

# **First meeting of the EUFORGEN working group developing guidelines and decision support tool for better incorporating genetic aspects into production and use of forest reproductive material**

Madrid, Spain, 15-18 November 2016

## **Summary of the meeting**

The meeting was held back-to-back with a stakeholders' consultation, organised by the GenTree project, which touched upon production and use of forest reproductive material (FRM) across Europe. During the consultation, various stakeholders involved in the FRM production chain, in policymaking, representatives of forest owners groups, forest managers and certification schemes, presented their perception and concerns with regards to the production of FRM. All working group members participating in the EUFORGEN meeting attended the GenTree event, of which the report is available on the Gentree website <http://www.gentree-h2020.eu/news/article/achieving-impact-through-strong-stakeholders-engagement/>.

## **1 Opening of the meeting**

M. Bozzano welcomed the participants. He presented the agenda of the meeting and clarified the mandate as assigned by the EUFORGEN Steering Committee. The goal of this working group is to reach a common understanding of how FRMs are used, produced and transferred across Europe and thereafter to describe the stages and factors in the FRM value chain that have the largest effects on the genetic constitution of FRM. Ultimately, the working group will develop practical guidelines to support informed decision-making on use and production on FRMs.

The agenda (*Annex 2*) was approved with no amendments. All meeting participants introduced themselves. S. Bordacs was nominated as rapporteur for the meeting, supported by B. Vinceti and the EUFORGEN secretariat.

### **1.1 EUFORGEN update**

M. Bozzano gave an update to the participants on the objectives of the other two working groups established by the EUFORGEN Steering Committee during Phase V. The working group on the *Genetic diversity indicator* will review Indicator 4.6 on genetic resources of the pan-European C&I for sustainable forest management and propose how this indicator could be improved. The group will meet in Rome, Italy on 28-30 November 2016.

The working group on the *Decision cascade tool* will further develop a decision tool to aid the identification and management of threatened genetic conservation units. The group had its first meeting in Rome, Italy on 25-28 October 2016.

More information about members and mandate of EUFORGEN working groups for Phase V is available on the EUFORGEN website <http://www.euforgen.org/about-us/how-we-operate/working-groups/>

### **1.2 Expected outputs of this working group**

The working group will produce guidelines and a decision-support tool to better incorporate genetic aspects into forest management practices related to production and use of FRM.

As illustrated by M. Bozzano, the working group will review relevant literature and capitalize on the results of the Forest Management network, which was active during Phase III of EUFORGEN (2005-2009).

The group will also build upon the publication *Use and transfer of forest reproductive material in Europe in the context of climate change*<sup>1</sup> developed by another EUFORGEN working group and published in 2015. Furthermore, the working group will integrate the discussion points derived from the GenTree stakeholders' consultation. Finally, best practices will be developed taking stock of the experience matured and tools already developed in some European countries.

The objective of the working group is dual:

- **production of FRM**
  1. document the production chain of FRM and examine how genetic aspects are affected in collection/production/deployment of FRM, taking into account how climate change may affect seed production
  2. make recommendations on how to improve existing schemes for tracking and recording FRM
  
- **use of FRM**
  1. define alternative choices of regeneration approaches (natural and artificial regeneration)
  2. analyse establishment techniques and use of FRM

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<sup>1</sup> The report, *Use and transfer of forest reproductive material (FRM) in Europe in the context of climate change* is available at the EUFORGEN website: <http://www.euforgen.org/publications/publication/use-and-transfer-of-forest-reproductive-material-in-europe-in-the-context-of-climate-change/>

### **1.3 Use and transfer of forest reproductive material in Europe in the context of climate change – recommendations from the EUFORGEN Phase IV working group**

M. Bozzano gave a brief overview of the main findings of the report<sup>1</sup> and highlighted the recommendations relevant for this working group, which include:

- Local is not always best
- FRM transfer is a valuable option for adapting forests to climate changes but it has its limitations
- Use provenances instead of species in assisted migration schemes
- Need for FRM documentation increases under climate changes
- Tree breeding offers opportunities for forestry under climate changes
- Knowledge gaps on the adaptation of forest trees should be filled
- Revision of transfer recommendations is necessary at the pan-European level
- More stringent control of FRM is needed in all stages of production and marketing.

## **2 Overview of the existing guidelines and consolidated practices on the production and use of FRM that incorporate genetic aspects**

### **2.1 National overview**

With the purpose of gaining an overview of the existing situation across Europe, the participants gave brief presentations on the mechanisms related to production, use and transfer of FRM in their countries. The presentations included experiences from the following countries: Croatia, Czech Republic, Denmark, Estonia, Germany, Hungary, Italy, Finland, France, Iceland, Ireland, Luxembourg, Norway, Poland, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Turkey and UK.

