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Common regional forest reproductive material transfer procedure

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Contents

1 Background

Riparian forests are rich in biodiversity and have the potential to contribute to the development of local communities. They provide multiple ecosystem services, including habitat for wildlife and unique animal and plant communities, wood and non-wood forest products, recreational areas for residents and a growing number of tourists, carbon sequestration, and more. Due to their extension along major rivers, many riparian forests are valuable ecological corridors for endangered fauna.

However, they are among the most threatened forest ecosystems. Their natural regeneration is often impaired where river dynamics have changed too much, ground vegetation, often consisting of alien plant species, is very dense and may prevent suitable light and moisture conditions, where pests and diseases have severely damaged tree species and where browsing is widespread. In such cases, artificial regeneration is necessary to ensure continuation of riparian forests. Artificial regeneration is also used for conversion of plantations of non-riparian tree species such as pines or non-native tree species into forests with more natural species composition and structure and for landscape restoration.

The legal framework for the production and marketing of forest reproductive material (FRM) within the EU, governed by national laws, is based on the **Council Directive 1999/105/EC of 22 December 1999 on the marketing of forest reproductive material**. The objective of the directive is to provide high quality and genetically suited FRM for planting in various conditions, to conserve biodiversity (including genetic diversity), to protect against the introduction and spread of organisms harmful to plants and to ensure free movement of FRM (called transfer) within the EU[1].

FRM coming from third countries should not be marketed within the EU unless it can be assured that it follows the same standards as the FRM produced and marketed under the Council Directive 1999/105/EC.

To enable the import of FRM form third countries, harmonization of the Council directive 1999/105/EC with the OECD Forest Seed and Plant Scheme was carried out through:

- Council decision 2008/971/EC on the equivalence of FRM produced in third countries,
- Commission Implementing Decision (EU) 2015/321 amending Decision 2008/989/EC authorizing Member States, in accordance with Council Directive 1999/105/EC, to take decisions on the equivalence of the guarantees afforded by forest reproductive material to be imported from certain third countries,
- Decision No 1104/2012/EU of the European Parliament and of the Council of 21 November 2012 amending Council Decision 2008/971/EC to include forest reproductive material of the 'qualified' category and to update the name of the authorities responsible for the approval and control of the production.
- Commission Implementing Decision (EU) 2021/773 of 10 May 2021authorising Member States, in accordance with Council Directive 1999/105/EC, to temporarily decide on the equivalence of forest reproductive material of certain categories produced in certain third countries (notified under document C(2021) 3194.

A third country must first become a member of the OECD Forest Seed and Planting Scheme following an approval procedure, before it is able to prove equivalency of their FRM with the FRM produced in the EU and subsequently market FRM in the EU.

[1] M Konnert; B Fady; D Gömöry; S A'Hara; F Wolter; F Ducci; J Koskela; M Bozzano; T Maaten; J Kowalczyk (2015) Use and transfer of forest reproductive material in Europe in the context of climate change. EUFORGEN, Bioversity International. 75 p.

However, directives, including the above-mentioned one, are legislative acts that set out a goal that all EU countries must achieve. But it is up to the individual countries to devise their own laws on how to reach these goals. Therefore, countries of the Mura-Drava-Danube Biosphere Reserve have different rules and approaches to fulfil the Directive 1999/105/EC. Serbia, although not a member of the EU, follows the Directive 1999/105/EC and is a party to the OECD Forest Seed and Plant Scheme making the FRM from this country equal to the one produced in the EU for use at the EU market.

2 General conditions for transfer or import of FRM among partner countries

2.1 Transfer or import of FRM into the EU

Four countries (Austria, Slovenia, Hungary, Croatia) of the Mura-Drava-Danube Biosphere reserve (MDD BR) are part of the EU and therefore FRM between these countries is not imported or exported, but only transferred. Import of FRM to EU only occurs between Serbia and the EU countries. FRM from third countries such as Serbia may be imported if it is considered equivalent to propagating material produced in the European Union and complies with the requirements of Council Directive 1999/105 and the Implementing EC Decision (EU) 2021/773 of 10 May 2021.

In Croatia and Slovenia, import of FRM from third countries further depends on authorization by the responsible Ministry, while in Austria, the import and trade with FRM from third countries requires approval from the Austrian Federal Forest Office prior to the import. In Hungary, FRM from third countries may be imported also if the appointed authority has granted an exceptional authorization under the authority of the Commission of the European Union. The appointed authority in both cases is currently the FRM Department of the National Food Chain Safety Office.

Within the DTP area, Bosnia and Herzegovina, Montenegro, Serbia, Ukraine, and Moldova are third countries and the procedures / recommendations presented for import of FRM into EU apply to all of them. Of these third countries, only Serbia is a member of the OECD Forest Seed and Plant Scheme (October 2020).

Table 1: Countries of the Danube Transnational Programme (DTP) area and their inclusion into EU and OECD Forest Seed and Plant Scheme in October 2020.

Country	EU	OECD
Austria	x	x
Bosnia and Herzegovina		
Bulgaria	x	x
Croatia	x	x
Czech Republic	x	
Germany	x	x
Hungary	x	x
Moldova		
Montenegro		
Romania	x	x
Serbia		x
Slovakia	x	x
Slovenia	x	

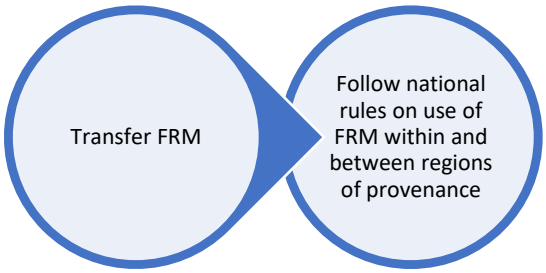
Ukraine		

2.2 Transfer of FRM between EU countries

Each EU member state is obliged to delineate regions of provenance and provide recommendations for use of FRM within and among them.

The use of FRM within a given region of provenance may include in their argumentation (with the view to protect the forest genetic resources within the national borders), to recommend only a limited number of regions of provenance (and elevation zones) for a specific forest tree species or group of species to be marketed to the end user in that provenance region. This may prevent marketing of FRM across national borders unless a specific professional opinion by the specified state authority would approve it.

Therefore, even transfer of FRM among countries within EU is not straightforward. **A detailed methodology for preparation of the abovementioned professional opinion on transfers across national borders, or support for preparation of a general protocol, and support for science-based recommendations**, are needed to facilitate transfer of FRM across EU member state borders.



2.3 Import of FRM from OECD third countries into EU and vice-versa

The decisions on harmonization between the OECD Forest Seed and Plant Scheme and EU (see 1 Background) determine the conditions under which FRM of the 'source identified', 'selected' and 'qualified' categories produced in non-EU OECD countries may be imported into the EU. Therefore, the import of FRM for forestry purposes is limited to these countries. FRM officially certified by these country's authorities following the OECD Forest Seed and Plant Scheme is considered equivalent to seed and planting stock complying with Council Directive 1999/105/EC. A precondition for OECD certification is the approval of stands or seed orchards and their introduction into a national register.

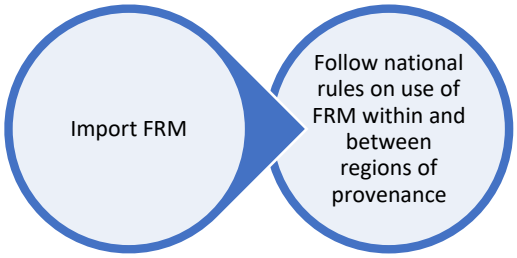
Again, the use of FRM within a given region of provenance may include in their argumentation (with the view to protect the forest genetic resources within the national borders), to recommend only a limited number of regions of provenance (and elevation zones) for a specific forest tree species or group of species to be marketed to the end user in that provenance region. This may prevent marketing of FRM from OECD third countries unless a specific professional opinion by the specified state authority would approve it. Therefore, just as with transfer of FRM between EU member states, we recommend **a detailed**

methodology for preparation of needed professional opinion on transfers across national borders, or support for preparation of a general protocol, and support for science-based recommendations.

Import of FRM into EU from all third countries is also subject to phytosanitary regulations. Import of plants for planting, other than seeds, *in vitro* material and naturally or artificially dwarfed woody plants for planting, originating from all third countries and belonging to species or genera growing in riparian forests as listed in Table 1 is strictly forbidden according to the Article 42(1) of Regulation (EU) 2016/2031 and the Commission implementing regulation (EU) 2018/2019 of 18 December 2018.

Table 2: List of riparian forest tree species and genera forbidden to import from third countries into EU in form other than seed. Only tree species from the output O3.1 Recommendations on tree species to use and promote were considered for this table.

Acer	***Malus***	***Salix***
Alnus	***Populus***	***Tilia***
Fraxinus	***Prunus***	***Ulmus***
Juglans	***Quercus***	



Serbia, the only country of the MDD BR outside of the EU, is a member of the OECD Forest Seed and Plant Scheme. The approval of basic materials for production of forest trees, production, production control, processing, quality, marketing, as well as the use of forest reproductive material are regulated by the Law on reproductive material of forest trees ("Official gazette of Republic of Serbia", No. 135/2004, 8/2005 and 41/2009), which is in full concordance with Council Directive 1999/105/EC and further defined in the Implementing Decision (EU) 2021/773 of 10 May 2021. Import of FRM from Serbia into other (EU) countries of the MDD BR is therefore considered equal to transfer of FRM between EU countries.

However, import of FRM from EU to Serbia is further governed by the Law on Plants Health of the Republic of Serbia ("Official Gazette of RS", No. 41/2009 and 17/2019). The import of FRM to Serbia is allowed only if it meets the following conditions:

1) is not infected with harmful organisms from List IA part I, List IA part II, List IIA part I and List IIA part II, or regulated harmful organisms in accordance with the Law, as well as new harmful organisms that are not on the lists prescribed by this Law, and for which there is a reasonable suspicion that they may pose a risk to plant health, taking into account the warnings of the recommendations and opinions of relevant international and regional organizations (EPPO, EFSA, IPPC) (Art. 34),
2) has a phytocertificate (Art. 67), issued in accordance to International Plant Protection Convention (Art. 71)
3) does not contain plants, plant products or prescribed objects from List IIIA (Art. 35),
4) meets the specific phytosanitary conditions from List IVA part I and List IVA part II (Art. 35).

2.4 Import of FRM from non-OECD Forest Seed and Plant Scheme third countries into EU

To the request of member states in well-founded cases, the European Commission may, in accordance with the opinion of the Standing Committee on Plants, Animals, Food and Feed (PAFF), Working Group on Forest Reproductive Material, give implementing decisions for the import of FRM from countries not included in the Decision No 1104/2012.

This means that for FRM from non-EU and non-OECD countries to be imported into EU, the equivalence of the control procedures with the ones prescribed by the Council Directive 1999/105/EC needs to be proven to apply for eligibility of these countries for import and marketing of FRM in the EU member states. When the production, marketing and control systems are reviewed, and if they are proven to be in concordance with the EC Directive (and implicitly also with the OECD Forest Seed and Plant Scheme), the EU member states interested for marketing of FRM from these third countries, may apply to the PAFF, Working Group on Forest Reproductive Material to approve the eligibility of FRM from these countries within their national borders. The EC then issues a Decree of approval.

Following the Decree of approval, the respective members states may consider marketing of FRM from non-OECD Forest Seed and Plant Scheme third countries to the end user, or, in case of further national restrictions, follow the requirements on preparation of a professional opinion as presented above for the EU and OECD countries.

Also in these cases, phytosanitary regulations as described in the previous chapter, apply.

We recommend non-OECD countries to be **transparent about FRM collection and production as well as documentation of all procedures in such a way to comply to the Council Directive 1999/105/EC or join the OECD Forest Seed and Plant Scheme scheme**.

3 Procedures defining the transfer of FRM entering Austria, Croatia, Hungary, Serbia and Slovenia

3.1 Slovenia

The Slovenian legislation on the production, marketing and use of FRM are based on the **Forest Act** (ZOG, 1993), which **defines the use of FRM in Slovenian forests**, and the **Forest reproductive material Act** (ZGRM, 2002), which **defines the production and marketing of FRM**. ZGRM is based on the conservation of forest genetic resources (FRG), as defined in its #2, and is valid in (#3):

- reforestation by planting and sowing,
- afforestation,
- design and maintenance of permanent protective or anti-erosion belts of forest trees,
- design and maintenance of forest tree plantations.

The Order on the list of species, for which the FRM Act is valid (Lista vrst, 2010), includes most of the species, defined in the Directive EC/105/1999 (10 from this list have been deleted according to the European Commission Decision no. EC/871/2005 exemplifying Denmark and Slovenia from some exotic forest tree species from the list in the Directive), while a number of additional species, important with respect to conservation of FGR and functioning of forest ecosystems, have been added (see Annex B). Thus, the total number of tree species, for which the FRM Act applies, is 77.

In accordance with Directive EC/105/1999, the territory of Slovenia has been divided into regions of provenance. The basis for demarcation are broader ecological regions that are delineated in more detail with boundaries between regional units – forest management areas and administrative boundaries – cadastral municipalities, which enables precise control over the production and recommended use of FRM in individual forest management areas and forest management units (Figure 1).

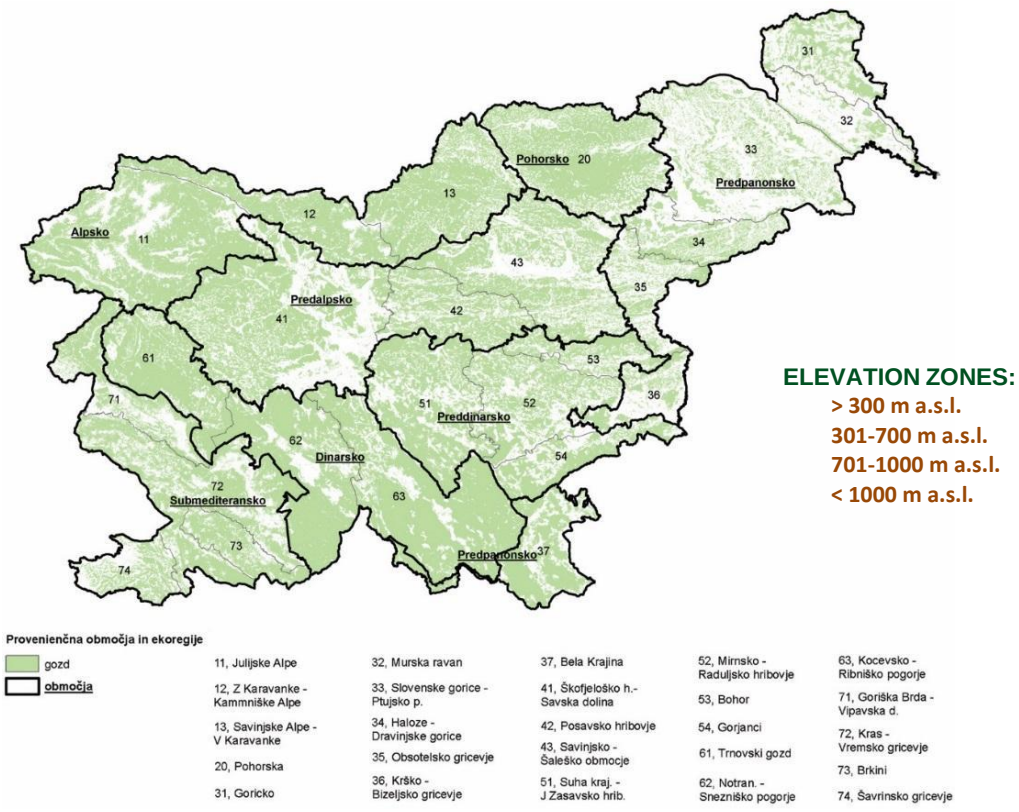


Figure 1: Regions of provenances based on ecological regions & subregions in Slovenia

The current Rules on the determination of areas of provenance (Pravilnik PO, 2003) combines the ecological regions, soil types, and main topographical and administrative borders, including the 14 Slovenian forest regions, while each region is divided into 4 elevation zones. For majority tree species (*Abies alba, Fagus sylvatica, Picea abies, Quercus petraea, Quercus robur*) Slovenia is divided into 7 provenance regions (1. Alpine, 2 Pohorje, 3 Prepannonian, 4 Prealpine, 5 Predinaric, 6 Dinaric, 7 Submediterranean), while for all other ("minority") species it would not be feasible to produce and use FRM in the same way, therefore Slovenia as a whole represents a single provenance region for these species, still divided into the four elevation zones. The Regulation includes recommendations for use of FRM, while the decisive role is on the forest rangers formalizing the use in their Decree on detailed silvicultural plan.

