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Recent Changes to the Control of Forest Reproductive Material

INFORMATION NOTE

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SUMMARY

Revised Forest Reproductive Material (FRM) Regulations came into effect on 1 January 2003. The main changes affect collection, production and choice of planting stock by the end user. These arise from an increase in the number of species controlled, and a classification of planting stock which takes into account the products of breeding programmes and addresses the increasing interest in using material from local sources.

INTRODUCTION

In recent years, increasing emphasis has been placed on identifying the source of planting stock used in forest establishment. In commercial conifer species, improved material from tree breeding programmes has accounted for a greater proportion of trees planted, while in native species, there has been a rise in interest in the source of stock, often emphasising a requirement for local provenance. On 1 January 2003, new regulations concerning the production and marketing of forest reproductive material came into force. These replace the regulations that were put in place soon after the UK entered the European Union which applied to a limited number of species prominent in commercial forestry at that time.

HOW HAVE THE FOREST REPRODUCTIVE MATERIAL REGULATIONS CHANGED?

The new regulations cover a greater number of species which are important because of the broader set of objectives under which forest establishment is now practised (see Table 1). Previous control was aimed at ensuring more productive, better quality timber crops whereas the new measures provide clear information on the source of planting stock across a wide range of species.

To serve the increasing interest in providing planting stock of native species from local sources, in 1999 the Forestry Commission (FC) divided Great Britain into a set of 24 native seed zones to provide a framework through which locally-sourced material could be identified. These zones (see Figure 1) form a sub-division of the regions of

Table 1

Important species used in forestry in Great Britain now covered by the Forest Reproductive Material regulations

Scientific name	Common name	Abbreviation	Native species	Controlled under old regulations
Abies grandis	grand fir	agr		
Acer platanoides	Norway maple	apl		
Acer pseudoplatanus	sycamore	aps		
Alnus glutinosa	common alder	agl	•	
Alnus incana	grey alder	ain		
Betula pendula	silver birch	bpe	•	
Betula pubescens	downy birch	bpu	•	
Carpinus betulus	hornbeam	cbe	•	
Castanea sativa	sweet chestnut	csa		
Fagus sylvatica	beech	fsy	•	•
Fraxinus excelsior	ash	fex	•	
Larix decidua	European larch	lde		•
Larix kaempferi	Japanese larch	lka		•
Larix x eurolepis	hybrid larch	leu		
Picea abies	Norway spruce	pab		•
Picea sitchensis	Sitka spruce	psi		•
Pinus contorta	lodgepole pine	pco		
Pinus nigra	Corsican pine in UK	pni		•
Pinus radiata	Monterey pine	pra		
Pinus sylvestris	Scots pine	psy	•	•
Populus spp.	poplar species	pop		•
Populus x canescens	grey poplar	pcn	•	•
Populus nigra var. betulifolia	black poplar	png	•	•
Populus tremula	aspen	ptr	•	•
Prunus avium	wild cherry	pav	•	
Pseudotsuga menziesii	Douglas fir	pme		•
Quercus petraea	sessile oak	qpe	•	•
Quercus robur	pedunculate oak	qro	•	•
Robinia pseudoacacia	locust tree	rps		
Tilia cordata	small-leaved lime	tco	•	
Tilia platyphyllos	large-leaved lime	tpl	•	

provenance recognised under the Forest Reproductive Regulations (FRM) regulations. The Voluntary Scheme for the Certification of Native Trees and Shrubs (The Voluntary Scheme), which closely follows the procedures used in the FRM regulations, was launched at the same time.

This note indicates how the wider range of material which will be available to the producer and planter will be categorised, controlled and identified.

HOW MANY MORE SPECIES WILL THE NEW REGULATIONS COVER?

Together with the genus *Populus,* the number of species which fall under the control of the new regulations has risen from 12 to 46. However, only 28 of these are relevant to forestry in Britain, including 4 new conifer and 13 new broadleaved species. The remainder are chiefly pine, oak and cedar species used in Mediterranean parts of Europe. The 28 species are listed in Table 1, where the 15 species native to Britain (including native *Populus* spp.) and the species controlled by the previous regulations are also identified. For each species, a 3-character abbreviation of its scientific name is given. In future, this will form part of the reference identity used in the control system.

WHAT NEW CATEGORIES OF MATERIAL HAVE BEEN INTRODUCED?

Table 2 shows the categories of material which can be marketed and the sources of parental material from which they can be derived. New combinations are identified by ● while those already covered by the former regulations by ■ (□ where no longer in use). Along the edges of the table, genetic quality increases from left to right, while specific information on the source increases from top to bottom.