A very broad range of practices and experience emerged, both at operational and legislative levels. In addition, due to different climatic and ecological conditions, country sizes, extensions of forests and economic capacities, the overview showed how countries are facing highly diverse challenges.

Some countries presented examples of web tools that guide the selection of appropriate FRM (i.e. species and provenances) based on the specific conditions of the site of establishment. These examples were judged useful for the work of this working group, as they constitute feasible solutions that could be more broadly developed and adopted. Such tools can be used as inspiration for a common tool that ideally could be employed across Europe and provide recommendations related to specific site conditions, purpose of the planting and suggested and available FRM of provenances/species.

## 2.2 Tree seed nursery chain: Procedures to preserve and transmit genetic diversity

F. Gorian gave a presentation on the procedures related to tree supply chain related to biodiversity conservation. The method had been used for restoring forests in the Po plain, Italy. This included an insight into how to establish *ex situ* conservation stands and produce FRM for native species with use of local sources and how to collect and treat seeds. This approach focuses on ensuring equal representativeness of the genetic material collected from the original source, in the restored forest.

## 2.3 Implementation practices of OECD/EU legislation

S. Bordács gave an introduction on the OECD Forest Seed and Plant scheme<sup>2</sup> and EU legislation<sup>3</sup> including an overview of the various data and documentation that support FRM tracking

The objective of FRM certification practices is to maintain FRM traceability throughout the whole supply chain, from producer to end user. S. Bordács highlighted the following points:

- Certification offers information, validity and traceability for the stakeholders. It is a tool to trace the seed-lots moving around across Europe.
- Existing certification schemes focus on the market rather than on the actual use of FRM.
- The fundamental element of the system is a categorization scheme related to the type of basic material: *Source identified, Selected, Qualified and Tested*. The higher category, the more genetic information is found on the FRM. Due to the recent EU legislation, only FRM in *Tested* category can be imported from OECD countries without any specific authorization.
- Genetic information is very limited in the certification system. Nevertheless, the tendency is that more and more countries use genetic information in their systems, e.g. delineation of region of provenances.
- All member states use regions of provenances but these vary across countries and are not harmonized in case of cross-border regions.
- The OECD and EU legislation is more or less synchronized (95% equivalence in substantive parts).

S. Bordács mentioned that genetic diversity and adaptive potential could be often inadequate in the case of use FRM in *Tested* and *Qualified* categories. However, these

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<sup>2</sup> OECD Scheme for the Certification of Forest Reproductive Material:

<http://www.oecd.org/tad/code/forestreproductivematerial.htm>

Decision of the Council establishing the OECD Scheme for the Certification of Forest Reproductive Material Moving in International Trade – including definitions :

<http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=215&InstrumentPID=340&Lang=en&Book=>

<sup>3</sup> Council Directive 1999/105/EC of 22 December 1999 on the marketing of forest reproductive material:

<http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31999L0105>

categories provide more genetic information about the FRM used. The genetic diversity is significantly reduced since those basic materials are usually created by selective breeding techniques.

S. Bordács raised some weaknesses in the system:

- Lack of understanding of what does *tested* mean. It is not obligatory to provide information on how the material is tested.
- Lack of information on adaptive potential in other places than where it was tested (e.g. information on resistance and growing capacity).
- Lack of more concrete directives and minimum requirements (e.g. on minimum size or minimum number of components). As it is now, the legislation does not allow foresters to take easy decisions on the choice of material.
- In the certification process, there are no mandatory controls on the final use of the seeds. This impedes traceability.

### **2.3 Results of the EUFORGEN Forest Management Network (Phase III)**

T. Eysteinnsson presented the main results of a EUFORGEN survey on relevant policies and practices related to genetic conservation and forest management conducted during Phase III (2005-2009) of the Programme.

The survey, dating back to 2007 and based on feedback from 22 countries, showed that artificial regeneration by planting is more common than natural regeneration as a regeneration method in Nordic and Central European countries and that most countries promote the use of native species and local provenances. Important to mention, state agencies and forest owners associations have a predominant role in providing forest owners with advice for their forest management decisions. T. Eysteinnsson underlined that a wide diversity of forest management practices are applied in the different sub-regions in Europe.

