



Food and Agriculture
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The International Treaty
ON PLANT GENETIC RESOURCES
FOR FOOD AND AGRICULTURE

**Views, Experiences and Best Practices as an example of possible options for
the national implementation of Article 9 of the International Treaty**

Note by the Secretary

At its [second meeting](#) of the Ad hoc Technical Expert Group on Farmers' Rights (AHTEG), the Expert Group agreed on a revised version of the [template](#) for collecting information on examples of national measures, best practices and lessons learned from the realization of Farmers' Rights

This document presents the updated information on best practices and measures of implementing Article 9 of the International Treaty submitted by Centre for Sustainable Development and Environment (CENESTA) on 26 July 2019.

The submission is presented in the form and language in which it was received.



Template for submission of Measures, Best Practices and Lessons Learned from the Realization of Farmers' Rights as set out in Article 9 of the International Treaty

Basic information

- Title of practice:
Increasing genetic diversity and realizing Farmers' Rights through Evolutionary Participatory Plant Breeding (EPPB)
- Date of submission: July 2019
- Name(s) of country/countries in which the measure/practice is taking place: Iran
- Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person)
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The Centre for Sustainable Development and Environment (CENESTA) is a not-profit non-governmental organization
- Collaborating/supporting institutions/organizations/actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s)):
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- **Description of the examples**
Mandatory information:¹
Since 2008, Cenesta has been started EPPB programme in Iran. As the main national and international partners of this programme in Iran, we can mention IFAD, Bioversity international, ICARDA, IRRI, FAO, The international treaty of PGRFA, Ministry of agriculture of Iran, Dryland Agriculture Research Institute of Iran, National Plant Gene Bank of Iran, Rice Research Institute of Iran, farmers' associations and universities.
The objective of the programme is enhancing the resilience of targeted low-input marginal farmers in different microclimates of Iran through increasing genetic diversity and developing evolutionary crop

¹ This mandatory information is required in order for the measure/practice to be included in the Inventory.



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populations with higher and stable yields under climate change, local farm agronomic and stress conditions including drought, water scarcity, salinity, pests and diseases.

Our main components are: 1) establishment of evolutionary populations (EPs) in farmers' fields and ensure sustainable seed supply, and 2) enhancing the policy and regulatory frameworks for use of PGRFA.

The capacity of farmers and researchers is built through this programme, so they receive the necessary institutional support to access, maintain and use evolutionary crop populations, which increase productive gains while at the same time maintaining yield stability and ecosystem resilience under changing climate conditions. Additionally, EPB is able to provide the market with more nutritious food and feed.

- Brief history (including starting year), as appropriate

Evolutionary Plant Breeding (EPB) represents a dynamic and inexpensive strategy to quickly enhance the adaptation of crops to climate change. The method consists of deploying populations with large genetic variability in the hands of farmers and letting them gradually evolve and adapt to both climate and management changes. This process of natural selection can be supplemented by farmer selection to select adapted germplasm for further multiplication, thus using the populations as a living gene bank in farmers' fields. The EPB program started in Iran, in 2008, by planting a mixture of nearly 1600 barley F2 (this population includes wide range of germplasms from the wild relatives, landraces from several countries and modern breeding materials) which is made by ICARDA's entire barley crossing program.

Since 2009, CENESTA, in cooperation with Sararood dryland agricultural research station, has commenced EPB on wheat and from 2014 the EPB programme developed on Iranian landraces of rice that genetic materials taken from IRRI gene bank. The barley population with several wheat populations and the population of rice landraces are currently evolving in many locations under different climate, environment and agronomic management conditions. In order to expand the programme to a new level, the landraces of lentil, Chickpea, millet and sorghum, were procured from National Plant Gene Bank of Iran and have been multiplying on the farmer's field. In the next cropping season, populations will be made out of these genetic materials.

- Core components of the measure/practice (max 200 words)

Evolutionary plant breeding is an inexpensive and dynamic method to "*in situ*" conservation of plant genetic resources, adaptation of crops to climate change, decrease the vulnerability of them by cultivating and generating new diversity. In addition, EPB aids small-scale farmers to improve the sustainability of their production by increasing the resistance to weeds, diseases and pests. Therefore, farmers do not need external inputs; as a result, the cultivation cost of evolutionary populations is lower than pure line varieties. Increasing the farmers' access to genetic diversity through EPB causes small-scale producers can conserve genetic diversity dynamically, and innovate ways to use genetic materials according to their local needs.