Because the emphasis was previously on timber production, only two categories of reproductive material could be marketed under the old regulations. These were the ***selected*** and ***tested*** categories. These categories have now been extended to encompass the full range of sources of material by the addition of the categories ***source-identified*** and ***qualified***. The limited distribution of symbols in Table 2 shows that material in the 4 different categories can only be obtained from sources of specific types.

The *source-identified* and *selected* categories encompass all material collected from seed sources or specific stands in which individual trees are not recognised (coloured **black** on Table 2). The *seed source* type is the least defined of all and may be simply the region of provenance or native seed zone.

A *stand* is recognised as a specific area. In the *source-identified* category a stand will have no stated attributes, but in the *selected* category the trees in the stand will have demonstrable superiority to other material of the same species.

Material in the *qualified* and *tested* categories is based on parental material in which individual trees have been specifically identified and selected for their superiority. These trees are most likely to have been derived from tree breeding programmes. In Table 2 two groups are considered; material derived from seed (coloured **purple**) and material derived from the vegetative propagation of individuals (coloured **grey**). The difference between qualified and tested material can be explained with specific reference to seed orchards.

Table 2

Categories of material which may be marketed and the types of source from which they may derive

Type of basic material	Category of reproductive material			
	Source identified	Selected	Qualified	Tested
Seed source	●			
Stand	●	■		■
Seed orchard		□	●	■
Parents of families			●	●
Clone			●	■
Clonal mixture			●	●

Increasing refinement of source ↓

Increasing genetic quality →

■ in both old and new regulations
● introduced in new regulations
□ in old regulations but no longer used

Seed orchards are special plantations of grafted or seedling representatives of individually selected trees. They were first established in Britain over 40 years ago and material of several commercial conifer species produced from them has been used for some time. Under the former regulations, they appeared in the *selected* category but they have now been reclassified as either *qualified* or *tested*. Qualified orchards are based on component trees which have been selected for their *observed* superiority only and have not undergone progeny-testing.

An orchard is classified as tested if the genetic superiority of its components has been evaluated in tests, or if the benefits of the commercial product have been demonstrated in comparative trials. All tested orchards have been assessed by the first of these methods. It was not recognised under the former regulations, hence the reclassification of orchards from selected to tested.

Parents of families describes parental material which is maintained through a variety of methods used in tree-breeding programmes. It will commonly include individual components of seed orchards or parents maintained in clonal archives. This type of source will cover the parental material currently used for the mass-propagation of Sitka spruce family mixtures, by cuttings for example. The use of the qualified and tested categories applies in the same way as seed orchards.

Clones are common in the propagation of poplar and willow. Here vegetative propagation, usually by cuttings, perpetuates the single individual tree originally selected. They are often recognised with a variety name such as *Populus* 'Robusta'. Clones can be marketed individually, or in *clonal mixtures*, as both qualified and tested material.

WHAT DIFFERENCE DOES THIS NEW CLASSIFICATION OF MATERIAL MAKE?

For previously controlled species, the introduction of the *source-identified* category is an important change. Under the former regulations, it was not possible to market material deriving from sources which did not meet the requirements of the selected category, except through special arrangements to meet any shortages in supply. In these circumstances, quotas of seed meeting less stringent requirements were negotiated through agreement between EU Member States. The introduction of the source-identified category removes this need, permitting unrestricted marketing of material which may not carry information on the exact location of its source (beyond the region of provenance or native seed zone) or on the genetic quality of the parental material involved. Collectors, producers and planters need to be aware of this clear widening of the range of material available and of the risks associated with such material. These can arise from:

- the lack of selection for any form of superiority,
- no knowledge of the number of trees from which the collection has been made,
- no knowledge of the geographical distribution of the collection points within the region or zone.

The qualified category, also introduced in the new regulations, will be used for material in breeding programmes in which some form of evaluation of the parental material, for inclusion in the tested category, is either incomplete or unplanned. Unless selection has been for a highly heritable characteristic, performance is likely to be lower than that of material in the tested category. Thus the re-classification of established seed orchards and family mixtures in the tested category now gives clear recognition to their worth as genetically improved material.

The overall effect of these changes is to bring all material of the controlled species under a common system of identification that will provide the user with appropriate information about quality and risks. New forms of identity for sources in the National Register of Basic Material which incorporate coding for the category of material have been set up and are described towards the end of this Note.

