Tree Supply Report – data analysis

Considerations and limitations

Production data was collected between August and November from 13 forest nurseries in England, Scotland, and Wales. These include private as well as public nurseries. The majority of the growers surveyed are large, wholesale commercial companies. While we estimate that these grow around 90% of the saplings used in forest and woodland planting in GB, this means that the diversity of small nurseries is not necessarily reflected in the figures of this report. Small and community nurseries often produce local broadleaves species, which might be somewhat under-represented in this report.

We have decided to leave the figures of Christmas trees and hedging species as given by the producers. It should be noted however that the report mainly targeted nurseries which produce forest and woodland trees, therefore this report does not aim to be representative of the production of Christmas trees and hedging species.

Nurseries have been asked to provide the species and number of trees produced at their site expected to be ready for sale in the 2022-23 season. Because data was supplied during the growing season, it relied on sample extrapolation and/or predicted figures rather than actual counts.

Forestry tree imports have been estimated as 2M for 2021[1]; from further conversations with stakeholders, imports and exports of trees are considered marginal, and have not been factored in this analysis.

This report aims to illustrate the overall production of saplings for woodland and forestry planting in the 2022/23 season in Britain. Unless otherwise stated, "tree" and "sapling" are used interchangeably and refer to stock destined to woodland and forestry.

Amenity and urban planting are outside of the scope of this report, although we cannot exclude some overlap.

The given figures represent overall saleable tree production in Great Britain in 2022/23, but do not in any way represent availability for sale.

The complete species dataset used for analysis can be found in the Appendix.

[1] Plant Health – international trade and controlled consignments, 2017-2021 – experimental statistics publication - GOV.UK (www.gov.uk)

Number of trees

The data show 152M trees produced for 2022-2023 planting season in the forest nurseries surveyed. FRM Suppliers' data (not published) suggests an additional production of 21M trees from other registered nurseries. We can therefore estimate that production of GB forest nurseries is around **173M saplings** for the year 2022-2023.

Of the 152M trees surveyed, 98.4% belong to a species controlled or certified under FRM Regulations[2] (Figure 1, top bar). FRM-regulated species however only constitute 66.4% of the 134 species assessed.

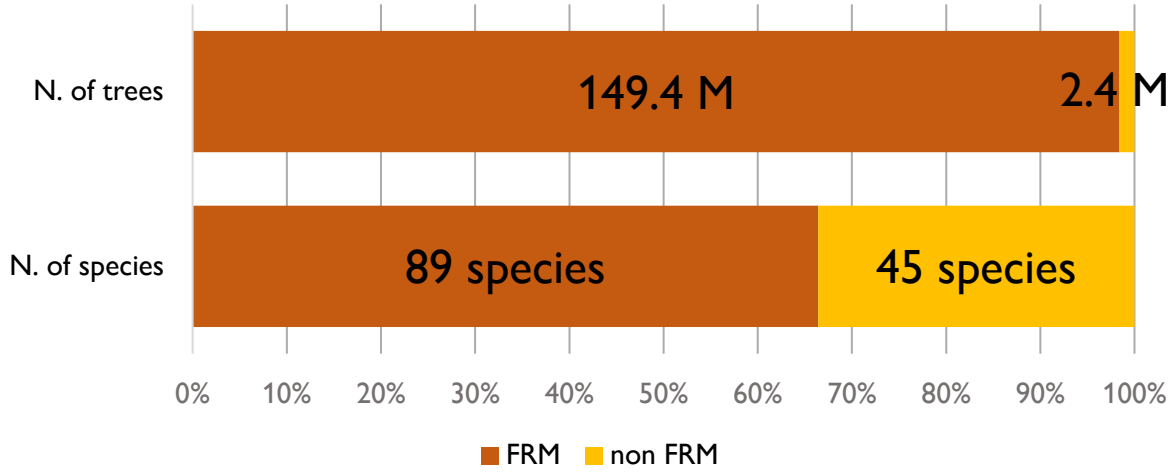

Figure 1 Saplings and FRM-regulated species. The dark orange bars represent trees and species belonging to FRM-regulated species, while the yellow bars show trees and species which fall out of the FRM regulations.

[2] Forest Reproductive Materials guide (forestresearch.gov.uk), Appendix 2

Broadleaf and conifer

Based on the nurseries surveyed, conifer species account for almost three quarters (73.8%) of the total number of trees supplied (Figure 1 – inner pie chart). While representing only 26.2% of the number of trees produced, broadleaves make up more than two thirds of the number of species surveyed (Figure 2 – outer ring chart).