The survey showed a situation more or less similar to the situation today. Though the preliminary results of a survey recently conducted within the GenTree project, partly repeating the questions posed in the past survey, show that awareness on tree genetic aspects is progressively increasing among stakeholders such as forest owners and managers. Participants agreed on this trend.

### **3 Definition of the areas of work for the working group**

The meeting participants agreed that this working group would provide recommendations and support for practitioners in formulating scientifically sound decisions with regard to the use and production of FRM in the framework of existing regulations. The focus will mainly be on the genetic aspects in FRM constitution and related to the adaptation to climate changes.

### **3.1 Definition of the working group's outputs**

The participants brainstormed on a potential output and target groups. It was agreed that, even though a printed report would be the initial output of the working group, the ultimate goal would be to produce something accessible for practitioners at various levels. This will include all production levels: from policy-makers to forest practitioners. The range of potential final users will be identified for the various elements of the production and use chain and the most appropriate product will be identified in due time.

The final product will also be available online to ensure easy access for different target groups and to simplify its updating. Recommendations and guidelines will be easily understandable.

The tool will aim to facilitate the implementation of the existing schemes (OECD and EU), and will reflect different sub-regional realities.

### **3.2 Preliminary recommendations**

The final recommendations of this working group will stem from the synthesis that the members will produce, but some preliminary points were raised during the meeting.

These include:

- the need to raise awareness on the potential uses and access to FRM across countries ,
- the importance of long-term planning when ordering FRM to allow identification and production of proper material,
- the need to support research that aims to better identify the most appropriate material for long-term needs,
- the need to develop communication channels with forest certification schemes,
- the importance of keeping records of where the material was used.

### **3.3 Practicalities and tasks**

M. Bozzano proposed two alternative options, that is, to divide the group in two smaller groups or continue as one. The participants preferred to maintain a single group to gain a better overview of the overall task, and avoid overlapping discussions and efforts. All participants agreed to develop first a complete draft and to draw from it a synthesis and main recommendations at the next meeting.

The working group decided to break down the various elements of the production chain in order to identify areas with impact on genetic aspects. Based on this, tasks were divided among the participants (see *Annex 1*). A leading author was identified

for each task to take the responsibility of organizing, structuring and compiling the text. It was agreed that, if a sub-group finds it necessary to arrange internal meetings, the secretariat should be informed in due time, in order to allocate resources and support the logistic arrangements.

The working group members that were unable to attend the first meeting will have a possibility to choose the most suitable tasks from the existing list (*Annex 1*).

It is expected that the participants of each sub-group specified in the outline produce the following:

1. a summarized literature review,
2. a descriptive narrative of the element of the FRM production chain or of the relevant part of the report
3. emerging recommendations

The whole product will consist of a few paragraphs, up to a maximum of a couple of pages.

The literature review will provide clarity on what relevant scientific information is available and what aspects are already addressed in the existing legislation (review present international regulations). Based on this knowledge, the group will be able to identify scientific, legal and practical gaps.

M. Bozzano encouraged the participants to consider publishing relevant reviews that will result from the efforts of this working group.

The best way to validate the outputs of the working group will be identified at a later stage.

It was decided to have two co-chairs. During the meeting, K. Himanen was elected as co-chair. The second co-chair will be elected at the next meeting of the working group.

The working group developed a workplan (*Annex 3*) and agreed on deadlines. The secretariat will support the leading authors and will remind all working group members about the deadlines.

#### **4 Wrap-up session**

Poland, Germany and Italy offered to host the next meeting of the working group. Participants suggested May-June 2017 as an ideal period. The specific venue and timing will be decided through an online consultation.

Participants also suggested that the next meeting should be shorter, with a duration of two to three full days, in the middle of the week.

M. Bozzano expressed his gratitude to the working group members for their participation and contribution.

K. Himanen officially closed the meeting.

## Annex 1: Outline of the Guidelines and decision support tool for better incorporating genetic aspects into production and use of forest reproductive material

Co-chairs: **Himanen (Finland)** & [to be nominated]

[drafting Authors are in square brackets [], leading authors are in **bold** ]

