

WP 7

Training

Months 6-60

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WP7

Participants

| Partner number and short name | WP7 effort |
|-------------------------------|--------------|
| 1 - KIS | 12.00 |
| 2 - BOKU | 1.00 |
| 3 - CRI | 4.00 |
| 4 - IFVCNS | 4.00 |
| 7 - UNEW | 3.00 |
| 10 - GEOKOMI | 1.00 |
| 11 - UNITUS | 11.20 |
| 12 - NATURLAND | 5.50 |
| 14 - IHAR | 5.00 |
| 18 - NPPC | 4.00 |
| 15 - UP | |
| 25 - WUS | |
| Total | 50.70 |



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Objectives

WP7

Rapidly introduce innovations developed as part of the project into commercial practice.

This will be achieved by:

- Design and delivery of **training workshops** in:
 - a) improved genotyping;
 - b) improved phenotyping;
 - c) participatory plant breeding;
 - d) organization/management of farmer participatory field trials.
- Producing a **cohort of young researchers** and scientists with a new blend of applied and fundamental R&D skills required to:
 - a) further improve the selection and breeding of organic crops;
 - b) apply breeding and agronomic methodologies/approaches developed in the project to other crops;
 - c) contribute to transferring developed technologies into commercial practice.
- Engage with **farmers and growers** and provide training that allows them to acquire the knowledge and understanding to actively engage in Participatory Plant Breeding (PPB) and manage Farmer Participatory Field Trials (FPT).



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WP7

WP7 will develop extensive training programs in:

- (a) molecular breeding,**
- (b) the use and application of improved phenotyping capabilities and**
- (c) PPB and the organization and management of Farmer Participatory field trials.**

Bursaries will be made available to participants from countries where the uptake of organic agriculture is low*. This will provide a **new blend of applied and fundamental R&D skills required to**

- (a) further improve the selection and breeding of organic crops**
- (b) apply breeding and agronomic methodologies/approaches developed in the project to other crops and/or**
- (c) contribute to transferring technologies developed into commercial practice.**

*no France, Spain, Germany and Italy



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WP7

TASK 7.1 Advanced genotyping training
(months 7-48)

TASK 7.2 Advanced phenotyping training
(months 7-48)

TASK 7.3 Participatory Plant Breeding (PPB) training
and the organization/management of Farmer
Participatory Trials (FPT) (months 7-48)



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TASK 7.1 Advanced genotyping training (months 7-48)

There is often limited opportunity for detailed training in **(a)** plant molecular biology, **(b)** molecular assisted breeding/selection and **(c)** associated biometrics, even though these are of increasing importance in commercial crop breeding.

As a result, breeding companies and crop research institutions increasingly report difficulties in recruiting Early Stage Researchers, who combine knowledge and skills in the areas of **(a)** traditional plant breeding, **(b)** plant genetics and physiology and **(c)** applied plant molecular biology/biometrics. Training workshops will focus on the following topics: **(i)** Methods/strategies for QTL identification, **(ii)** association genetics and **(iii)** marker-assisted breeding, **(iv)** applications of transcriptomic and **(v)** proteomic methods/approaches in crop breeding. A key focus of this training activity will be integrating genomics and **(vi)** bioinformatics into the field of molecular breeding. This will involve **4 workshops (5 days/ 12 participants)** for which 6 bursaries at a value of up to 500€ [*bursary support will be 12,000 euros*] will be made available per workshop where participants are from countries where the organic sector is low and/or have insufficient funds available to attend the genotyping workshops.

- Development of training materials (UNITUS month 12)

Responsible partner: UNITUS; Partners involved: BOKU, IFVC, IHAR, NPPC



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TASK 7.2 Advanced phenotyping training (months 7-48)

Many breeders/research institutions carry out extensive phenotyping activities often under time and resource constraints, which may lead to results that are difficult to interpret especially for quantitative resistance to key diseases. There is therefore an urgent need to develop and train researchers and plant breeders in the use and application of **(i)** improved phenotyping capabilities in terms of **(ii)** digital, **(iii)** thermal and **(iv)** hyperspectral imaging in terms of **(v)** when, **(vi)** where and **(vii)** how these can be efficiently utilized. This will involve **6 workshops (2 days/ 20 participants)** for which 10 bursaries at a value of up to 200€ [*bursary support will be 12,000 euros*] will be made available per workshop where participants are from countries with a low uptake of organic agriculture and/or have insufficient funds available to attend the phenotyping workshops. A minimum of 6 workshops will be run in advanced phenotyping.

