



Food and Agriculture
Organization of the
United Nations



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 AfricaRice, Bioversity International, CIAT, CIMMYT, ICARDA, ICRISAT and IRRI on 23 July 2019.

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

CGIAR Centres' submission on best practices/measures of implementing Article 9 of the ITPGRFA

Compilation revised according to the new template adopted by the Ad Hoc Technical Expert Group on Farmers' Rights at its second meeting (May 2019) for collecting information on examples of practices and measures implementing Article 9 of the ITPGRFA.

Date: 23 July 2019

This submission includes the following measures or initiatives:

Africa Rice (page 2)

1. Applying innovation system approach in rice value chain analysis and development for competitive markets in Nigeria; Involving farmers as partners in research and development projects; and documenting efforts made by the Centers and partners to promote farmers' rights in the countries concerned, and sharing them to help inform farmers' rights-related policy development

Bioversity International (page 7)

2. Official guidelines for registration of farmers' varieties in Nepal
3. Supporting farmers seed producers for the production and commercialization of traditional potato varieties
4. Establishing and linking community seed banks with national gene bank for conservation and policy support
5. Community biodiversity registries and community biocultural protocols: strengthening communities' capacity to manage crop genetic diversity in Benin
6. Helping farmers access PGRFA from the multilateral system for climate change adaptation

CIAT (page 32)

7. Rapid participatory characterization of cassava landrace agrobiodiversity, nomenclature and traditions, uses, and conservation status

CIMMYT (page 39)

8. Drought tolerant maize provides extra 9 months of food for farming families
9. International Maize Improvement Consortium – Asia

ICARDA (page 45)

10. Gender and Lentil Production in Rural Ethiopia
11. Mungbean for more productive crop rotations in Tajikistan

ICRISAT (page 57)

12. Experiences on farmers' rights in Mali, Nigeria and Niger
13. Farmers Participatory Varietal Selection (FPVS) trials

IRRI (66)

14. The Heirloom Rice Project

Africa Rice

Basic information

Title of measure/practice: Applying an innovation-system approach in rice value-chain analysis and development for competitive markets in Nigeria; Involving farmers as partners in research and development projects; and documenting efforts made by the Centers and partners to promote farmers' rights in the countries concerned, and sharing them to help inform farmers' rights-related policy development

Date of submission: July 2019

Name(s) of country/countries in which the measure/practice is taking place: Nigeria

Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person):

Africa Rice Center, Sali A. Ndindeng, S.Ndindeng@cgiar.org, +22588331222

Type of institution/organization (categories): CGIAR

Collaborating/supporting institutions/organizations/actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s)):

NCRI, Bakare Oladele, oladelebakare@yahoo.co.uk

Mandatory information:

Short summary to be put in the inventory (max. 200 words) including:

The Federal Government of Nigeria has put in place policies to reduce rice imports and increase domestic production. To be successful, this policy must be accompanied by investments in the local rice sector, including through research and innovation. Main objectives of the current research are to increase the productivity and competitiveness of the rice value chain in Nigeria through implementation of an innovation systems model. AfricaRice and its national partners have started implementing the rice value chain development component in the Middle Rima Valley Irrigation Scheme (MRVIS) in Goronyo, Sokoto State of Nigeria, since 2018. Key components include creating linkages between rice value-chain actors; understanding strengths, weaknesses, opportunities and threats of the rice economy in MRVIS; identification of 1-2 high-yielding, processor- and consumer-preferred rice varieties; and installation of a rice-processing facility for the Goronyo Rice Innovation Platform (GRIP) that will help develop quality products and services for the market. Expected outcomes include increased productivity and quality of paddy rice in the target area and training of youth groups to become part of the innovation platform by providing services around the use of innovative technologies. Furthermore, rice husks will be used as fuel for household cooking.

Implementing entity and partners: Africa Rice Center

Start year 2018

Objective(s):

- Increase paddy yield and quality through the adoption of improved seeds, good crop management practices and small farm machineries,
- Improve efficiency and synergy along the value-chain for sustainable agro-business development,
- Improve quality of locally milled rice through simple, adoptable, gender friendly post-harvest technology to enhanced competitiveness,
- Create an image for rice produce in Nigeria with attractive packaging, branding and labelling to boost large sale in urban and niche markets.
- Increase utilization of rice by-products for the improvement of impoverished soils and thermal energy generation.

Summary of core components**Component 1: Innovation Platform Approach.**

- Value chain analysis (SWOT)
- Analysis roles of actors and linkages between actors
- Analysis of existing infrastructure
- Determination of production constraints and costs
- Determine the willingness of actors to organize into an innovation platform
- Facilitate the creation of an innovation platform with specific entry points
- Develop linkages between actors through contractual arrangements

Component 2: Production and productivity

- Facilitate the acquisition of ICT-based tools to improve fertilizer application and soil fertility management
- Training of extension agents and farmers on the use of ICT-based tools to manage soil fertility.
- Training of extension agents on Good Agricultural Practices (GAP)

Component 3: Post-harvest processing and marketing

- Facilitate the acquisition and installation of modern post-harvest equipment.
- Training of extension agents and processors on the production of quality parboiled rice.
- Facilitate the design and production of attractive packages for urban markets

Component 4: Rice by-product utilization.

- Facilitate the acquisition and installation of husk utilization technologies for household cooking.
- Training of extension agents and women on the use of rice husk for household cooking.

Component 5: Value-chain research, studentship and project management

- Training of students on value-chain analysis and fixing
- Study the effect of technologies/tools on yield, grain quality and loss reduction.
- Analyze the major determine of rice prices in the market through experimental auction and laboratory analysis
- Monitor project implementation based on performance indicators.
- Measure outcome changes at the level of actors.

Key outcomes

- Increased productivity of rice value chain in the Sokoto-Rima River Basin
- Paddy yield and quality improved in the target area
- Trained youth groups who are part of the IP can effectively provide services using RiceAdvice, ASI-thresher, GEM parboiler and rice mill.
- Trained processors with at least 50% being women and youth are using technologies and innovations to produce high quality milled rice

- Households within the vicinity of rice processing area are using husk as fuel for household cooking.

Lessons learned (if applicable)

- Heterogeneity in the quality of milled rice from site to site due to heterogeneity in the quality of paddy. There are still big issues as to how processors link with growers to source quality paddy.
- Heterogeneity in the quality of locally fabricated equipment (Threshers, Paddy cleaners, Dryers, Rice graders etc..) between countries due to absence of agreed standards and norms.
- Low (adoption) rate of mechanical equipment due to financial constraints associated with smallholder farmers. Innovative service provision models such as those observed for parboiling and milling need to be tested for other equipment.

Brief history (including starting year), as appropriate

Sub-optimal production and processing practices are major reasons for the low production and quality of rice in SSA. Rice with a high proportion of impurities, chalky, and/or diseased grains and a low proportion of whole grains is not preferred and records a low market value especially in urban centres (Demont, 2013; Ndindeng et al., 2015; Demont et al., 2017). Consequently, imported rice has gained grounds in markets in urban cities in SSA especially those close to the port (Demont and Ndour, 2015). SSA imports 13 million tons of milled rice annually costing about \$6 billion. Total demand for rice in Nigeria is put at about 5 million metric tons (MT) a year of which about 3.7 million MT is produced locally (IRRI, 2016) while the rest is imported. This trend threatens food and nutrition security and renders rice production in the country unsustainable due to the loss in foreign exchange earnings and low investments in the local rice sector.

Recently, the Federal Government of Nigeria has put in place policies to reduce the importation. However, these policies must be accompanied by investments in the local rice sector. The goal of the current research is to increase the productivity and competitiveness of the rice value-chain in Nigeria through the validation of an innovation systems model that creates and strengthens linkages between stakeholders, improves access to agricultural inputs, technologies and services and reduces barriers that hinder smallholder farmer and processor's access to urban markets.

Within the framework of national policy for sustainable agricultural production for food and nutrition security, the Federal Government with funding from World Bank is implementing the TRIMING project with a Project Development Objective of improving access to irrigation and drainage services and strengthening institutional arrangements for integrated water resources management and agriculture service delivery in selected large-scale public schemes in Northern Nigeria. AfricaRice and its national partners are implementing the rice value chain development component. The work aims at creating linkages between rice value chain stakeholders in the Middle Rima Valley Irrigation Scheme (MRVIS) in Goronyo, Sokoto State Nigeria, understanding the Strengths, Weakness, Opportunities and Threats of rice economy in MRVIS, and progress toward identification of 1-2 high yielding, processor and consumer preferred rice varieties for MRVIS and the installation of the rice processing facility for the Goronyo Rice Innovation Platform (GRIP) that will help develop quality products and services for the market.

Core components of the measure/practice (max 200 words): See above

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) See above

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	Also relevant
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		
3	Approaches to encourage income-generating activities to support farmers' conservation and sustainable use of PGRFA		x
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 ¹ , seed networks and other measures improving farmers' choices of a wider diversity of PGRFA.	x	
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		x
9	Training, capacity development and public awareness creation		x
10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		
11	Other measures / practices		

¹ Including seed houses.

Bioversity International

Basic information:

Title of measure/practice:

Official guidelines for the registration of farmers' varieties in Nepal

Date of submission:

23 July 2019

Name(s) of country/countries in which the measure/practice is taking place

Nepal

Responsible organizations

Nepal Agricultural Research Council (NARC)
Singhdurbar Plaza, Kathmandu, Nepal

<http://narc.gov.np/>

Contact person: Deepa Singh Shrestha, dees_shrestha@hotmail.com

Local Initiatives for Biodiversity, Research and Development (LI-BIRD)
Pokhara, Nepal

<http://www.libird.org/>

Contact person: Santosh Shrestha, santosh.shrestha@libird.org

Bioversity International in Nepal
Katmandu, Nepal.

www.bioversityinternational.org

Contact person: Devendra Gauchan, d.gauchan@cgiar.org

Type of institution/organization (categories)

NARC: Public research organization

LI-BIRD: Non-governmental organization

Bioversity International: International Research Centre within CGIAR

Collaborating/supporting institutions/organizations/actors, if applicable

Swiss Development and Cooperation (SDC) and GEF and UNEP provided financial support.

Description of the examples

Mandatory information:

Short summary to be put in the inventory (max. 200 words)

In Nepal, provisions for the registration of farmers' local varieties were included in the Seed Regulation (2013; Rules 12, By-Rules 2: Annex D), with the aim to facilitate their conservation and sustainable. These provisions were expected to simplify the inscription of farmers' local varieties in the national catalogue, thereby facilitating the production and commercialization of seed of these varieties. However, a lack of clear procedures and technical officers' limited

experience in dealing with farmers' traditional varieties limited the application of the provisions. Working closely with farmers' organizations, the Nepal Agricultural Research Council (NARC) and Local Initiatives for Biodiversity, Research and Development (LI-BIRD), in cooperation with Bioversity International and several donors, developed an 'easy to fill' format/guidelines to facilitate the application of the provisions. The format was verified and tested during the 2nd National Workshop of Community Seed Banks (3-5 May 2018) in Kathmandu, based on consultation with key stakeholders (farmers, community seed bank members, seed certification agency, research and extension professionals). The revised guideline/format for local variety registration was considered by the Seed Quality Control Centre (SQCC) and the National Seed Board of the Government of Nepal and accepted as the officially recommended format for registration of farmers' local varieties.

Brief history (including starting year), as appropriate

For the last 20 years, NARC and LI-BIRD have collaborated with farmers and farmers' organizations in various parts of Nepal for the characterization, conservation and use of crop diversity. Partly thanks to these collective efforts, the current and potential value of farmers' traditional varieties has been recognized by national authorities and several policy measures have been adopted to promote their conservation and use. One of these measures was the introduction of relaxed provisions for the registration of farmers' local varieties in Nepal's Seed Regulation (2013; *Rules 12, By Rules 2: Annex "D"*). These relaxed provisions were expected to facilitate the introduction of farmers' local varieties in the national catalogues of commercial varieties and in this way regularize the seed production and commercialization of these varieties within the country. However, the lack of clear procedures for the application of these relaxed provisions and technical officers' limited experience in dealing with farmers' traditional varieties limited the application of the provisions. In practice, applications for registration of local varieties by farmers' organizations were treated and processed according to the standard procedures, which limited considerably the chances for successful registration. Working closely with farmers' organizations, NARC and LI-BIRD developed an "easy to fill" format/guidelines to facilitate the application of the relaxed provisions. The format was verified and tested during the 2nd National Workshop of Community Seed Banks (3-5 May 2018) in Kathmandu with the consultation of key stakeholders (farmers, community seed bank members, seed certification agency, research and extension professionals). The revised guideline /format for local variety registration was considered by the Seed Quality Control Centre (SQCC) and the National Seed Board of the Government of Nepal, and accepted as the officially recommended format for registration of farmers' local varieties. The format is available as "Proposal Format for Registration of Landraces" in SQCC website (in Nepali: <http://sqcc.gov.np/en/category/documents>).

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

Working closely with farmers' organizations, NARC and LI-BIRD developed an "easy to fill" format/guidelines to facilitate the application of the relaxed provisions. The format was verified and tested during the 2nd National Workshop of Community Seed Banks (3-5 May 2018) in Kathmandu with the consultation of key stakeholders (farmers, community seed bank members, seed certification agency, research and extension professionals). The revised guideline /format for local variety registration was accepted as the officially recommended format for registration of farmers' local varieties.

The format/template includes the following sections:

- Crop
- Common name
- Permanent accession number at the National Genebank: (this requires deposition of specified amount of seeds in genebank for ensuring the back up for registered accessions)
- Brief History on origin, importance, use
- Distinct characters
- Present status-four cell analysis
- Morphological Characteristics
- Agronomical Characteristics
- Cultivation practices/ Productivity
- Unique character
(All above information should be taken from 10 farmers for one season or by focus group discussions with 25 farmers)
- Responsible organization for maintenance of the variety and for seed production
- Reason for registration
- Photos
- Approval from local agriculture office

In parallel, NARC and LI-BIRD have worked with farmers in the characterization of local diversity and the most promising varieties have been identified for registration and further improvement. A key aspect in this process has been to explore options for guaranteeing proper conservation of the varieties proposed for registration and supply basic seed for multiplication once registered.