Article 7 of the Rules determining regions of provenance (Pravilnik PO, 2003) includes the following guidelines for use:

"(1) In order to steer the use of FRM, the following suitability scale for the use of FRM is applied:

1. most suitable: use of FRM in a certain sub-region of provenance and altitudinal zone produced from a seed source in the same sub-region and altitudinal zone,
2. very suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in the same region of provenance and altitudinal zone,
3. suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in a neighboring region of provenance and the same altitudinal zone,

4. less suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in the remaining regions of provenance and the same altitudinal zone,
5. exceptionally suitable: use of FRM in a certain region of provenance and altitudinal zone produced from a seed source in the remaining regions of provenance and a neighbouring altitudinal zone,

(2) If the most suitable or very suitable FRM is not available in a seed source of a certain region of provenance and altitudinal zone and if it is not available even in a seed storage, FRM for suitable or less suitable use may also be stored or used, although only for the needs of one year at the most.

(3) If not even FRM for less suitable use is available for more than 10 years, FRM for exceptionally suitable use may also be stored or used, although only for the needs of one year at the most.

(4) Notwithstanding the provisions from the preceding paragraphs, in order to preserve the forest genetic resources in the Šavrinija sub-region of provenance, it is permitted to use only FRM from that sub-region."

This article was subsequently amended several times, and after the latest harmonisation it is permitted to also use, in case of lack of adequate FRM originating from within the Slovenian forests, for sanitary reasons after large-scale disturbance, and after obtaining a positive expert opinion of the Slovenian Forestry Institute, FRM from certain regions of provenance from the neighboring countries (Austria, Croatia and Hungary) in certain areas and altitudinal zones in Slovenia (Table 3).

Table 3: Tree species and their originating provenance regions in Croatia which can be used in selected provenance regions in Slovenia

Tree species	**Croatian provenance regions**	**Provenance regions in Slovenia**
Quercus robur	1.1.3, 1.2.3	3.1 – 3.6
Quercus petraea	2.1.3, 2.1.4	3.3 –3.7, 5.4
Quercus pubescens	4.1.1, 4.1.2	7.
Quercus ilex	5.1.1	7.
Fagus sylvatica	2.2.2, 2.3.3, 2.2.3, 3.3.1, 3.4.1	3., 5.4, 6.2, 6.3, 7.
Fraxinus angustifolia	1.1.2, 1.2.3	3.
Alnus glutinosa	1.1.2, 1.2.1	3.
Salix alba	1.1, 1.2	3.
Populus spp. and artif. hybrids	1.1, 1.2, 4.1	3., 7.
Abies alba	2.3.1, 3.3.1	3.4 – 3.7, 6.2, 6.3
Picea abies	3.2.1, 3.3.1	3.7, 5.4, 6.2, 6.3
Pinus sylvestris	2.1.1, 3.2.1	3, 5.4, 6.2, 6.3, 7
Pinus nigra	3.3.1, 5.5.1	3.5 – 3.7, 5.4, 6.2, 6.3, 7.
Pinus halepensis	5.1.1	7.

The modified #7 states:

"1. Austria: the use of FRM from the provenance areas 6.1 (Südliches Randgebirge) and 6.2 (Klagenfurter Becken) in the Alpine (1) provenance region may be used in all three sub-regions: 1.1 (Julian Alps), 1.2 (Western Karavanke - Kamnik Alps), 1.3 (Eastern Karavanke - Savinja Alps) taking into account the assessment of the comparison of altitude zones and vegetation. Exceptionally, the use of a GRM of provenance region 1.3 (subcontinental Innenalpen-Ostteil) may be permitted, mainly on a silicate parent base, in the middle and upper altitudinal zone, above 900 m above sea level. Exceptionally, the use of FRM from the provenance regions 3.2 (ÖstlicheZwischenalpen-Südteil) and 3.3 (Südliche Zwischenalpen) in the Alpine (1) and Pohorje (2) provenance areas in the middle and upper altitudinal zones may be allowed, taking into account the comparison of altitudinal zones, parent base material and vegetation;

The use of FRM of Douglas fir - *Pseudotsuga menziesii var. viridis* from provenance region 8.2 may be used in provenance region 3. (Prepannonian region, excluding 3.7) in the zone of 200 to 700 m above sea level. … (note: a list of green Douglas fir provenances recommended for planting in the 8.2 provenance zone in Austria is also included).

2. Hungary: The use of FRM of common, pedunculate and turkey oaks and black alders from the provenance region (1) may be allowed for use in the provenance region 3. (Prepannonian region, excluding 3.7).

3. Croatia: the introduction of FRM from the Republic of Croatia is possible for seed regions bordering the Republic of Slovenia, only in the provenance sub-regions in contact with these seed regions, as shown in the table 2.

The certification system in Slovenia

The certification system in Slovenia includes several institutions, briefly presented in Figure 2.

Since conservation of FGR is of utmost importance in Slovenian forestry, an expert opinion is to be prepared by the authorized institution, which is the Slovenian Forestry Institute. The expert opinion is based on the Rules on provenance regions (as presented above), and on the information on the seed stand and genetic diversity of FRM, based on the number of trees from which FRM has been collected.

The needs for FRM from the three neighbouring countries, specified in the Rules (Pravilnik PO, 2003), are proposed by the Slovenia Forest Service, who collects all necessary data on possible sources of FRM from these countries, presents the needs for reforestation after large-scale disturbances, for which there is not sufficient FRM available in Slovenia, and any delay would lead to deterioration of the sites. The application for use of the specified FRM, together with all information (master certificate, description of the approved seed stand and number of trees from which the FRM was originally collected, and any other relevant data). Based on the information obtained, the SFI can issue an expert opinion which is the basis for approval for use of FRM in Slovenian forests.

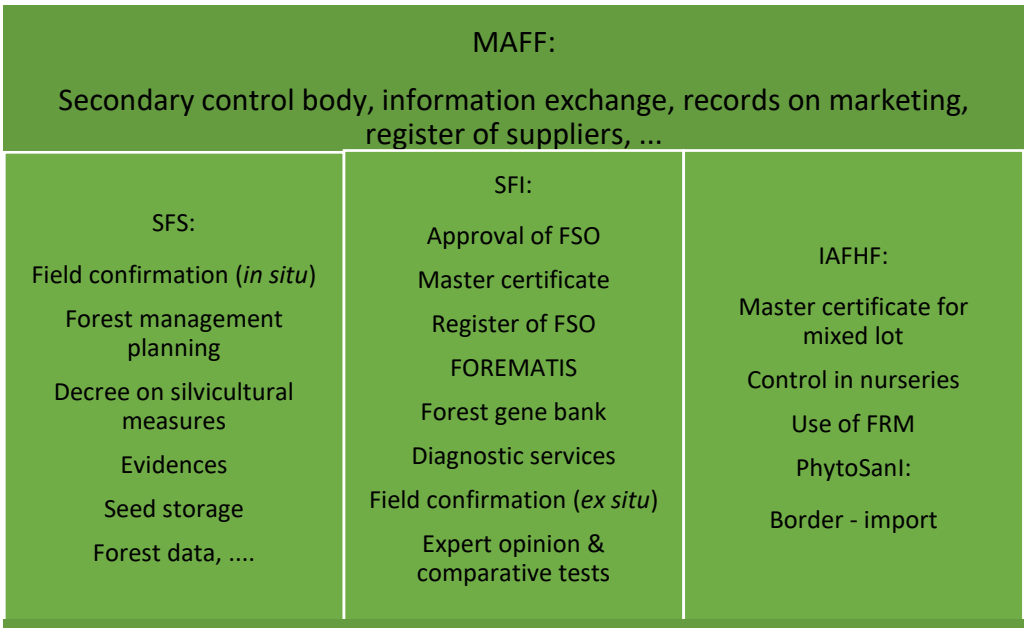


Figure 2: Institutions and overview of their roles & authorizations in certification of FRM in Slovenia; MAFF – Ministry for agriculture, forestry and food; SFS – Slovenia Forest Service, SFI – Slovenian Forestry Institute, IAFHF – Inspectorate for agriculture, forestry, food and fisheries, PhytoSanI – Phytosanitary inspectorate

3.2 Croatia

In Croatia Law of FOREST REPRODUCTIVE MATERIAL (FRM) regulates the production, placing on the market and import of FRM, production and import of Christmas trees, conditions that must be met by suppliers of forest reproductive material and suppliers of Christmas trees, and the registration in the Register of Forest Seed objects, including seed orchards and other establishments, and use of seed material reserves, genetic and seed bank of forest tree taxa, establishment of a commission for forest reproductive material, collection, use and exchange of data and information, costs related to the implementation of measures prescribed by this Act, bodies responsible for implementing this Act, and overseeing its implementation. This Act transposes into the legal system of the Republic of Croatia the Directive EC/105/1999 from 22 December 1999 on marketing of forest reproductive material (FRM).

Forest and forest land in Croatia cover an area of 2.759.039 hectares, or 49,3 % of the total territory of Croatia. For this reason it was suggested that Croatian forest should be divided into seed zones and seed units, regardless of the fact that 95% of the forest have a natural structure. The use of seed in inappropriate habitats, or genetically bad seed and forest reproductive material may be irreparably harmful to restoration and regeneration of forests. The Forest reproductive material Law (»O G«, no 75/09) is valid for the List of forest tree species, presented in Annex B.

The forest seed units in Croatia are determined based on genotypical variability, the knowledge of genetic distinctiveness in Croatia and the neighbouring countries, and scientific background (Kajba et al. 2005). On this basis Croatian forests are divided into 5 regions, 13 zones and 57 seed units.

Provenances of forest tree taxa of economic importance are divided into the following seed areas (RULES ON PROVENANCES OF FOREST TREES, Official Gazette, Nos. 147/11, 96/12, 115/14 and 114/15).

1. Lowland forest area (80 - 200 m above sea level)
2. Area of mountain forests of central and northern Croatia (150 - 1,000 m above sea level)
3. Area of hilly-mountain-mountain forests (150 - 1,500 m above sea level)
4. Area of sub-Mediterranean forests (0 - 1 000 m above sea level)
5. Area of eumediterranean forests (0 - 400 m above sea level)

Seed areas of forest tree taxa of economic importance are divided into seed zones, as follows:
1. Lowland forest area
1.1. Seed zone of lowland forests of Podravina and Podunavlje
1.2. Seed zone of lowland forests of Posavina, central Croatia and Pokuplje
2. Area of mountain forests of central and northern Croatia
2.1. Seed zone of sessile oak, beech and chestnut forests
2.2. Seed zone of mountain beech forest
2.3. Pannonian beech and fir forest seed zone
3. Area of hilly-mountain forests
3.1. Seed zone of sessile oak and chestnut forests

3.2. Seed zone of mountain beech forest
3.3. Seed zone of Dinaric beech and fir forests
3.4. Seed zone of coastal beech forests
4. Sub-Mediterranean forest area
4.1. Seed zone southwest
4.2. Seed zone southeast
5. Area of eumediterranean forests
5.1. Seed zone of holm oak forest
5.2. Dalmatian black pine seed zone

Seed zones of forest tree taxa of economic importance are divided into seed regions:

Quercus robur, Pedunculate oak:
1. Lowland forest area
1.1. Seed zone of lowland forests of Podravina and Podunavlje
1.1.1. Seed region of Baranja, Đakovo and Vukovar plain
1.1.2. Seed region middle Podravina
1.1.3. Seed region upper Podravina
1.2. Seed zone of lowland forests of Posavina, central Croatia and Pokuplje
1.2.1. Seed region lower Posavina
1.2.2. Seed region central Posavina
1.2.3. Seed region of upper Posavina and Pokuplje
3. Area of hilly-mountain-mountain forests
3.1. Seed zone of sessile oak and chestnut forests
3.1.1. Seed region of Lika
4. Sub-Mediterranean forest area
4.1. Seed zone southwest
4.1.1. Seed region Motovun forest

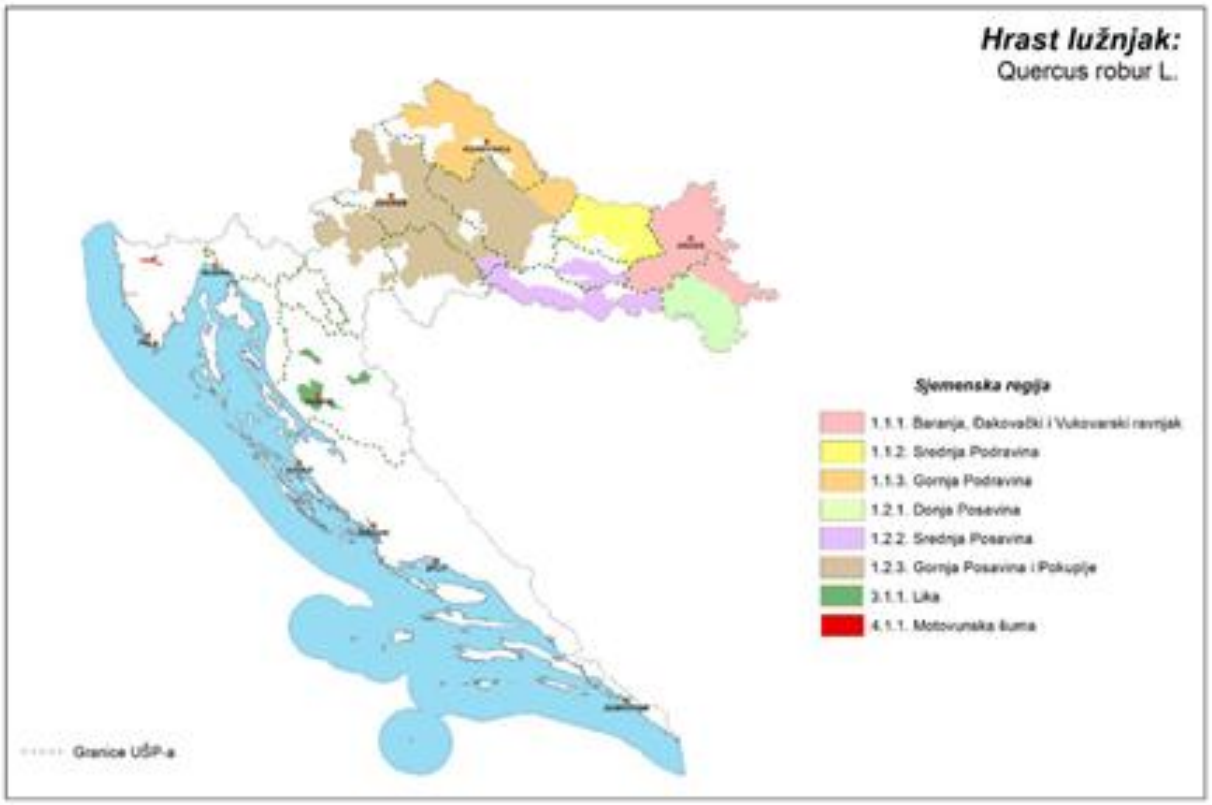


Figure 3: Overview of provenance regions in Croatia for *Quercus robur* (for other tree species see Annex C)

Provenance regions for other economically important forest tree species in Croatia are presented in Annex C.