### 0. Preface [**Bozzano (Secretariat)**]

#### 1. Introduction [will be elaborated at a later stage]

#### 2. Artificial vs. natural regeneration in the face of climate change

- a. timeframe: how fast can we buffer effects of climate change/foster adaptation by using natural vs artificial regeneration [**Gömöry (Slovakia)**, Kennedy (Ireland) Frank (Switzerland) Jurše (Slovenia)]
- b. influence of site management practices [Proietti (Italy), **Schneck (Germany)**, Pilipovič (Serbia) Uggla (Sweden)]
- c. enrichment planting [**Tollefsrud (Norway)**, Bordács (Hungary), Friis Proschowsky (Denmark), Yüksel (Turkey)]
- d. what diversity to monitor/use? What markers (neutral vs adaptive) risks of using homogeneous FRM with regard to resilience [ Liesebach (Germany), A'Hara (United Kingdom), Friis Proschowsky (Denmark), **Tollefsrud (Norway)**]

#### 3. Production chain of FRM

##### a. Assessment of needs and purpose [**Bordács (Hungary)**]

- i. Purpose
- ii. Where?
- iii. Which species?

##### b. Identification of basic material and establishing/approval of sources (where to collect FRM) [Authors indicated in this will also cover the corresponding sub-chapters in "c." and "d."]

0. Production environment [included in all points below]

##### i. Which category

1. Uncertified [**Himanen (Finland)** Maaten (Estonia)]
2. Certified

- a. Source identified [Bordács (Hungary), Ivankovic (Croatia), Himanen (Finland) **Maaten (Estonia)** Frank (Switzerland)]

- b. Selected [**Ivankovic (Croatia)** Guibert/Ducouso (France) Frank (Switzerland) Liesebach (Germany) Yüksel (Turkey), Proietti (Italy) Brynjar (Iceland)]
    - i. Seed stands
  - c. Qualified [Himanen (Finland) **Gömöry (Slovakia)** Pilipovič (Serbia) Guibert/Ducouso (France) Tollefsrud (Norway) Liesebach (Germany) **Bordács (Hungary)** Kowalczyk (Poland) Kennedy (Ireland) Uggla (Sweden) Brynjar (Iceland)] {to be split between seed orchards and clonal material}
    - i. Plus trees/Parents of families
    - ii. Seed orchards
    - iii. Clones, clonal mixtures, tissue-cultured material
  - d. Tested - combinations) [Pilipovič (Serbia) **Schneck (Germany)** Kowalczyk (Poland) Bordács (Hungary)]
    - i. testing approaches
  - ii. Breeding effects on basic material [veg propagation] [also iii below]
    - Tollefsrud (Norway)** Gömöry (Slovakia) Bordács (Hungary) Ivankovic (Croatia) Proietti (Italy) Frýdl (Czech Republic)]
      - 1. Breeding for what?
  - iii. Conservation strategy (linked to climate change, breeding efforts)
- c. **Management measures of basic material** [authorship as in “b”]
  - d. **Collection** [authorship as in “b”]
  - e. **Processing and storage** [**Pilipovič (Serbia)** Himanen (Finland) Jurše (Slovenia) Yüksel (Turkey)]
  - f. Nurseries practices [veg propagation] [**Himanen (Finland)** Bordács (Hungary) Yüksel (Turkey)]
  - g. Transport and treatment during transport [veg propagation] [**Bordács (Hungary)**]
  - h. Verification of origin/control systems (tools currently available) [**Bordács (Hungary)**]
  - i. Choice of establishment method [veg propagation] [Bordács (Hungary) **Proietti (Italy)**]
  - j. Planting [veg propagation] and sowing [**Himanen (Finland)** Pilipovič (Serbia) Maaten (Estonia)]

k. Traceability [**Lieseback (Germany)** A'Hara (United Kingdom) Bordács (Hungary)]

4. **Analysis:** the use of FRM and available tools for choices [**Kowalczyk (Poland)** Frank (Switzerland) Guibert/Ducousso (France) Friis Proschowsky (Denmark) Uggla (Sweden)]

5. **Recommendations**

6. **References**

**Annex 2: Agenda**

INIA "Centro Nacional de Recursos Genéticos Forestales Puerta de Hierro",  
 Madrid, Spain  
 15-18 November 2016

<b>Tuesday 15 November</b>	
13-14.30	lunch at INIA
14.30	Opening of the meeting <ul style="list-style-type: none"> <li>● Welcome opening from INIA (R. Alia)</li> <li>● Introduction to the meeting (M. Bozzano)</li> <li>● Adoption of the agenda</li> <li>● Nomination of rapporteurs</li> </ul>
14.45	EUFORGEN update and expected outputs of the working group (M. Bozzano)
15.30	Use and transfer of forest reproductive material in Europe in the context of climate change – recommendations from the EUFORGEN Phase IV working group (M. Bozzano) <ul style="list-style-type: none"> <li>● Discussion</li> </ul>
16.00	Coffee/tea break
16.30	National overview on existing guidelines or consolidated practices on the production and use of forest reproductive material that incorporate genetic aspects (Croatia, Czech Republic, Denmark, Estonia, Germany, Hungary, Iceland, Italy, Sweden)
17.15	Wrap-up of the day (M. Bozzano)
17.30	Bus to hotel
	Dinner on your own