Short description of the context and the history of the measure/practice is taking place

The relaxed provision in the Seed Act had not been internalized by the Variety Release and Registration sub Committee (VRRRC) -a technical committee of the National Seed Board of the Government of Nepal in charge of testing and registering new varieties. Other stakeholders like farmers, development workers, extension agents, researchers and policy makers were not aware about the existing flexibilities for the registration of farmers' varieties or lacked knowledge and experience for implementing them. When landraces and farmer varieties were presented for registration, the classic format and procedures were requested. This resulted in the most important and crucial information not being taken into consideration in relation to landraces. NARC, through the National Genebank, decided to champion the adaptation of the new format so that it could be used for the registration of traditional and local varieties, and be friendly for farmers and other users. The new format incorporates methods and approaches that are common in participatory work with farmers such as four-cell analyses and focus group discussions.

In addition to addressing the format, national authorities, the national genebank, the farmers and other actors involved wanted to address uncertainties concerning who has responsibility for the maintenance of registered farmers varieties/ landraces. While for new varieties it is implied that the breeder will maintain them in the form of breeder's seed, for landraces and local varieties, this responsibility was not entirely clear. Discussions led to the agreement that for registered traditional and local varieties, safety maintenance in the National Genebank would be mandatory, and a local organization in charge of providing basic seed would have to be designated.

Finally, the question about the level of distinctiveness, uniformity and stability that should be applied to landraces and farmers' varieties required discussion. It is not completely resolved yet.

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

Art. 9.1

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	Also relevant
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		X
2	Financial contributions to support farmers conservation and sustainable use of PGRFA such as contributions to benefit-sharing funds		
3	Approaches to encourage income-generating activities to support farmers' conservation and sustainable use of PGRFA		X
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 ² , seed networks and other measures improving farmers' choices of a wider diversity of PGRFA.	X	
7	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection		X

² Including seed houses.

8	Farmers' participation in decision-making at local, national and sub-regional, regional and international levels		X
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	X	

In case you selected 'other measures', would you like to suggest a description of this measure, e.g. as a possible new category? Registration of farmers' varieties in national catalogues of commercial varieties.

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

By registering farmers' local varieties, the national catalogues of commercial varieties can be diversified, and varieties which are better adapted to particular local environments can be promoted and commercialized by a wider range of actors. This is particularly true for crops and geographical areas where seed enterprises are absent.

Often, the introduction of alternative, flexible and relaxed systems in seed laws for the registration of traditional, local and farmers' varieties is not enough for facilitating the registration of these varieties. Technical guidelines on the implementation of these flexibilities may be necessary for the national bodies in charge of testing and registering the varieties.

Similarly, support for farmers in the form of capacity building events and guiding tools like the template presented in this note may be required for farmers to be able to apply for registration and follow the necessary procedures.

Researchers' direct field observations of farmers' varieties' combined with the project team's and farmers' interactions with the technical team of the VRRRC convinced the VRRRC about the benefits of registering and releasing farmers' varieties as commercial varieties.

At the time of applying for registration of farmers' local varieties, the implications of such registration must be taken into consideration, in particular the commitments of: a) long-term conservation and availability of the varieties; and b) supply of good quality basic seed for multiplication.

Registration of farmers' local varieties only makes sense if and when the existing seed system has the capacity to produce and distribute seed of such varieties with the necessary quality and in the necessary quantities. When farmers' associations are the ones producing and selling the seed, they have an opportunity for improving their livelihoods.

Registration requires some uniformity and stability in the varieties, even if these requirements are relaxed for farmers' varieties. In the process of selecting and purifying populations part of the genetic diversity is lost.

What challenges encountered along the way (if applicable) (max 200 words)

Revision of the format in a way that was understood by, and acceptable to, the most relevant stakeholders required to accommodate both the exigencies of the VRRRC in charge of registering the varieties and the needs and expectations of the farmers as the expected users of the new format. Several rounds of discussions and sometimes negotiations took place, requiring both actors to think outside their usual box and understanding each other's realities and points of view.

Some challenging questions are still to be resolved:

- How to ensure benefit-sharing with individual farmers and with farmers' communities once landraces and/or farmers' varieties are registered and commercial benefits are generated?
- What criteria should be applied to assess farmers' varieties? How distinct and stable should they be? How much uniformity should be required as a condition of registration of a farmer variety?

What would you consider conditions for success, if others should seek to carry out such a (max 100 words)

Technical expertise, sound research base of the organization or organizations leading the effort. Good communication and understanding with national authorities in charge of variety registration and seed quality control.

Clarity of all actors involved about the advantages of registering farmers' local varieties.

Farmers' trust and interest in the registration process as part of a seed system where they have a role to play and from which they can obtain benefits.

Farmers' knowledge of local varieties, and their capacity to describe and prioritize their own varieties.

Bottom up approach is probably most effective.

Organization interested in championing the initiative and the process.

Linkage with the national genebank or other recognized institution at the national level for conservation backup is an important aspect for maintaining the landraces.

The local level organizations' capacity should be carefully assessed.

Información básica

Denominación de la medida o práctica:

Apoyo a grupos de agricultores semilleristas en la producción de semilla de papa nativa
Support to farmer seed-producer groups in producing seed potatoes of native varieties

Fecha:

23 Julio 2019

Nombre del país o países en que se está aplicando la medida o práctica:

Bolivia

Institución u organización responsable:

Fundación PROINPA
Av. Meneces s/n. Km. 4 Zona El Paso
Cochabamba
Teléfono: (591 – 4)4319595
Fax: (591 – 4)4319600
Contacto: Ximena Cadima, x.cadima@proinpa.org

Tipo de institución u organización (categorías):

Fundación sin fines de lucro (Organización No Gubernamental)

Instituciones, organizaciones o actores colaboradores o de apoyo, si procede

Asociaciones de agricultores del municipio de Colomi (Cochabamba, Bolivia) han sido los principales beneficiarios y actores de las medidas que se describen.

Bioversity International (Roma, Italia) ha dado apoyo técnico y ha permitido a PROINPA aprender de iniciativas similares en otros países y compartir su experiencia a nivel internacional.

La Cooperación Suiza para el Desarrollo (COSUDE o SDC) ha apoyado el trabajo financieramente.

Descripción de los ejemplos

Información obligatoria:

Resumen para el Inventario

En el año 2011, PROINPA comenzó a dar apoyo a varios grupos de agricultores en diferentes zonas de Bolivia, entre ellos la Puna de Colomi, donde se identificaron grupos con interés en mejorar sus sistemas de producción de semilla de calidad para poder abastecer de semilla de papa nativa no solo a nivel local, sino también a otras zonas productoras de papa. Desde el año 2011 y con el apoyo de SDC y Bioversity International, PROINPA ha trabajado de cerca con grupos de campesinos de Colomi con tres objetivos principales: 1) Formar y registrar oficialmente los grupos de Colomi en el directorio nacional de productores de semillas; 2) Caracterizar e identificar de modo participativo las variedades de papa nativa más promisorias

para su producción y venta como semilla y para consumo; y 3) Mejorar las capacidades y habilidades de los campesinos (semilleristas y no) para la producción de papa nativa de calidad en las duras condiciones de la Puna. Esta iniciativa ha demostrado que la producción de semilla por los campesinos puede generar ingresos para las comunidades rurales pobres además de incrementar la diversidad de variedades disponible en el mercado de semilla. También ha confirmado que ante un régimen político y legal de producción de semilla muy rígido las organizaciones de campesinos pueden organizar sus propios sistemas de producción y control de calidad.

Summary for the inventory

Since 2011, the PROINPA foundation, with support of the Swiss Agency for Development and Cooperation (SDC) and Bioversity International, supports farmer groups in Bolivia, including in the 'Puna de Colomi'. As part of this work, groups with an interest in improving their seed production systems were identified, with the objective to supply seed of native potato varieties not only locally, but also to other potato producing areas. Key components were (1) to form and officially register seed-producer groups in the national directory of seed producers; (2) to characterize and identify, in a participatory manner, the most promising native potato varieties for production and sale as seed, and for consumption; and (3) to enhance the capacities and skills of farmers (both seed producers and others) for the production of high-quality native potato crops in the harsh conditions of the Puna de Colomi. Lessons learned include that seed production by farmers can contribute to income generation for poor rural communities as well as increase the diversity of varieties available in the seed market; in the face of a rigid political and legal seed production regime, farmers' organizations can organize their own production and quality control systems.

Breve historia (incluido el año de inicio), cuando proceda

El trabajo de caracterización y mapeo de las variedades nativas de Papa en colaboración con los campesinos en un centro de alta agrobiodiversidad como el Municipio de Colomi durante la década del 2000 permitió conocer mejor los sistemas de producción y de semillas e identificarlos como elementos especialmente relevantes para los medios de vida de las familias campesinas y la conservación de los recursos genéticos de papas y su uso para una agricultura más justa y sostenible. El limitado número de papas nativas disponibles en los mercados locales y nacionales y la dificultad de los campesinos para identificar y obtener semilla de calidad de papa nativa tanto a nivel local como nacional, evidenciaron la falta de un sistema robusto de semillas para las papas nativas. En el año 2011, PROINPA comenzó a dar apoyo a varios grupos de agricultores en diferentes zonas, entre ellos la Puna de Colomi, donde se identificaron grupos con interés en mejorar sus sistemas de producción de semilla de calidad para poder abastecer no solo a nivel local, sino también a otras zonas productoras de papa. El trabajo se inició con dos grupos de campesinos que se asociaron y se especializaron en variedades nativas, siendo los primeros en el país reconocidos por las autoridades nacionales de semilla. Actualmente, los grupos incluyen miembros de diferentes comunidades de Colomi y están trabajando en ampliar su oferta con otras especies, como el tarwi (*Lupinus mutabilis*), la única leguminosa domesticada en los andes de altura.

Componentes básicos de la medida o práctica (máx. 200 palabras)

Desde el año 2011 y con el apoyo de SDC y Bioversity International, PROINPA ha trabajado de cerca con grupos de campesinos de Colomi para:

- Formar y registrar oficialmente los grupos de Colomi en el directorio nacional de productores de semillas.
- Caracterizar e identificar de modo participativo las variedades de papa nativa más promisorias para su producción y venta como semilla y para consumo.
- Mejorar las capacidades y habilidades de los campesinos (semilleristas y no) para la producción de papa nativa de calidad en las duras condiciones de la Puna.
- Proveer a los grupos de productores de semillas con semilla básica de muy buena calidad y libre de patógenos para iniciar la multiplicación y producción de semilla de calidad. Entre 2013 a 2018 aprox. 5665 kilos de semilla básica y prebásica de 14 variedades de papas nativas se han distribuido a los grupos de producción de semilla de Colomi. Los grupos han reportado una producción en tres ciclos agrícolas de alrededor de 268 000 kilos de papa, de los cuales 19 750 kilos se ha vendido como semilla a otros campesinos en el mercado de Colomi.
- Certificar la semilla de papa nativa producida por estos grupos de acuerdo con la normativa nacional.
- Registrar en el catálogo nacional de variedades comerciales una selección de papas nativas, y asociar la producción de semilla de dichas variedades con los grupos de producción de semilla. A Enero de 2019, 4 variedades de papa nativa han sido introducidas en el catálogo.
- Elaborar planes de negocio a corto, medio y largo plazo para los grupos de producción semilla.
- Dar a conocer los grupos de producción de semilla en los mercados y ferias locales y nacionales, así como en el directorio nacional de proveedores de semilla y redes de semilleristas regionales
- Reforzar la relación entre los grupos productores de semillas y los campesinos interesados, promoviendo acuerdos de compra-venta de semilla a largo plazo.
- Promover la venta y el consumo de papas nativas en el Departamento de Cochabamba y en Bolivia en general, fomentando la demanda de papas nativas producidas por los campesinos del centro de alta agrobiodiversidad de Colomi.
- Aprovechar las flexibilidades de la legislación nacional de semillas y promover la modificación de la legislación para dar mayor espacio a las papas nativas y a los campesinos de la Puna en el sector de semillas de Bolivia.
- Apoyar a las autoridades locales de Colomi en sus esfuerzos por conservar y utilizar la diversidad agrícola del municipio en beneficio de sus habitantes.

Descripción del contexto y de la historia

(Ver secciones precedentes y a continuación)

Disposiciones del artículo 9 del Tratado Internacional con las que se relaciona esta medida

Art. 9.1

Art. 9.2b

Art. 9.3

Otra información, si procede

Indique qué categoría del inventario es la más pertinente para la medida propuesta y qué otras categorías también son pertinentes (si las hubiera):

N.º	Categoría	Más pertinente	También pertinente
1	Reconocimiento de las contribuciones de las comunidades locales e indígenas y de los agricultores a la conservación y la utilización sostenible de los RFAA, por ejemplo mediante premios y distinciones otorgados a los agricultores custodios o guardianes		
2	Aportes financieros para respaldar la contribución de los agricultores a la conservación y la utilización sostenible de los RFAA, como las aportaciones a fondos de distribución de beneficios		
3	Enfoques para fomentar actividades de generación de ingresos con miras a respaldar la contribución de los agricultores a la conservación y la utilización sostenible de los RFAA	X	
4	Catálogos, registros y otras formas de documentación de los RFAA y protección de los conocimientos tradicionales		X
5	Conservación y gestión de los RFAA <i>in situ</i> o en la explotación, en especial medidas sociales y culturales, la gestión comunitaria de la biodiversidad y los sitios de conservación		
6	Simplificación del acceso de los agricultores a una variedad de RFAA por medio de bancos de semillas comunitarios, redes de semillas y otras medidas para mejorar las posibilidades de elección de los agricultores entre una variedad más amplia de RFAA		X
7	Enfoques participativos en la labor de investigación sobre los RFAA, en especial la caracterización y evaluación, el fitomejoramiento participativo y la selección de variedades		X
8	Participación de los agricultores en la toma de decisiones a escala local, nacional y subregional, regional e internacional		
9	Capacitación, fomento de la capacidad y sensibilización de la opinión pública		

10	Medidas jurídicas para la aplicación de los derechos del agricultor, como medidas legislativas relacionadas con los RFAA		
11	Otras medidas o prácticas		

Enseñanzas adquiridas

Describe las enseñanzas adquiridas que puedan resultar de interés para quienes deseen aplicar medidas o prácticas iguales o similares (máx. 250 palabras)

Los sistemas de semillas influyen muchísimo la presencia, cantidad y uso de los recursos genéticos en las fincas de los agricultores y en los centros urbanos de consumo.