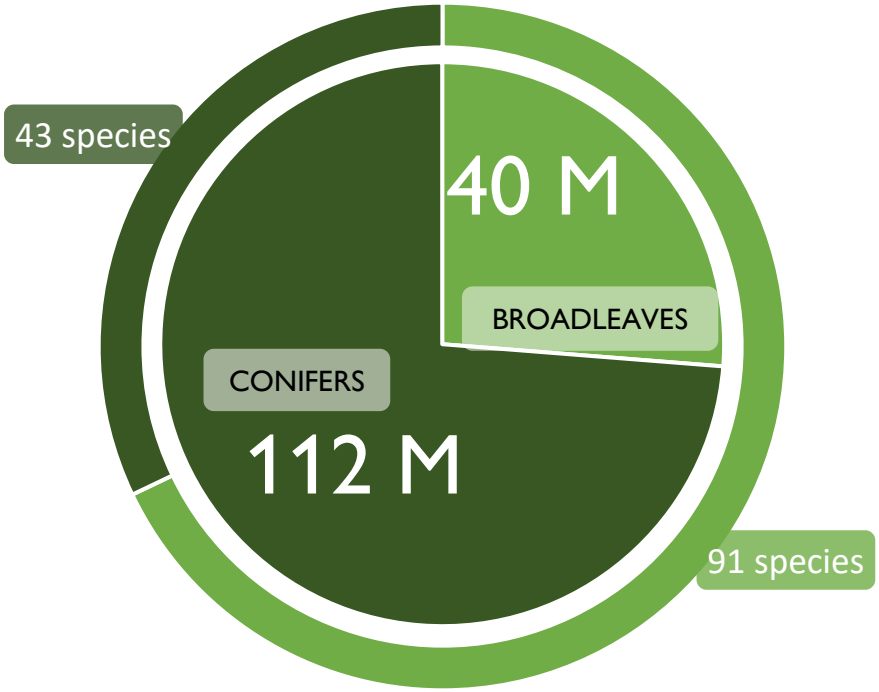

Figure 2 Breakdown of saplings surveyed by tree type. The inner pie chart represents total number of trees by type, while the outer ring represents the number of species within each type.

Most common species

At almost half (48.3%) of the total number of trees produced, Sitka spruce (*Picea sitchensis*) is by far the predominant tree species grown in GB. Sitka production is more than five-fold that of the second-most grown species, Scots pine (Figure 3). It is not surprising to see that the top 4 species are the main conifers used in timber production. Hawthorn (*Crataegus monogyna*) is also very high on the list, emphasising the importance of native hedge planting in the GB landscape.

The most frequently grown species in the nurseries surveyed were native oaks, aspen and Norway spruce, which were grown at 12 of the 13 nurseries surveyed (Figure 3, grey bar).