HOW ARE SOURCES OF NATIVE SPECIES COVERED?

While 15 of the species which are native to Great Britain are controlled, a further 11 tree species together with 27 small tree and shrub species recognised as being native are included in the Voluntary Scheme, allowing certification of seed of native species (see Forestry Commission Practice Note 8 *Using local stock for planting native trees and shrubs*). For a large number of these species, only exceptionally will material fall into any other category than source-identified.

Two refinements have been introduced to provide more information. Firstly, the 3-digit seed zone for native species

is used in the identification, e.g. native seed zone 203 (one of four zones within region of provenance 20). Secondly, the letter N will be used in the identity if it can be demonstrated beyond reasonable doubt that the source is indigenous — having regenerated naturally on the site over a long period. This latter classification will be considered at the level of individual source-identified stands (or exceptionally selected stands), but not at the more general seed source level, where invariably the origin will be given as 'unknown'. This native designation will be important where the use of material of local origin is specified, e.g. in the restoration of ancient semi-natural woodland.

IS THERE A CLEAR AUDIT TRAIL BETWEEN PLANTING STOCK & PARENTAL SOURCE?

All sources from which seed or vegetatively propagated material can derive are described in a *National Register of Basic Material* maintained by the FC. This will now cover all types and categories of the increased range of controlled species. In addition, the new regulations maintain the requirement for *Master Certificates* for seed and cuttings collected, and require sellers to provide buyers of seed or plants with *supplier's documents* which set out species, quantity, provenance, origin, registered source, type and category. The regulations have to be followed throughout the production process right through to the recipient of planting stock. The FC has the power to inspect at any stage between collection and planting to ensure compliance with every aspect of the regulations. Only suppliers (i.e. seed collectors, nurseries and traders) registered with the FC are permitted to market material.

HOW ARE NATIONAL REGISTER IDENTITIES INTERPRETED?

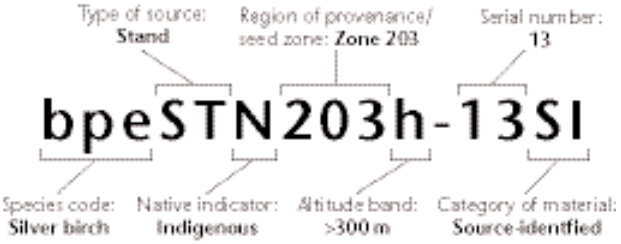
Each unit of approval in the National Register is given an individual reference identity. Stands and seed orchards numbered under the former regulations, together with native Scots pine seed collection areas, will retain their original serial numbers within the new expanded form of National Register identity. Identities have a fixed format in which information is encoded in the fixed order shown in Table 3.

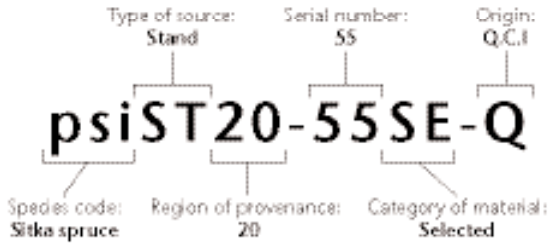
Table 3

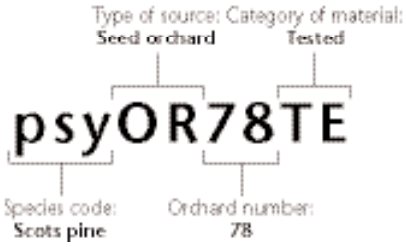
National Register identity format

Species code	3-letter scientific abbreviation
Type of source	RP = seed source, ST = stand, OR = seed orchard, PF = parents of families, CL = clone, CM = clonal mixture
Native indicator	N if source is indigenous
Region of provenance/ native seed zone	2- or 3-digit code
Serial number	Where applicable
Category of material	SI = source-identified, SE = selected, QU = qualified, TE = tested
Origin	Codes used for Sitka spruce and lodgepole pine only

Some example are:



