

# Training course outline MODULE 1

Plant Genetic Resources (PGRs): collection, conservation and exchange to support the increase of agrobiodiversity in farming systems

Task 1.4 - WP1

TRAINERS (or responsible partner): UPV (lead), AEGILOPS, KIS, additional contributors: ECLLD and Rete Semi Rurali

## **SECTION 1: Info on the module for** *trainees*

## Identity card and case study data

Below you'll find all the information you need to produce one or more learning activities: the training objective and the pedagogical modality chosen (face-to-face, virtual classroom, self-

study), parameters that form the framework of your exercise, a list of learning activities and a list of pedagogical resources from which you can draw (but you're free to invent new ones) to design your learning activity.

## **1. TRAINING THEMATIC**

Plant genetic resources (PGRs) are essential for breeding. The agrobiodiversity encompassed in modern varieties, landraces and ecotypes, ancient materials, etc. as well as wild relatives must be preserved i) to mitigate genetic erosion and, therefore, ii) to ensure that these resources are available to face future challenges (e.g. climate change, new pathogens, new preferences) and iii) contribute to a diverse and resilient agrifood sector. Seedbanks as ex situ conservation structures, community seedbanks (CSBs), breeding and prebreeding collections, are among the most usual ex situ conservation methods. The own community banks and farmers' collections are examples of in situ conservation. In this module (Module 1 within T1.4 in LIVESEEDING), the targeted actors will learn about the most relevant issues and particularities, methodologies and strategies related to the conservation, use and exchange of genetics resources.

## 2. TRAINING STAKES AND OBJECTIVES

Describe here the training stakes for this audience and the general training goal to achieve at the end of the training

Training stakes and the general training goal for the target audience you have chosen

1. The training course aims to: Main methodologies for the management of PGRs

2. Structure of the module and training

This module 1 is divided into three units.

- Seedbank methodologies Collecting, seed exchanging, conservation
- Prebreeding materials. Breeders' preselections
- Community seed banks seed collection, management, exchange
- 3. At the end of the training, the trainee will be able to:
  - Manage their own genetic resources
  - Get a better understanding about PGR conservation methodologies
  - Develop their own collection initiatives

## **3. STRUCTURE OF THE TRAINING MODULE**

### Insert a summary table showing the module structure, units, and their duration.

MODULE #1 – Plant Genetic Resources (PGRs): collection, conservation and	4,5 hours
exchange to support the increase of agrobiodiversity in farming systems	
Unit 1: Public/Institutional seedbanks: PGRs collection, conservation and exchange	1,5 hours
Unit 2: Pre-breeding: from genetic resources characterisation to their use in	1,5 hours
breeding programmes	
Unit 3: Community seed banks: collection, dynamic management and exchange	1,5 hours

## **4. TARGET AUDIENCE**

Training is only effective if it is designed for a given audience and related to the problematic work situations for that given audience. A training activity may therefore differ depending on whether it is aimed at an advisor from a small seed company or a network of seed producers.

### Check the target audience(s) (preferably one type of audience, possibly 2)

□ Farmers'seed (networks) □ Contract seed producers □ Handcarft small-scale seed enterprises □ Large scale / □ Multinational seed companies

### Precise the target audience

Mainly (but also opened to others):

1. Organic farmers (wide range, particular interest for farmers committed with agroecology, preservation of landraces and starting in breeding their own varieties)

2. Students (wide range, from High School on agroecology to MSc in Plant Breeding)

Specify the target audience, its level of expertise (experts, beginners, intermediates) and whether the training concerns vegetable seeds or cereal seeds.

Check the "pre-requisite" level of the trainees

X Beginner X Intermediate 🗆 Expert

### Check the type of seeds concerned by the training

x Vegetables seed x Cereals

## **5. MODALITIES**

□ virtual classroom / x face-to-face classroom (mainly online) / □ self-paced-training

## **6. EVALUATION METHODS**

x Quiz / 
Presentation of a case study / x add the method (homework: search info online)

# 7. MATERIAL AVAILABLE FOR BUILDING THE LEARNING ACTIVITY(IES)



The learning resources for this topic require that you connect to the internet with your computer, as part of the info showed are online databases, seedbank repositories, webpages of community seedbanks, youtube videocasts, etc. They will be provided and mentioned during the main presentation.