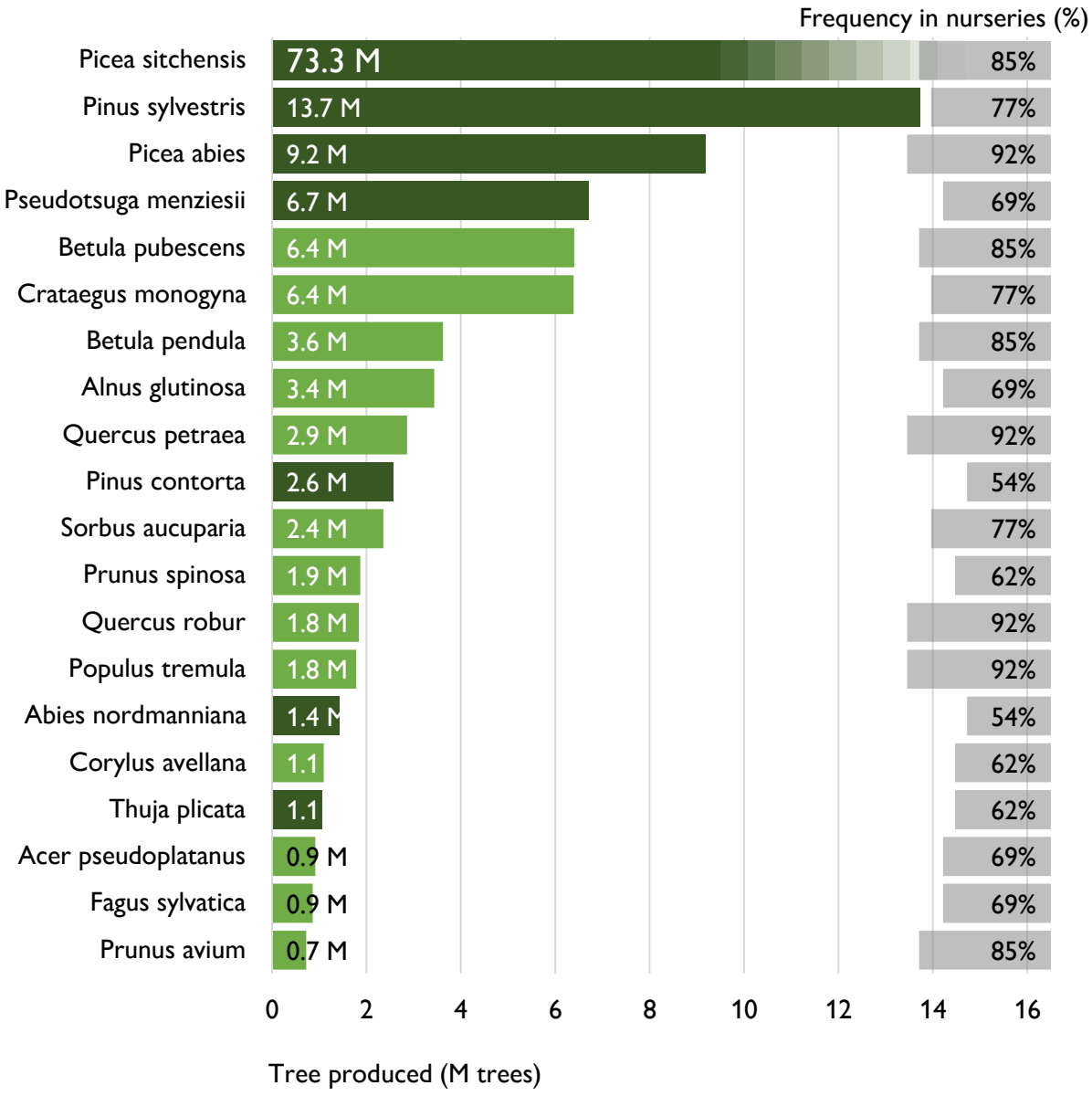

Figure 3 Top 20 species grown in GB. NOTE that the measurement bar for Picea sitchensis has been faded for ease of interpretation. Scots pine (Pinus sylvestris) includes both native provenances as well as improved material. Dark green coloured bars denote conifer species, and light green broadleaf species. The grey bars on the right represent how many (in %) of the 13 nurseries surveyed grow each species.

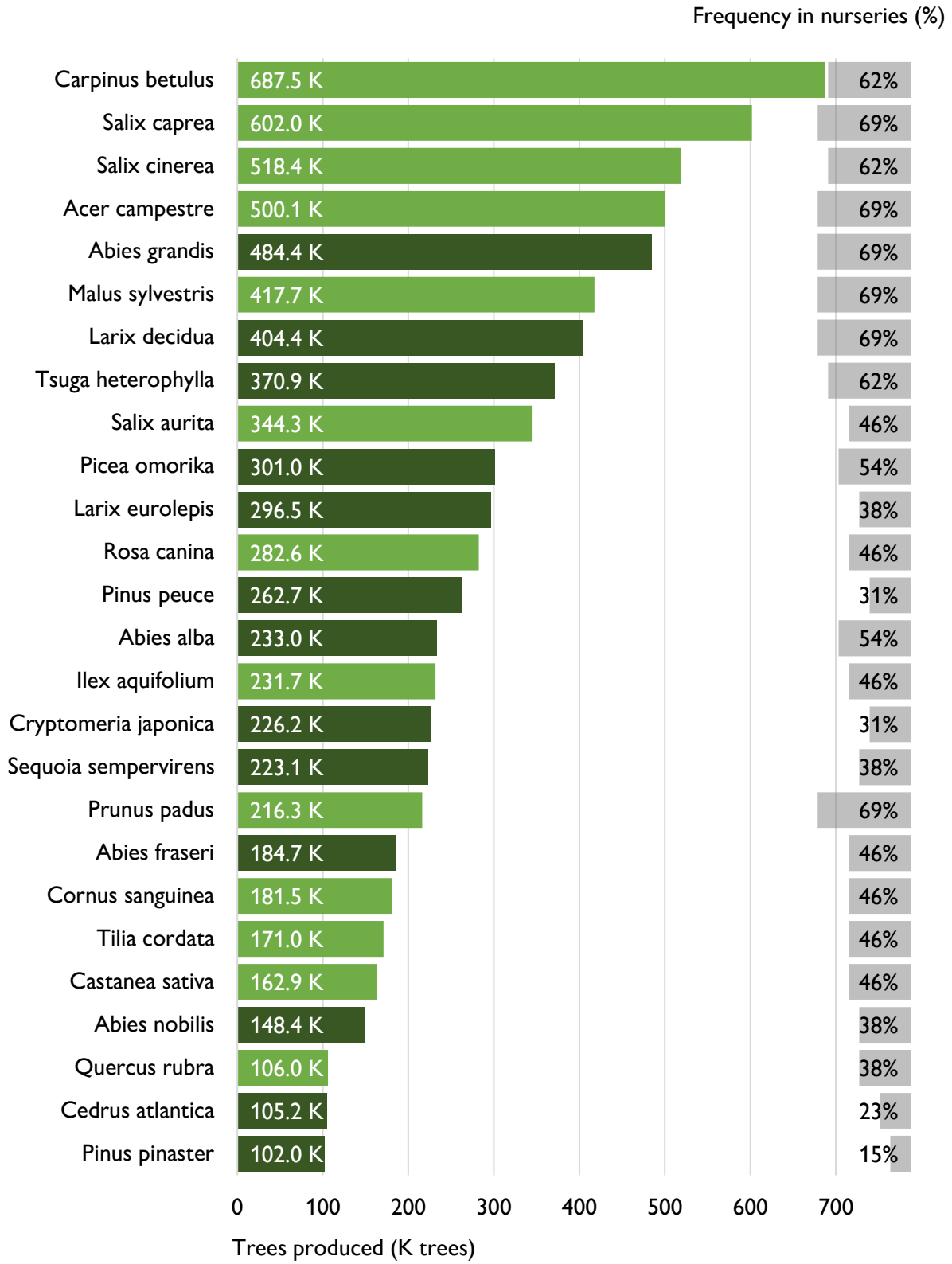

Figure 4 Top species grown in GB- continued. NOTE that the unit of measurement has changed from M trees of the previous graph, to K trees. Dark green coloured bars denote conifer species, and light green broadleaf species. The grey bars on the right represent how many (in %) of the 13 nurseries surveyed grow each species.