Los pequeños campesinos que viven en zonas pobres y remotas, y con limitado acceso a tecnología (por ejemplo semilla de calidad), tienen un gran interés en utilizar las variedades tradicionales que están adaptadas a su entorno, pero en ausencia de una demanda por parte del mercado y de tecnología que les facilite la producción agrícola, es difícil que dichas variedades se cultiven de un modo sostenible y pueden llegar a desaparecer.

La producción de semilla de manera asociada es una opción viable en las zonas agrícolas pobres, sin embargo la presencia de líderes reconocidos y respetados con una buena visión de negocio es necesaria, así como el apoyo de políticas, aunque locales, que favorezcan la producción y comercialización.

La producción de semilla puede generar ingresos para los campesinos pobres siempre que su nicho dentro del mercado de semillas esté claro y sea promovido a través de iniciativas como la que se describe aquí.

Multitud de iniciativas intentan modificar la legislación de semillas para dar cabida a los pequeños productores y las variedades tradicionales. En aquellos lugares donde la rigidez del sistema formal o las características del mercado de semillas no permitan adaptar la legislación de semillas, los campesinos, apoyados por autoridades locales y organizaciones no gubernamentales, pueden organizarse ellos mismos para explotar su propio nicho en la producción y venta de semillas, al margen o en paralelo con el sistema formal.

Los fondos externos son necesarios para lanzar la iniciativa y minimizar los riesgos del campesino que se embarca en la producción de semilla, pero desde el comienzo se debe buscar la sostenibilidad: es decir, que la venta de semilla de papa nativa de calidad sea un negocio lucrativo para el productor. Para ello se debe trabajar tanto para garantizar una oferta como para crear una demanda suficiente y estable.

¿Qué dificultades encontró en el camino (si procede)? (máx. 200 palabras)

Las limitaciones a las que se ha enfrentado la iniciativa derivan de las propias dificultades generales que afectan la vida y la agricultura en la Puna boliviana: comunidades campesinas dispersas, muy pobres, con bajo grado de alfabetización y en búsqueda de mejores oportunidades en la ciudad o en zonas menos duras; fenómenos climáticos extremos e imprevisibles que afectan la producción agrícola y la cosecha.

En particular los siguientes aspectos han afectado el trabajo de la iniciativa de modo negativo:

- Legislación de semillas y estrategias gubernamentales poco propicias para la promoción de semilla de papa nativa.
- Cambios en las agencias gubernamentales a cargo de los temas relacionados con los recursos genéticos y el mercado de semillas.
- Dificultad para introducir la semilla nativa en las estrategias locales de protección del medio ambiente y la agro-biodiversidad.
- Dificultad para garantizar la sostenibilidad de la iniciativa sin fondos externos.

En su opinión, ¿cuáles serían las condiciones para el éxito si otros quisieran llevar a cabo la misma medida u organizar la misma actividad? (máx. 100 palabras)

Agricultores con un mínimo de organización colectiva y entre los que haya líderes comprometidos.

Un mínimo de tejido social que permita la consolidación o emergencia de mercados de productos agrícolas.

Apoyo de organizaciones que faciliten el diálogo entre campesinos y autoridades, entre agricultores productores y diferentes tipos de consumidores, reales o potenciales.

Interés y apoyo continuado de las autoridades locales y nacionales, no sujetos a cambios en el gobierno.

Fondos económicos suficientes para poder lanzar la iniciativa y minimizar los riesgos para el agricultor en una primera etapa.

Posibilidad de operar legalmente dentro del sistema de semillas existente o de modificarlo para que la venta de semilla nativa por pequeños campesinos sea posible.

Basic information:

Title of measure/practice:

Establishing and linking Community Seed Banks with the national genebank for conservation and policy support.

Date of submission:

23 July 2019

Name(s) of country/countries in which the measure/practice is taking place

Uganda

Responsible organizations

National Agricultural Research Organization- Plant Genetic Resources Center (NARO-PGRC)
Contact person: John Wasswa Mulumba, Email: jwmulumba@yahoo.com

Ministry of Agriculture Animal Husbandry and Fisheries (MAAIF)
Contact Person: Brenda Kisingiri

Bioversity International in Uganda
Kampala Uganda
www.bioversityinternational.org
Contact Person: Gloria Otieno g.otieno@cgiar.org

Type of institution/organization (categories)

NARO: Public research organization

MAAIF: Government Ministry

Bioversity International: International Research Centre within CGIAR

Collaborating/supporting institutions/organizations/actors, if applicable

Swiss Development and Cooperation (SDC) and the Netherlands government provided financial support.

Description of the examples

Mandatory information:

Short summary to be put in the inventory

Since 2007, Bioversity International, as partner of various projects supported by the Swiss Agency for Development and Cooperation (SDC) and the International Fund for Agricultural Development (IFAD), has been working with the National Genebank and Plant Genetic Resources Center of Uganda (NARO-PGRC) to link ex situ conservation of PGRFA with in situ conservation through community seed banks. The objective was to enhance farmers' access to diverse, high-quality seed from farmers' seed systems, and to strengthen policy support for pluralistic approaches to seed system development. Core activities included capacity development for farmers on seed production and marketing, participatory variety selection as

well as policy review and development. Five community seed banks have been established so far, serving around 3000 farmers. Recent policies, including Uganda's draft PGRFA Policy of 2016 and the National Seed Policy of 2019 recognize the importance of a pluralistic seed system and the need to integrate formal and informal seed systems, also emphasizing the importance of community seed banks.

Brief history (including starting year), as appropriate

Since 2007 Bioversity International through various projects supported by SDC and IFAD has been working with the national gene bank and Plant Genetic Resources Center of Uganda (NARO-PGRC) to link *ex situ* conservation of PGRFA with *in situ* conservation through community seed banks (CSBs). So far, five community seedbanks have been established in different geographic areas of Uganda to support farmers' rights in the following six ways:

- Conservation of indigenous varieties of beans, finger millet, sorghum, vegetables and other legumes and linking these with *ex-situ* conservation by keeping farmers' duplicate collections in the national seed banks
- Improving access to good quality and diverse seed by farmers through their community driven seed banks which support farmers to freely save and exchange seeds of desired characteristics
- Increasing farmers' capacity to produce quality seed, conserve and use local varieties and indigenous knowledge
- Recognition of community seed banks in the draft national PGRFA Policy as an important aspect of *in situ* conservation including the establishment of a community gene fund to support future and present community seed banking initiatives.
- Establishing of a network/platform on community seedbanks which has brought together many farmers and partners such as NGOs, research and policy makers countrywide to share information and resources regarding genetic diversity and availability of diverse seed.
- Holding seed fair events to promote sharing and exchange of seeds and related indigenous knowledge.

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

Core components of the measure include:

Capacity enhancement:

- Construction of 5 community seed banks that preserve genetic diversity of food security crops including beans, finger millet, sorghum, traditional leafy vegetables, cow peas and pigeon peas.
- Training of over 3000 farmers on community seed banking and conservation of local indigenous varieties; quality seed production including seed selection and preservation.
- Developing seed businesses with community seedbanks to improve access of diverse seeds to local communities and training seed bank members on business management.
- Training and inspection by seed certification services of ministry of agriculture and providing alternative quality assurance mechanisms such as Quality Declared Seed (QDS) for community seed banks to enable them package, market and sell their seed.

- Capacity enhancement for *in situ* and *ex situ* conservation of PGRFA by linking the community seedbanks with national seed banks to enable the seedbanks to store their duplicates in the gene bank and make voluntary contributions.

Research for climate change adaptation:

Various community seedbanks and their members have been involved in participatory varietal selection of materials grown out from beans, finger millet and sorghum accessions from the national gene banks of Kenya Uganda and Tanzania. These materials are currently being evaluated for resistance to pests and diseases associated with climate change. These trials give farmers an opportunity to participate in decision-making processes with respect to varieties that are suitable for their use. Joint generation and exchange of information between farmers' communities and the national genebanks on climate change issues have also taken place.

Policy review and development:

The draft Uganda PGRFA Policy of 2016 still awaits tabling through cabinet and parliament approval. This draft policy recognizes farmer' rights to good quality diverse seeds for food security and livelihood improvement. Provisions in the draft acknowledge community seed banking as an effective measure to recognize and implement farmers' rights. Strategy 3.6.1, 3.6.4 and 3.6.5 of this policy provide for the establishment of CSBs, support for community management of PGRFA and farmers' rights respectively. The draft national PGRFA Policy specifically proposes that a fund be set up to support *in situ* conservation activities. NARO-PGRC and other partners are using this instrument to ensure National support for CBS is institutionalized and funded.

The recently approved National Seed Policy 2019 recognizes the importance of a pluralistic seed system and the need to integrate formal and informal seed systems. It also emphasizes the role of CSBs in providing access to quality seed in the informal sector and provides alternative quality assurance mechanisms such as QDS certification for seed banks engaged in seed businesses.

Short description of the context and the history of the measure/practice is taking place

Described in previous sections.

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

Art. 9.1

Art. 9.2a

Art. 9.2c

Art. 9.3

Other information, if applicable (optional):

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	Also relevant
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		X
2	Financial contributions to support farmers conservation and sustainable use of PGRFA such as contributions to benefit-sharing funds		
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 bank ³ , seed networks and other measures improving farmers' choices of a wider diversity of PGRFA.	X	
7	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection		X
8	Farmers' participation in decision-making at local, national and sub-regional, regional and international levels		X
9	Training, capacity development and public awareness creation		X
10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		X
11	Other measures / practices		

Objective: To improve access to quality and diverse seed in farmers' seed system and policy support for pluralistic seed systems

Target group(s) and numbers of involved and affected farmer

³ Including seed houses.

Smallholder farmers, local seed businesses, community seed banks, policy makers

Location(s) and geographical outreach

Western, Central and Eastern Uganda

Resources used for implementation of the measure/practice

Various international donors such as SDC, IFAD, GEF UNEP, the government of Netherlands and the Benefit Sharing Fund of the ITPGRFA have contributed funds to the work described in this note, totaling for around one million USD in more than 10 years.

How has the measure/practice affected the conservation and sustainable use of plant genetic resources for food and agriculture? Please describe the achievements of the measure/ practice so far (including quantification) (max 200 words)

The measure has improved access to quality and diverse seed by over 3000 farmers directly and others indirectly.

Other national level instruments that are linked to the measure/practice

Described above.

Are you aware of any other international agreements or programs that are relevant for this measure/practice?

Nagoya Protocol. Regional and international agreements on variety registration and seed quality certification.

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

National gene banks and national agencies in charge of ex situ and in situ conservation, such as the Ministry of Environment must be engaged in efforts to conserve PGRFA. Engaging the national gene bank also provides a back-up for CSBs' collections thereby enhancing the complementarities between *in situ* and *ex situ* conservation.

What would you consider conditions for success, if others should seek to carry out such a (max 100 words)

Farmers' knowledge of local varieties, and their capacity to describe and prioritize their own varieties.

Continued technical and financial support from international research and development organizations over the years

Good partnerships with the national gene bank and the focal point of the ITPGRFA

Having a close relationship with the Ministry of agriculture's seed certification and inspection services is advantageous to farmers in capacity development for QDS production contributing to farmers' enhanced access to quality seed of a diversity of varieties.

Further information

<http://www.ccsenet.org/journal/index.php/sar/article/view/64785/36008>

<https://www.bioversityinternational.org/e-library/publications/detail/community-seedbanking-to-improve-the-resilience-of-farmers-the-case-of-kiziba-seedbank-in-uganda/>

<https://www.bioversityinternational.org/news/detail/women-of-the-kizibi-community-seedbank/>

<https://www.bioversityinternational.org/e-library/publications/detail/community-seed-banks-sharing-experiences-from-north-and-south/>

https://ccaafs.cgiar.org/hoima-community-seed-bank-launch#.XFgYq_ZFzIU

Basic information:

Title of measure/practice:

Community biodiversity registries and biocultural community protocols: strengthening communities' capacity to manage crop genetic diversity in Benin.

Date of submission:

23 July 2019

Name(s) of country/countries in which the measure/practice is taking place

Benin

Responsible organizations

Bioversity International

Type of institution/organization (categories)

International Research Centre within CGIAR

Collaborating/supporting institutions/organizations/actors, if applicable

Project partner institutions:

- ABS Capacity Development Initiative;
- ONG Cercle de Sauvegarde des Ressources Naturelles (CeSaReN) (Benin);
- Institut National des Recherches Agricoles du Benin (INRAB);
- Secretariat of the Convention on Biological Diversity (CBD);
- Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
- Natural Justice
- Comité de gestion des forêts sacrées de Bonou, Bonou (Benin).
- Jeunesse Sans Frontière, Tori Bossito (Benin).

Description of the examples:

Mandatory information:

Brief summary for the inventory

From 2015 to 2018, Community Biodiversity registers and Biocultural Community Protocols were developed in Benin. The national agricultural research organization *Institut National des Recherches Agricoles du Benin* (INRAB) as well as several NGOs were involved (see submissions for detailed lists of project partners). In a first step, community biodiversity registries were established in the participating communities to identify crop, forage and agroforestry diversity in their agricultural systems. These registers can be used, for example, for the documentation of traditional knowledge associated with PGRFA, for monitoring purposes or to identify potentially interesting materials for exchange with outsiders. Biocultural Community Protocols were then developed with the objective of helping local communities to take advantage of their countries' commitments under both the ITPGRFA and the Nagoya Protocol by establishing mechanisms to regulate access to genetic resources in their territories. These protocols can set out rights and responsibilities under customary, state and international law as the basis for engaging with external actors, such as governments, companies, academics and

NGOs, and to establish the terms and conditions for access to and use of their traditional knowledge and resources.

(184)

Brief history (including starting year), as appropriate

The project 'Mutually supportive implementation of ITPGRFA and the Nagoya Protocol in Benin and Madagascar' was implemented with the support of the Darwin Initiative, a UK Government Fund, from April 2015 to April 2018. The project's primary objectives were to develop mechanisms to implement the ITPGRFA and the Nagoya Protocol in mutually supportive manners from community to national levels. The project was successful in supporting partners to developing national level laws that were approved by national cabinets; it also supported communities to develop mechanisms to promote their interests as managers of biological diversity in their agricultural systems. This note will focus on two of those mechanisms: community biodiversity registries and biocultural community protocols. The latter were developed with the objective of helping the communities take advantage of their countries' commitments under both the ITPGRFA and the Nagoya Protocol. Bioversity International was the lead executing agency for the grant. Project partners are listed above.