- Development of training materials (NPPC month 12)



Responsible partner: NPPC; Partners involved: UNEW, KIS



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TASK 7.3 Participatory Plant Breeding (PPB) training and the organisation/management of Farmer Participatory Trials (months 7-48)

Traditional breeder-directed breeding programs are very effective at developing varieties that can be used in farming systems that are fairly homogeneous, but less effective for **heterogeneous** environments i.e. organic production. Through PPB the plant breeders can direct/focus their R&D more on the needs of organic farmers. Farmers can assure plant breeders that they are assessing trade-offs among traits correctly. PPB ensures greater success of adoption of innovation by the farmers. By doing so we will increase **farmer skills** to enhance farmer selection and seed production efforts. Most variety evaluation trials are carried out in **small-plots** and under a high input environment. Farmer Participatory Trials will ensure that varieties will be evaluated under “**real life**” conditions. It is therefore important to train farmers and growers in the establishment, management and data recording required to fully evaluate these farmer based field trials. **Each partner will be responsible for holding a minimum of 2 training events during the project.**

- Development of training materials (NATURLAND month 24)

Responsible partner: NATUR; Partners involved: WSU, UNEW, NPPC, GEO, KIS, BOKU, CRI, IFVC, IHAR, UP



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Advertise

The workshops will be **advertised on the external project website and by e-mail postings to organizations involved in research and advice, crop breeding and organic/low input agriculture (using existing networks and databases of partner organizations)**. The use of Agricultural training networks i.e. Bionet Austria (www.bionet.at), the Czech Technology Platform for Organic Agriculture (www.ctpez.cz), Association of Organic Farming (Zväz ekologického poľnohospodárstva) in Slovakia (www.ecotrend.sk/zvaz-ekologickeho) and the Association of Slovenian Ecological Farming and Chamber of Agriculture and Forestry of Slovenia (www.kgzs.si/gv/eko.aspx) will provide a vehicle for advertising the training workshops and also the transfer of knowledge to farmers. These and other existing training networks could also be used to jointly host the events, especially those in TASK 7.2 and particularly TASK 7.3, but also to deliver further training workshops after completion of the ECOBREED project. Once the training programs have been developed, there also exists the potential for Partners to offer these courses on a stand-alone self-funded basis.



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Deliverables

| No. | Title | Lead beneficiary | Dissemination level | time |
|------|---|------------------|--|------|
| D7.1 | Production of materials for improved genotyping training | 11 - UNITUS | Confidential, only for members of the consortium (including the Commission Services) | 12 |
| D7.2 | Production of materials for improved phenotyping training | 18 -NPPC | Confidential, only for members of the consortium (including the Commission Services) | 12 |
| D7.3 | Production of materials for PPB and FPT training | 12 - NATURLAND | Public | 18 |
| D7.4 | Final report on WP7 | 11 - UNITUS | Public | 60 |



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Risks

- Lack of interest and poor participation in training workshops (Low)

Ensure good advertisement and communication with publicity materials provided and distributed. Work with existing training organizations in different countries (Section 2.2a) Provision of a bursary scheme to support uptake.

- Cancellation of attendance at training workshops at the last minute (Low)

Ensure that awaiting list is provided with efficient communication with potential attendees.



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Workshops

TASK 7.1 Advanced genotyping training (months 7-48)

4 workshops (5 days/ 12 participants):

1. Association genetics and marker-assisted breeding,
2. QTL identification for MAS,
3. Applications of transcriptomic,
4. Proteomic methods/approaches in crop breeding,
5. Bioinformatics

Time table?

Locations?

UNITUS – Italy
BOKU – Austria
IFVC – Serbia
IHAR – Poland
NPPC - Slovakia

Start thinking about.

At the next project meeting in 12 months time should be able to confirm this.

Real focus for WP7 over the next 10-12 months will be:

- a) partners to start communicating with each other and
- b) preparation of the materials to be used in the workshops to meet the set deliverables



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TASK 7.2 Advanced phenotyping training (months 7-48)

6 workshops (2 days/ 20 participants):

1. Phenotype traits and GxE interaction,
2. Automatic Phenotype technologies,
3. Results interpretation,
4. Qualitative vs quantitative traits,
5. Digital, thermal and hyperspectral imaging,
6. Biostatistics -informatics

Time table?

Locations?

NPPC – Slovakia

UNEW - UK

KIS - Slovenia

Start thinking about.

At the next project meeting in 12 months time should be able to confirm this.



Real focus for WP7 over the next 10-12 months will be:

- a) partners to start communicating with each other and
- b) preparation of the materials to be used in the workshops to meet the set deliverables



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TASK 7.3 Participatory Plant Breeding (PPB) training and the organization/management of Farmer Participatory Trials (FPT) (months 7-48)

Farmers where FPT are located will be used to host training activities

24 workshops (1 days/ local participants):

1. PPB and the organization and management of Farmer Participatory field trials,
2. Concepts of selections in autogamous vs allogamous vs propagated crops,
3. Practical phenotyping selection,
4. Broad adaptability and GxE interactions,
5. Apply breeding and agronomic methodologies/approaches to select lines and genotypes,
6. Enhance seed production efforts,
7. Development of diverse, locally adapted plant populations,
8. *In situ* (on farm) conservation to improved resilience.

Time table?

Locations? NATUR-Germany, WSU-USA, UNEW-UK, NPPC- Slovakia, GEO- Greece, KIS-Slovenia, BOKU-Austria, CRI- Czech Republic, IFVC- Serbia, IHAR-Poland, UP- Hungary

Lead partners in each country over the next 12-18 months will be identifying where these trials can be located, so that when we meet in 12 months time and then again in 24 months time this can be confirmed.



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WP 7

Training

Activities for months 6-12

Focus for WP7 over the next 10-12 months will be:

- i) Partners to start **communicating** with each other and;
- ii) Preparation of the **materials** to be used in the workshops to meet the set deliverables;
- iii) Consider University certificate for the courses;
- iv) Collaboration aspect with the **Bresov** and **Liveseed** projects.



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