3.3 Austria

Regions of provenance and altitude belts

Austria has a single regional division, valid for all tree species. The delimitation of the regions depends on biogeographical regions which represent climatic and topographic differences, which results in typical forest types. The present division recognises 22 regions of provenance. Ecologically similar regions of provenance are concentrated in nine forest regions coloured differently on the map (Figure 4). In addition to provenance regions, FRM is being classified according to their altitude of origin. The altitude is classified in altitudinal zones which are biophysical elevation classes and take varying climatic pattern throughout the Eastern Alpine range into account, but not on actual altitude of the origin of FRM.

Provenance recommendations are recommendations only and not mandatory. Subsidies for planting in Austria are usually connected to the use of certain tree species, not certain genetic material, i.e. origin of FRM.

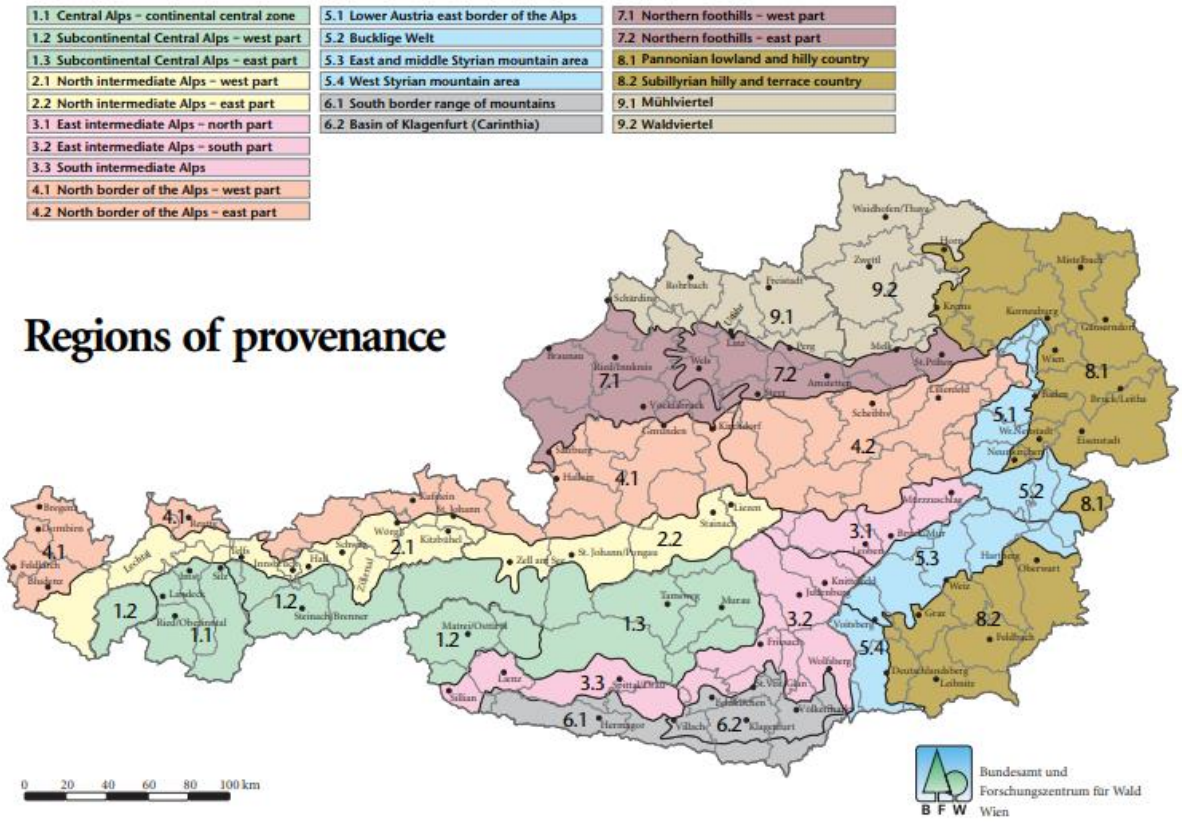


Figure 4: Regions of Provenance in Austria.

The Mura-Drava-Danube Biosphere Reserve lies in the region of provenance 8.2 Subillyrian hilly and terrace country, which has only two altitudinal belts, colline (200 – 300 m a.s.l.) and sub montane (300 – 700 m a.s.l.). For planting of FRM from other regions of provenance, the suitability of FRM depends on the altitudinal zone (colline, sub montane) which are biophysical elevation classes and take varying climatic pattern throughout the Eastern Alpine range into account, but not on actual altitude of the origin of FRM.

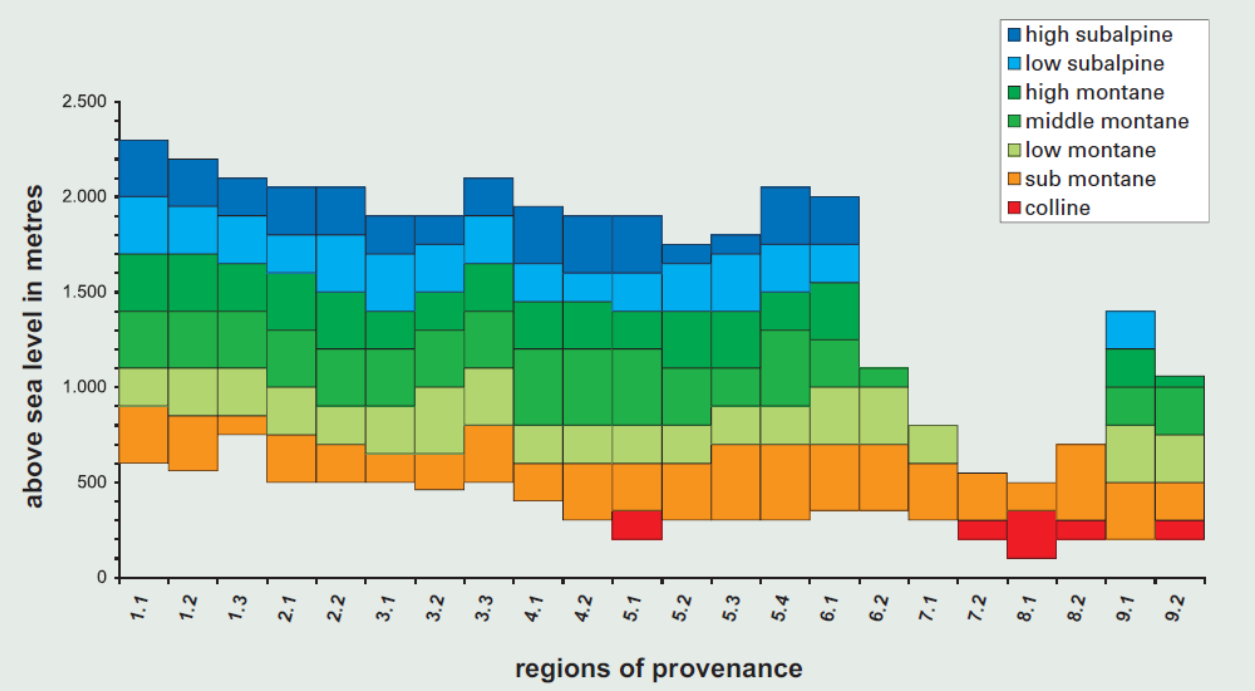


Figure 5: Altitude belts in Austria.

Use of FRM from other countries

FRM from other countries of the European Union can be transferred to Austria and marketed following the regulations of the EC Directive 1999/105/EG and the Austrian Law for forest reproductive material FVG 2002. EU countries from which FRM is transferred to Austria are required to inform the Federal Forest Office Austria about the transfer via information papers. It registered Austrian FRM producer or traders are transferring FRM to other EU countries, they will inform the Federal Forest Office and this will send information papers to the respective national authorities. Import of FRM from third-countries requires a granted permission from the Federal Forest Office.

Use of FRM on non-native tree species

A forest owner is allowed to plant all tree species that can form a forest stand and can be used for forestry purposes in forests, also non-native ones. These species belong to the following genera: *Abies, Cedrus, Chamaecyparis, Larix, Metasequoia, Picea, Pinus, Pseudotsuga, Sequoiadendron, Thuja, Tsuga, Acer, Ailanthus, Betula, Carya, Corylus, Elaeagnus, Fagus, Fraxinus, Gleditsia, Juglans, Liriodendron, Platanus, Populus, Prunus, Quercus*. For a full list of species and genera see the Appendix of the Federal Forest Law 1975 in its present version.

FRM categories

Following the EC Directive 1999/105/EG, the Austrian forest reproductive material FVG 2002 encompasses the EU wide species list. Also, FRM in Austria is classified within the same 4 categories. Based on the importance of species in Austria, special considerations are given for the applicability of these categories to the different tree species. Only for the following 16 species, FRM of the category source identified is unprohibited: *1. Acer platanoides L.; 2. Alnus incana Moench.; 3. Betula pendula Roth; 4. Betula pubescens Ehrh.; 5. Carpinus betulus L.; 6. Castanea sativa Mill.; 7. Fraxinus angustifolia Vahl.; 8. Quercus cerris L.; 9.*

Robinia pseudoacacia L.; 10. Tilia platyphyllos Scop.; 11. Populus alba L.; 12. Populus nigra L.; 13. Populus tremula L.; 14. Populus x canescens; 15. Abies grandis; 16. Quercus pubescens. For all other regulated tree species, FRM needs to be classified under the categories "selected", "qualified" or "tested" to be applicable at the Austrian FRM market.

3.4 Hungary

The national legislation on forest reproductive material production, transfer and use in Hungary has been developed in accordance with the Council Directive 1999/105/EC and the OECD Forest Seed and Plant Scheme. The 110/2003. (X. 21.) FVM Decree on the forest reproductive material (ESZR), in accordance with the XXXVII/2009 Act on forestry, forest protection and forest management and the LII/2003 Act on state approval of plant varieties, on reproductive material production and trade, defines the legal background of FRM production, certification, transfer, trade and utilization in order to maintain genetically diverse forest cover that is well adapted to the environment and the evolutionary capacity of natural systems and biological species and taxa by using high quality and well-adapted genetic material in forests.

Species considered by the FRM regulation

The ESZR covers 86 tree species, as well as their varieties and artificial hybrids (Annex B). In addition to the species listed in the Directive 1999/105/EC, 39 species or groups of species of national interest have been mentioned.

FRM categories

The ESZR has adopted and applies the 4 categories specified in the Council Directive 1999/105/EC. Category-based restrictions exist in case of *Pinus sylvestris* and *Robinia pseudoacacia*, where FRM from 'source identified' category cannot be used for forestry purposes, and of poplar and willow vegetative material, where 'tested' category can be deployed to forest land, exclusively.

Regions of provenance

According to the ESZR, six regions of provenance have been specified for *Fagus sylvatica*, *Fraxinus excelsior*, *Quercus cerris* and *Qu. petraea* (Fig. 6a), five for *Juglans nigra*, *Quercus robur* and *Qu. rubra* (Fig. 6b) and four for *Alnus glutinosa*, *Fraxinus angustifolia*, *Populus alba*, *P. nigra* and *Salix alba* (Fig. 6c). The delineation of the regions of provenance has been based on eco-geographical factors including climatic and topographic characteristics, soil properties and water availability information, and on forest typology. The boundaries of these regions follow the borders of the forest management subregions. For the species not mentioned above, the entire country is considered as a single region of provenance. As topographic features have already been covered in the delineation, there is no classification by the altitude of origin for FRM.

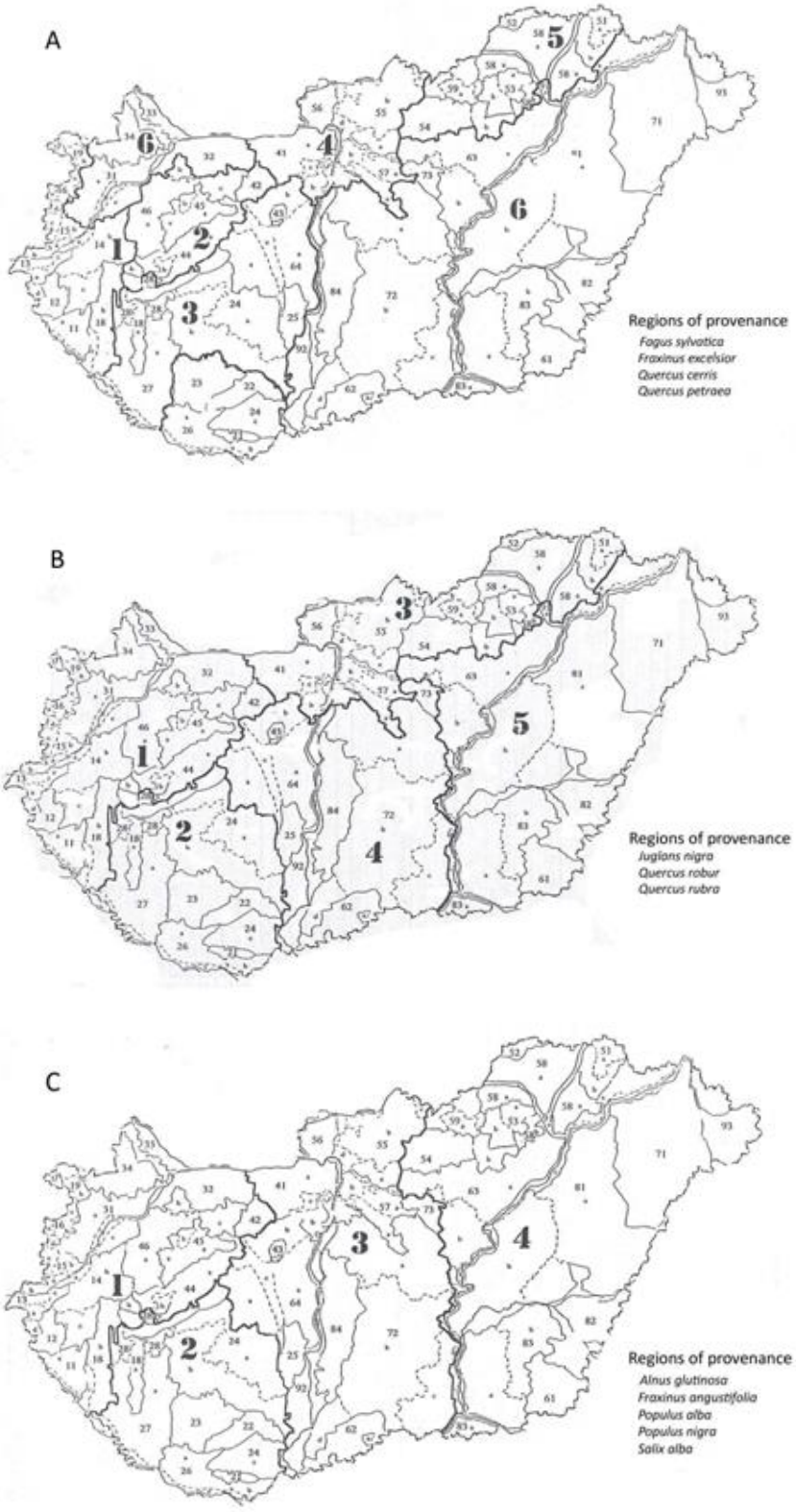


Figure 6: Regions of provenances in Hungary

Use of FRM from other countries

As a general rule, FRM originating from European Union member countries is free to be transferred, marketed and deployed to Hungary following the procedures set by the Council Directive 1999/105/EG and the ESZR. The source of the FRM has to be registered in the EU or listed in the national register of the source country. The appointed authority of the source country is required to contact the Hungarian authority on FRM control, the National Food Chain Safety Office (NFCSO), via information sheets according to 1598/2002/EC directive.