As some examples:

- Operational Genebank Manual. Centre for Genetic Resources, The Netherlands (CGN-WUR). And others manuals: <u>https://www.ecpgr.org/aegis/aquas/genebank-manuals</u>
- IPGRI/Bioversity international descriptors: <u>https://cgspace.cgiar.org/collections/835fa638-0167-4669-</u> 9532-ffc488facc94
- International PGR treaties and management: *"CURSO DE PROCEDIMIENTOS DE ACCESO A RECURSOS FITOGENÉTICOS PARA LA ALIMENTACIÓN Y LA AGRICULTURA"*. Ministerio de Agricultura, Pesca y Alimentación (Spain chrome-

extension://efaidnbmnnnibpcajpcglclefindmkaj/https://preservicio.mapama.gob.es/es/agricultura/temas/ medios-de-produccion/curso\_mapa\_acceso\_rfaa\_easysmta\_tcm30-690179.pdf

• Webpages of PGR Seedbanks and Programs:

CGN: <u>https://www.wur.nl/nl/onderzoek-resultaten/kennisonline-onderzoeksprojecten-lvvn/centre-for-genetic-resources-the-netherlands/plant-genetic-resources.htm</u>

Kew Gardens: https://www.kew.org/science/collections-and-resources/collections

USDA-ARS: <u>https://www.ars.usda.gov/plains-area/fort-collins-co/center-for-agricultural-resources-</u> research/paagrpru/docs/seed/seed-collections/

Real Jardín Botánico de Madrid-CSIC: <u>https://rjb.csic.es/rjb-colecciones/banco-de-germoplasma/</u> COMAV-UPV: <u>https://www.upv.es/contenidos/BGCOMAV/</u>

## 8. TRAINING TECHNIQUES

Check one or several learning activities you have chosen to develop

Expositive methods –	x Presentation: organized information on a specific topic
which emphasize the	Demonstration of how a task can be performed
'absorption' of new	x Worked examples with comment and explicit reference to
Information. The learner	the theory
needs to listen, read,	x Case studies real, significant cases related to the topic
observe.	🗆 other
	+ with survey and feedback
Application methods –	Demonstration and practice of a gesture or procedure
which emphasize the	Analysis and diagnosis of a "virtual" case study (described
active processes that	in writing, audio or video recording)
learners use to perform	x Guided search for resources and production of a summary
procedural and principle-	Role-playing or simulation
based tasks and build new	x Project: apply the principles and concepts learned in your
knowledge	own environment
Collaborative methods –	x Guided online discussions (chat, forum, video or audio
which emphasize the	conference): debate, exchanges
social dimension of	Collaborative work: application methods involving group
learning and engage	collaboration (longer, more complex tasks)
learners in sharing	x Tutoring or even peer assessment: pairing up, for example,
knowledge and	to assess each other's work/production.
performing tasks in a	
collaborative way.	

## **SECTION 2:** Info on the module for trainers

# 2.1 THE DURATION OF THE PLANNED ACTIVITY, ITS VARIOUS STAGES AND TIMING

Describe the duration, stages, and timing of the activities in each unit

### Unit 1 (UPV)

1) Sharing of instructions about the session, and main concepts to be learned – 10 min, 2) Main presentation from the trainer, description of useful materials (available online) - 45 min, 3) <u>Evaluation of trainees 1</u> questions relative to issues exposed during presentations (Quiz, 10 min in total; response provided by e.mail to the trainer) 4) plenary explanation of PGRs repositories in Genebanks (15 min) 5) Conclusions, follow-up and prospects (what have we learnt today?, 5-10 min). 6) <u>Evaluation of trainees 2</u> (individual homework, germplasm searching in PGRs online repositories, performed individually during the next week, work provided to the trainer by e.mail)

#### Unit 2 (KIS)

1) Sharing of instructions about the session, and main concepts to be learned – 5 min, 2) Main presentation from the trainer, description of useful materials (available online) - 50 min, 3) Evaluation of trainees 1 using questions relative to issues exposed during presentations (Quiz, 10 min in total; response provided by e.mail to the trainer) 4) plenary discussion on pre-breeding procedures and selection of parents/populations (15 min) 5) Conclusions, follow-up and prospects (what have we learnt today?, 5-10 min). 6) Evaluation of trainees 2 (individual homework, pre-breeding activities and selection of parents/populations (list examples) for two different species, performed individually during the next week, work provided to the trainer by e-mail).

Unit 3 (AEG, with support of ideas and/or materials from ECLLD and Rete Semi Rurali) 1) Sharing of instructions about the session, and main concepts to be learned – 5 min, 2) Main presentation from the trainer, description of useful materials (available online) - 50 min, 3) Evaluation of trainees 1 questions relative to issues exposed during presentations (Quiz, 10 min in total; response provided by e.mail to the trainer) 4) plenary discussion of main differences and complementarities between formal and informal seed system (15 min) 5) Conclusions, follow-up and prospects (what have we learnt today?, 5-10 min). 6) Evaluation of trainees 2 (individual homework, community seed bank (CSB) activities and cooperative conservation projects/networks worldwide (successful examples), performed individually during the next week, work provided to the trainer by e.mail)

### INSTRUCTIONS

## Describe the instructions you're going to give trainees for carrying out the activity. Ideally, write down these instructions

UNIT 1 – The structure of the unit will be shortly explained in the first 5-10 min.