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

Two groups of communities in Benin (Tori Bossito, Bonou) created community biodiversity registries to identify crop, forage and agroforestry diversity in their agricultural systems. They use those registries to monitor trends in the use of diversity across the community, to identify potentially interesting materials to exchange with users outside the community, and to identify gaps that they could potentially fill by acquiring crop diversity from elsewhere. The communities also developed biocultural community protocols to set out processes and procedures, building on community level institutions and practices, and linking up with local, national organizations where necessary, for a) considering requests for genetic resources managed within the communities and b) to access desirable plant genetic resources from elsewhere. Awareness raising and capacity strengthening workshops were organized at the community level to introduce the ITPGRFA and the Nagoya Protocol, and their potential significance to the communities concerned.

The communities exchanged crop genetic resources between themselves (within and between the two countries) and accessed crop genetic resources from CGIAR Centres which they entered into collectively managed evaluation trials.

Short description of the context and the history of the measure/practice is taking place

The Nagoya Protocol and the ITPGRFA create access and benefit sharing norms, and promote recognition of indigenous peoples, local communities and farmers as biodiversity stewards. Before the project started, Benin had ratified the ITPGRFA and the Nagoya Protocol. However, it didn't have mechanisms to implement either agreement.

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

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	Also relevant
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		X
2	Financial contributions to support farmers conservation and sustainable use of PGRFA such as contributions to benefit-sharing funds	X	
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		X
5	In-situ/on-farm conservation and management of PGRFA, such as social and cultural measures, community biodiversity management and conservation sites		X
6	Facilitation of farmers' access to a diversity of PGRFA through community seed banks, 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		X
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		

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

The activities conducted at the community level required considerably more resources (both time and financial) than was initially planned for in the project proposal. Meaningful community level engagement takes considerable time and support. The project was very lucky to have the ABS Capacity Development Initiative and Natural Justice already involved working with some of the communities. Their participation/contributions underscore the importance of maintaining close, ongoing interaction/dialogue with community members and representatives.

What would you consider conditions for success, if others should seek to carry out such a (max 100 words)

Participatory, inclusive approaches to community engagement. Women and men from the four case study communities actively participated, from the very beginning, in the development of the biocultural community protocols, community biodiversity registries and the community investment plans.

Multistakeholder governance of project activities within both countries. National Project Implementation Committees were formed in both countries. These included representatives of all relevant stakeholder groups in the country, including local farmers and farmer organizations. These Committees met regularly to guide the implementation of the project. These Committees were co-chaired by the national ITPGRFA and Nagoya Protocol focal points in both countries.

Further information

Bioversity International maintains a webpage dedicated to the project where more information is available: <https://www.bioversityinternational.org/darwin-benin-madagascar/>

The biocultural community protocols developed by the four communities are available at:

- BCP Tori Bossito, Benin:
https://www.bioversityinternational.org/fileadmin/user_upload/research/research_portfolio/policies_for_crop/BCP_ToriBossito_Benin_2018.pdf
- BCP Bonou, Benin
https://www.bioversityinternational.org/fileadmin/user_upload/research/research_portfolio/policies_for_crop/BCP_Bonou_Benin_2018.pdf

Basic information:

Title of measure/practice: Helping farmers access PGRFA from the multilateral system for climate-change adaptation

Date of submission:

23 July 2019

Name(s) of country/countries in which the measure/practice took place:

Costa Rica, Guatemala, Burkina Faso, Bhutan, Cote D'Ivoire, Benin, Kenya, Nepal, Madagascar, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe,

Responsible organizations

National research teams comprised of national agricultural research organizations, farmer and community organizations, universities, national ITPGRFA focal points in the countries listed above with support from Bioversity International.

Description of the examples

Mandatory information:

Brief summary for the inventory

Under the Joint Capacity Building Program for Developing Countries on Implementation of the International Treaty and its Multilateral System of Access and Benefit-sharing, Bioversity International with partners implemented several projects: 'Genetic Resources Policy Initiative,' 'Mutually supportive implementation of the Plant Treaty and Nagoya Protocol in Benin and Madagascar' and 'Open source seeds systems for climate change adaptation'. Core components included participatory workshops with farmers to identify climate-change impacts and desirable crop traits, followed by selecting local varieties and adapted materials for crop enhancement programs suited to local conditions. Other components included technical training to identify suitable PGRFA from abroad, which were then accessed through the multilateral system. The objectives were (1) to help farmers access diverse crop germplasm whose performance they can evaluate in their own local settings; and (2) to demonstrate to national policy makers why implementing and taking advantage of the ITPGRFA's multilateral system of access and benefit-sharing is useful. Key lessons learned include that most farmers are unaware of the ITPGRFA, but once they understand the opportunities, they become highly interested in accessing and testing PGRFA; however, connecting farmers to the multilateral system requires support from the national research system.

Brief history (including starting year), as appropriate

Under the framework of the Joint Capacity Building Programme for Developing Countries on Implementation of the ITPGRFA and its Multilateral System of Access and Benefit-sharing (Joint Programme), Bioversity International has managed a number of projects working with teams of national partners in Latin America, Africa and Asia. The largest such project was the 'Genetic Resources Policy Initiative', supported by the government of the Netherlands. A second, smaller

project funded by the Darwin Initiative was entitled, 'Mutually supportive implementation of the Plant Treaty and Nagoya Protocol in Benin and Madagascar'. As part of those projects, Bioversity and partners have developed an activity/method for working with farmers at community level to obtain potentially useful germplasm for adapting to the impacts of climatic changes on their agricultural production systems. These exercises are described in the following section. These exercises have served two functions: first, to help farmers get access to a diversity of crop germplasm whose performance they can evaluate in their own local settings, and second, to demonstrate to national policy makers in the same countries why it is useful to implement and take advantage of the ITPGRFA's multilateral system of access and benefit-sharing. This note focusses on the first aspect, that is, helping farmers to get PGRFA through the multilateral system.

Bioversity is involved in a third project, supported by the ITPGRFA Benefit Sharing Fund, called "Open source seeds systems for climate change adaptation" which uses a similar approach for helping farmers access materials from the multilateral system.

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

Multi-stakeholder project teams travel to participating communities for participatory workshop with community members with the objectives of ascertaining farmers' perspectives on the impact of climate changes on food security crops, the farmers' coping strategies, and to identify desirable traits in varieties of those same crops or replacement crops. Then the teams consider potential sources of PGRFA with the desired traits. First, the teams consider local varieties that farmers may identify that are performing acceptably and consider options for increasing the availability of seed/reproductive materials for those crops for other farmers in the area. Second, the teams, which include the national genebank manager and plant breeders, consider potentially adapted materials from national public collections and crop enhancement programs that may do well in local conditions. Third, the teams are taught how to use a combination of publicly available climate data, GIS data, and genebank accession passport information, to identify materials in other countries' national and in international genebanks that may be potentially useful. For this latter exercise, the research teams search through accession level information on Genesys to identify materials. Thereafter, the national teams consider the results of their searches and identify what they consider to be 'best bets'. They request the materials from the organizations conserving them, sign SMTAs and eventually receive materials through the multilateral system. Thereafter, national and international experts work with the farmers to design evaluation trials using participatory tools and methods.

This is a generic description of the exercise that the project teams have gradually developed over time. It has not been possible to replicate all steps in all of the countries listed above.

Description of the context and history

See previous and following sections.

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

Art. 9.1

Art. 9.2b

Art. 9.2c

Art. 9.3

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	Also relevant
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		
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, seed networks and other measures improving farmers' choices of a wider diversity of PGRFA.	X	
7	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection		X
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		

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

Most of the farmers in the world do not know anything about the ITPGRFA or the multilateral system of access and benefit sharing. However, once informed about the possibility of free (or almost free) access to such an immense diversity of reproductive materials, many farmers are naturally very interested in knowing if there are materials that they could use. Farmers clearly need a lot of support to learn about the multilateral system, to figure out how to search through it and find potentially useful materials, ask for it, and to finally receive it after it has gone through necessary phytosanitary testing. National agriculture research organizations, national

genebanks, national agricultural extension agencies can play key roles in connecting farmers to the multilateral system.

What would you consider conditions for success, if others should seek to carry out such a (max 100 words)

Commitment from national agricultural research organizations to engage with farming communities. Financial support for both the farmers and the national agricultural research organizations to dedicate requisite time and effort to work together to identify farmers needs, search through information on materials in the multilateral system, go through process of requesting the materials, signing the standard material transfer agreements, getting materials through national phytosanitary processes and finally, setting up evaluation trials.

Centro Internacional de Agricultura Tropical (CIAT)

Basic information:

Title of measure/practice

Rapid participatory characterization of cassava landrace agrobiodiversity, nomenclature and traditions, uses, and conservation status

Date of submission

23 July 2019

Name(s) of country/countries in which the measure/practice is taking place

Peru

Responsible institution/organization (name, address, website, e-mail address, telephone number(s) and contact person)

International Center for Tropical Agriculture (CIAT)

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Type of institution/organization

International research Centre, part of the CGIAR.

Collaborating/supporting institutions/organizations/actors, (name, address, website (if applicable), e-mail address, telephone number(s))

Federación De Comunidades Nativas Yaneshas (FECONAYA)

<https://www.facebook.com/FederaciondeComunidadesNativasYaneshas/>

La Universidad Nacional Daniel Alcides Carrión (UNDAC)

<http://www.undac.edu.pe/sedes-filiales-undac/oxapampa-pasco>

Oxapampa, Peru

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El Instituto Del Bien Común (IBC)

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Tel: (51-1) 3732268 - (51-1) 3732296 - (51-1) 373-2284

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Mandatory information:

Brief summary for the inventory

The characterization of cassava landraces in the region of Pasco, Peru, was initiated in 2017 by a consortium coordinated by the International Center for Tropical Agriculture (CIAT), including the Instituto Nacional de Innovación Agraria (INIA), National University Daniel Alcides Carrión (UNDAC), the civil society organization Instituto del Bien Común (IBC) and an organization representing the indigenous Yanesha peoples, the *Federación de Comunidades Nativas Yaneshas* (FECONAYA). Objectives entail the documentation of *Yanesha* cassava agrobiodiversity, including associated practices and traditions; to compare these with historic measures (based on previous studies); to assess patterns of conservation, management, and loss; to generate locally-appropriate educational materials, including varietal catalogues; to communicate results to local peoples; and ultimately to empower the *Yanesha* peoples. Core components include the systematic documentation of existing landrace diversity in cassava-producing *Yanesha* communities by conducting household surveys, participatory GIS cartography and field sampling, phenological and morphological documentation, plant photography and ethnobotanical inquiries, combined with genetic fingerprinting studies. These data provide a robust analysis of cassava diversity and conservation trends, both spatially and temporally. In addition, locally appropriate catalogues and communication materials give local people insight into their varietal diversity, risk of loss, and management options.

Brief history (including starting year), as appropriate

The characterization began in 2017, when the CIAT-coordinated consortium of project partners began. This follows on work conducted by CGIAR-affiliated scientist Jan Salick on documenting *Yanesha* cassava diversity in the same region in 1986, and again in 1999. Since this time much has changed for the *Yanesha*, including Peru's approval of the UN Declaration on the Rights of Indigenous Peoples (DRIP) in 2007, and the establishment of the Oxapampa Ashaninka *Yanesha* Biosphere reserve in 2010. The CRP-RTB has one activity on in-situ conservation, initially involving baseline-level inventories of crop diversity in identified hotspots as a precursor to future monitoring activities.

Core component of the measure/practice (max 200 words)

The practice consists of the systematic documentation of existing landrace diversity in cassava-producing communities. The practice begins with a standardized household survey, which is randomly implemented in each of the participating villages. These surveys are followed by participatory GIS cartography and field sampling, in which farmers assist local university students in documenting their cassava fields using geographic information systems containing detailed characterization of cropping patterns, intercropping / polyculture arrangements, and spatial segregation by variety. The methodology allows for red listing of landraces as a measure of the relative abundance or evenness of these materials.

On the basis of farmer responses, village-level varietal collection gardens are installed, and planted with a representative collection of unique cassava landraces from the surveyed farmers and communities. These landraces are maintained in order to conduct phenological and morphological documentation at 3, 6, and 9 months after planting, and at harvest. Plant photography and ethnobotanical inquiries help to document each individual landrace in detail. This in turn is expected to result in a catalogue of the landraces of the Yanésa. In the final stage of the study, leaf clippings will be used to conduct genetic fingerprinting studies to be paired with the morphological and use descriptions collected above. These data together will form the basis of a robust analysis of cassava diversity and conservation trends, both spatially and over time. In addition, this data will be used to generate locally appropriate catalogues and communication materials for use in the project area, giving local peoples unique insight into their varietal diversity, risk of loss, and management options.

Short 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)

Baseline assessment and cataloging is a well-established approach to both systematic monitoring of the conservation status of on-farm diversity (De Haan et al., 2016), as well as assuring farmers rights to their genetic resources (Scurrah et al., 2013). It allows for the objective establishment and documentation of the agrobiodiversity maintained by indigenous communities. This documentation and actual registration allows for communities to defend and promote their ancestral resources.

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	Also relevant
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		X

2	Financial contributions to support farmers conservation and sustainable use of PGRFA such as contributions to benefit-sharing funds		
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	X	
5	In-situ/on-farm conservation and management of PGRFA, such as social and cultural measures, community biodiversity management and conservation sites		X
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		

Objective:

To catalog Yanesha cassava agrobiodiversity, maintenance, cropping practices, and traditions; to compare these with historic measures to evaluate patterns of conservation, management, and loss; to generate locally-appropriate educational materials communicating the results to local peoples through varietal catalogues and other products; ultimately to empower the Yanesha peoples with a greater understanding and stewardship of their cassava genetic resources.

Target group(s) and numbers of involved and affected farmer:

This initiative works specifically with Peru's Yanesha indigenous people. With a population of less than 10,000 people, the Yanesha are a small indigenous group making up approximately

⁴ Including seed houses.

3% of the Peruvian Amazon's indigenous population. The Yanesha are an Amerindian group with a language in the Arawak family. Over the past 4 decades, the Yanesha have moved steadily away from their traditional fishing and hunting background, and increasingly into commercially-oriented crop cultivation and livestock based livelihoods. Linguistic evidence suggests that the Yanesha have been inhabiting their traditional lands surrounding the Palcazu and Pichis river valleys for ~4000 years. Archaeobotanical and ethnographic studies indicate that cassava has been an integral part of the diets and traditions of the Yanesha people for the duration of this time. Lessons learned from the Yanesha experience will also serve as an example and model for the dozens of other minority ethnic groups in Peru's Amazonian region and beyond. Ideally future catalogues would be developed based on an ethnic and/or hotspot-basis.