FRM import from third country is possible if the equivalence conditions set by Council Decision EC/971/2008 are met or a special permission is granted to the registered FRM producer or trader by the NFCSO.

Recommendations on use of FRM

The ESZR contains general recommendations for the use of propagating material within the region of provenance, specifies areas from which FRM transfer is desirable in case of need, provides itemized list of geographic regions to advise conifer FRM transfer to Hungary and specifies areas from which the FRM transfer should be completely avoided. However, these are recommendations only, without any binding power. Generally, there is no subsidy system connected to the use of specific FRM quality, however, limited funds have been made available for supporting the use of pre-adapted sources in artificial regeneration.

Exceptions from quality and administration rules may apply for FRM used for scientific, experimental, demonstration and educational purposes and for nature conservation measures, including forest genetic resources conservation activities.

3.5 Serbia

The **Law on reproductive material of forest trees** (Official Gazette of the Republic of Serbia 135/04, 8/05 and 41/09) regulates approval of basic materials for production of forest trees, production, production control, processing, quality, marketing as well as the use of reproductive material of forest trees. This Law is in concordance with Council Directive 1999/105/EC.

The provisions of this Law cover the reproductive material of the tree species given in Annex B, including also the reproductive material of other forest species when they are produced for raising and artificial regeneration of forests.

According to Law on reproductive material of forest trees, the territory of Serbia has been divided into regions of provenance, for the following tree species: *Fagus sylvatica* L. (5 provenance regions), *Quercus petraea* (Matt.) Liebl.(2), *Quercus robur* L. (2), *Pinus nigra* (3), *Pinus sylvestris* L. (2), *Fraxinus angustifolia* Vahl. (2), *Picea abies* Karst. (3), *Abies alba* Mill. (3). For the rest of the tree species the entire Serbia is a single provenance region. The basis for delineation of provenance regions in Serbia depends on tree species and includes species spatial genetic diversity (e.g. *F. sylvatica*), administrative boundaries (e.g. *Q. rubur*) and ecological vegetation characteristics (e.g. *F. angustifolia*, see Cvjeticanin et al. 2014).

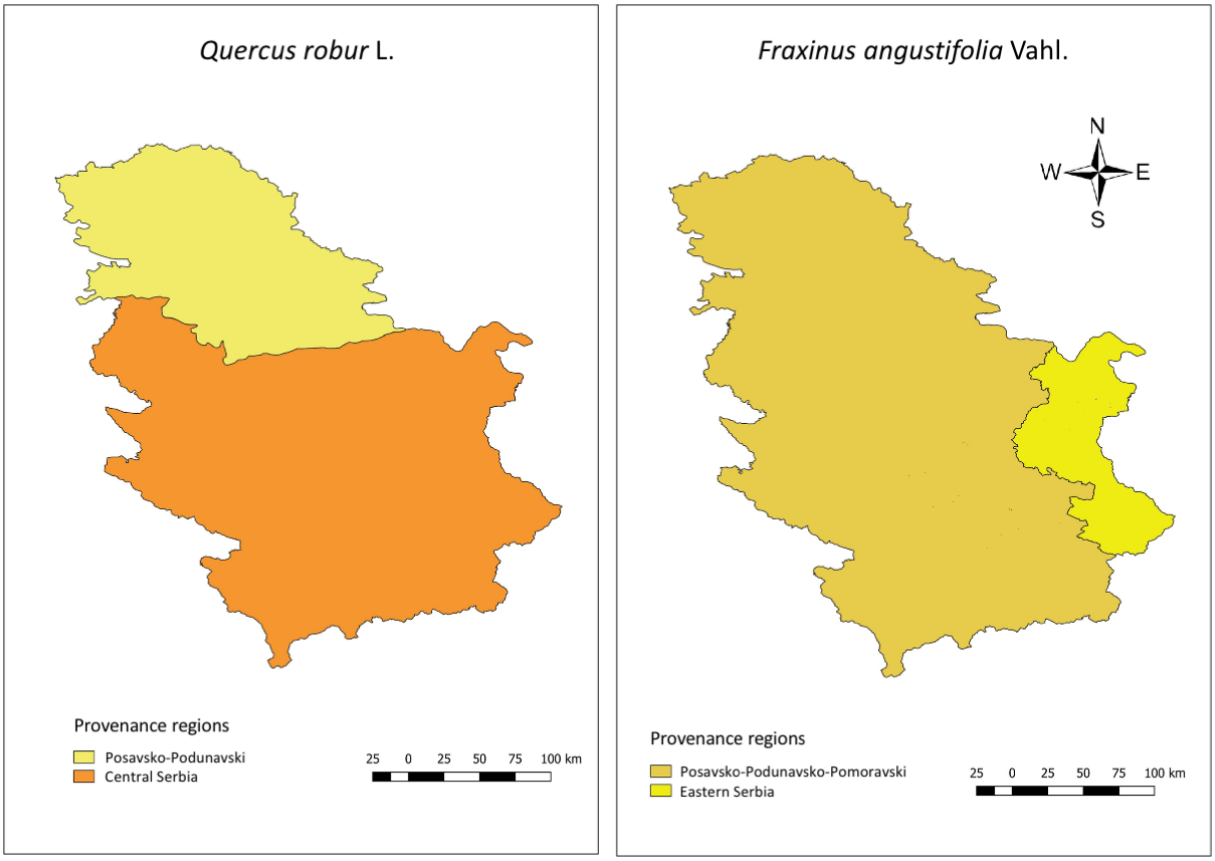


Figure 7: Provenance regions of REFOCuS target species *Quercus robur* L. (left) and *Fraxinus angustifolia* Vahl. (right) in Serbia.

Categories of the reproductive materials are as follows: (1) source – identified, (2) selected, (3) qualified and (4) tested. Regions of provenance are legal basis for the trade and use of "source–identified" forest reproductive material, as this reproductive material can be used for afforestation only in the region of provenance in which it is produced. Specifically, "source–identified" reproductive material could be used for afforestation and regeneration of forests only within the same provenance provided that: (1) there is no seed or seed production is not sufficient, or if sufficient quantities of reproductive material do not exists on stock, required for afforestation and regeneration of forest in that year, (2) due to force majeure (forest fire, natural disasters, etc.) the volume of afforestation must be increased. Other categories of forest reproductive material can be used outside the region in which they were produced.

4 Conclusions

- Legal requirements on transfer and import of FRM between and into EC ember states are to be considered when transferring FGM between countries in the Danube-Mura-Sava region, while compliance with the OECD Forest Seed and Plant Scheme facilitates the procedures.

- Each country applies a set of additional requirements regarding the use of FRM within its national forest areas, whereby the 'equivalence ' is based on the principles for conservation of forest genetic resources.
- The List of species per country that apply to the legislation in general complies with the list from the Directive EC/105/1999, however each country includes additional species important at the national level (see Annex B).
- An expert opinion is required in most countries, provided by the specified authority / research institution, on the allowance or recommendations for use of well-defined FRM in specific provenance regions at the national level.
- More stringent requirements apply for certain forest tree species in some member states for the category 'source identified', such as for all species in Slovenia and for a selection of species in Austria.
- For conservation of the adaptability potential of forest genetic resources additional requirements regarding maintaining genetic diversity of FRM are defined in some countries, such as a minimum area and/or effective population size of the approved seed object in Slovenia. Therefore the expert opinion for use pf FRM from neighbouring countries also considers potential genetic diversity of such FRM.

5 References

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Zakon o reproduktivnom materijalu šumskog drveća (Službeni glasnik Republike Srbije br. 135/04, 8/05-ispr. i 41/09)

ZGRM. (2002). Forest Reproductive Material Act (Official Gazette of the Republic of Slovenia, No. 58/02, 85/02 - amended , 45/04 - ZdZPKG and 77/11) / Zakon o gozdnem reprodukcijskem material, Uradni list RS 58/02, 85/02, 45/04, 77/11.

ZOG. (1993). Forest Act (Official Gazette of the Republic of Slovenia, No. 30/93 , 56/99 - ZON, 67/02 , 110/02 - ZGO-1, 115/06 - ORZG40, 110/07 , 106/10 , 63/13 , 101/13 - ZDavNepr, 17/14 , 22/14 - odl. US, 24/15 , 9/16 - ZGGLRS in 77/16) / Zakon o gozdovih, Uradni list RS, 30/93, 56/99, 67/02, 110/02, 115/06, 110/07, 106/10, 63/13, 101/13, 17/14, 24/15, 9/16, 77/16.

Note: For an overview of the national legislation important for transfer of FRM at the national level, see the list in Annex A.

Annex A

The aim of this annex is to provide end users with an easy-to-understand **information on sourcing and using FRM of riparian tree species *Alnus glutinosa, Fraxinus spp., Populus nigra (and poplar hybrids), Quercus robur, Salix spp., Ulmus spp.*** for artificial regeneration and restoration of riparian forests in the **Mura-Drava-Danube Biosphere Reserve**.

1 Extent of artificial forest regeneration in the Mura-Drava-Danube Biosphere reserve

Both natural and artificial forest regeneration are important in the riparian forests of the Mura-Drava-Danube Biosphere Reserve. According to an expert assessment within the REFOCuS project, natural regeneration predominates in Serbia (64%) and Croatia (80%), while artificial regeneration prevails in Hungary, Slovenia and Austria with 80%, 75% and 60% of the total forest regeneration in the Biosphere Reserve, respectively. These figures are strongly determined by the predominant forest types and the corresponding regeneration techniques.

2 Legally binding procedures and recommendations for sourcing and use of FRM

Following the *Directive 1999/105/EC* each EU member state and Serbia are obliged to delineate regions of provenance and provide recommendations for use of FRM within and among them.

The use of FRM within a given region of provenance may include in their argumentation (with the view to protect the forest genetic resources within the national borders), to recommend only a limited number of regions of provenance (and elevation zones) for a specific forest tree species or group of species to be marketed to the end user in that provenance region. This may prevent marketing of FRM across national borders unless a specific professional opinion by the specified state authority would approve it.

2.1 Austria

Regions of provenance and altitude belts

Austria has a single regional division, valid for all tree species. The delimitation of the regions depends on biogeographical regions which represent climatic and topographic differences, which results in typical forest types. The present division recognises 22 regions of provenance. Ecologically similar regions of provenance are concentrated in nine forest regions coloured differently on the map (Figure 1).

Provenance recommendations are recommendations only and not mandatory. Subsidies for planting in Austria are usually connected to the use of certain tree species, not certain genetic material, i.e. origin of FRM.

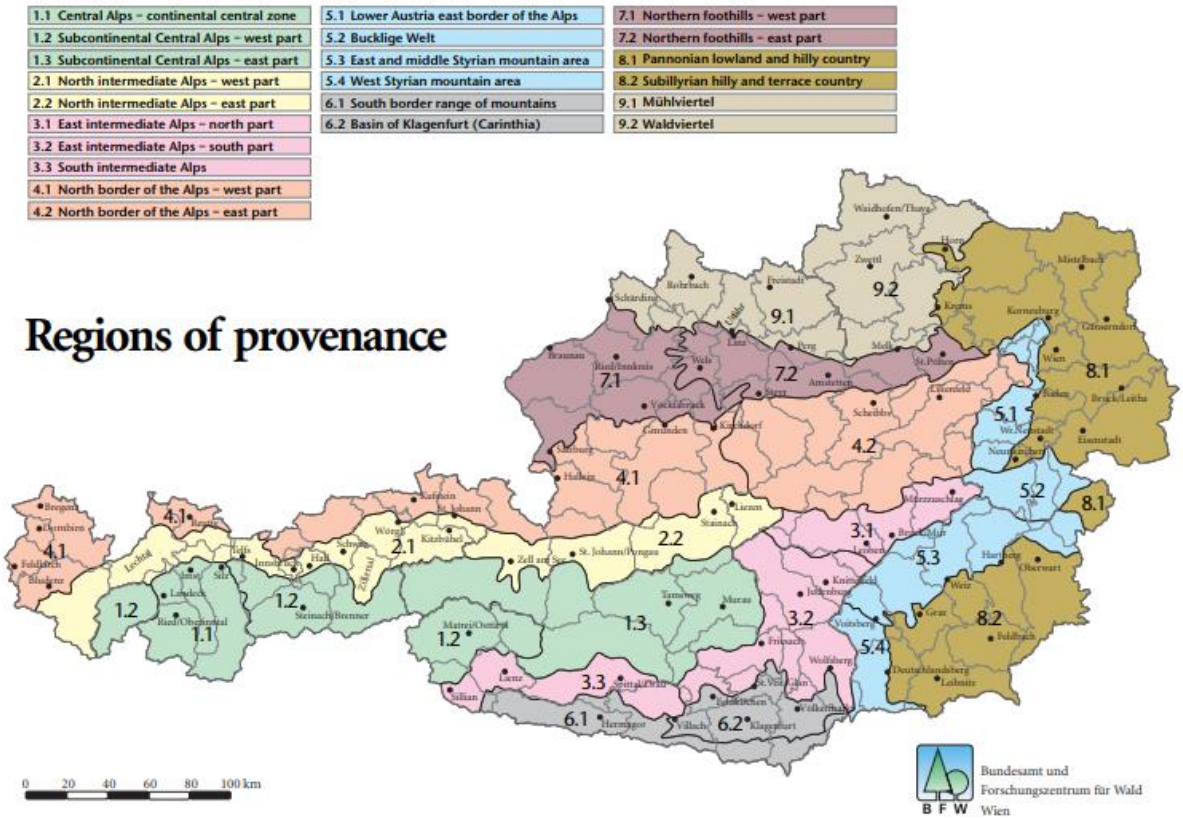


Figure A1: Regions of Provenance in Austria. The Mura-Drava-Danube Biosphere Reserve lies in the region of provenance 8.2 Subillyrian hilly and terrace country which has only two altitudinal belts, colline (200 – 300 m a.s.l.) and sub montane (300 – 700 m a.s.l.).

The Mura-Drava-Danube Biosphere Reserve lies in the region of provenance 8.2 Subillyrian hilly and terrace country, which has only two altitudinal belts, colline (200 – 300 m a.s.l.) and sub montane (300 – 700 m a.s.l.). For planting of FRM from other regions of provenance, the suitability of FRM depends on the altitudinal zone (colline, sub montane) which are biophysical elevation classes and take varying climatic pattern throughout the Eastern Alpine range into account, but not on actual altitude of the origin of FRM.