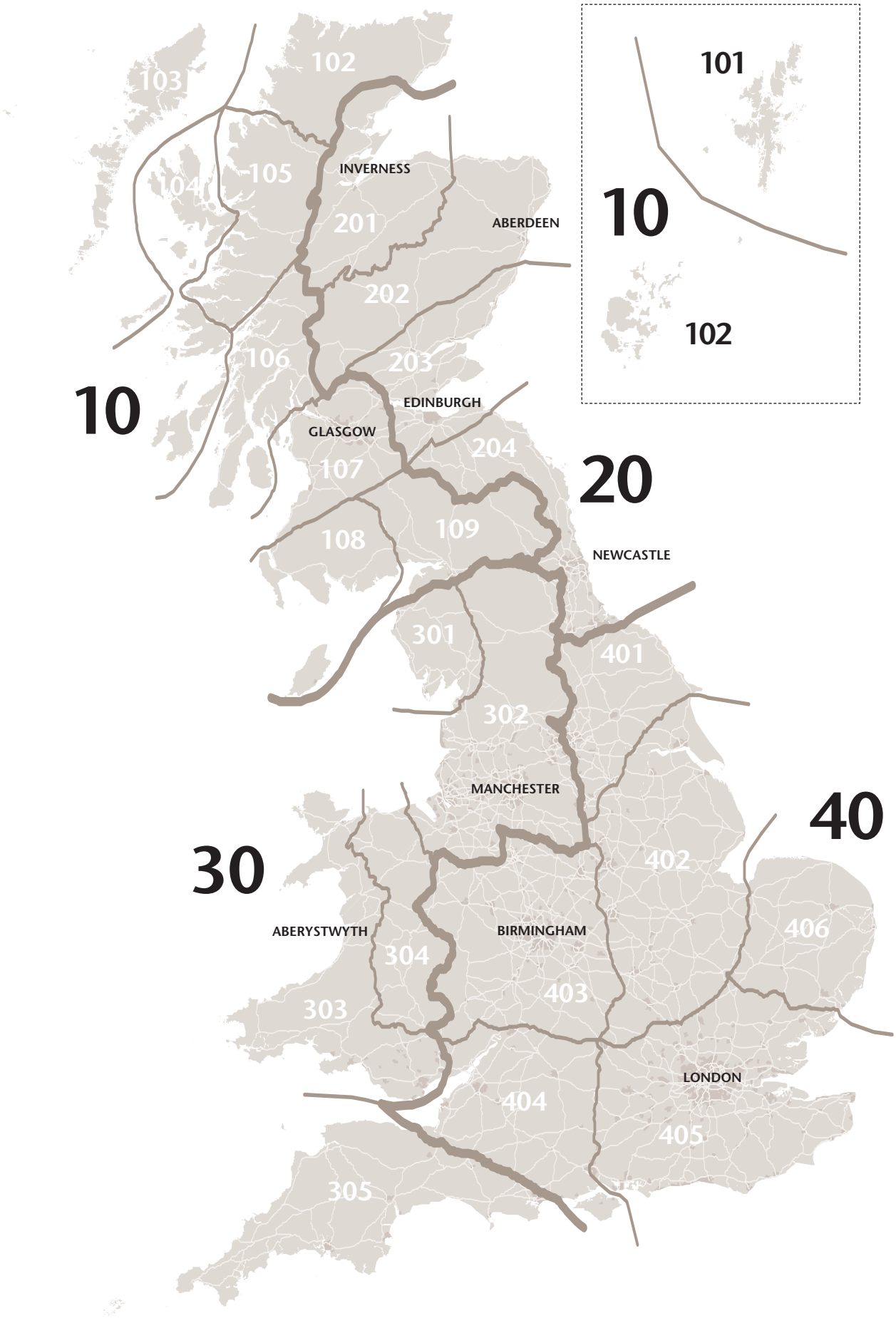




Seed identity numbers may be constructed from these identities using brackets and year of ripening abbreviations in the established way. For the above examples they would take the forms:

bpeSTN203h-13SI	2003 collection becomes	**bpe03(STN203h-13SI)**
psiST20-55SE-Q	2004 collection becomes	**psi04(ST20-55SE-Q)**
psyOR78TE	2005 collection becomes	**psy05(OR78TE)**

Figure 1 Map of local seed zones



REFERENCES AND USEFUL SOURCES OF INFORMATION

ANON. (2002).
The forest reproductive material (Great Britain) regulations 2002.
Statutory Instrument 2002 No. 3026
TSO, London.

FORESTRY COMMISSION (1999).
Using Local Stock for Planting Native Trees and Shrubs.
Forestry Commission Practice Note 8.
Forestry Commission, Edinburgh.

A full copy of the new regulations can be found at:

www.legislation.hmso.gov.uk

Further details on the operation of the regulations, registration of sources, certification of material and the registration and obligations of suppliers, can be obtained by telephoning 0131 314 6175 or by visiting the FC web site at:

www.forestry.gov.uk/frm

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