Location(s) and geographical outreach

The Yanesha traditional lands surround 33 Yanesha villages in the Palcazu and Pichis river valleys in Central Peru's Pasco region. In 2010, the Oxapampa-Ashaninka-Yanesha Biosphere Reserve was established in Pasco, with a core area of 110,000 ha and buffer/transition zones bringing the total surface area to 1.8 million hectares. The designation of this area as a biosphere reserve is an official recognition of the importance of the living landscape, which explicitly includes both natural resources and the interacting socio-economic activities of its indigenous Amerindian inhabitants. The Yanesha (and their much larger neighboring Ashaninka ethnic group) face serious challenges from plantation farming and livestock rearing led ecosystem degradation, the encroachment of colonists migrating from other regions of Peru, growing outside commercial interests in their resources, and the illicit coca trade. These factors, among others, jeopardize the unique interacting biodiversity of the Yaneshas' domesticated and crop wild relative genetic resources.

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

In the case of this particular initiative on cassava landraces it is too early to say how it has affected conservation. The actual publication of a catalogue will still take a few years. However, previous experiences on cataloging and baseline studies of contemporary diversity have been highly successful, providing a record of what farmers actually maintain and resulting in the description of previously undocumented landraces with unique characteristics. Achievements, as of today, with the Yanesha communities include the installment of 15 gardens with local communities and a qualitative inventory of landraces (survey-based).

Are you aware of any other international agreements or programmes that are relevant for this measure/practice?

Yes, similar work has been done by the International Potato Center (CIP) resulting in various landrace catalogues. See:

<https://cgspace.cgiar.org/handle/10568/89110>

<https://cgspace.cgiar.org/handle/10568/69083>

<https://cgspace.cgiar.org/handle/10568/73247>

<https://cipotato.org/wp-content/uploads/2014/08/003524.pdf>

Other issues you wish to address, that have not yet been covered, to describe the measure/practice

For the Yanেশa people, cassava diversity is an explicit link to their spiritual and cultural heritage. The Yanেশa religion and mythos are intertwined with their landscape and real geographic, floral, and faunal environment. The creation myth detailing the very origins of the Yanেশa peoples themselves explains that people were cassava in the previous world. For this reason a role of the Yanেশa shaman is to maintain the diversity of cassava landraces for future generations. Yanেশa names for traditional cassava varieties codify these traditions and parables, and emphasize this rich cultural legacy. According to legend, the preparation of cassava beer, known as 'masato', was the event that allowed human social harmony and the organization of villages and settlements, and the fermented cassava drink remains of central importance in nearly any community event of note today. This intangible cultural heritage is essential to the preservation of the Yanেশa identity in a changing world. The rooting of these mythologies in cassava agrobiodiversity gives the documentation and management of these resources a special importance and significance in the preservation of customs and beliefs beyond the norm in other scenarios.

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

Active involvement of local stakeholders, including NGO's, indigenous associations and research institutions has enjoyed a high level of trust, which has facilitated the execution of solid agreements with the local population, including about attribution and use. Active involvement of elders and women has been vital in the documentation of collective knowledge about landraces, which has put in evidence that documentation and characterization of native plant genetic resources needs to be done locally, on-farm, and involving the farmers themselves as central actors in the process.

The work has put in evidence that at least 3 years, ideally 5 years, is the time needed to fully document agrobiodiversity in hotspots. Fundraising is becoming more and more difficult to obtain to support exploratory agrobiodiversity genetic studies without explicit commercial implications.

What challenges encountered along the way. What would you consider conditions for success, if others should seek to carry out such a measure or organize such an activity?

Active involvement of local stakeholders, either NGO's, indigenous associations or institutions that enjoy a high level of trust

Active involvement of elders and women to document collective knowledge about landraces

Fundraising is becoming more and more difficult to support exploratory genetic studies without explicit commercial implications.

Further information

De Haan, S., Polreich, S., Rodriguez, F., Juarez, H., Ccanto, R., Alvarez, C., Otondo, A., Sainz, H., Venegas, C. and Kalazich, J. (2016). A Long-term Systematic Monitoring Framework for On-

farm Conserved Potato Landrace Diversity. pp. 289-296. In: N. Maxted, E. Dulloo and B.V. Ford-Lloyd (eds.), *Enhancing Crop Genepool Use: capturing wild relative and landrace diversity for crop improvement*. CABI International, Wallingford.

Scurrah, M., De Haan, S. And Winge, T. (2013). *Cataloging Potato Varieties and Traditional Knowledge from the Andean Highlands of Huancavelica, Peru*. Pp. 65-79 In: R. Anderson and T. Winge (eds.), *Realising Farmers' Right to Crop Genetic Resources: success stories and best practices*. Routledge Publishers, New York.

Centro Internacional para la Mejora del Maíz y el Trigo (CIMMYT)

Title of Measure	Drought Tolerant Maize Provides Extra 9 Months of Food for Farming Families	International Maize Improvement Consortium – Asia (IMIC-Asia)
<p><u>IMPLEMENTING ENTITY</u>⁵</p> <p>Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person)</p> <p>Type of organization</p>	<p>Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT)</p> <p>Km.45 Carretera México-Veracruz, El Batán, Texcoco, Estado de México,</p> <p>C.P. 56237, MÉXICO</p> <p>Tel: +52 (55) 5804 2004 or +52 (595) 52 1900</p> <p>https://www.cimmyt.org/</p> <p>email contact: Rosalia Munoz at R.Munoz@cgiar.org</p> <p>Non-profit CGIAR center (maize and wheat agriculture research institution)</p>	<p>Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT)</p> <p>Km.45 Carretera México-Veracruz, El Batán, Texcoco, Estado de México,</p> <p>C.P. 56237, MÉXICO</p> <p>Tel: +52 (55) 5804 2004 or +52 (505 952 1900</p> <p>https://www.cimmyt.org/</p> <p>email contact: Rosalia Munoz at R.Munoz@cgiar.org</p> <p>Non-profit CGIAR center (maize and wheat agriculture research institution)</p>
<p><u>PARTNERS Collaborating/ supporting institutions/ organizations/ actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s))</u></p>	<p><u>IITA</u> (International Institute of Tropical Agriculture) – co-implementing party</p> <p><u>CGIAR MAIZE CRP</u> – funder</p> <p>This study was conducted under the Drought Tolerant Maize for Africa project, and will be continued under the Stress Tolerant Maize for Africa project.</p>	<p><u>Seed companies</u> – funders</p>
<p><u>START YEAR</u></p>	<p>2014</p>	<p>2010</p>
<p>Name(s) of country/countries and geographic outreach in which the measure/ practice is taking place</p>	<p>Southeastern Zimbabwe</p>	<p>South and South East Asia</p>
<p><u>OBJECTIVES</u></p>	<p>Improve food and economic security of Zimbabwean farmers by stabilizing and securing maize food security when drought strikes.</p>	<p>Develop and test inbred and hybrid maize with abiotic and biotic stress tolerance and high-yield potential based on needs and priorities identified by consortium members, especially small- and medium size seed enterprises (SME)</p>

⁵ “Mandatory Information” as requested for this July 2019 update is denoted by categories underlined and in capital letters in the left-hand column. In some cases, information submitted in January 2019 was combined with new or revised information, and some text has been rearranged.

Title of Measure	Drought Tolerant Maize Provides Extra 9 Months of Food for Farming Families	International Maize Improvement Consortium – Asia (IMIC-Asia)
		<p>Improved maize productivity and livelihoods of farmers in rainfed areas that so far have not benefited from improved and adapted seeds.</p> <p>Capacity of breeders and technical personnel of consortium members strengthened in modern maize breeding and breeding informatics</p>
<u>SUMMARY OF CORE COMPONENTS</u>	CIMMYT addresses severe drought conditions resulting from climate change by developing and disseminating drought tolerant maize varieties, leading to greater maize yields and ultimately improved livelihoods for Zimbabwean farmers	Small- and medium-sized public- and private-sector organizations join together as a consortium in which they contribute to building capacity and technical expertise in maize breeding to work toward increased maize productivity, ultimately improving the livelihoods of smallholder farmers in Asia
<u>KEY OUTCOMES</u>	<p>Drought Tolerant (DT) maize varieties were shown to increase maize yields up to 40 percent under severe drought conditions,</p> <p>Zimbabwean smallholder farmers were provided an additional nine months of food at no additional cost to them</p>	<p>Consortium members helped to establish a strong collaborative testing network for identifying best-bet pre-release products for further evaluation at the national or state level as a part of the varietal release process. CIMMYT hybrid combinations are in the process of being allocated to interested members, especially small and medium enterprises for commercialization and deployment to farmers</p>
<u>LESSONS LEARNED</u> Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words)	<p>Consistent with on-station and on-farm trials of DY maize, Zimbabwean households that grew DT maize experienced a significant increase in total maize production; DT maize is higher yielding than non-DT maize varieties in drought conditions</p> <p>DT maize has the potential to vastly improve food and economic security for many poor farmers</p>	<p>Appreciation gained for the vast genetic diversity in CIMMYT-held germplasm, and how the use of cutting-edge molecular breeding technologies can be employed to address abiotic and biotic stresses in maize, including disease resistance, drought, heat and waterlogging tolerance, ultimately to accelerate the pace of product development and to provide farmers with better and more diverse variety options.</p> <p>Asia is one of the most important hubs for accelerating the better use of diverse germplasm by farmers due to highly skilled scientific and technical staff and world-class institutions and infrastructure</p>
<u>BRIEF HISTORY (including starting year), as appropriate</u>	In a study beginning in 2014 CIMMYT Drought Tolerant (DT) maize varieties were shown to increase maize yields up to 40 percent under severe drought conditions, providing smallholders in Zimbabwe an additional nine months of food at no additional cost to them.	Beginning in 2010, CIMMYT launched the first phase of IMIC-Asia, a consortium of private and public organizations involved in maize research and breeding, hybrid production, seed sales and marketing. These organizations partnered with CIMMYT to develop and share improved maize germplasm for impact in South and South East Asia, with a particular view of improving food security and income of smallholders in stress-prone regions. In 2015,

Title of Measure	Drought Tolerant Maize Provides Extra 9 Months of Food for Farming Families	International Maize Improvement Consortium – Asia (IMIC-Asia)
		<p>IMIC-Asia entered its second phase with continuing and new members.</p> <p>The consortium members helped to establish a strong collaborative testing network for identifying best-bet pre-release products for further evaluation at the national or state level as a part of the varietal release process. CIMMYT hybrid combinations are in the process of being allocated to interested members, especially small and medium enterprises for commercialization and deployment to farmers.</p>
<p>CORE COMPONENTS of the measure/ practice (max 200 words)</p>	<p>CIMMYT development and dissemination of DT maize varieties to address climate change-induced severe drought conditions, ultimately to improve maize yield</p> <p>By growing DT maize varieties Zimbabwean farmers improve livelihoods, and food and economic security at no additional cost</p>	<p>Consortium of public and private organizations</p> <p>Targeted impact on maize productivity and improvement of livelihoods of smallholders farmers in rain-fed maize production areas in South and South East Asia</p> <p>Capacity of breeders and technical personnel of consortium members – mostly small and medium size enterprises, strengthened in modern maize breeding and breeding informatics</p>
<p>DESCRIPTION OF CONTEXT and HISTORY of the measure/practice is taking place (political, legal and economic framework conditions for the measure/practice) (max. 200 words)</p>	<p>Zimbabwe is routinely affected by droughts; severity and intensity is expected to increase with changing climates.</p> <p>CIMMYT is working to combat the effects of recurring droughts due to climate change through the development of drought tolerant maize and risk averting crop management practices.</p>	<p>Maize is a key crop in Asia, and for more than 50 years maize breeders have demonstrated significant improvements in grain yield</p> <p>Consortium member partnerships facilitate the development and testing of pre-release hybrid combinations in multi-location trials supported by members that influence breeding and product priorities, training of breeders (capacity building) and access to germplasm analysis services, field-based phenotyping for abiotic (drought, heat) and biotic (parasites, insects, bacteria, weeds, etc.) stresses; and statistical and genomic data management</p> <p>Access provided to improved CIMMYT-improved Asia-adapted maize germplasm; allocation and licensing process permits CIMMYT hybrids to be commercialized and shared with farmers for cultivation across Asia</p>
<p>ARTICLE 9 PROVISIONS TO WHICH THIS WORK RELATES</p>	<p>9.2 b and 9.3</p>	<p>9.2 b and 9.3</p>
<p>OTHER INFORMATION, IF APPLICABLE</p>		

Title of Measure	Drought Tolerant Maize Provides Extra 9 Months of Food for Farming Families	International Maize Improvement Consortium – Asia (IMIC-Asia)
Template category (benefits to farmers) most relevant for the measure	Facilitation of farmers' access to a diversity of PGRFA through community seed banks, seed networks, and other measures improving farmers' choices of a wider diversity of PGRFA	Facilitation of farmers' access to a diversity of PGRFA through community seed banks, seed networks, and other measures improving farmers' choices of a wider diversity of PGRFA
Other relevant categories	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection Training, capacity development and public awareness creation
Target group(s) and numbers of involved and affected farmer	Several thousand tons of DT maize seed are disseminated annually in Zimbabwe 200 smallholder farmer households were surveyed for the study	Current consortium members: 23 private sector organizations, 1 public sector organization serving smallholder farmers throughout South and South-East Asia (no number available at this time)
Resources used for implementation of the measure/ practice. How has the measure/practice affected the conservation and sustainable use of plant genetic resources for food and agriculture? Please describe the achievements of the measure/ practice so far (including quantification) (max 200 words)	<i>Resources</i> CIMMYT-held germplasm; CIMMYT-developed DT maize varieties; CIMMYT breeding expertise CIMMYT improved DT maize varieties adapted to Zimbabwean growing conditions combatted effects of climate change and lead to a no-cost increase in maize yield and that improved food and economic security for farmers who grew DT maize. The farmers who grew CIMMYT-developed DT maize yielded on average over 610 kg more maize per hectare than those not growing DT maize in the same region. (This translates to USD \$240/ha or nine months of food supply per household at no additional cost to the household.)	<i>Resources</i> CIMMYT improved inbred lines and hybrids; consortium members' proprietary germplasm; CIMMYT laboratory, statistical/genomic data analysis management, and breeding expertise, administration and oversight of consortium activities CIMMYT improved inbred lines and hybrids and consortium members' proprietary germplasm are developed and improved, and evaluated in multi-location field trials, which allow for a wider network of locations and quality data available at a lower cost. Consortium members vie for allocation of CIMMYT pre-commercial hybrids, and each successful party is licensed a hybrid for varietal release on a non-exclusive basis.
Other national level instruments that are linked to the measure	None	None