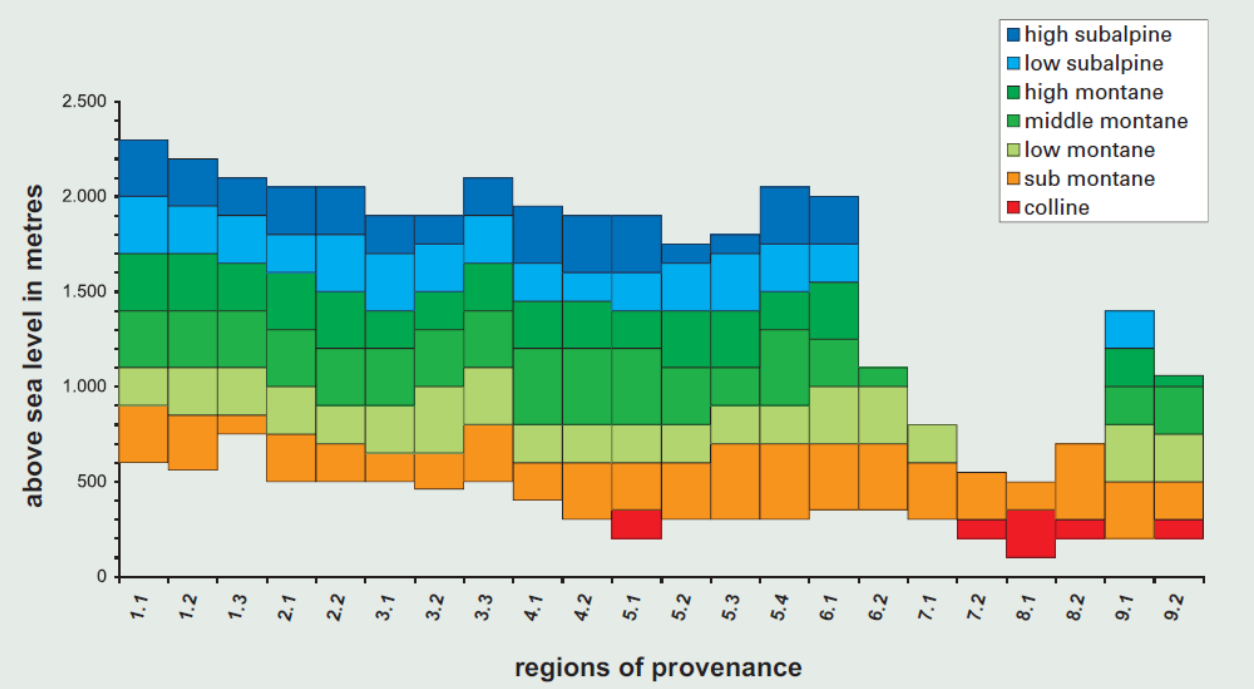


Figure A2: Altitude belts in Austria. The Mura-Drava-Danube Biosphere Reserve lies in the region of provenance 8.2 with only two altitude belts: colline and sub montane.

Use of FRM from other countries

FRM from other countries of the European Union can be transferred to Austria and marketed following the regulations of the EC Directive 1999/105/EG and the Austrian Law for forest reproductive material FVG 2002. EU countries from which FRM is transferred to Austria are required to inform the Federal Forest Office Austria about the transfer via information papers. It registered Austrian FRM producer or traders are transferring FRM to other EU countries, they will inform the Federal Forest Office, and this will send information papers to the respective national authorities. Therefore, transfer to and from Austria are eligible with Slovenia, Hungary and Croatia.

Import of FRM from third countries - in case of the Mura-Drava-Danube Biosphere Reserve Serbia - requires a granted permission from the Federal Forest Office.

Use of FRM on non-native tree species

A forest owner is allowed to plant all tree species that can form a forest stand and can be used for forestry purposes in forests, also non-native ones. These species belong to the following genera: *Abies, Cedrus, Chamaecyparis, Larix, Metasequoia, Picea, Pinus, Pseudotsuga, Sequoiadendron, Thuja, Tsuga, Acer, Ailanthus, Betula, Carya, Corylus, Elaeagnus, Fagus, Fraxinus, Gleditsia, Juglans, Liriodendron, Platanus, Populus, Prunus, Quercus*. For a full list of species and genera see the Appendix of the Federal Forest Law 1975 in its present version. The use of non-natives species is also freely allowed within the region of the Mura-Drava-Danube Biosphere Reserve, but may be regulated by regional management plans of the NATURA2000 areas included within the Mura-Drava-Danube Biosphere Reserve.

FRM categories

Following the EC Directive 1999/105/EG, the Austrian forest reproductive material FVG 2002 encompasses the EU wide species list. Also, FRM in Austria is classified within the same 4 categories. Based on the importance of species in Austria, special considerations are given for the applicability of these categories to the different tree species. Only for the following 16 species, FRM of the category source identified is unprohibited: 1.*Acer platanoides* L.; 2.*Alnus incana* Moench.; 3.*Betula pendula* Roth; 4.*Betula pubescens* Ehrh.; 5.*Carpinus betulus* L.; 6.*Castanea sativa* Mill.; 7.*Fraxinus angustifolia* Vahl.; 8.*Quercus cerris* L.; 9.*Robinia pseudoacacia* L.; 10.*Tilia platyphyllos* Scop.; 11.*Populus alba* L.; 12.*Populus nigra* L.; 13.*Populus tremula* L.; 14.*Populus x canescens*; 15.*Abies grandis*; 16.*Quercus pubescens*. For all other regulated tree species, FRM needs to be classified under the categories "selected", "qualified" or "tested" to be applicable at the Austrian FRM market.

Thus, any transfer or import of FRM for the species *Alnus glutinosa, Fraxinus excelsior, Quercus robur* requires the FRM categories "selected", "qualified" or "tested", while FRM of *Populus nigra, Populus canescens* and *Fraxinus angustifolia* may also be transferred and used for the FRM category "source-identified". Tree species of the genera *Salix* and *Ulmus* are not regulated in Austria.

Phytosanitary issues

Transfer of forest reproductive material to Austria and from Austria to other countries of Mura-Drava-Danube Biosphere Reserve requires the compliance with national and European phytosanitary regulations. For the transfer of forest seedlings from other EU member states to Austria the supply needs to be accompanied by an EU plant passport. For the transfer of seeds into Austria, a plant passport is only required for seeds of pine species (*Pinus* spp.) and Douglas-fir (*Pseudotsuga menziesii*). The plant passport confirms that FRM is free from quarantine pest organisms as well as from non-quarantine pests.

If FRM is being imported from non-EU countries, such as Serbia to Austria, further phytosanitary rules apply. In such cases, the official national authorities are required to certificate a phyto certificate, because the plant passport only applies for EU member states. Moreover, at the EU entrance point any import of FRM into the EU needs to be registered within the Information Management System for Official Controls IMSOC (TRACES NT) and will undergo a phytosanitary inspection. The registration concerns forest seeds and seedlings. For forest seeds, phytosanitary inspections are implemented only for control samples except for pine species and Douglas-fir, where a phytosanitary inspection is mandatory.

For the transfer of FRM from Austria into other EU countries, registered and authorized plant producers/traders are required to fix the plant passport at the shipment or the shipment papers. Application for registration and authorization need to be made at the regional plant protection authorities within the respective Austrian states. If FRM shall be exported from Austria to non-EU countries, registered and authorized plant producers/traders need to apply for a plant health certificate at the regional plant protection authority within Austrian states.

2.2 Croatia

Regions of provenance and altitude belts

Croatian forests are divided into 5 areas, 13 zones and 57 seed units. The seed units of the floodplain forests belong to the area of lowland forests divided into two seed zones - I Podravina and Podunavlje and II Posavina, Middle Croatia, Pokuplje. The Mura-Drava-Danube biosphere reserve belongs to seed zone I Podravina and Podunavlje. For the tree species that do not form stands (e.g. elms) the seed zones are not further divided into seed units. Also, there are no altitudinal belts in the floodplain forests so entire seed

zones are in the same altitudinal belt. In Croatia, in Mura-Drava-Danube biosphere reserve, regions of provenance are delimited for *Alnus glutinosa, Fraxinus angustifolia, Populus nigra* (including hybrids)*, Salix alba* (including hybrids) and *Quercus robur* (*Rulebook on provenances of forest trees*).

***Populus sp*. - poplar and its hybrids**

1. Lowland forest area

1.1. Seed zone of lowland forests of Podravina and Podunavlje

For poplars and its hybrids, the Mura-Drava-Danube biosphere reserve is located in the Lowland forest area, Seed zone of lowland forests in Podravina and Podunavlje. Still, when producing seedlings and plantations of black poplar and its hybrids, they may come from the entire Lowland forest area. Only phenotypically stable clones, and on heavier, non-flooded soils clones with a specific adaptation to such conditions may be used. Forest reproductive material of white poplars and their hybrids must be used within the same seed zone, so for the biosphere reserve from the Seed zone of lowland forests of Podravina and Podunavlje.

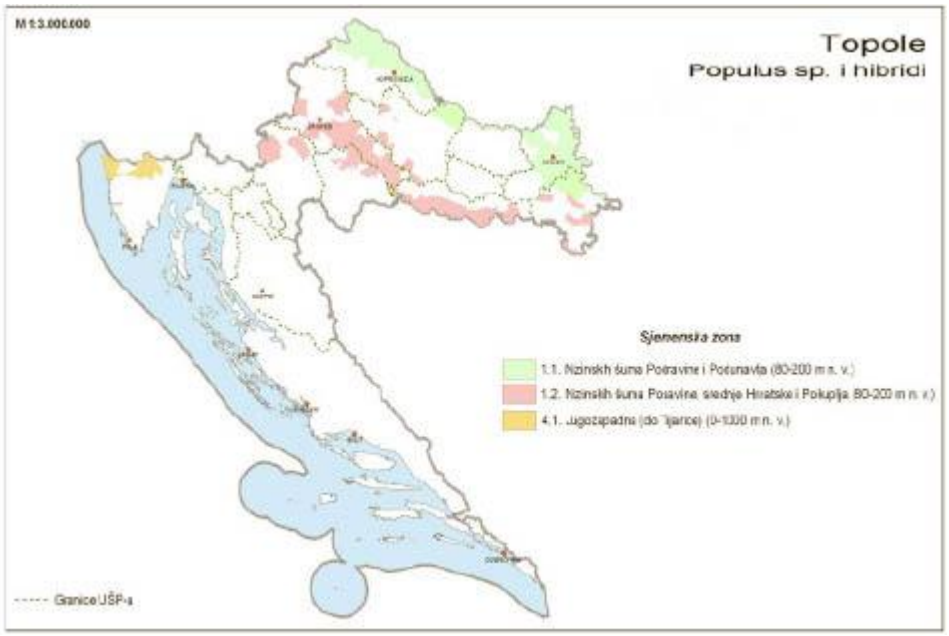


Figure A3: Delineation of Croatia into seed zones for poplars and its hybrids. Mura-Drava-Danube biosphere reserve is located in the 1.1 Seed zone of lowland forests in Podravina and Podunavlje (green colour).

***Salix alba* L. - white willow and its hybrids**

1. Lowland forest area

1.1. Seed zone of lowland forests of Podravina and Podunavlje

Mura-Drava-Danube Biosphere Reserve belongs to the Seed Zone of lowland forests in Podravina and Podunavlje. The use of forest reproductive material of willows and its hybrids in the biosphere reserve may originate from the entire Lowland forest area. Willow clones used within the Seed zone of lowland forests of Podravina and Podunavlje, must be phenotypically stable.

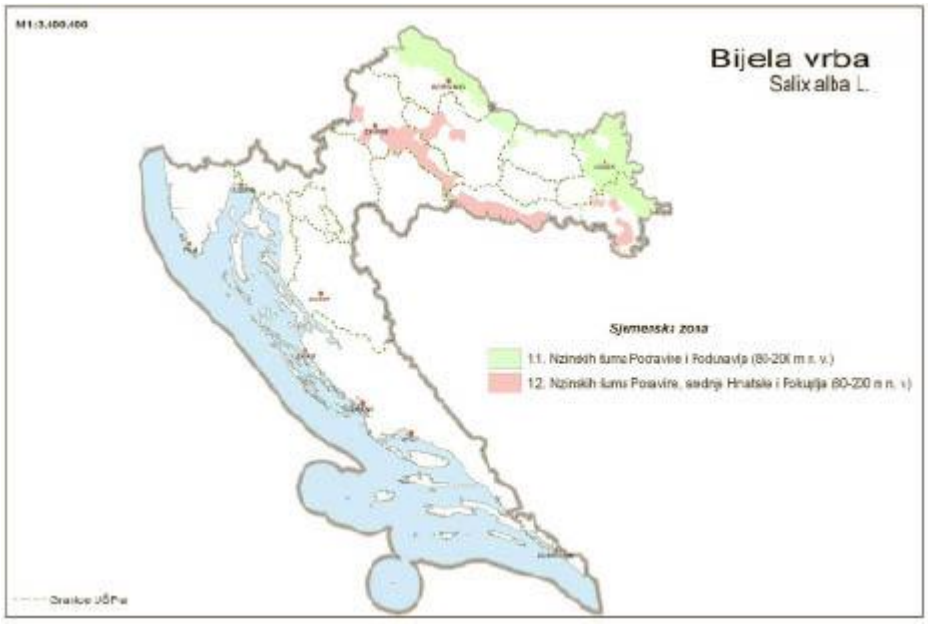


Figure A4: Delineation of Croatia into seed zones for willows and its hybrids. Mura-Drava-Danube biosphere reserve is located in the 1.1 Seed zone of lowland forests in Podravina and Podunavlje (green colour).

***Alnus glutinosa* (L.) Gaertn. - black alder**

1. Lowland forest area
1.1. Seed zone of Podravina and Podunavlje
1.1.2. Seed unit of middle and upper Podravina

Forest reproductive material originating from one seed zone may be used only in the same seed zone. The Mura-Drava-Danube Biosphere Reserve belongs to Seed unit of middle and upper Podravina, and only forest reproductive material originating in this seed unit may be used in the biosphere reserve. It is forbidden to use the seed of black alder from the seed units of Posavina and Pokuplje.

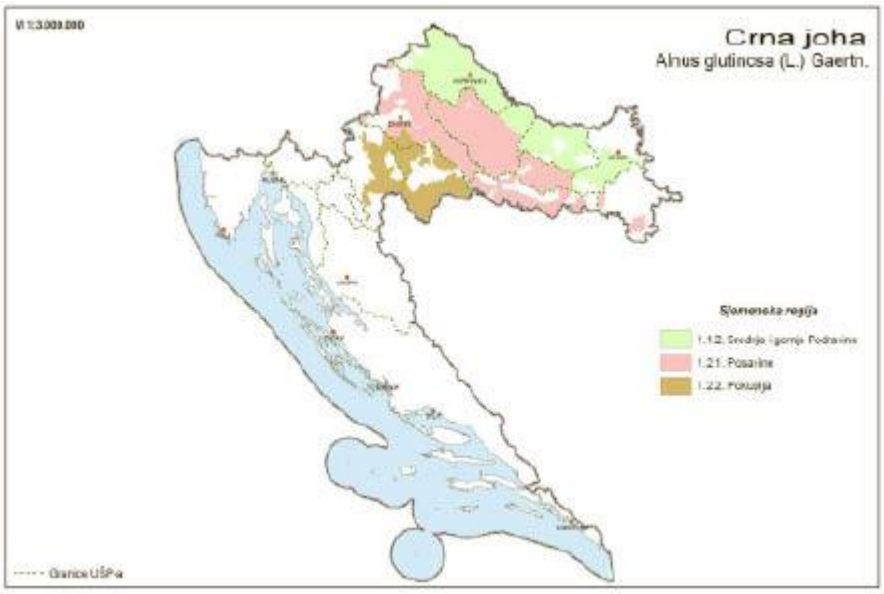


Figure 5: Seed units for black alder. The Mura-Drava-Danube Biosphere Reserve belongs to 1.1.2 Seed unit of middle and upper Podravina (green colour).

***Fraxinus angustifolia* Vahl - field ash** (or narrow-leaved ash)

1. Lowland forest area
1.1. Seed zone of lowland forests of Podravina and Podunavlje
1.1.1. Seed unit of the Danube region
1.1.2. Seed unit of middle and upper Podravina

The use of forest reproductive material is permitted within a seed zone, meaning that forest reproductive material originating from the Seed unit of the Danube region can be also used in the Seed unit of middle and upper Podravina and vice-versa.