In summary, be ready :

i) to follow online presentation

ii) take notes of main issues treated

as iii) there will be a short quiz for evaluation and

iv) finally you will be also evaluated through a homework (during the next week) based on a practical searching of genetic resources in online repositories (CGN-Netherlands, COMAV-UPV, ARS-GRIN from USA, World vegetable Center Seedbank from Taiwan, etc.)

UNIT 2 - The structure of the unit will be shortly explained in the first 5 min.

In summary, be ready :

i) to follow online presentation

ii) take notes of main issues presented as

iii) there will be a short quiz for evaluation and

iv) finally you will be also evaluated through a homework (during the next week) based on prebreeding activities and selection of parents/populations for two different species of your choice.

UNIT 3 – The structure of the unit will be shortly explained in the first 5 min.

In summary, be ready :

i) to follow online presentation

ii) take notes of main issues treated

as iii) there will be a short quiz for evaluation and

iv) finally you will be also evaluated through a homework (during the next week) based on a practical searching of community seed bank activities and cooperative conservation projects/networks worldwide (succesful examples) : ECLLD, Balkan Seed Network etc

### MATERIALS

Describe the materials provided for trainees to carry out the activity (resources, Internet links, etc.) and specify how they will use the resources, and describe the link between the resources and the activity

UNIT 1 – In the presentation, online resources will be shared with trainees. Other online presentations to widen info on PGRs management in Seedbanks (available for further consulting of trainees), International treaties, repositories of internationally recognised seedbanks. Examples : CGN: <a href="https://www.wur.nl/nl/onderzoek-resultaten/kennisonline-onderzoeksprojecten-lvvn/centre-for-genetic-resources-the-netherlands/plant-genetic-resources.htm">https://www.wur.nl/nl/onderzoek-resultaten/kennisonline-onderzoeksprojecten-lvvn/centre-for-genetic-resources-the-netherlands/plant-genetic-resources.htm</a> Kew Gardens: <a href="https://www.kew.org/science/collections-and-resources/collections">https://www.kew.org/science/collections-and-resources/collections</a>

USDA-ARS: <u>https://www.ars.usda.gov/plains-area/fort-collins-co/center-for-agricultural-resources-</u> research/paagrpru/docs/seed/seed-collections/

Real Jardín Botánico de Madrid-CSIC: <u>https://rjb.csic.es/rjb-colecciones/banco-de-germoplasma/</u>COMAV-UPV: <u>https://www.upv.es/contenidos/BGCOMAV/</u>

UNIT 2 - In the presentation, online resources will be shared with trainees. Other relevant resources will be shared online or later, by e-mail to widen the info on pre-breeding activities. Examples : https://link.springer.com/chapter/10.1007/978-3-030-90673-3\_25

https://cwr.croptrust.org/project-components/pre-breeding-and-evaluation/

https://justagriculture.in/files/newsletter/nov/034.%20Pre-breeding.pdf

https://www.nordgen.org/media/qbadgkec/promoting-nordic-plant-breeding-for-the-future-

ppp-public-private-partnership-for-pre-breeding.pdf

https://edepot.wur.nl/3667

https://www.cbd.int/doc/world/bt/bt-nbsap-v2-p9-en.pdf

UNIT 3 – In the presentation, online resources will be shared with trainees. Other online presentations to widen info on PGRs management in CSBs (available for further consulting), International treaties and Farmers Rights, existed CSB or related networks/projects and CSB activities. Examples :

https://liberatediversity.org/the-network/

https://save-foundation.net/en/

https://www.facebook.com/balkanseednetwork/

https://diversifood.eu/community-seed-banks-in-europe/

https://foodtank.com/news/2020/07/26-organizations-working-to-conserve-seed-biodiversity/

https://www.echocommunity.org/en/pages/echo\_global\_seedbank\_info

https://www.communityseednetwork.org/

https://more.bham.ac.uk/farmerspride/network/

### PLANNED INTERACTION BETWEEN TRAINEES AND/OR WITH THE TRAINER

Describe it and specify in particular if it's remote (virtual class, self-training) the support used (chat tool, collaborative writing document, collaborative whiteboard, survey, etc.).

The three UNITS: Remote virtual class (synchronous, through TEAMS or similar platforms), chat tool for questions during presentation (questions not replied during the virtual online class will be replied later in a document, which will be shared to the mail list of trainees)

### **EVALUATION**

Describe how you are going to assess what you have learned. Please note that the skills assessed must relate to the training objective you have formulated. If it's a quiz, true/false, MCQ, etc., write down the questions you might ask.

UNITS 1, 2, 3: fast quiz (5-10 min) during the lesson + individual homework (during the week after the lesson, provided to the trainer once finished for evaluation)