Title of Measure	Drought Tolerant Maize Provides Extra 9 Months of Food for Farming Families	International Maize Improvement Consortium – Asia (IMIC-Asia)
International agreements or programs that are relevant for this measure/practice?	ITPGRFA	ITPGRFA
<p>What challenges were encountered along the way (if applicable)? (max 200 words)</p> <p>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)</p>	<p>Challenges</p> <p>Making DT maize more widely available including to farmers in more remote areas</p> <p>Informing farmers of new DT varieties (proper messaging, appropriate branding on seed bags) and encouraging farmers to use DT varieties</p> <p>Conditions for Success</p> <p>Making DT maize affordable and widely available in drought stricken regions</p> <p>Farmer education and properly marked seed bags</p>	<p>Challenges</p> <p>Improving the understanding of genetics of complex traits such as heat stress tolerance and waterlogging tolerance</p> <p>Discovery, validation and deployment of breeder-ready markers for prioritized biotic and biotic stress traits</p> <p>Developing breeding strategies for simultaneous introgression of multiple loci associated with stress resilience in maize</p> <p>Conditions for Success</p> <p>Consortium governance committee comprised of governmental, CIMMYT, and consortium member representatives</p> <p>Well-organized field trials and demonstrations</p> <p>Transparent process for hybrid allocation in place at initiation of consortium</p>
Link to further information about the measure/practice	<p><u>CIMMYT website article:</u></p> <p>https://www.cimmyt.org/drought-tolerant-maize-provides-extra-9-months-of-food-for-farming-families/</p> <p><u>Published study:</u></p> <p>https://www.tandfonline.com/doi/full/10.1080/17565529.2017.1372269</p>	<p><u>CIMMYT website articles:</u></p> <p>https://www.cimmyt.org/the-international-maize-improvement-consortium-for-asia-imic-asia-partnership-for-targeted-impacts-2/</p> <p>https://www.cimmyt.org/project-profile/international-maize-improvement-consortium/</p>

Title of Measure: Drought tolerant maize provides Extra 9 Months of Food for Farming Families

Summary for the Inventory

In 2014, the International Wheat and Maize Improvement Center (CIMMYT), in collaboration with the International Institute of Tropical Agriculture (IITA) and with funding provided through the Consultative Group on International Agricultural Research (GIAR) Research Program on Maize, started the implementation of the 'Drought Tolerant Maize for Africa' project, which will be continued under the 'Stress Tolerant Maize for Africa' project. The objective of the project is to improve food and economic security of Zimbabwean farmers by stabilizing and securing maize food security when drought strikes. Core components include development and dissemination of drought-tolerant (DT) maize varieties to farmers in Zimbabwe to improve maize yields and improve livelihood conditions . Key outcomes so far are improved maize yields (up to 40%) under severe drought conditions, providing smallholders in Zimbabwe an additional nine months of food at no additional cost. Key lessons learned include that Zimbabwean households that grew DT maize experienced a significant increase in total maize production; DT maize thus has the potential to improve food and economic security for many farmers.

Title of Measure: International Maize Improvement Consortium – Asia (IMIC-Asia)

Summary for the Inventory:

In 2010, the International Maize and Wheat Improvement Center (CIMMYT), in collaboration with seed companies, launched the International Maize Improvement Consortium – Asia (IMIC-Asia), a consortium of organizations engaged in maize research, breeding, hybrid production, seed sales and marketing in South and Southeast Asia. Objectives included (1) developing and testing inbred and hybrid maize with abiotic and biotic stress tolerance and high yield potential based on needs and priorities identified by consortium members; (2) improving maize productivity and livelihoods of farmers in rainfed farming areas that have not yet benefited from improved and adapted seeds; and (3) developing capacities of breeders and technical personnel of consortium members in modern maize breeding and breeding informatics. Core component is the establishment of a consortium of small- and medium-size enterprises and research organizations in which all partners contribute to building capacities and technical expertise in maize breeding. Together, they established a strong collaborative testing network for identifying promising pre-release products for further evaluation at the national or state level as a part of the varietal release process. CIMMYT hybrid combinations are in the process of being allocated to interested members for commercialization and deployment to farmers.

International Centre for Agricultural Research in the Dry Areas (ICARDA)

Basic information

Title of measure/practice: Gender and lentil production in rural Ethiopia

Date of submission: July 23, 2019

Name(s) of country/countries in which the measure/practice is taking place: Ethiopia

Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person):

ICARDA, CGIAR Research Center; www.icarda.org; a.nour@cgiar.org; d.najjar@cgiar.org

Type of institution/organization (categories): treaty-based international organization; international research centre part of CGIAR.

Collaborating/supporting institutions/organizations/actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s)):

ICARDA worked with the agricultural offices of the Woreda and Kebele administrative regions within Ethiopia.

This research activity was undertaken with funding from the CGIAR Research Program on Grain Legumes and Dryland Cereals.

Mandatory information:

Short summary to be put in the inventory (max. 200 words) including:

In 2018, the International Centre for Agricultural Research in the Dry Areas (ICARDA) started implementing a project addressing gender relations in lentil production in Ethiopia, in cooperation with Agricultural Offices at district (Woreda) and community (Kebele) administrative levels and with funding from the Consultative Group on International Agricultural Research (CGIAR) Research Program on Grain Legumes and Dryland Cereals. Main objectives were to enhance understanding how gender inequality affects the capacity of women and men to build resilient livelihoods, and how to address gender-based constraints in agricultural research and extension work. Core components included exploring gender-related norms surrounding the division of roles in lentil production; farm-related decision making; access to lentil-based extension services; and innovations, particularly new varieties, in two major lentil-producing areas of Amhara and Oromiya, where rainfed farming is dominant. Activities entailed quantitative and qualitative interviews and focus group discussions, followed by a validation and an awareness-raising process, which involved representatives of the above-mentioned administrative units as well as community leaders and lentil growers. In the course of this process, the research-findings were shared with the communities, considering Article 9 of the International Treaty and ICARDA's obligations under the CGIAR Principles on the Management of Intellectual Assets.

Brief history (including starting year), as appropriate

Gender and agriculture studies in Ethiopia have often focused on legumes such as chickpea. The gender aspect of lentil production is under-studied. However, lentils are a main source of income, constituting 50 to 100% of the income of surveyed households in Oromiya and Amhara regions of Ethiopia. The study explored norms surrounding the division of roles, farm-related decisions, access to lentil-based extension services, and innovations, particularly new seed varieties in two major lentil-producing areas of Amhara and Oromiya. The research employed quantitative and qualitative interviews and focus group discussions with a total of 554 male and female lentil farmers. This was followed by a validation process and an awareness raising process which involved an additional 201 male and female respondents through 64 interviews with male and female lentil growers.

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

The validation and awareness-raising process involved a 201 male and female respondents through 64 interviews with male and female lentil growers with special focus on female heads of households (five interviews with women sharecroppers, three interviews with divorced women, and three interviews with widows), six focus groups with each gender (60 male and 60 female lentil growers including laborers) and four key informants from Oromiya (one female and three male) and five from Amhara (two female and three male). The awareness-raising process also involved representatives of Woreda Agriculture Bureau (second lowest administrative unit), community leaders, Kebele (the lowest government administrative structure), community groups and lentil growers.

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)

Although lentils are a critical source of income in parts of Ethiopia, not enough attention has been paid to farmers' limited access to reliable information and improved seed varieties. Furthermore, the gender aspects of lentil production are rarely studied; gender and agricultural studies on legumes in Ethiopia have more often focused on chickpea, bean, and groundnut. Understanding gender norms related to lentil farming is important – and will help address constraints that affect the resilience of both women's and men's livelihoods.

New ICARDA research shows that the sale of lentils constitutes 50 to 100 percent of smallholders' income in the Oromiya and Amhara regions, two of Ethiopia's largest lentil-producing areas. The study explored norms surrounding the division of roles, farm-related decisions, access to lentil-based extension services, and innovations, particularly new seed varieties. Special focus was given to female heads of households, as they are the most disadvantaged and often lack family and government support.

ICARDA researchers also worked with married female farmers who have limited access to extension and rarely participate in cooperatives, where their husbands play a lead role - resulting in the benefits of cooperatives (such as dividends, inputs, and trainings) being directed towards men.

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	Also relevant
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		
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 ⁶ , 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	X	
9	Training, capacity development and public awareness creation		X

⁶ Including seed houses.

10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		
11	Other measures / practices		

Objective(s)

The findings were shared with the community for three reasons: (1) to confirm ICARDA accurately understood what was happening on the ground, (2) to raise awareness of the harmful implications of gender inequality on lentil production, and (3) to uphold the community's right to know the findings, noting Article 9 of the ITPGRFA and also ICARDA's obligations under the CGIAR Principles on the Management of Intellectual Assets with respect to farmer's rights and dissemination of ICARDA research results.

Target group(s) and numbers of involved and affected farmers⁷

The validation and awareness-raising process involved a 201 male and female respondents through 64 interviews with male and female lentil growers with special focus on female heads of households (five interviews with women sharecroppers, three interviews with divorced women, and three interviews with widows), six focus groups with each gender (60 male and 60 female lentil growers including laborers) and four key informants from Oromiya (one female and three male) and five from Amhara (two female and three male). The awareness-raising process also involved representatives of Woreda Agriculture Bureau (second lowest administrative unit), community leaders, Kebele (the lowest government administrative structure), community groups and lentil growers.

Location(s) and geographical outreach

Amhara and Oromiya regions of Ethiopia.

Resources used for implementation of the measure/practice

During the validation and awareness phase, there were findings on farm-related divisions of labor, decision-making norms and practices, challenges in growing lentil, access to agriculture extension services and membership in farmer's cooperatives. Participants appreciated the sharing of the findings which, according to them, is a rare practice. Heated discussions were held with regards to, for example, the issue of women's limited participation in agriculture. Oftentimes during the discussions, men were targeted due to a belief that they represent the entire household. This became a point of contention between those men who thought women were not interested in learning about farming, or thought women did not need access to extension services because they "*are not farmers*" and those in the discussions who insisted that women could not participate due to prevailing norms, such as norms that limit women's mobility and participation in meetings. For example, in a male Focus Group Discussion (FGD) a participant from Amhara argued that "*if women go out too much and walk around they are said to have bad behavior so it is better for them to remain at home. So they do not come to the farmers' training center*". Others noted women's multiple roles as producers and caregivers to be additional reasons for their limited involvement in an agriculture extension service. Women

⁷ Any classification, e.g. of the types of farmer addressed, may be country-specific.

also raised a number of practical issues for their lack of participation. Married women mentioned that spouses attended meetings and also explained that the timings of trainings often do not consider women's busy schedules. However, female participants from both regions agreed that female heads of household are more involved in extension services when compared to married women.

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

The measure increased awareness and facilitated dialogue between officials and members of the community on gender inequalities which has significant food security implications, including the gender yield gap and inequitable access to resources and opportunities in food production.

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

A representative of the Woreda Agriculture Bureau from Oromiya commented that the discussion helped him to understand better how gender norms affect male and female farmers differently and promised to consider that in his future work. Female participants from both regions also recommended arranging the timing and place of services in consultation with women would contribute to improve women's participation in extension services. Male FGD participants noted that the lack of research and agricultural training support on lentil crops affects both men and women negatively and as such should be improved so that both can benefit. Female and male FGD participants recommended improvements in access to affordable farm inputs, such as effective chemicals, and good quality seeds. And, according to them, immediate actions are required to sustain the already-established lentil demand and lentil market in both Oromiya and Amhara.

Other national level instruments that are linked to the measure/practice

Ethiopia is undergoing rapid political changes with a strong women empowerment component. These effort mesh well with the current political climate with its promising potential to realize increased gender equality in the country.

Are you aware of any other international agreements or programs that are relevant for this measure/practice?

IDRC highly encourages returning findings to the community in its funded projects.

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

It is good practice to return findings to the community. Policy-based measures can have limited impact without buy-in from local partners. As such, it is important to raise awareness on the potential harmful impacts of gender inequality.

What challenges encountered along the way (if applicable) (max 200 words)

Farmers were angry that they did not receive their fertilizer share, which was complicated due to political unrest in the country. It was difficult to gain their perspective. ICARDA listened to their

problems, incorporated these into the research and they then agreed to share with ICARDA their experiences about lentil production. Another limitation was that it was harvesting time and rain was expected. ICARDA visited their fields and even helped them with piling crops to help spare some time for the project.

The project had a built-in component that related to awareness-raising as to the impacts of problems observed with a focus on gender inequality. This is not always possible for other projects due to bureaucracy (e.g., in obtaining fieldwork permission), or funding limitations.

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)

Experienced people who speak the same language and are from the same culture. ICARDA worked with a skilful consultant who was leading the fieldwork implementation of the study and she has done similar work for WFP. Such sensitive topics (being critical of government extension services, harmful aspects of gender norms) are better received by people from the same culture.

Further information

Link(s) to further information about the measure/practice

<https://www.icarda.org/media/news/lentil-farming-and-gender-norms-ethiopia>

Also featured on GLDC Website along with a related photo essay,
<http://gldc.cgiar.org/lentil-farming-and-gender-norms-in-ethiopia/>

Basic information

Title of measure/practice

Mungbean for more productive crop rotations in Tajikistan

Date of submission

July 23, 2019

Name(s) of country/countries in which the measure/practice is taking place

Tajikistan

Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person)

ICARDA

6 Osiyo Street, Tashkent 10000, Uzbekistan

Phone: +998 71 237-21-30/69/04; Fax: +998 71 120-71-25

Website: ICARDA, CGIAR Research Center; www.icarda.org;

Contact persons: Andrea Nour (a.nour@cgiar.org) , Ram Sharma (r.c.sharma@cgiar.org)

Type of institution/organization (categories)

Treaty-based international organization; international research centre part of the CGIAR.