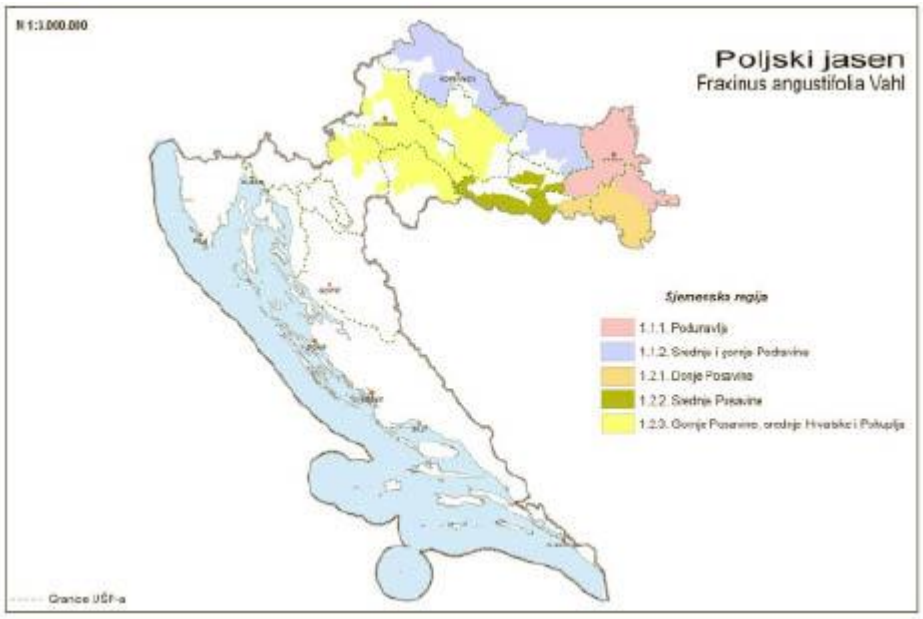


Figure A6: Seed units for narrow-leaf ash in Croatia. The Mura-Drava-Danube Biosphere Reserve belongs to 1.1.1 Seed unit of the Danube region (red colour) and 1.1.2 Seed unit of middle and upper Podravina (blue colour).

Quercus robur L. Pedunculate oak

1. Lowland forest area
1.1. Seed zone of lowland forests of Podravina and Podunavlje
1.1.1. Seed unit of Baranja, Đakovo and Vukovar plain
1.1.2. Seed unit middle Podravina
1.1.3. Seed unit upper Podravina

The use of forest reproductive material of pedunculate oak is recommended to be within the same seed unit as it originates but it must at least happen within the same seed zone.

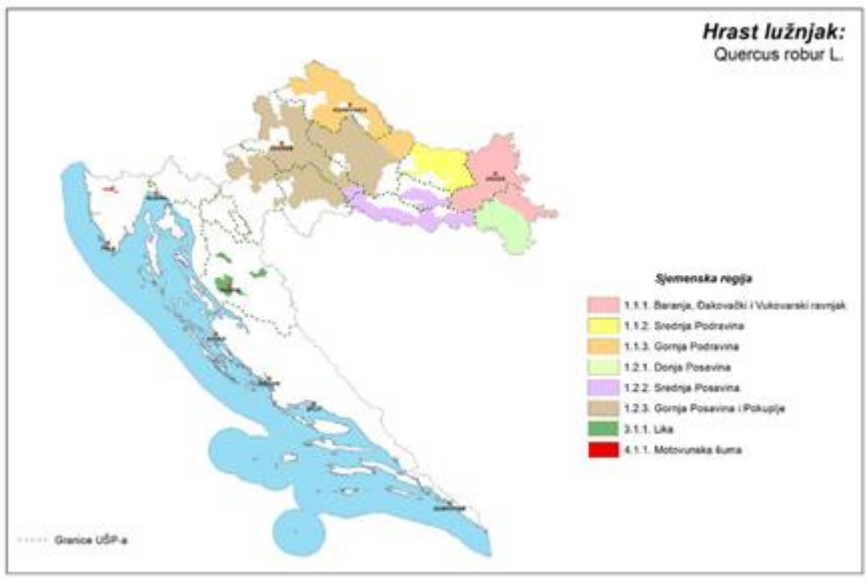


Figure A7: Delineation of Croatia into seed units for pedunculate oak. Pedunculate oak in the Mura-Drava-Danube Biosphere Reserve belongs in 1.1.1. Seed unit of Baranja, Đakovo and Vukovar plain (pink colour), 1.1.2. Seed unit middle Podravina (yellow colour) and 1.1.3. Seed unit upper Podravina (orange colour).

Use of FRM from other countries

Use of forest reproductive material from other countries is regulated by *Rulebook on conditions for recognition of equality of forest reproductive material and list of countries from which may be imported*. The process is controlled by the official body (Croatian Forest Research Institute). In the case of import of seed and planting material of forest taxa and hybrids in the category "known origin" or "selected" from the countries listed in *Annex 1* to this Ordinance, the supplier wishing to import the material into the Republic of Croatia is obliged to submit it to the official body of the Republic (Croatian Forest Research Institute) who issue Certificate of Provenance for imported FRM.

Use of FRM on non-native tree species

Forest reproductive material of non-native species may be used in the Mura-Drava-Danube biosphere reserve. Prior to its use, the Official Body, which is the Croatian Forest Research Institute, must give a positive opinion on the use of a forest reproductive material of non-native tree species (*Law on forests, Article 10*) according to *Regulation on provenance of tree species*. Also, according to the *Law on short rotation wood plantations (Article 3 (2)*) it is allowed to establish plantations of non-native species, but only if they do not threaten biodiversity (*Law on forests*, *Article 10*). According to the *Law on Nature Protection (Article 55 (3)),* it is not allowed to introduce genetically modified organisms into protected areas or ecological networks.

Phytosanitary issues

Health condition of forest seed objects and health of forest reproductive material is controlled by the official body (Croatian forest research Institute).

Seeds and seedlings to be planted in the Mura-Drava-Danube Biosphere Reserve must be accompanied by a plant passport. After a phytosanitary inspection, a plant passport is issued by the authorized specialized entity inscribed in the Register in Ministry of agriculture. The passport includes document checks, identity

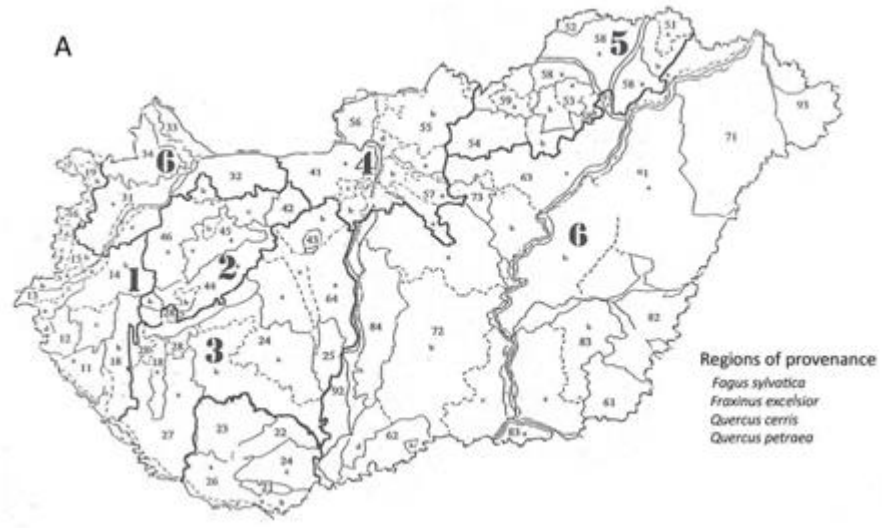
checks and plant health checks in accordance with phytosanitary regulations. A report is made on the performed inspection.

2.3 Hungary

Regions of provenance and altitude belts

Six regions of provenance have been specified for *Fagus sylvatica*, *Fraxinus excelsior*, *Quercus cerris* and *Q. petraea* (Figure 8A), five for *Juglans nigra*, *Quercus robur* and *Qu. rubra* (Figure 8B) and four for *Alnus glutinosa*, *Fraxinus angustifolia*, *Populus alba*, *P. nigra* and *Salix alba* (Figure 8C) in Hungary. The delineation of the regions of provenance has been based on eco-geographical factors including climatic and topographic characteristics, soil properties and water availability information, and on forest typology. The boundaries of these regions follow the borders of the forest management subregions. For the species not mentioned above, the entire country is considered as a single region of provenance. As topographic features have already been covered in the delineation, there is no additional classification by the altitude of origin for FRM.

There are three regions of provenance in the Mura-Drava-Danube Biosphere Reserve for the majority of the keystone riparian tree species (1, 3, 6 for *Fraxinus excelsior*, 1, 2, 4 for *Quercus robur* and 1, 2, 3 for *Alnus glutinosa*, *F. angustifolia*, *Populus alba*, *P. nigra* and *Salix alba*), while for *Ulmus laevis*, *U. minor*, *Salix caprea* and *S. fragilis*, the whole country is a single region of provenance.



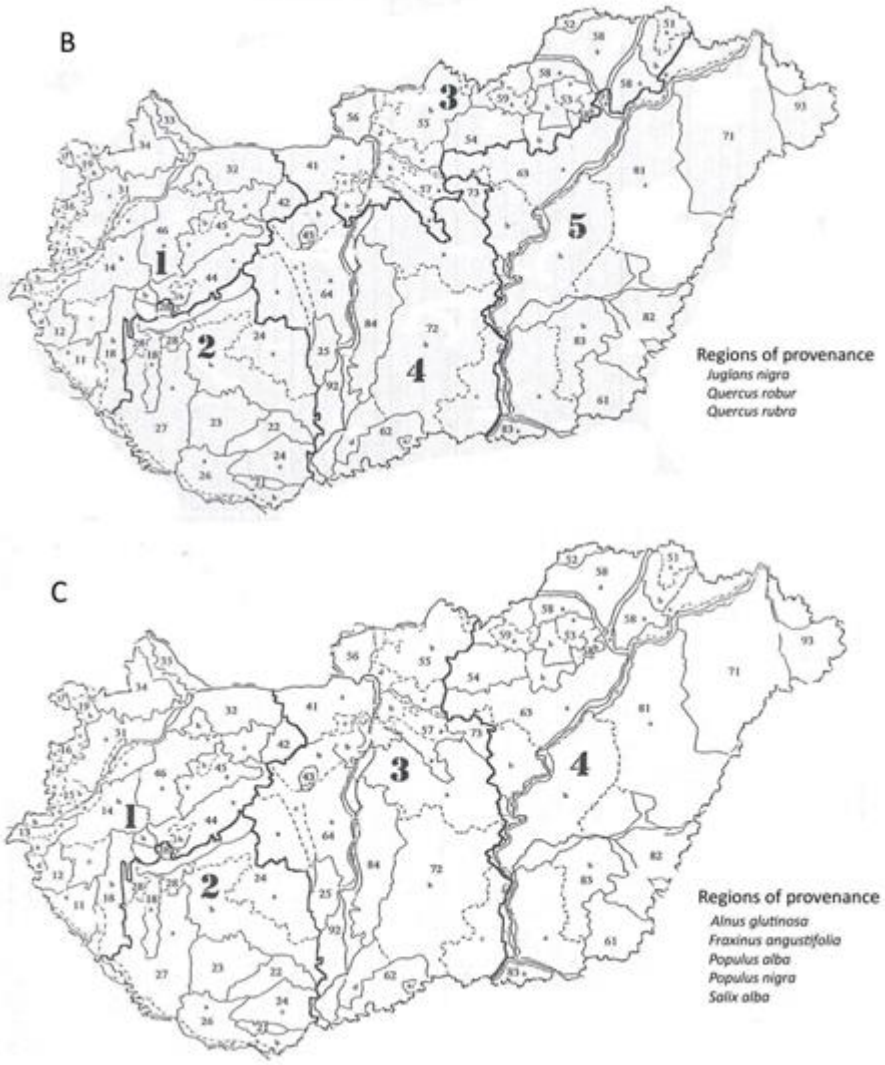


Figure A8: Regions of provenance in Hungary for the following riparian tree species: *Fraxinus excelsior* (A), *Quercus robur* (B), *Alnus glutinosa, Fraxinus angustifolia, Populus alba, Populus nigra, Salix alba* (all C).

Use of FRM from other countries

As a general rule, FRM originating from European Union member countries is free to be transferred, marketed and deployed to Hungary following the procedures set by the *Council Directive 1999/105/EG* and the national legislation. The source of the FRM must be registered in the EU or listed in the national register of the source country. The appointed authority of the source country is required to contact the Hungarian authority on FRM control, the National Food Chain Safety Office (NFCSO), via information sheets according to *1598/2002/EC directive*.

FRM import from third country is possible if the equivalence conditions set by *Council Decision EC/971/2008* are met or a special permission is granted to the registered FRM producer or trader by the NFCSO.

In the absence of special rules, limitations or exceptions for the Mura-Drava-Danube Biosphere Reserve, use of FRM from foreign sources is allowed in the Biosphere Reserve.

Use of FRM on non-native tree species

The list of non-native species that can be deployed to forests is specified by the 61/2017. (XII. 21.) FM bylaw of the Forestry Act and includes several species suitable for use in riparian environment, like *Juglans nigra*, *J. regia*, *Morus alba*, *Platanus* x *hybrida*, *Populus* hybrids and varieties, *Quercus rubra*, *Robinia pseudoacacia* and *Salix* hybrids and varieties.

Use of non-native forestry tree species is allowed with restrictions in or in the vicinity of protected areas and natural forests. As a rule of thumb, the use of non-native tree species must be avoided in protected areas and in non-protected areas of ecological networks; existing stands of non-native tree species must be replaced, at least gradually, by native species; and the forestry authority may prohibit or impose conditions on the establishment or regeneration of non-native stands in the immediate vicinity of sensitive areas. However, in absence of feasible alternatives, regeneration with non-native tree species might be allowed if justified by habitat conservation or restoration considerations.

Phytosanitary issues

Health conditions are regularly monitored during the annual checks in forestry nurseries. Transfer, import or export of FRM is subject to phytosanitary control. Individual FRM stocks must be accompanied with plant passport issued by the National Food Chain Safety Office or the regional government office acting as appointed phytosanitary authority after the itemized inspection.

2.4 Serbia

Serbia, the only country of the Mura-Drava-Danube Biosphere Reserve outside of the EU, is a member of the OECD Forest Seed and Plant Scheme. The approval of basic materials for production of forest trees, production, production control, processing, quality, marketing, as well as the use of forest reproductive material are regulated by the *Law on reproductive material of forest trees*, which is in full concordance with *Council Directive 1999/105/EC*. Import of FRM from Serbia into other (EU) countries of the Mura-Drava-Danube Biosphere Reserve is therefore considered equal to transfer of FRM between EU countries.

Regions of provenance and altitude belts

It is mandatory to use FRM of specific provenance for *Quercus robur* and *Fraxinus angustifolia* (*Law on reproductive material of forest tree species* in case of "source–identified" forest reproductive material, as this reproductive material can be used for afforestation only in the region of provenance in which it is produced. For other riparian tree species of interest (*Ulmus spp., Alnus glutinosa, Populus nigra, Salix spp*.) entire Serbia is one provenance region. The Mura-Drava-Danube Biosphere Reserve is located in the regions of provenance Posavsko-Podunavski and Posavsko-Podunavsko-Pomoravski for *Q. robur* and *F. angustifolia*, respectively (Figure 9).