<b>Wednesday 16 November</b>	
8.30	Transport from Hotel Leonardo Madrid City Center to INIA - Centro Nacional de Recursos Genéticos Forestales "Puerta de Hierro"
9.00	Synthesis of main points from previous day (m. Bozzano)
9:15	National overview on existing guidelines or consolidated practices on the production and use of forest reproductive material that incorporate genetic aspects - [continued] (Finland, France, Ireland, Luxembourg, Norway, Poland, Serbia, Slovakia, Slovenia, Switzerland, Turkey, UK)
11:00	Coffee/tea break
11.30	Implementation practices of OECD/EU legislation (S. Bordács) <ul style="list-style-type: none"> <li>• Discussion</li> </ul>
12:00	Results of the EUFORGEN Forest Management Network (Phase III) (T. Eysteinnsson) <ul style="list-style-type: none"> <li>• Discussion</li> </ul>
12.30	Summary of the state-of-the-art (M. Bozzano)
13:00	Lunch
14:00	Definition of the niche for the working group <ul style="list-style-type: none"> <li>• Discussion</li> </ul>
15:00	Definition of the working group's outputs
16:00	Coffee/tea break
16.30	Report of the working group <ul style="list-style-type: none"> <li>• Development of the table of contents</li> <li>• Discussion</li> </ul>
18:00	Wrap-up of the day (M. Bozzano)
17.15	Nomination of Chairs and vice Chairs of the working group
17.30	Bus to hotel
20.00	Social dinner (Txoko Taberna. Calle Jovellanos 3)

<b>Thursday 17 November</b>	
8.30	Transport from Hotel Leonardo Madrid City Center to INIA "Puerta de Hierro"
9:00	Initiation of the working group tasks (plenary or in two groups)

	<ul style="list-style-type: none"> <li>• Compilation of data, relevant publications etc.</li> </ul>
13:00	Lunch
14:00	Initiation of the working group tasks – Drafting of the content
17.00	Wrap-up of the day (M. Bozzano)
17.30	Bus to hotel
	Dinner on your own

<b>Friday 18 November</b>	
8.30	Transport from <i>Hotel Leonardo Madrid City Center</i> to INIA "Puerta de Hierro"
9:00	Finalisation of the working group tasks <ul style="list-style-type: none"> <li>• Discussion</li> </ul>
11:00	Coffee/tea break
11:00	Next steps before the second meeting <ul style="list-style-type: none"> <li>• Tasks and deadlines</li> </ul>
12:15	Wrap-up session <ul style="list-style-type: none"> <li>• Any other business</li> <li>• Date and place of next meeting</li> </ul>
13:00	Lunch
13:00-14:00	Transport to Madrid Airport, as needed

**Annex 3: Work plan of the EUFORGEN working group developing Guidelines and decision support tool for better incorporating genetic aspects into production and use of forest reproductive material (as agreed during the first meeting of the working group on 18 November 2016)**

<b>Task/Activity</b>	<b>Outputs</b>	<b>Date (When activity will be completed)</b>	<b>Who</b>	<b>Comments</b>
Circulate outline	Agreed outline of the report circulated	21 Nov	Secretariat	send to All WG members
Tasks assignments within subgroups	Sub-outline and definition of tasks and responsibilities <b>Identify if there is the need for a sub-group meeting</b>	By 15 Dec 2016	Group leaders	Coordinated by co-chair and Secretariat
	Possible sub-wg meetings	Jan-feb		Venue and timing to be defined as appropriate
<b>First drafts</b>	<b>Draft text</b>	<b>By 31 March 2017</b>	<b>All authors</b>	<b>To group leaders</b>
	Consolidated first individual drafts	15 April	Group leaders	To Secretariat
	Consolidated whole document	1 May	Secretariat / co-chair	To all WG Members and SC and email contributors
	Comment round	By 15 May	all WG Members and email contributors	To Secretariat and co-chair
<b>Second Draft</b>	revision of individual drafts	By 15 June	<b>All authors</b>	To Secretariat
Next meeting		26-30 June / 3-7 July 2017	Secretariat	to be confirmed depending on WG members availability
Final document		By 31 Dec 2017		

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