Collaborating/supporting institutions/organizations/actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s))

Dehkan-Farm Association named after "A. Gafurov",

B. Gafurov dist., Soghd province, TAJIKISTAN

Email: saidov_6363@mail.ru

Contact person: Mr. Sanginboy Gafurov

Mandatory information

Brief summary for the inventory

The Collaborative Research Project on Sustainable Soil Management to Enhance Agricultural Productivity in Central Asia (Phase II) started in 2018. It is carried out by the International Center for Agricultural Research in the Dry Areas (ICARDA) together with the International Food Policy Research Institute (IFPRI) and the Eurasian Center for Food Security, funded by the Russian Government. The objective is to introduce mungbean cultivation as a new practice to smallholder farmers in the Sughd region of Tajikistan to enhance soil fertility in current cotton-wheat-cotton or wheat-fallow crop rotations, as well as to generate additional income. Core component is the introduction of short-duration, heat- and drought-tolerant mungbean; 600 kg of elite seeds were provided by ICARDA. Farmers saved seed for their own use from their harvest and either shared or sold part of it to other farmers for sowing in 2019. This farmer-to-farmer

seed exchange and sale is expected to ensure broader impact in following years. Further project activities include building a network of on-farm demonstration sites and capacity development for farmers and seed-producers. The key to including an additional crop in the crop rotation lies in the smallholders' access to improved early-maturing wheat and mungbean varieties.

Brief history

In June 2018, soon after the harvest of the winter wheat crop, ICARDA began working with a group of local farmers in Sughd province of Tajikistan to pilot new early-maturing varieties of winter wheat and of mungbean. Including mungbean in the existing wheat-cotton crop rotation would both increase cropping intensity by 50 to 100 percent, leading to higher incomes, and improve soil health through nitrogen fixation, thus reducing the cost of fertilizer application.

Crop rotation	Yr1 (Nov – June)	Yr 1 (July to Oct)	Yr2 (Nov – Feb)	Yr 2 (March-Oct)	Cropping intensity
Wheat-Cotton	Wheat	Fallow	Fallow over winter	Cotton	2 crops in 2 years (100%)
Wheat-Mungbean-Cotton	Wheat	Mungbean	Fallow over winter	Cotton	3 crops in two years (150%)

Crop rotation	Yr1 (Nov – June)	Yr 1 (July to Oct)	Cropping intensity
Wheat-Wheat	Wheat	Fallow	1 crops in 1 year (100%)
Wheat-Mungbean	Wheat	Mungbean	2 crops in 1 year (200%)

Core components

Farmers within the research site primarily follow cotton-wheat-cotton in two-year rotations or wheat-fallow in an annual rotation of crops. Both wheat and cotton crops are demanding on soil nutrients, leaving soil impoverished. Inclusion of short-duration, heat and drought tolerant short-duration mungbean does not only bring additional income from otherwise fallow fields, it also improves soil health by fixing atmospheric nitrogen into the soil. Within the framework of the project, mungbean cultivation was introduced as an SLM practice for the smallholder farmers.

Description of the context

Traditionally, the winter wheat farmers in Central Asia have been leaving fields fallow following the wheat harvest in June-July. Cultivation of local old, long-duration (120 -150 days) mungbean varieties after wheat harvest was delaying wheat planting in fall. The key to include an additional rotation crop during summer lay in identifying early-maturing wheat and early-maturing mungbean varieties. While early-maturing wheat varieties had become available to farmers through international collaboration with ICARDA and CIMMYT, the farmers in the research site were either not aware of these varieties or did not have access to seed. ICARDA made available the seed of the early-maturing wheat varieties through project. The second issue was unavailability of early-maturing mungbean varieties. Early maturing (75 to 105 day) mungbean varieties were made available in Central Asia through international collaboration of the World Vegetable Center (WorldVeg). ICARDA, in collaboration with WorldVeg, had promoted the adoption and seed multiplication of early-maturing mungbean varieties in its CRP-Dryland project in Central Asia.

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

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 ⁸	Also relevant ⁹
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		
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		

⁸ Please select only one category that is most relevant, under which the measure will be listed.

⁹ Please select one or several categories that may also be relevant (if applicable).

6	Facilitation of farmers' access to a diversity of PGRFA through community seed banks ¹⁰ , seed networks and other measures improving farmers' choices of a wider diversity of PGRFA.	X	
7	Participatory approaches to research on PGRFA, including characterization and evaluation, participatory plant breeding and variety selection		X
8	Farmers' participation in decision-making at local, national and sub-regional, regional and international levels		
9	Training, capacity development and public awareness creation		X
10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		
11	Other measures / practices		

Objective(s)

Introduction of mungbean cultivation as a new practice in the fields of smallholder farmers in Sughd region of Tajikistan

Target group(s) and numbers of involved and affected farmers¹¹

A group of 31 farmers (11 women and 20 men) participated in the wheat-based rotation with inclusion of mungbean as a rotation crop. Within the framework of the project, ICARDA provided 600 kg of Mungbean elite seeds to plant 30 ha of mungbean by using 20 kg/ha seed rate.

Location(s) and geographical outreach

On-farm field activities were undertaken in the Sughd region of Tajikistan, but it has relevance for whole country in Tajikistan and its neighbouring countries in Central Asia.

Resources used for implementation of the measure/practice

600 kg Improved seed of a short-duration mungbean variety

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

The participant farmers saved the seed for following year planting, and either shared or sold to other farmers for planting in 2019. This farmer to farmer seed exchange and sale is expected to have a broader impact in following years.

¹⁰ Including seed houses.

¹¹ Any classification, e.g. of the types of farmer addressed, may be country-specific.

Please describe the achievements of the measure/ practice so far (including quantification)

Using 600 kg seed the farmers produced 18.5 tons mungbean. Mungbean yield among farmers ranged from 0.4 to 0.8 t/ha with an average yield of 0.62 t/ha. At the prevalent selling price of USD 0.75/ha, farmers were able to earn USD 300 to USD 600/ha. The maximum cost involved in production of mungbean in the research site was USD 150/ha. Thus, the farmers were able to earn approximately between USD 150 to USD 450/ha as net profit. In a short period of 75 days these profit levels are substantial considering the 9-month duration of the wheat crop. Additional benefits came from improvement in soil health due to an increase in nutrient contents of the soil, as a result of mungbean production.

Other national level instruments that are linked to the measure/practice

Academy of Agricultural Sciences of Tajikistan

Are you aware of any other international agreements or programs that are relevant for this measure/practice?

No

Other issues you wish to address, that have not yet been covered, to describe the measure/practice

The mere availability of early-maturing wheat and mungbean varieties alone is not going to make this innovative crop rotation practice sustainable on a larger scale. Establishment of a network of on-farm demonstration sites and the capacity-building of the farmers and seed-producers for production of quality seed is crucial for the expansion and sustainability of adoption of wheat-mungbean crop rotation by smallholders.

Lessons learned

There are a few elements that must be considered in undertaking wheat-mungbean crop rotation.

Institutions – an arrangement should be made either with public or with farmers’ organizations about seed production of both early maturing varieties of wheat and mungbean. This was a critical issue for the initiation of the project.

Capacity building – Since mungbean is not a widely-grown crop, and more so the farmers don’t have technical know-how of seed production of mungbean, a planned capacity-building component should be included for the package and practice of crop and seed production of both wheat and mungbean, in particular for mungbean.

Policy – Local governmental agencies should be made aware of the intervention in order to link the pilot work into the main-frame of land-use planning.

Marketing – Even though marketing is not a problem at pilot level of the project, market outlets for mungbean should be created in advance for large scale cultivation of mungbean by the farmers.

Further information

Link to further information about the measure/practice

- Mavlyanova R, and Sharma RC. 2015. Producing high quality mungbean seeds. Workshop Report. ICARDA, Tashkent, Uzbekistan. <http://www.cac-program.org/files/6f59f8d0abe1470efda99793a991c938.pdf>
- Mavlyanova R. and Sharma RC. 2015. High quality seed production of wheat and mungbean in Kuva, Fergana. Report. ICARDA, Tashkent. <http://www.cac-program.org/files/ec9f7aca08a1460f0debbbab0399c61c.pdf>
- Amanov S, Sharma RC, Akramkhanov A, and Nurbekov A. 2018. Wheat-mungbean crop rotation improves soil health and increases income on small farms in Uzbekistan. https://drive.google.com/drive/folders/19_tu4xRSh_QXAKN4QG_8F4-rSI_W-KbK

International Crops Research Institute for the Semi-Arid Tropic (ICRISAT)

Basic information

Title of measure/practice:

Germplasm collection in 'gap areas' of the West and Central African region

Date of submission:

July 23, 2019

Name(s) of country/countries in which the measure/practice is taking place:

Nigeria, Niger, Burkina and Senegal

Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person):

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Niamey Niger

Hamidou Falalou, Regional Genebank Manager, Ph; +227 20315656/+227 96171446

Email: h.falalou@cgiar.org

Type of institution/organization (categories):

International Agricultural Research Centre, part of the CGIAR Consortium.

Collaborating/supporting institutions/organizations/actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s)):

National Centre for Genetic Resources and Biotechnology (NACGRAB), Nigeria

Sunday Aledele, saladele6083@gmail.com

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Kano Nigeria

Angarawai Ignatius, Senior Scientist, Sorghum breeder, Ph :+2348022115524,

Email: i.angarawai@cgair.org Institut National de Recherche Agricole (INRAN), Niamey, Niger.

Baina Danjimo, Senior Scientist, Genetic resources responsible, Ph: +227 80067868

Email : bdj0709@yahoo.fr

Institut de l'Environnement et de Recherches Agricoles (INERA), Burkina Faso

Ouedraogo mahamadi, Scientist, Millet breeder, Ph: +22670419282. Email:

ouedmadim@gmail.com

Institut Senegalais de Recherche Agricole (ISRA), Thies, Senegal

Amy Bodian, Scientist, Molecular Biologist, Ph: +221 339514993/94

Email: miamybo@yahoo.fr

Mandatory information:

Short summary to be put in the inventory (max. 200 words) including:

In 2013, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), together with national agricultural research organizations of the respective countries, initiated a project aiming to fill gaps in the ICRISAT genebank collections and enhancing utilization of germplasm for food and agriculture. Core components were collection missions targeting pearl millet, sorghum and groundnut. In addition to these crops, national partners collected also other crops that are not part of ICRISAT's mandate crops, such as cowpea, okra, sesame, Bambara groundnut, maize, etc. Trainings were offered to participating staff on collection and conservation techniques; these trainings also addressed Farmers Rights and traditional knowledge. Key outcomes include the collection of 5,057 germplasm accessions; seed samples were distributed across African, USA and European countries, including to researchers, breeders, farmers organizations, agrodealers, processors and students. Key lessons learned include the awareness of the need for communication with and consent from local communities; building trust with local partners: and getting the necessary agreement from local authorities.

Implementing entity and partners

Implementing entity: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Niamey Niger; Partners: National Centre for Genetic Resources and Biotechnology (NACGRAB), Nigeria, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Kano Nigeria, Institut National de Recherche Agricole (INRAN), Niamey, Niger, Institut de l'Environnement et de Recherches Agricoles (INERA), Burkina Faso, Institut Senegalais de Recherche Agricole (ISRA), Thies, Senegal

Start year

2013

Objective(s)

The objective of the collection missions was to fill the gap of collections conserved in ICRISAT genebank and enhance the utilization of germplasm for food and agriculture.

Summary of core components

Land races are the core components of the germplasm collection for conservation and utilization.

Key outcomes

In total, up to 5057 germplasm were collected and conserved in regional genebank. Duplicates were sent to ICRISAT main genebank India. 7351 seeds samples were distributed across African, USA and European countries. Recipients of seeds samples included researchers, breeders, farmers organizations, agro dealers, processors and students. We received feedback from some of recipients acknowledging the quality of seeds received and the utilization they were doing. We also trained the collection missions participants on how to collect and conserve

sample until it reaches genebank for medium term or long term conservation. The training includes also information and discussions on farmers right and traditional knowledges.

Lessons learned (if applicable)

Communication and participative exploration mission. Get farmers consent and community protocols during meetings (in the presence of community leaders)

Build trust and Network with local partners. Give them useful information when they want to get back their material or any information/knowledge they may need.

Get necessary agreement from authorities, involve the traditional leaders (chief of the village and resources persons).

Insecurity context in some areas

Brief history (including starting year), as appropriate

Since 2013 exploration missions for collecting germplasm were organized in west African countries. In each country, areas where collection gaps exist are visited to collect samples of pearl millet, sorghum and groundnut. In addition to these crops, NARS partners collected also non ICRISAT mandate crops like cowpea, okra, sesame, Bambara groundnut, maize, etc.

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

Land races are the core components of the germplasm collection for conservation and utilization.

Indeed, aware of continuous plants genetics resources erosion leading to loss of genetic diversity and the existence of gaps in collected materials conserved in ICRISAT genebank, collecting germplasm/land races in specific areas of West and Central Africa countries will fill the gaps of ICRISAT mandate crops. The collection missions were organized in collaboration with NARS partners. The land races collection will not only increase the diversity in the existing collections but also support breeding and research for food and agriculture.

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)

Although several collection missions were organized in different countries of West and Central Africa, some areas were not explored mainly because of distance, inaccessibility, lack of funding and in the same time the environmental conditions are degrading. So, the germplasm collection missions were implemented following request from NARS to ICRISAT. The two parties agreed to organized collaborative exploration missions, ICRISAT will provide technical support while NARS will conserve copy of collected materials in ICRISAT genebank.

The activity involved farmers, plant genetic resources responsible, researchers, agriculture extension services and breeders in each country. The number varies depending on the area of collection and the country.

In Niger the collection was in Dosso and Tillabery regions. In Burkina Faso it was the regions of Centre and North centre while in Nigeria it was the part of North and East states. The collected locations in Senegal were Thiès, Mbour, Tivaouane, Mbacké-Diourbel and Bambey regions.

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

Art. 9.1 Yes

Art. 9.2a Yes

Art. 9.2b Yes

Art. 9.2c Yes

Art. 9.3 Yes

Basic information

Title of measure/practice

Farmers Participatory Varietal Selection (FPVS) trials

Date of submission

17 July 2019

Name(s) of country/countries in which the measure/practice is taking place

India

Responsible institution/organization (name, address, website (if applicable), e-mail address, telephone number(s) and contact person)

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India. Srinivasan Samineni, Senior Scientist, Chickpea breeding. Ph: +91 40 3071 3585, +91 9948280279; Email: s.srinivasan@cgiar.org

Type of institution/organization (categories)

International Research Centre, part of CGIAR.