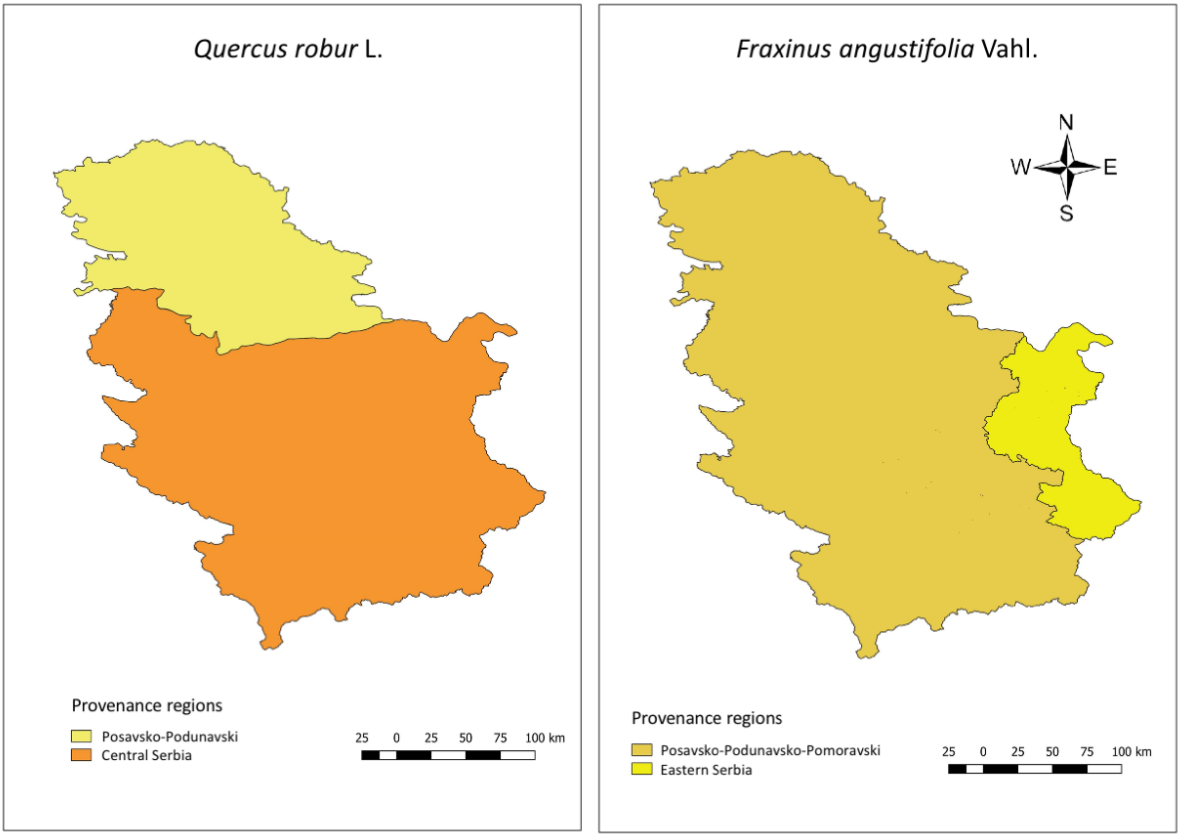


Figure A9: Regions of provenance for *Quercus robur* L. (left) and *Fraxinus angustifolia* Vahl. (right) in Serbia.

Use of FRM from other countries

Decree on the Protection of the Special Nature Reserve "Upper Danube" does not regulate use of FRM imported from abroad. Imported reproductive material of forest trees referred to in *Article 3 of the Law on reproductive material of forest trees* can be used to raise and restore forests if: (1) it has category qualified or tested, (2) there is no seed yield, or the seed yield is not sufficient, or if there are not sufficient quantities of reproductive material in stock for the needs of raising and regenerating forests in that year. Approval for import of seeds shall be issued by the Ministry of Agriculture, Forestry and Water Management of Republic of Serbia. Imported FRM need also to meet demands prescribed by *Law on Plants Health of the Republic of Serbia*.

Use of FRM on non-native tree species

According to Law on Nature Protection it is forbidden to introduce allochthonous wild species and their hybrids into the wild in the territory of the Republic of Serbia, except it is scientifically and professionally proven and acceptable from the point of view of nature protection and sustainable management, and if the introduction does not endanger populations or natural habitats of indigenous wild species.

Use of non-native tree species in the region of Special Nature Reserve "Upper Danube", which is part of Mura-Drava-Danube Biosphere Reserve is regulated according to *Decree on the Protection of the Special Nature Reserve "Upper Danube"*. According to Article 5 of this Decree, the introduction of non-native species is not-allowed in the areas of 1st and 2nd degree of protection, whereas in the areas under 3nd

degree of protection the introduction is allowed only for the species of forest trees (if they are not nature invading) which are already managed according to management plans.

Phytosanitary issues

Import of FRM from EU to Serbia is further governed by the *Law on Plants Health of the Republic of Serbia*. The import of FRM to Serbia is allowed only if it meets the following conditions:

1) is not infected with harmful organisms from List IA part I, List IA part II, List IIA part I and List IIA part II, or regulated harmful organisms in accordance with the Law, as well as new harmful organisms that are not on the lists prescribed by this Law, and for which there is a reasonable suspicion that they may pose a risk to plant health, taking into account the warnings of the recommendations and opinions of relevant international and regional organizations (EPPO, EFSA, IPPC) (Article 34),
2) has a phytocertificate (Article 67), issued in accordance with International *Plant Protection Convention (Article 71)*
3) does not contain plants, plant products or prescribed objects from List IIIA (Article 35),
4) meets the specific phytosanitary conditions from List IVA part I and List IVA part II (Article 35).

The Law on Nature Protection further regulates transboundary movement, trade and breeding of strictly protected, protected and allochthonous wild species.

2.5 Slovenia

Regions of provenance and altitude belts

Slovenia is divided into seven regions of provenance for *Quercus robur, Quercus petraea, Fagus sylvatica, Picea abies* and *Abies alba*. For all other tree species, the entire country is a single region of provenance. There are four altitude zones: 0-300, 301-700, 701-1000 and above 1001 m a.s.l.

The Mura-Drava-Danube Biosphere Reserve is located in the region of provenance 3 Subpanonian (Predpanonsko), in the subregions 3.2 and 3.3. and within the lowest altitude zone (0 - 300 m a.s.l.).

Regions of provenance are recommendations and are not associated with subsidies for planting. However, the altitude belts must always be respected, i.e. only FRM originating from altitudes below 300 m may be planted in Mura-Drava-Danube Biosphere Reserve.

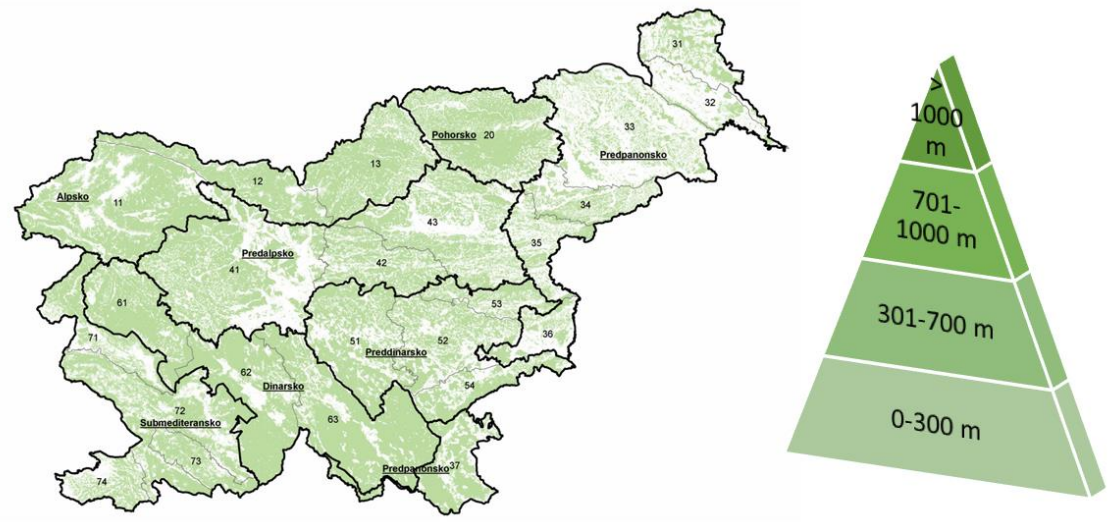


Figure A10: Regions of provenance in Slovenia depend on the tree species and are used as a recommendation while altitude belts must be always respected. The Mura-Drava-Danube Biosphere Reserve is located in region of provenance 3 Subpanonian (Predpanonsko), in the subregions 3.2 and 3.3. and the lowest altitude belt.

The use of FRM is defined in detailed silvicultural plans and established with decrees that must be followed by forest owners. The use of best available FRM (a way to follow provenance recommendations) is aided by the fact that the Slovenian Public Forest Service distributes the seedlings to forest owners while forest owners only have to sign the application for the FRM to be financed from the budget provided (national one or from ERDF funds after major natural disasters).

Use of FRM from other countries

In accordance with the *Rules determining regions of provenance*, it is allowed to use FRM of riparian tree species of foreign origin in the Biosphere Reserve as detailed in Table YX. However, before planting of foreign FRM in Slovenian forests, the designated authority (i.e. Slovenian Forestry Institute) must issue a positive opinion on such use of FRM. For issuing an opinion, the designated authority will need to receive a proposal on the need of foreign FRM by the Slovenia Forest Service due to special circumstances (lack of Slovenian FRM, need for FRM due to large scale disturbance, etc.) together with relevant information on FRM to be imported such as a master certificate.

Table A1: Allowed use of FRM for riparian tree species in the Mura-Drava-Danube Biosphere Reserve originating from outside of Slovenia

Tree species	From: country	From: region of provenance in the country of origin
Alnus glutinosa	Hungary	1
	Croatia	1.1.2, 1.2.1
Fraxinus angustifolia	Croatia	1.1.2, 1.2.3
Populus nigra (also hybrids)	Croatia	1.1, 1.2
Quercus robur	Hungary	1
	Croatia	1.1.3, 1.2.3
Salix alba	Croatia	1.1, 1.2

Use of FRM on non-native tree species

Slovenian part of the Mura-Drava-Danube Biosphere Reserve is a Natura 2000 site. Therefore, planting of non-native tree species is prohibited there (*Decree on special protection areas (Natura 2000 areas), Article 7 (5)*).

Phytosanitary issues

Transfer of forest reproductive material to Slovenia and from Slovenia to other countries of Mura-Drava-Danube Biosphere Reserve requires compliance with the phytosanitary regulations . For the movement of forest seedlings from other EU member states to Slovenia each trade unit (may be the subset or the whole of a lot) needs to be accompanied by an EU plant passport, issued by the supplying authorised nursery.

The plant passport confirms that FRM is free from quarantine as well as from non-quarantine pests. If the seedlings originate in Slovenia, they must be accompanied by plant passport.

If forest reproductive material is being imported from non-EU countries, such as Serbia to Slovenia, further phytosanitary rules apply. A phytosanitary certificate and inspection at import are mandatory for all seedlings and for seeds of sweet chestnut, pine species and Douglas-fir (because the plant passport only applies for EU member states). Moreover, at the EU border control point any import of forest seedlings and some seeds into the EU needs to be registered within the Information Management System for Official Controls IMSOC (TRACES NT) and will undergo a phytosanitary inspection.

For the movement of forest reproductive material from Slovenia into other EU countries, registered and authorized plant producers/traders are required to fix the plant passport at each trade unit. Application for registration and authorization to issue the plant passport need to be made at the national plant protection authority. If forest reproductive material is to be exported from Slovenia to non-EU countries, registered and authorized plant producers/traders need to apply for a phytosanitary certificate at the national plant protection authority (phytosanitary inspector). A phytosanitary certificate confirms that phytosanitary requirements of importing country are met.

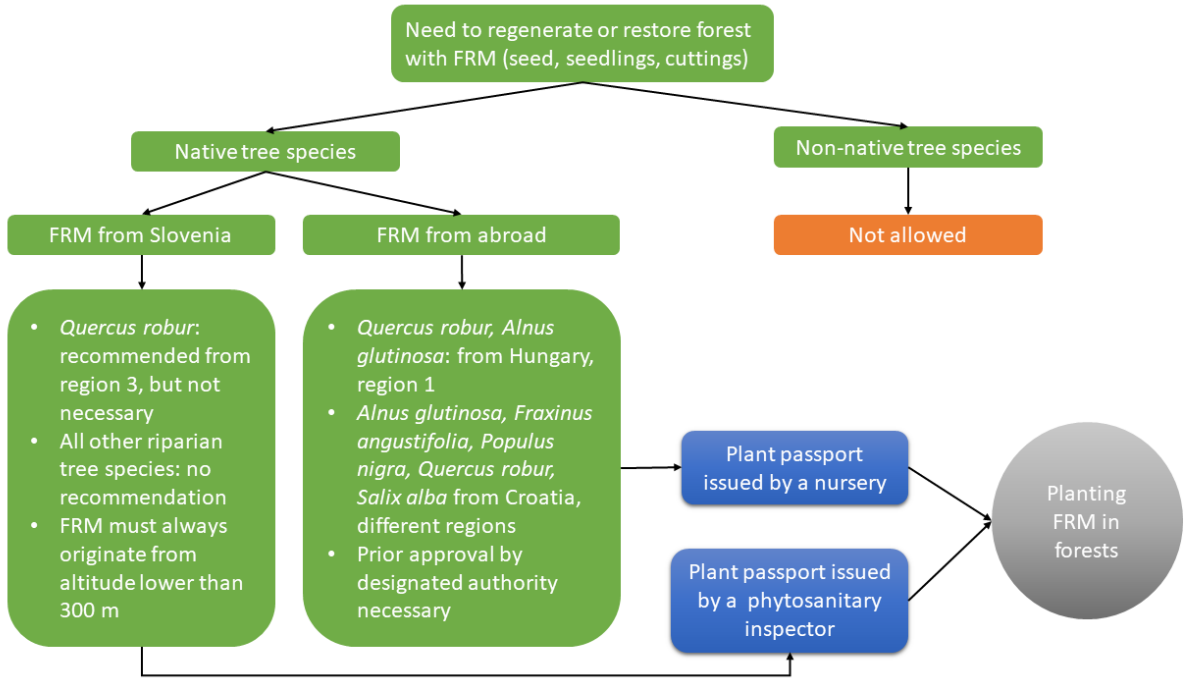


Figure A11: A short overview of rules to follow when regeneration or restoring riparian forests of the Mura-Drava-Danube Biosphere Reserve with riparian tree species (alder, ash, elm, oak, poplar, willow) in Slovenia

3 Links to regulations governing the use of FRM

European Union

- https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32012D1104
- https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31999L0105&from=EN

- https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32008D0971&from=en
- https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32015D0321&from=GA
- https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R2031&from=EN
- https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32018R2019&from=EN

Austria

- https://bfw.ac.at/rz/bfwcms.web?dok=4930
- https://bfw.ac.at/cms_stamm/Bundesamt/PDF/Poster_FRM_DE_EN_2016.pdf

Croatia

- Law on forest reproductive material: https://zakon.hr/z/597/Zakon-o-%C5%A1umskom-reprodukcijskom-materijalu
- Rulebook on provenances of forest trees: https://narodne-novine.nn.hr/clanci/sluzbeni/2011_12_147_2987.html
- Rulebook on conditions for recognition of equality of forest reproductive material and list of countries from which may be imported: https://narodne-novine.nn.hr/clanci/sluzbeni/2009_07_91_2298.html
- Law on plant health: https://narodne-novine.nn.hr/clanci/sluzbeni/2005_06_75_1467.html
- Rulebook on the phytosanitary register and plant passport: https://narodne-novine.nn.hr/clanci/sluzbeni/2012_05_56_1398.html

Hungary

- XXXVII/2009 Act on Forestry, forest protection and forest management: https://njt.hu/jogszabaly/2009-37-00-00.27
- 61/2017. (XII. 21.) Implementation law of the XXXVII/2009. Forestry Act: https://njt.hu/jogszabaly/2017-61-20-11
- 110/2003. (X. 21.) Decree on the forest reproductive material: https://njt.hu/jogszabaly/2003-110-20-82
- LIII/1996. Act on Nature protection: https://njt.hu/jogszabaly/1996-53-00-00.52#SZ41A
- 275/2004. (X.8.) Decree on the conservation areas of EC interest: https://njt.hu/jogszabaly/2004-275-20-22