According to previous statements, the EPB method is completely compatible with the concept of Farmers' Rights mentioned and recognized in article 9 of the ITPGRFA. At the first, EPB is a fully participatory research method, which local small-scale farmers involved in all parts of the process. Secondly, traditional knowledge of local and indigenous communities relevant to PGRFA is a milestone of the EPB. Finally, EPB ensures farmers' right to save, use, exchange and sell farm-saved seed by bringing back the control of seeds in the hands of farmers.



- Description of the context and the history of the measure/practice is taking place (political, legal and economic framework conditions for the measure/practice) (max 200 words)

CENESTA Carries out some main components: 1) establishment of evolutionary populations (EPs) in farmers' fields and ensure sustainable seed supply; and 2) enhancing the policy and regulatory frameworks for use of PGRFA.

For the first component, CENESTA facilitates the distribution of EPs of barley, wheat and rice among local farmers in different places and running new bakeries to make traditional breads with flour gained from EPs. EPs of wheat and barley and conventional varieties are collected to use as checks from different locations of Iran. In addition, a multiplications trial is designed to evaluate the collected samples in farmers' fields. In addition, according to some farmers' request, CENESTA has negotiated with national gene banks to access to genetic materials of lentil and chickpea for making their populations.

For the second component, CENESTA reviews and monitors national and international policies, laws and regulations related to plant genetic resources, plant variety protection, seeds law, and farmers' rights, prepares various publications to raise public and academic awareness in farmers' rights. In this case, CENESTA also has held several meetings and workshops. Moreover, CENESTA works on laws and regulations and advocates with governmental authorities and parliamentarians to recognize farmers' rights in the national legal regime appropriately.

- To which provision(s) of Article 9 of the International Treaty does this measure relate

- Art. 9.1
- Art. 9.2a
- Art. 9.2b
- Art. 9.2c
- Art. 9.3

Other information, if applicable

- Please indicate which category of the Inventory is most relevant for the proposed measure, and which other categories are also relevant (if any):

No.	Category	Most relevant ²	Also relevant ³
1	Recognition of local and indigenous communities', farmers' contributions to conservation and sustainable use of PGRFA, such as awards and recognition of custodian/guardian farmers		
2	Financial contributions to support farmers conservation and sustainable use of PGRFA such as contributions to benefit-sharing funds		

² Please select only one category that is most relevant, under which the measure will be listed.

³ Please select one or several categories that may also be relevant (if applicable).



3	Approaches to encourage income-generating activities to support farmers' conservation and sustainable use of PGRFA		
4	Catalogues, registries and other forms of documentation of PGRFA and protection of traditional knowledge		
5	In-situ/on-farm conservation and management of PGRFA, such as social and cultural measures, community biodiversity management and conservation sites		
6	Facilitation of farmers' access to a diversity of PGRFA through community seed banks ⁴ , seed networks and other measures improving farmers' choices of a wider diversity of PGRFA.		
7	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection		
8	Farmers' participation in decision-making at local, national and sub-regional, regional and international levels		
9	Training, capacity development and public awareness creation		
10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		
11	Other measures / practices		

- In case you selected 'other measures', would you like to suggest a description of this measure, e.g. as a possible new category? EPPB is also relevant to 10 elements of agroecology (diversity, Co-creation and sharing of knowledge, Synergies, Efficiency, Recycling, Resilience, human and social values, Culture and food traditions , Responsible governance and Circular and solidarity economy.

- Objective(s)

The resilience of target low-input poor farmers in the marginal lands is enhanced through developing evolutionary populations (EP) with higher and more stable yield under the local farm agronomic and stress conditions, including drought, salinity, pests and diseases.

- Target group(s) and numbers of involved and affected farmers⁵

The major beneficiaries of EPB program are local small-scale farmers and indigenous pastoralists of Iran. At least, 1000 small women and men producers (farmers and pastoralists) have benefited directly from the deployment of genetic diversity where it reduced their vulnerability to production and income losses, and to the negative effects on their health of unsafe use of pesticides. They have also benefited from a more complete understanding of how their management practices can be effectively deployed. Researchers and decision makers are key beneficiaries as they have actively sought for leadership, management and research roles in the programme.