Collaborating/supporting institutions/organizations/actors, if applicable (name, address, website (if applicable), e-mail address, telephone number(s))

Director of Agriculture and Food Production, Department of Agriculture Farmers' Empowerment, Government of Odisha, India (website: <https://agriodisha.nic.in/Home/English>)

Mandatory information:

Short summary to be put in the inventory (max. 200 words) including:

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), in collaboration with the Department of Agriculture Farmers' Empowerment, Government of Odisha, India, conducted activities for the promotion and adoption of new and improved chickpea cultivars in three districts (Keonjhar, Mayurbhanj and Sundargarh) of Odisha state from 2014 to 2017. The objective was to identify and promote farmer-preferred chickpea varieties. Core components were farmer-participatory variety selection (FPVS) trials, through which farmers were exposed to seeing the performance of improved and diverse cultivars, including early maturing, drought tolerant, high yielding and wilt resistant cultivars. 52 FPVS trials were conducted in different villages of target districts, each including on 5-6 cultivars; 668 men and 261 women farmers participated in the activities. Farmer-preferred chickpea varieties spread quickly among the farming community and showed high rates of adoption. These trials enhanced farmers' awareness of newly available varieties and improved production technologies among farmers. Key lessons learned include that low availability of improved seed was one of the challenges faced by farmers, and that seed systems should be strengthened to enhance farmers' access to preferred varieties.

Brief history (including starting year), as appropriate

n/a

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

Crop varieties are the core components of the selection process by farmers. Farmers in the targeted locations have been growing low yielding and disease susceptible local landraces. Through FPVS trials, farmers were exposed to see the performance of improved and diverse cultivars suitable for the local growing conditions. The chickpea cultivars included were early maturing, drought tolerant, high yielding and resistant to wilt disease.

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)

None

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	Also relevant
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		
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 ¹² , 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	1	
8	Farmers' participation in decision-making at local, national and sub-regional, regional and international levels		
9	Training, capacity development and public awareness creation		1
10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		
11	Other measures / practices		

Objective(s)

To identify and promote farmer preferred Chickpea varieties for cultivation.

Target group(s) and numbers of involved and affected farmers

Smallholder farmers are the target group. FPVS trials were conducted for four years (2014-18) and 668 men and 261 women farmers participated in the selection of varieties.

Location(s) and geographical outreach

Three districts (Keonjhar, Mayurbhanj and Sundergarh) in Odisha state of India. Chickpea varieties were promoted under rice-fallow areas.

Resources used for implementation of the measure/practice

Government of Odisha has sanctioned a project entitled 'Promotion of Improved Chickpea Varieties in Rice-Based Cropping Systems of Smallholder Farmers in Odisha' for a period of four years (2014-18).

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

Large portion of the smallholder farmers involved in the varietal selection process belonged to tribal areas. These farmers were given different options to select their preference among high yielding varieties suitable for cultivation in their local environments. Farmers could themselves identify the improved traits in the new cultivars compared to their traditional landraces and were convinced about adoption of new cultivars.

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

Farmer preferred chickpea varieties spread quickly among the farming community and also showed high rate of adoption. A total of 52 farmer-participatory varietal selection (FPVS) trials were conducted on 5 - 6 cultivars in different villages of target districts (Keonjhar, Mayurbhanj and Sundargarh) under rice-fallow conditions during 2014-15 to 2017-18 (Table 1). The cultivars

¹² Including seed houses.

included both desi (JAKI 9218, JG 14, NBeG 3 and NBeG 47) and kabuli (Ujjawal and Vihar) types. A total of 929 farmers (668 men + 261 women) which included 260 farmers (193 men + 67 women) in Keonjhar, 332 farmers (245 men + 87 women) in Mayurbhanj, and 337 farmers (230 men + 107 women) in Sundargarh district evaluated the cultivars in these districts. The farmers preferred NBeG 3 followed by JG 14 (heat tolerant) and NBeG 47 (tall and large seed). Farmers preferred NBeG 3 due to its profused branching habit and bigger pod and seed size. The average yield of the desi varieties was in the range of 1.1 - 1.5 t ha⁻¹. Further, the kabuli chickpea variety Ujjawal (1.2 t ha⁻¹) performed better than Vihar (0.9 t ha⁻¹). Farmers received good yields, even though the crop was sown late (around mid-December) every year due to delay in paddy harvesting in kharif season.

Year	District	No of trials	No of farmers participated		Most preferred variety	
			Men	Women	Men	Women
2015-16	Keonjhar	6	98	36	NBeG 3, JG 14	NBeG 3, JG 14
	Mayurbhanj	10	102	45	NBeG 3, JAKI 9218, JG 14	NBeG 3, JAKI 9218, JG 14
	Sundargarh	7	95	61	NBeG 47, NBeG 3	NBeG 47, NBeG3
2016-17	Keonjhar	5	32	14	JAKI 9218, NBeG 3	NBeG 3
	Mayurbhanj	5	85	20	NBeG 3	NBeG 3
	Sundargarh	5	81	21	NBeG 3	NBeG 3
2017-18	Keonjhar	5	63	17	NBeG 3, JG 14	NBeG 3, JG 14
	Mayurbhanj	5	58	22	NBeG 3	NBeG 3
	Sundargarh	5	54	25	NBeG 3, NBeG 47	NBeG 3
Total		52	668	261		

Other national level instruments that are linked to the measure/practice

none

Are you aware of any other international agreements or programs that are relevant for this measure/practice?

none

Lessons learned

Describe lessons learned which may be relevant for others who wish to do the same or similar measures/practices (max 250 words).

Availability of improved seed was the major challenge faced by farmers. Seed systems need to be strengthened for promoting the farmers preferred varieties.

Nutrient status of the farmer fields was not tested before planting the trials. Many fields were found deficient in several macro and micro nutrients.

What challenges encountered along the way (if applicable) (max 200 words)

Many of the farmers were illiterate which made them difficult to understand the new production technologies and the process of varietal selection.

Participation of women farmers was less compared to men.

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)

The following conditions may be considered while conducting the FPVS trials.

1. The optimum number of varieties in the trials should be 5-6 for making selections by farmers.
2. Encourage participation of women farmers in the selection process.
3. Farmers should be sensitized on special characters of each variety before the selection process.
4. Selection process should be conducted at optimum stage of crop where varieties show their best performance.
5. Demonstrate the performance of improved varieties along with the local landraces and traditional cultivation practices.

International Rice Research Institute (IRRI)

International Rice Research Institute (IRRI)

Basic information:

Title of measure/practice:

Heirloom Rice Project

Date of submission:

23 July 2019

Name(s) of country/countries in which the measure/practice is taking place

Philippines

Responsible organizations

International Rice Research Institute (IRRI)
Department of Agriculture of The Philippines
PhilRice
Local Government Units (LGUs)
Department of Agriculture- Cordillera Administrative Region (DA-CAR)
Self-help groups (SHG)
CGIAR Research Programme RICE

Type of institution/organization (categories)

IRRI: International Research Centre within CGIAR

Department of Agriculture: Governmental Organization

PhilRice: Public Research Organization

DA-CAR: Regional governmental organization within Philippines

LGUs: Local governmental organizations

SHGs: Farmers' organizations

RICE: CGIAR Research Programme involving CGIAR Centres and a wide range of national partners from the whole globe.

Collaborating/supporting institutions/organizations/actors, if applicable

Food Staples Sufficiency Program (FSSP) of the Philippines' Department of Agriculture

Description of the examples

Mandatory information:

Short summary to be put in the inventory (max. 200 words)

The Heirloom Rice Project, which started in 2014, is supported by the Department of Agriculture of the Philippines and the International Rice Research Institute (IRRI). It aims to enhance the

productivity and enrich the legacy of heirloom and traditional rice varieties through empowering communities in rice-based ecosystems in the Philippines. Heirloom rice varieties, handed down for generations and grown by small landholders, have exceptional cooking quality, flavour, aroma, texture, colour, and nutritional value. There is high demand for these varieties, and they command higher prices in both domestic and international markets. However, there are also challenges hindering farmers to seize these opportunities, while some of the varieties are at risk of extinction. The Heirloom Rice Project thus takes a market and product development approach. Core activities include (1) characterizing existing heirloom or traditional varieties alongside modern climate-resilient varieties; (2) capacity development and enterprise building in farming communities; (3) identifying opportunities for value addition and market linkages; (4) documenting and disseminating good management practices through various communication channels; and (5) improving resistance and/or tolerance of selected heirloom varieties to diseases and environmental stresses. Key results include an increase in production of heirloom rice varieties by almost 80% in six years.

Brief history (including starting year), as appropriate

Handed down through generations, heirloom rices are special breeds of rice that have come to be regarded as the treasured heirlooms of the communities that developed them. They exhibit exceptional nutritional value, flavour, aroma, colour, and cooking quality. While the demand for these varieties is high both in local and international markets, their production is low. Heirloom rice varieties are grown in certain regions of Mindanao, such as Banasilan, Alamada, and the Arakan Valley in North Cotabato. They are also widely grown in provinces and municipalities of Cordillera Administrative Region (CAR).

In the 2010 decade the partners listed above got together to design and implement a project oriented to conserve the diversity of heirloom rice varieties by supporting their use and commercialization by farmers in selected sites and promoting awareness of their value. The Heirloom Rice Project started in 2014, and, in a span of 3 years, it was able to establish 14 two-cropping-season farmer field schools (FFS) with 290 farmer graduates, and 12 demonstration and seed production farms for farmer-preferred varieties: Chong-ak and Ulikan in Kalinga, Minaangan and Tinawon in Ifugao, Chorchor-os, Ominio, and Balatinaw in Mt. Province, Lasbakan and Balatinaw in Benguet, and Denorado and Azucena in Cotabato and Sultan Kudarat. A total of 124 varieties were collected from seven municipalities of CAR, two municipalities of North Cotabato, and one municipality of Sultan Kudarat, and 10-15 varieties grown in roughly 1000 square meter plots in each SHG barangay. These varieties were used for characterization, purification, seed production, and as learning fields for the farmers. Furthermore, 13 varieties were demonstrated, characterized, and purified in Benguet; 16 in Mt. Province; 19 in Kalinga; 22 in Ifugao; 38 in North Cotabato; and 16 in Sultan Kudarat. During the FFS, farmers were shown how to make their own organic foliar fertilizers through the use of readily-available resources such as fruit and plant juices and snails. The 13 FFS were conducted in 6 provinces in collaboration with various local organizations. From these FFS, a Farmer Field School Curriculum Guide was developed. In addition, the project distributed farm machines to the farmers, and evaluated the usefulness of the machines on local farming conditions.

Documentation of best and new farming practices from seed selection to post-harvest activities was done through farmer interviews (focus group discussion and participatory needs and opportunities assessment), participatory discussion during FFS, and study results from the established FFS learning field trials and Participatory Heirloom Rice Characterization Plot.

Developing business plans and linking heirloom rice farmers to local and international markets have been an important part of the project. Some milestones of the project in this regard were: 1) A Market Development Workshop in March 2016, which was attended by Local Government Units, farmers and the project management team. They discussed business plans, market linkages, Geographical Indication (GI) registration, and other market-related concerns. Participating farmers from Ifugao, Benguet, Kalinga, and Mountain Province provided comments on and suggestions to their specific business plans. The farmers and local champions had started putting together these business plans in December 2015 under the guidance of the Agribusiness and Marketing Assistance Division of the Department of Agriculture (DA)-CAR and the International Rice Research Institute (IRRI); 2) Participation of the project in Madrid Fusion, a congress that attracts annually chefs and food aficionados from all over the World. Heirloom rice varieties attracted the attention of local and international audiences. Among them were local and international restaurateurs who showed keen interest in including heirloom rice in their menus, chefs who are on the lookout for new ingredients, and heads of food companies who are seeking to diversify their products. The rice likewise drew food bloggers and writers, health advocates, government representatives, students, and senior citizens.

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

The project focuses on the following actions:

1. Characterize existing heirloom or traditional varieties or landraces and modern climate resilient varieties in selected provinces;
2. Enhance local capacity and enterprise building in farming communities;
3. Identify opportunities for adding value and creating market linkages for heirloom or traditional rice varieties;
4. Document good management practices and disseminate through modern and traditional information, education and communication channels; and
5. Improve resistance to disease and tolerance of environmental stresses of selected heirloom varieties.

Short description of the context and the history of the measure/practice is taking place

Since 2005, the Rice Terraces Farmers Cooperative has exported 97 metric tons of grain from heirloom varieties, such as Tinawon and Unoy, to the US market. This includes a 2012 shipment of 24.4 metric tons valued at PhP1.3 million. Production of heirloom rice varieties has increased by almost 80% in six years. But the huge potential of heirloom rice as a lucrative livelihood is hindered by the inability of local farmers to produce these with higher seed quality and purity and in greater quantity. Moreover, certain heirloom varieties preferred in the market are gradually disappearing, some even close to extinction. Market and product development, alongside maintaining biodiversity in the region, could be crucial in encouraging farmers to continue growing these threatened rice varieties, both traditional in the Cordillera Region and traditional and improved in the Arakan Valley Complex in Mindanao. Adding value to every step—from varietal development to market linkages—will benefit farmers in the long term.

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	Also relevant
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2	Financial contributions to support farmers conservation and sustainable use of PGRFA such as contributions to benefit-sharing funds		
3	Approaches to encourage income-generating activities to support farmers' conservation and sustainable use of PGRFA	X	
4	Catalogues, registries and other forms of documentation of PGRFA and protection of traditional knowledge		X
5	In-situ/on-farm conservation and management of PGRFA, such as social and cultural measures, community biodiversity management and conservation sites		X
6	Facilitation of farmers' access to a diversity of PGRFA through community seed banks, 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		X
8	Farmers' participation in decision-making at local, national and sub-regional, regional and international levels		X

9	Training, capacity development and public awareness creation		X
10	Legal measures for the implementation of Farmers' Rights, such as legislative measures related to PGRFA.		
11	Other measures / practices		

Links to further information about the measure/practice

- <https://www.heirloomrice.com/>
- <http://cure.irri.org/heirloom-rice-project>
- <https://www.philrice.gov.ph/heirloom-rice-preserved-made-productive/>
- <https://www.tandfonline.com/doi/full/10.1080/03066150.2017.1284062>
- https://www.rappler.com/move-ph/issues/hunger/70991-heirloom-rice-project-irri-cordilleras_