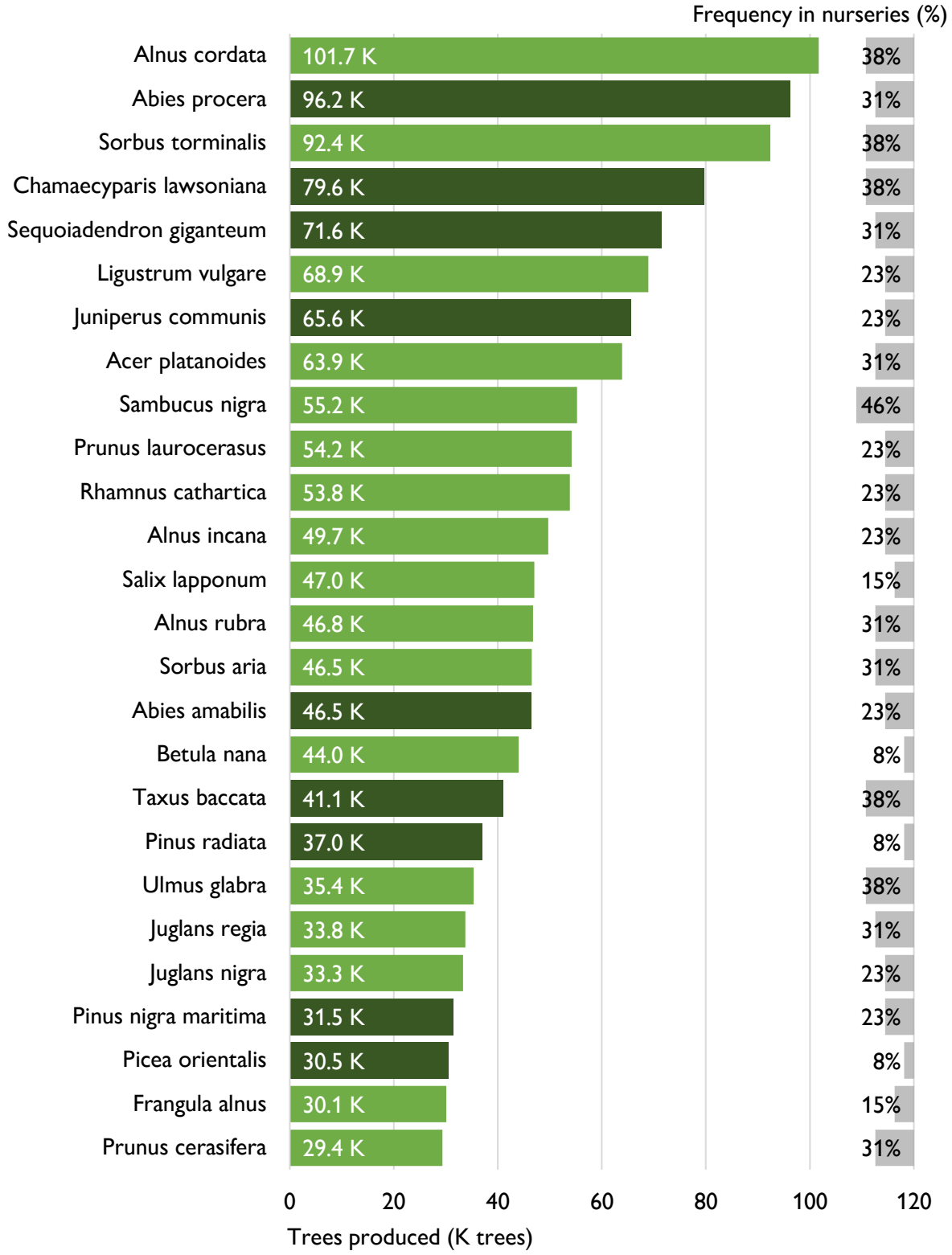

Figure 5 Top species grown in GB- continued. NOTE that the unit of measurement is K trees. Dark green coloured bars denote conifer species, and light green broadleaf species. The grey bars on the right represent how many (in %) of the 13 nurseries surveyed grow each species.