⁴ Including seed houses.

⁵ Any classification, e.g. of the types of farmer addressed, may be country-specific.



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- Location(s) and geographical outreach

This method has been developed across 19 provinces of Iran and mainly used by both farmers using rainfed agriculture, and farmers using irrigation who is faced with water scarcity in low land and high lands. This method is being used in some other countries such as Jordan, Yemen, Algeria, Bhutan, Nepal, Ethiopia, Uganda Italy, France etc.

- Resources used for implementation of the measure/practice

National and international gene banks and research stations play a key role in providing genetic materials used in this method. In the case of CENESTA's program, ICARDA, IRRI, and national agricultural institutions and organizations and National Plant Gene Bank of Iran have main roles to provide genetic resources and make primary populations. In addition, small holder farmers' resources, including land, traditional knowledge and other inputs are very important to achieve the programs' goals. So, in this method, collaboration among all stakeholders is necessary. In Iran, thanks to the participation of all stakeholders, CENESTA successfully gained populations which have met the farmers' needs and can adapted to climate change or some specific stresses.

- How has the measure/practice affected the conservation and sustainable use of plant genetic resources for food and agriculture?

High genetic diversity is the basis of EPPB method and making populations as well. With the use of this method, farmers are provided with a big amount of genetic resources in a short time, and based on the traditional local knowledge, farmers, according to their needs, conserve the given varieties and populations and use them as food and feed. On the other hand, EPPB farms are appropriate sources for choosing genetic materials required for PPB and conventional breeding methods. This method strikes a balance between conserving and exploiting resources among stakeholders.

- Please describe the achievements of the measure/ practice so far (including quantification) (max 200 words)

- Different populations evolve differently in different locations and under biotic and abiotic stresses. The yield under rainfed condition has been tripled, approximately. The yield is increased to approx. 3 tons/ha.
- More than four hundreds of stakeholders such as farmers, researchers, breeders, bakers are participated in the programme and have benefited from its advantages.
- Evoking national policy makers for developing plant genetic resources in farmers' fields and using EPB as a new approach to participatory plant breeding programme. A steering committee with participation of 20 key stakeholders has been formed to meet the programme objectives and develop them at the national level.
- Two bakeries has been run in order to bake local breads, from the flour of EPs. These kinds of breads are more nutritious than formal breads and are suitable for people allergic to Gluten. In addition, the family farmers use this flour to bake their traditional breads.
- At least four M.A and PhD thesis on EPB and farmers' rights are in process by students throughout Iran.
- A specific university course on farmers' rights is going to be established in two universities. Cenesta, in a participatory manner, is helping to define the syllabus of the course.



- Other national level instruments that are linked to the measure/practice
 - Due to successes achieved through the programme, it has become one of the GEF/SGP 6th programmes in Iran. Cenesta has consulting role in this project.
 - Evolutionary Populations are under research in terms of salinity, agroecologic, and agronomic traits. The results will be used to policies, laws and regulations in Iran.
- Are you aware of any other international agreements or programs that are relevant for this measure/practice?

European Projects:

- 1) Strategies for Organic and Low-input Integrated Breeding and Management (Solibam- 2010-2014)
- 2) Research to realize full potential of organic farming (LIVESEED-2017-2021)

- Other issues you wish to address, that have not yet been covered, to describe the measure/practice
 - EPB and IPRs in seeds

According to Iran national seeds law, all registered seeds must uphold the criteria of being new, distinct, uniform and stable (DUS). It should be considered that the EPs not only cannot meet these criteria but also their diversity and dynamic evolution is literally their main advantages. However, the law only addresses commercialized seeds which the breeders realise them in the formal market. The EPs are not marketed, but simply exchanged between farmers, therefore, there is no current legal prohibition against EPs program. In addition, the state of Iran is a member of ITPGRFA and have the obligation to respect, protect and fulfil Farmers' Rights.

