difficulties encountered in implementing them:

Article 11: Coverage of the Multilateral System

20. Has your country notified all PGRFA listed in Annex I to the Treaty that are under the management and control of your Government and in the public domain as included in the Multilateral System of Access and Benefit-Sharing (MLS)?

All

If your answer is 'all', please provide details of any difficulties encountered in including Annex I PGRFA in the MLS:

In general, all PGRFA listed in Annex I to the Treaty are included in the MLS system, but still not all are available due to the availability of materials.

21. Has your country taken measures to encourage natural and legal persons within your jurisdiction who hold Annex I PGRFA to include those resources in the MLS?

Yes

If your answer is 'yes', please provide details of:

- The natural or legal persons within your jurisdiction that included Annex I PGRFA in the MLS;
- The crops that have been included in the MLS by these persons; and
- Any difficulties these persons encountered in including Annex I PGRFA in the MLS:

In new National program for conservation and sustainable use of PGRFA just started promotional activities to include NGO's, farmers associations and other that are dealing with PGRFA in the common data system and MLS.

Article 12: Facilitated access to plant genetic resources for food and agriculture within the Multilateral System

22. Has your country taken measures to provide facilitated access to Annex I PGRFA, in accordance with the conditions set out in Article 12.4 of the Treaty?

Yes

If your answer is 'yes', please provide details of such measures:

In the 2009 Croatian Parliament has taken the Decision on the proclamation of the Law on the confirmation of the International Agreement on Plant Genetic Resources for Food and Agriculture within is prescribed implementation of Standard Material Transfer Agreement (SMTA).

23. Has facilitated access been provided in your country to Annex I PGRFA using the Standard Material Transfer Agreement (SMTA)?

Yes

24. Has the SMTA been used voluntarily in your country to provide access to non-Annex I PGRFA?

Yes

25. Does the legal system of your country provide an opportunity for parties to the material transfer agreements (MTAs) to seek recourse in case of contractual disputes arising under such agreements?

No

26. Does the legal system of your country provide for the enforcement of arbitral decisions related to disputes arising under the SMTA?

Yes

If your answer is 'yes', please provide details of the relevant laws, regulations or procedures:

The Republic of Croatia made notification of its succession to the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards on 26 July 1993 but declared itself bound by the Convention as of 8 Oct. 1991. (Source: Official Gazette of the Republic of Croatia/Off. Gaz./International Treaties, 1994, No. 4.)

27. Have there been any emergency disaster situations in respect of which your country has provided facilitated access to Annex I PGRFA for the purpose of contributing to the re-establishment of agricultural systems?

No

If your answer is 'yes', please provide details of such emergency disaster situations and the Annex I PGRFA to which access was provided:

Article 13: Benefit-sharing in the Multilateral System

28. Has your country made any information available regarding Annex I PGRFA?

Yes

If your answer is 'yes', please provide details of any information made available regarding Annex I PGRFA:

- Catalogues and inventories
- Information on technologies
- Results of scientific and socio-economic research, including characterisation, evaluation and utilisation
- Other

29. Has your country provided or facilitated access to technologies for the conservation, characterisation, evaluation and use of Annex I PGRFA?

Yes

If your answer is 'yes', please indicate whether your country:

- Has established or participated in crop-based thematic groups on utilisation of PGRFA;

Is aware of any partnerships in your country in research and development and in commercial joint ventures relating to the material received through the MLS, human resource development and effective access to research facilities.

Please provide details:

Croatian experts are members of some ECPGR working groups and participate within research projects in Croatia as well as outside of Croatia.

30. Has your country provided for and/or benefitted from capacity building measures in respect of Annex I PGRFA?²

Yes

If your answer is 'yes', please indicate whether such measures were related to:



Establishing and/or strengthening programmes for scientific and technical education and training in conservation and sustainable use of PGRFA;



Developing and strengthening facilities for conservation and sustainable use of PGRFA;

Carrying out scientific research and developing capacity for such research.

If your country provided for and/or benefitted from such measures, please provide details:

Within SEEDNet program (South East European Development Network on Plant Genetic Resources), participating in the ECPGR working groups and projects, research project on national and international level.