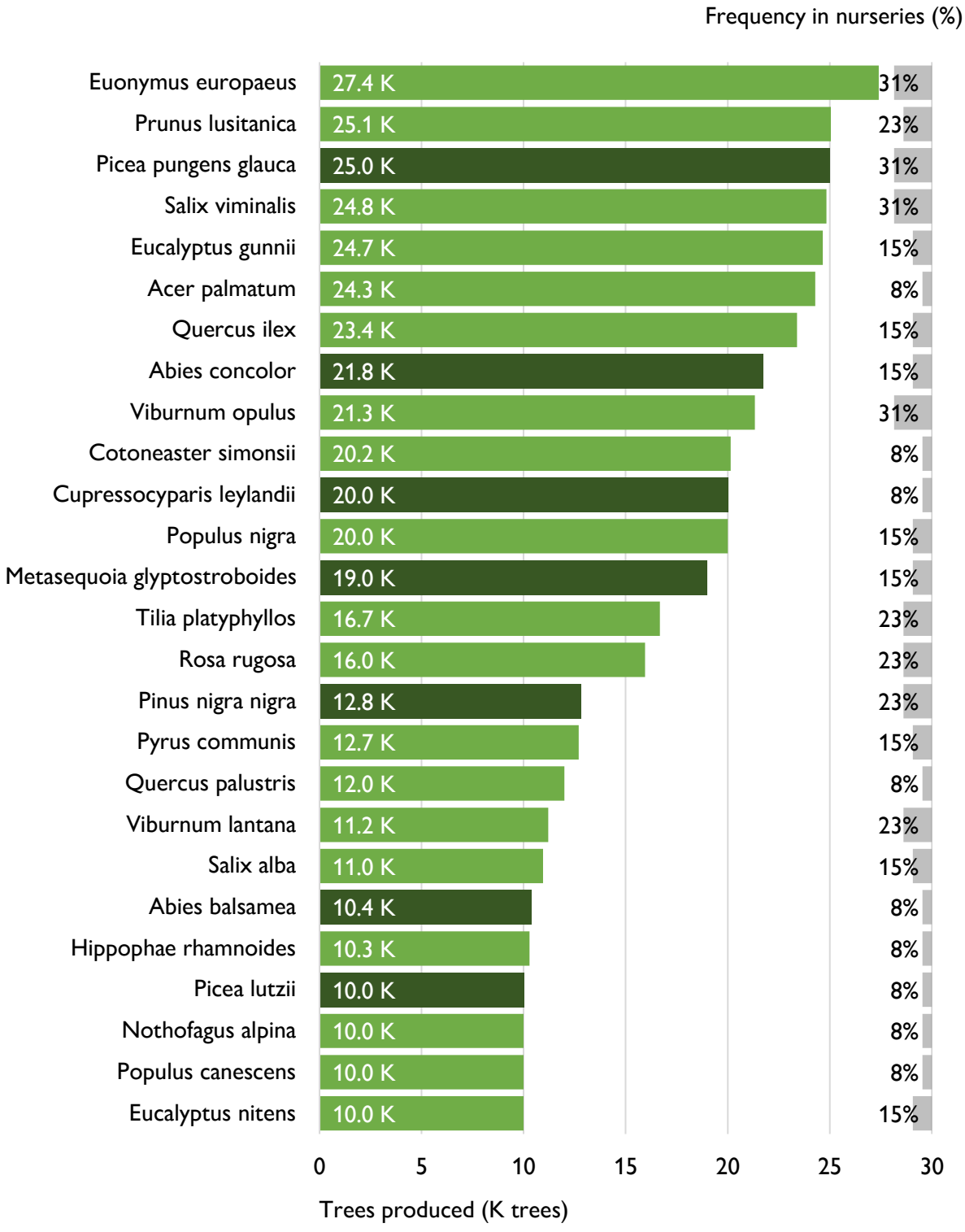

Figure 6 Top species grown in GB- continued. NOTE that the unit of measurement is K trees. Dark green coloured bars denote conifer species, and light green broadleaf species. The grey bars on the right represent how many (in %) of the 13 nurseries surveyed grow each species.

Species diversity

There is high species variability within the nurseries. The number of species grown at each nursery ranged between 5 and 91 (Figure 7). There is no correlation between nursery size and diversity of stock available within the nurseries sampled (data not shown).

All nurseries surveyed produced both coniferous and broadleaf trees, but in significantly different proportions (broadleaves varied from 2% to 98% of the nurseries' total production, **Error! Reference source not found.**). Interestingly, none of the nurseries surveyed had an even split between conifers and broadleaves.

There seems to be a positive correlation between precentage of conifers grown and size of the nursery (data not shown), which is a result of larger nurseries often growing commercial coniferous stock.