The main issue is the condition that seeds must be commercialized, and in doing this needs to be registered and certified. The formal seed release system in Iran requires that new seed varieties pass a series of tests: the value for cultivation and use (VCU) test and the distinctiveness, uniformity and stability (DUS) test. As mentioned in the previous part, EPs are unlikely to comply with these variety release criteria, which are tailored to the characteristics of modern varieties, since farmer improved varieties cannot show 'clear improvement' under different growing conditions and can hardly meet the DUS criteria. In addition, Iran's seed regulations do not recognize collective intellectual property rights and there is no national ABS regulation.

Lessons learned

- Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).
 - EPs can be useful for marginalized smallholder producers, also provide more nutritious food and feed. For implementing this method, a strong relation between gene banks and research stations and farmers is needed, for introducing a new population to farmers annually.
 - Using EPB in each country has direct relation to seed policies and laws, whether to let free genetic resource exchange. Therefore, It is very vital for farmer organizations, relative CSOs and grassroot movements to have a good knowledge on laws and regulations about PVP and IPRs in seeds and enhance their capacity to do advocacy with related authorities about farmers' rights and democratic agricultural systems that realize these rights.



- Iran has no formal ABS policy, but this system is used in Iran. For instance, despite the EPB does not fit in ABS framework, required genetic materials has been supplied by gene banks and research stations such as ICARDA, DARSI and IRRI, which has handed to smallholder farmers. In addition, since there are some national instructions and no legal prohibition to farm-saved seed system, the evolutionary populations have been exchanged quickly and numerous farmers are benefited from them. In Iran, in order to move towards ABS policy, it is possible to take advantage of methods like EPB. Therefore, it must be said that although ABS policy has not been realized in Iran yet, using methods like EPB would be an advance to constitute ABS policy in the country.
- **What challenges encountered along the way (if applicable) (max 200 words)**
 - In EPB, farmers need major access to genetic materials to make new populations every few years, However, today seeds and genetic material exchange between gene bank, research stations and farmers is very limited and close collaboration between farmers and reserachers is very low. In addition, for supporting and developing EPB programee, comprehensive lows and regulations is needed. Such as laws that allow farmers to multiplication and distribution their populations or special varieties that obtained in this method. Also the stability conditions of EPs fields (Especially under rainfed condition) in different cropping seasons are very variable and unpredictable and this challenge causes farmers lose their locally adopted populations due to flood, drought and insufficient rainfall amount, human faults in harvesting and entering livestock to farms. Therefore, for protecting and reaseraching on these populations need specific strategies and plans.
 - In recent years there is some interests among some government authorities and commercial breeders to join the UPOV or expand the patent on life. If Iran decides to join UPOV, then there would be major limitations on evolutionary populations. IPR regimes such as UPOV don't recognize the farmers' right on farm saved-seed and require that all certified seed adhere to the criteria of DUS. As already mentioned, the evolutionary populations do not adhere to these criteria that favor uniformity and outlaw diversity.
- **What would you consider conditions for success, if others should seek to carry out such a measure or organize such an activity? (max 100 words)**
 - A real collaboration among all stakeholders, including farmers, pastoralists, gene banks, research stations, etc.;
 - Recognition of Farmers' Rights, in a proper legal manner;
 - The appropriate usage of traditional knowledge and experiences of smallholder producers in all parts of the program (design, implementation, resource management, etc.)
 - Expanding the in situ conservation in farmers' farms as local gene banks;
 - Special attention to landraces and native varieties instead of the use of uniform trade ones;
 - Considering the microclimate and environmental stresses of each region for designing the project;
 - The importance of conducting simultaneously fieldwork and pursuing policy and legal activities

Further information

- Link(s) to further information about the measure/practice
 - <http://www.cenesta.org/wp-content/uploads/2016/06/publication-cenesta-evolutionary-plant-breeding-2013-en.pdf>



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- <https://www.ileia.org/2016/04/16/evolutionary-populations-living-gene-banks-farmers-fields-iran/>
- [https://www.academia.edu/17835754/Evolutionary Plant Breeding in Iran](https://www.academia.edu/17835754/Evolutionary_Plant_Breeding_in_Iran)
- <http://www.cenesta.org/wp-content/uploads/2016/06/publication-cenesta-epb-guidelines-2015-en.pdf>