Serbia

- Law on Reproductive Material of Forest Tree Species: https://www.upravazasume.gov.rs/wp-content/uploads/2015/12/Zakon_o_reproduktivnom_materijal_u_sum_drv.pdf
- Law on Nature Protection: https://www.paragraf.rs/propisi/zakon_o_zastiti_prirode.html
- Law on Plants Health: https://www.paragraf.rs/propisi/zakon-o-zdravlju-bilja-republike-srbije.html
- Decree on the Protection of the Special Nature Reserve “Upper Danube”: http://demo.paragraf.rs/demo/combined/Old/t/t2009_12/t12_0328.htm

Slovenia

- Forest Reproductive Material Act: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1342

- Rules determining regions of provenance: http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV3788
- Decree on implementation of EU regulations on protection measures against pests of plants: http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED8006
- Act on Forests: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO270

Decree on special protection areas (Natura 2000 areas): http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED283

Annex B: List of species to which the FRM Act applies in REFOCUS partner countries

Botanical name	**CRO**	**HU**	**SER**	**SI**
Abies alba Mill.*	X	X	X	X
Abies cephalonica Loud.*	X	X	X	X
Abies grandis Lindl.*	X	X	X	X
Abies pinsapo Boiss.	X	X	X	
Acer campestre L.	X	X		X
Acer monspenssulanum L.	X			X
Acer obtusatum W. et K. ex. Willd.	X			X
Acer platanoides L.*	X	X	X	X
Acer pseudoplatanus L.*	X	X	X	X
Acer tataricum L.	X	X		X
Aesculus hippocastanum		X		
Alnus glutinosa (L.) Gaertn.*	X	X	X	X
Alnus incana (L.) Moench *		X	X	X
Alnus viridis (Chaix) DC.				X
*Betula pendula Roth**	X	X	X	X
Betula pubescens Ehrh.*	X	X	X	X
Carpinus betulus L.*	X	X	X	X
Carpinus orientalis Mill.	X	X		X
Castanea sativa Mill.*	X	X	X	X
Cedrus atlantica (Endl.) Manetti ex Cerriere	X	X	X	
Cedrus libani A. Rich.	X	X	X	
Celtis australis L.	X			X
*Cerasus mahaleb**		X		
Cercis siliquastrum L.				X
Corylus avellana		X		
Corylus colurna		X		
Crataegus monogyna		X		
Crataegus oxyacantha		X		
Elaeagnus angustifolia		X		
Cupressus sempervirens L.	X			
Fagus sylvatica L.*	X	X	X	X
Fagus moesiaca (Domin.,Maly) Czeczott.			X	
Ficus carica L.				X
Fraxinus angustifolia Vahl*	X	X	X	X
Fraxinus excelsior L.*	X	X	X	X
Fraxinus ornus L.	X	X		X
Ilex aquifolium L.				X
Juglanc nigra L.	X		X	
Juglans regia L.		X	X	X
Juniperus communis		X		
Laburnum alpinum (Mill.) Bercht. et J. Presl				X
Laburnum alschingeri (Vis.) C. Koch				X
Laburnum anagyroides Medik.				X
Larix decidua Mill.*	X	X	X	X
Laric x eurolepis Henry*	X	X	X	

Larix kaempheri (Lamb.) Carr.*	X	X	X	X
Larix sibirica (Munchh) Ledeb.	X	X	X	X
Laurus nobilis L.				X
Malus sylvestris (L.) Mill.	X	X		X
Mespilus germanica L.				X
Morus sp. L.	X			
Morus alba		X		
Olea europaea L.				X
Ostrya carpinifolia Scop.	X			X
*Padus avium**		X		
Phillyrea latifolia L.				X
Picea abies (L.) Karst.*	X	X	X	X
Picea omorika (Panc.) Purkyne			X	
Picea sitchensis (Bong.) Carr.	X	X	X	
Pinus brutia Ten.	X	X	X	
Pinus canariensis C. Smith	X	X	X	
Pinus cembra L.*		X	X	X
Pinus contorta Loud.	X	X	X	
Pinus halepensis Mill.*	X	X	X	X
Pinus heldreichii H. Christ	X		X	
Pinus leucodermis Antoine.*		X	X	
Pinus mugo Turra	X			X
Pinus nigra Arnold*	X	X	X	X
Pinus pinaster Ait.*	X	X	X	X
Pinus pinea L.*	X	X	X	X
Pinus radiata D. Don	X	X	X	
Pinus strobus L.	X			
Pinus sylvestris L.*	X	X	X	X
Pistacia terebinthus L.				X
Platanus hybrids		X		
Populus alba L.				X
Populus nigra L.				X
Populus tremula L.				X
Populus spp and hybrids*	X	X	X	X
Prunus avium L.*	X	X	X	X
Prunus mahaleb L.				X
Prunus padus L.				X
Prunus spinosa		X		
Pseudotsuga menziesii (Mirb.) Franco*	X	X	X	X
Pyrus amygdaliformis				X
Pyrus pyraster (L.) Burgsd.	X	X		X
Quercus crenata Lam.				X
*Quercus cerris L.**	X	X	X	X
Quercus coccifera L.	X			
Quercus frainetto Ten.	X	X	X	
Quercus ilex L.*	X	X	X	X
Quercus petraea (Matt.) Liebl.*	X	X	X	X
Quercus pubescens Willd.*	X	X	X	X
Quercus robur L.*	X	X	X	X
Quercus rubra L.*	X	X	X	X

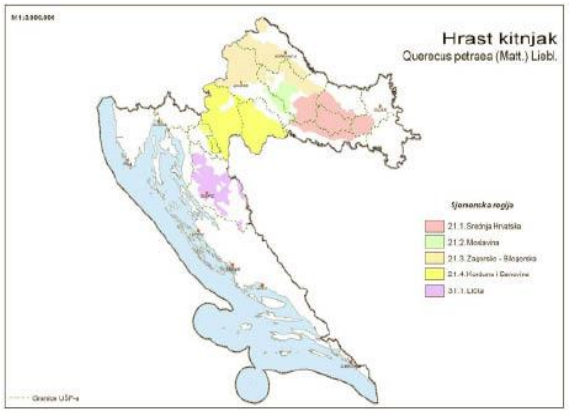
Quercus suber L.*	X	X	X	X
Quercus virgiliana		X		
Robinia pseudoacacia L.*	X	X	X	X
Rosa canina		X		
Salix alba		X		
Salix caprea		X		
Salix fragilis		X		
Sambucus nigra		X		
Sophora japonica		X		
Salix spp. and hybrids	X			X
Sorbus aria (L.) Crantz	X			X
Sorbus aucuparia L.	X			X
Sorbus domestica L.	X			X
Sorbus spp		X		
Sorbus torminalis (L.) Crantz	X			X
Tamarix tetrandra		X		
Taxus baccata L.	X	X		X
Tilia cordata Mill.*	X	X	X	X
Tilia platyphyllos Scop.*	X	X	X	X
Tilia tomentosa Moench.	X	X		
Ulmus campestris s.l.		X		
Ulmus glabra Huds.	X	X		X
Ulmus laevis Pall.	X	X		X
Ulmus minor Mill.	X			X
Ulmus pumila		X		
Viburnus lantana		X		
Viburnum opulus		X		

For Austria – see text

*Some tree species occur twice due to synonims of botanical names used in different national lists

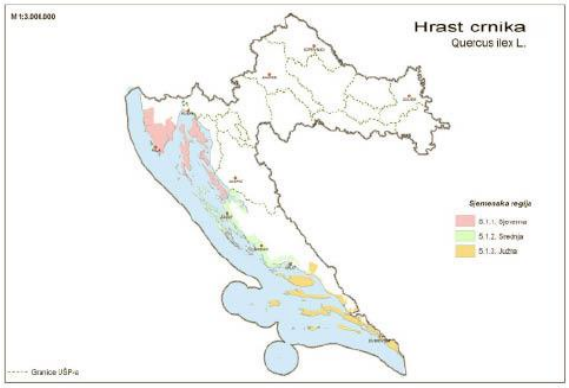
Annex C: Provenance regions for most important tree species in Croatia

Quercus petraea

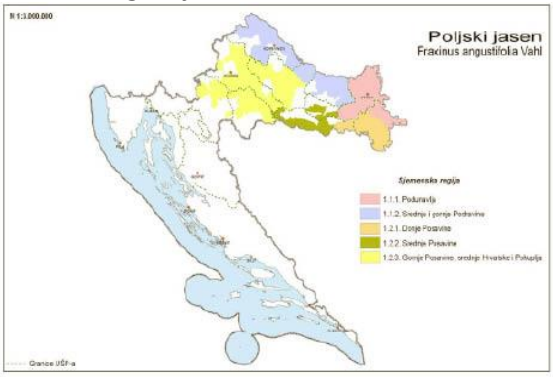


Fagus sylvatica

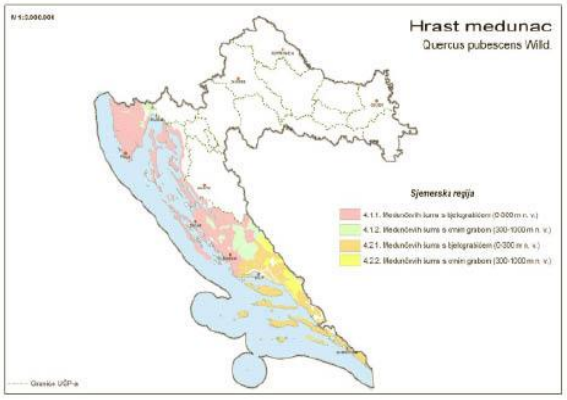
Quercus ilex



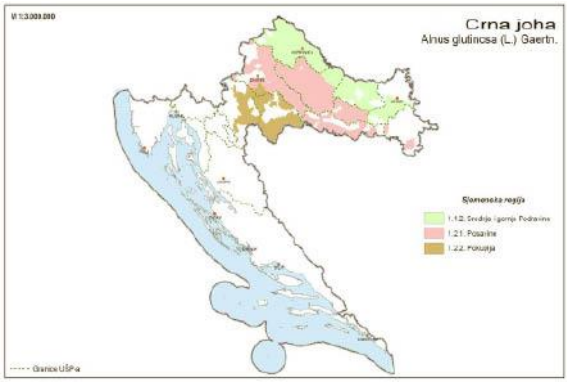
Fraxinus angustifolia



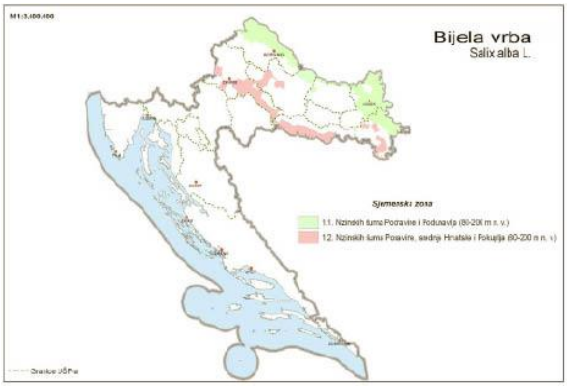
Quercus pubescens



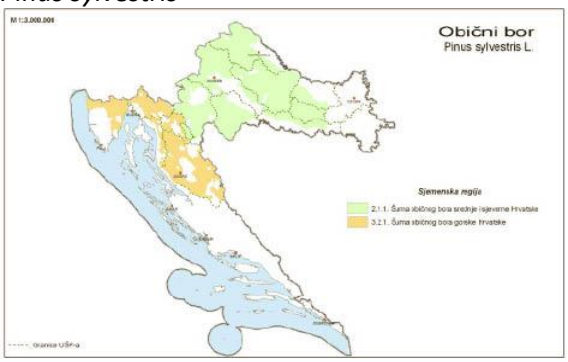
Alnus glutinosa



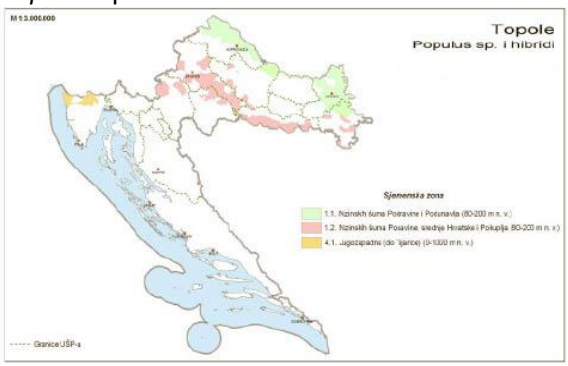
Salix alba



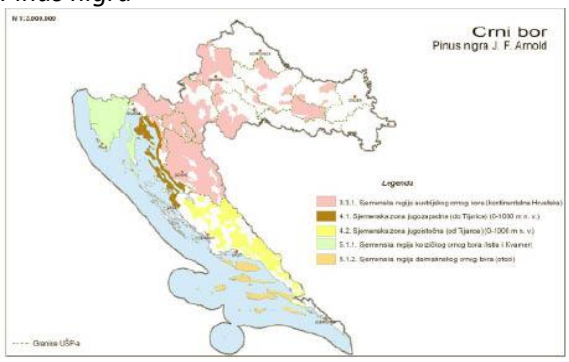
Pinus sylvestris



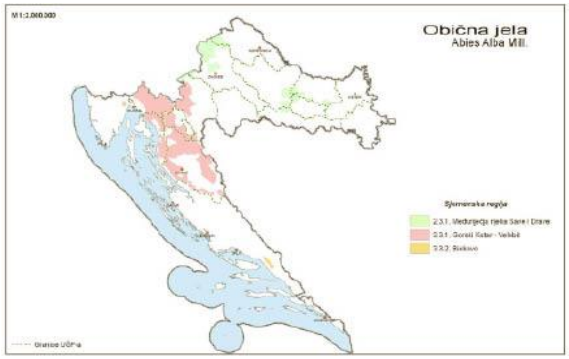
Populus sp.



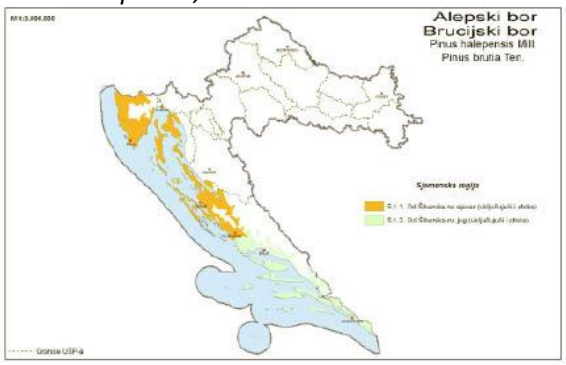
Pinus nigra



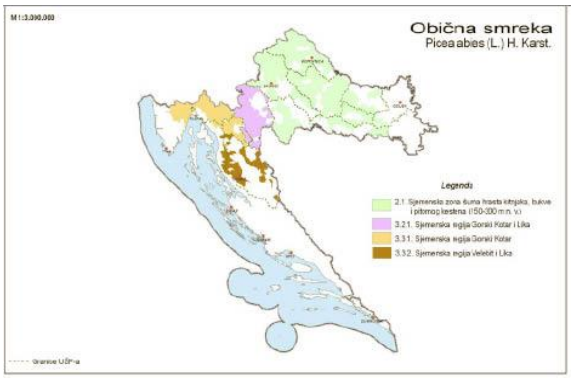
Abies alba



Pinus halepensis, P. brutia



Picea abies



Cupressus sempervirens