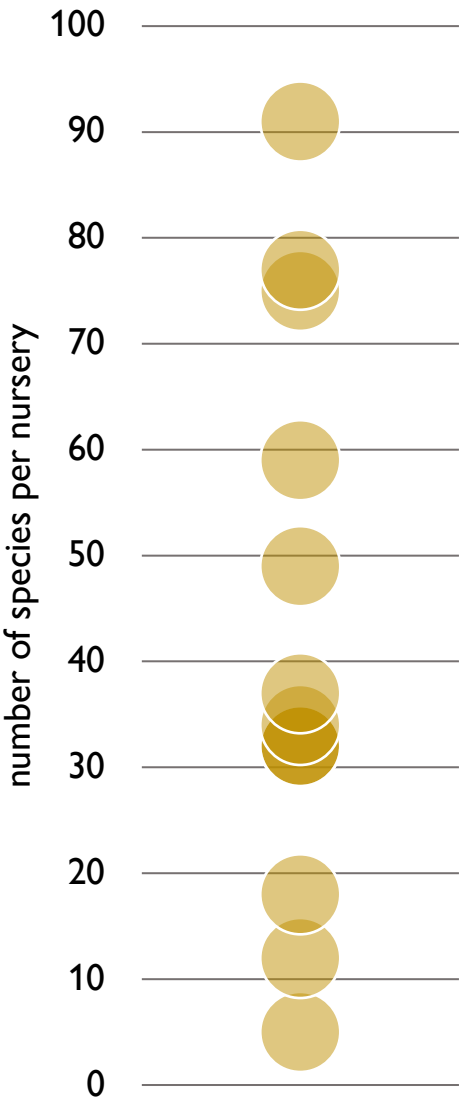

Figure 7 Number of species grown at each of the nurseries surveyed.

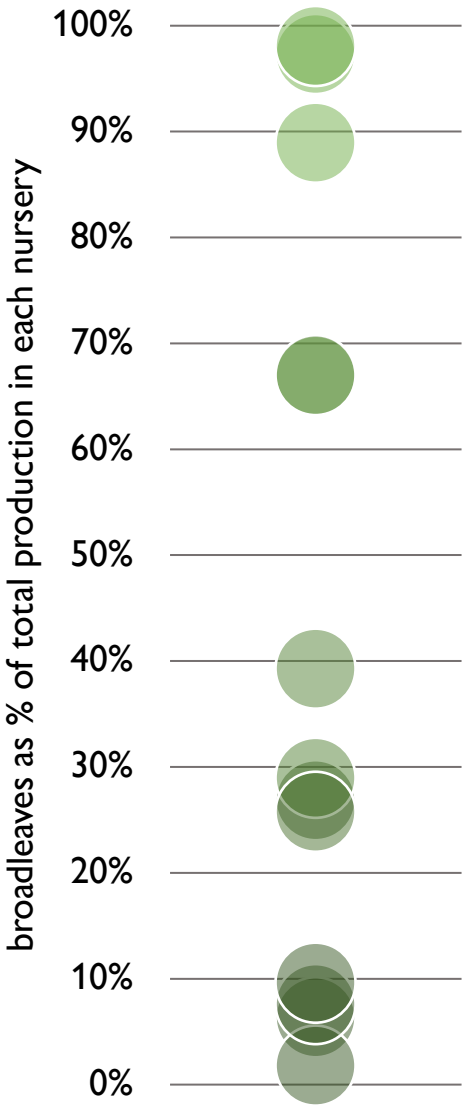

Figure 8 Broadleaves as a percentage of the total production in each of the nurseries surveyed.

Figure 9 and Figure 10 show species and family diversity within broadleaf and conifer trees in this report respectively.

Figure 9 Broadleaves: Main botanical families and respective species. Larger areas represent

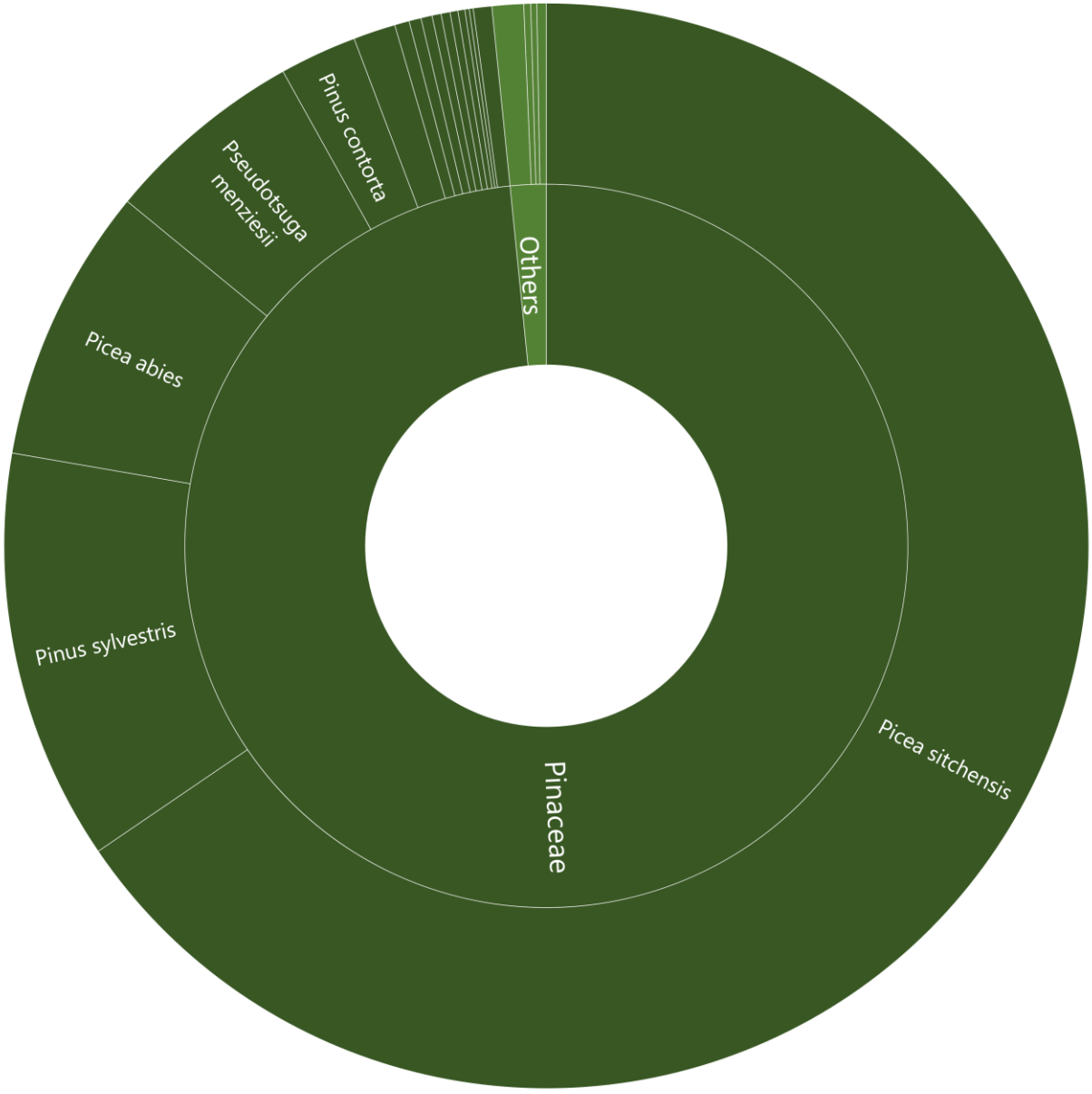

Figure 10 Conifers: Main botanical families and respective species.

Appendix

Table 1 All tree and shrub species grown for 2022-23 season, as reported by the nurseries. In alphabetical order.

Group	Scientific name	Common name	N. of trees
CF	Abies alba	Silver fir	233,000
CF	Abies amabilis	Pacific silver fir	46,500
CF	Abies balsamea	Balsam blue fir	10,400
CF	Abies concolor	White fir	21,800
CF	Abies fraseri	Fraser fir	184,700
CF	Abies grandis	Grand fir	484,400
CF	Abies koreana	Korean fir	11,900
CF	Abies koreana x balsamea		2,300
CF	Abies nobilis	Noble fir	148,400
CF	Abies nordmanniana	Nordmann fir	1,417,300
CF	Abies procera	Noble (red) fir	96,200
BL	Acer campestre	Field maple	500,100
BL	Acer palmatum	Japanese maple	24,300
BL	Acer platanoides	Norway maple	63,900
BL	Acer pseudoplatanus	Sycamore	913,100
BL	Aesculus hippocastanum	Horse chestnut	8,100
BL	Alnus cordata	Italian alder	101,700
BL	Alnus glutinosa	Common alder	3,435,600
BL	Alnus incana	Grey alder	49,700
BL	Alnus rubra	Red alder	46,800
BL	Berberis thunbergii	Japanese barberry	3,300
BL	Betula nana	Dwarf birch	44,000
BL	Betula pendula	Silver birch	3,621,000
BL	Betula pubescens	Downy birch	6,399,700
BL	Carpinus betulus	Hornbeam	687,500
BL	Castanea sativa	Sweet chestnut	162,900
CF	Cedrus atlantica	Atlas cedar	105,200
CF	Cedrus deodara	Deodar cedar	3,900
BL	Cercis canadensis	Eastern redbud	1,000
CF	Chamaecyparis lawsoniana	Lawson's cypress	79,600
BL	Cornus alba	Siberian dogwood	7,700
BL	Cornus sanguinea	Common dogwood	181,500
BL	Corylus avellana	Hazel	1,092,800
BL	Cotoneaster bullatus	Hollyberry cotoneaster	100
BL	Cotoneaster franchettii	Franchet's cotoneaster	9,000
BL	Cotoneaster lacteus	Milkflower cotoneaster	2,500
BL	Cotoneaster simonsii	Himalayan cotoneaster	20,200
BL	Crataegus laevigata	Midland hawthorn	500
BL	Crataegus monogyna	Hawthorn	6,387,800

Group	Scientific name	Common name	N. of trees
CF	Cryptomeria japonica	Japanese cedar	226,200
CF	Cupressocyparis leylandii	Leyland cypress	20,000
BL	Cytisus scoparius	Common broom	2,000
BL	Elaeagnus umbetella	Autumn olive	200
BL	Eucalyptus gunnii	Snow gum	24,700
BL	Eucalyptus nitens	Shining gum	10,000
BL	Euonymus europaeus	European spindle	27,400
BL	Fagus sylvatica	Beech	858,900
BL	Frangula alnus	Alder buckthorn	30,100
BL	Fraxinus excelsior	Ash	6,600
BL	Ginkgo biloba	Ginkgo	1,600
BL	Hippophae rhamnoides	Seaberry	10,300
BL	Ilex aquifolium	Common holly	231,700
BL	Juglans nigra	Black walnut	33,300
BL	Juglans regia	English walnut	33,800
CF	Juniperus communis	Juniper	65,600
BL	Laburnum anagyroides	Common laburnum	5,500
CF	Larix decidua	European larch	404,400
CF	Larix eurolepis	Hybrid larch	296,500
CF	Larix kaempferi	Japanese larch	4,000
CF	Larix laricina	Tamarack	7,000
BL	Ligustrum ovalifolium	Garden privet	1,500
BL	Ligustrum vulgare	Wild privet	68,900
BL	Liriodendron tulipifera	Tulip tree	200
BL	Malus sylvestris	Crab apple	417,700
CF	Metasequoia glyptostroboides	Dawn redwood	19,000
BL	Nothofagus alpina	Rauli beech	10,000
CF	Picea abies	Norway spruce	9,185,700
CF	Picea lutzii	Lutz spruce	10,000
CF	Picea omorika	Serbian spruce	301,000
CF	Picea orientalis	Oriental spruce	30,500
CF	Picea pungens glauca	Colorado blue spruce	25,000
CF	Picea sitchensis	Sitka spruce	73,325,500
CF	Pinus contorta	Lodgepole pine	2,571,600
CF	Pinus coulteri	Coulter pine	300
CF	Pinus nigra maritima/corsicana	Corsican pine	31,500
CF	Pinus nigra nigra/austriaca	Austrian pine	12,800
CF	Pinus peuce	Macedonian pine	262,700
CF	Pinus pinaster	Maritime pine	102,000
CF	Pinus radiata	Monterey pine	37,000
CF	Pinus sylvestris	Scots pine	13,727,500
CF	Pinus taeda	Loblolly pine	7,500
BL	Platanus x acerifolia/hispanica	London plane	1,200

Group	Scientific name	Common name	N. of trees
BL	Populus alba	Silver poplar	200
BL	Populus nigra	Black poplar	20,000
BL	Populus tremula	Aspen	1,784,600
BL	Populus x canescens	Hybrid poplar	10,000
BL	Prunus avium	Wild cherry	720,900
BL	Prunus cerasifera	Cherry plum	29,400
BL	Prunus institia	Damson plum	800
BL	Prunus laurocerasus	Cherry laurel	54,200
BL	Prunus lusitanica	Portuguese laurel	25,100
BL	Prunus padus	Bird cherry	216,300
BL	Prunus spinosa	Blackthorn	1,866,900
CF	Pseudotsuga menziesii	Douglas fir	6,704,500
BL	Pyrus communis	Common pear	12,700
BL	Quercus cerris	Turkey oak	4,500
BL	Quercus ilex	Holm oak	23,400
BL	Quercus palustris	Swamp oak	12,000
BL	Quercus petraea	Sessile oak	2,856,700
BL	Quercus robur	Pedunculate oak	1,835,800
BL	Quercus rubra	Red oak	106,000
BL	Rhamnus cathartica	Purging buckthorn	53,800
BL	Robinia pseudoacacia	Black locust	6,300
BL	Rosa arvensis	Field rose	4,100
BL	Rosa canina	Dog rose	282,600
BL	Rosa rubiginosa	Sweet briar rose	2,400
BL	Rosa rugosa	Red Japanese rose	16,000
BL	Rosa spinosissima	Scotch rose	2,200
BL	Salix alba	White willow	11,000
BL	Salix aurita	Eared willow	344,300
BL	Salix babylonica	Weeping willow	100
BL	Salix caprea	Goat willow	602,000
BL	Salix cinerea	Grey willow	518,400
BL	Salix fragilis	Crack willow	5,000
BL	Salix lapponum	Downy willow	47,000
BL	Salix pentandra	Bay willow	800
BL	Salix viminalis	Osier willow	24,800
BL	Sambucus nigra	Elder	55,200
CF	Sequoia sempervirens	Coast redwood	223,100
CF	Sequoiadendron giganteum	Giant redwood	71,600
BL	Sorbus aria	Common whitebeam	46,500
BL	Sorbus aucuparia	Rowan	2,359,700
BL	Sorbus intermedia	Swedish whitebeam	7,100
BL	Sorbus torminalis	Wild service tree	92,400
CF	Taxus baccata	Yew	41,100

Group	Scientific name	Common name	N. of trees
CF	Thuja plicata	Western red cedar	1,051,200
BL	Tilia cordata	Small-leaved lime	171,000
BL	Tilia platyphyllos	Large-leaved lime	16,700
CF	Tsuga heterophylla	Western hemlock	370,900
BL	Ulex europaeus	Gorse	8,300
BL	Ulmus glabra	Wych elm	35,400
BL	Ulmus minor	Field elm	500
BL	Viburnum lantana	Wayfaring tree	11,200
BL	Viburnum opulus	Guelder rose	21,300