Article 14: Global Plan of Action

31. Has your country promoted the implementation of the Global Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture?

Yes

If your answer is 'yes', please indicate whether the implementation of the plan was done through:



National actions;



International cooperation;

Please provide details:

The National Program for conservation and sustainable use of PGRFA is in line with the guidelines of the "Second Global Action Plan for Plant Genetic Resources for Food and Agriculture" (Second GPA) and includes activities from all four priority areas. Institutions and members of National program are cooperating within the ECPGR in activities and other international projects.

Article 15: Ex Situ Collections of Plant Genetic Resources for Food and Agriculture held by the International Agricultural Research Centres of the Consultative Group on International Agricultural Research and other International Institutions

32. Has facilitated access to Annex I PGRFA been provided in your country to the International Agricultural Research Centres of the Consultative Group on International Agricultural Research

² Please note that this question differs from question 15 as it only concerns Annex I PGRFA and is more specific

(IARCs) or other international institutions that have signed agreements with the Governing Body of the Treaty?

Yes

If your answer is 'yes', please indicate:

To which IARCs or other international institutions facilitated access was provided;

The number of SMTAs entered into with each IARC or other international institution:

No demands for CPGRD accessions until now.

33. Has access to non-Annex I PGRFA been provided in your country to IARCs or other international institutions that have signed agreements with the Governing Body of the Treaty?

No

If your answer is 'no', please provide details of any difficulties encountered in providing access to non-Annex I PGRFA to IARCs and other international institutions that have signed agreements with the Governing Body of the Treaty:

No demands for accessions in CPGRD.

Article 16: International Plant Genetic Resources Networks

34. Has your country undertaken any activities to encourage government, private, non-governmental, research, breeding and other institutions to participate in the international plant genetic resources networks?

Yes

If your answer is 'yes', please provide details of such activities:

The Croatian Ministry of Agriculture confirmed the participation of Croatia also in Phase X of ECPGR by signing the Agreement and the annual contribution.

Article 18: Financial Resources

35. Has your country provided financial resources for national activities for the conservation and sustainable use of PGRFA?

Yes

If your answer is 'yes', please provide the estimated amount of funds provided during the last five years, including government resources:

The financial resources were provided by the State budget and European Agricultural Fund for Rural Development as follows:

State budget:

2016. – 177.912,10 EUR

2017. – 169.364,86 EUR

2018. – 184.487,77 EUR

2019. - 89.988,91 EUR

2020. - 63.621,62 EUR

European Agricultural Fund for Rural Development:

2018. – 885.046,07 EUR

2019. – 683.830,32 EUR

2020. – cca. 800.000,00 EUR (still in the phase of financial processing of eligible project costs for 2020. in first part of the 2021. for institutions that are part of PGRFA)

36. Has your country provided financial resources for the implementation of the International Treaty?

Yes

If your answer is 'yes', where possible, please provide details of such channels and the amount of the financial resources involved during the last 5 years:

Financial resources for the implementation of the International Treaty are a part of above mentioned resources from State budget on annual basis for PGRFA. A the five-year average is 137.075,05 EUR.

Please provide details:

37. Has your country received financial resources for the implementation of the International Treaty?

Yes

If your answer is 'yes', where possible, please provide details of such channels and the amount of the financial resources involved during the last 5 years:

Financial resources for the implementation of the International Treaty, Croatia has received in period 2018-2020. from European Agricultural Fund for Rural Development as mentioned above (85% of it is from EU).

General remarks on the implementation of the ITPGRFA

38. You may use this box to share any advice you may have arising from your country's experience with implementation of the Treaty:

National inventory (documentation system) as CPGRD should be used as much as possible and the documentary system generally should be more user friendly.

Relating the SMTA we are using it in English, not in the national language and until know we did not find it as a problem.

Also as some countries we saw a need for general guideline of inclusion of materials into the MLS and we think it would be useful.

39. You may use this box to share any additional information that may be useful to provide a broader perspective of difficulties in implementation of the Treaty:

40. You may use this box to share any additional information that may be useful to provide a broader perspective of measures that could help to promote compliance:

[--- Question to be administered separately ---]

About this reporting

41. Have you encountered any difficulties in completing this reporting format?

Yes

No

If your answer is 'yes', please provide details on such difficulties:

If you have suggestions for improvement of this reporting format, please share them: