

The Life of a Tree Chapter 1: Nursery

OAK 1-3 years from seed collection to sale to the forester

COLLECT

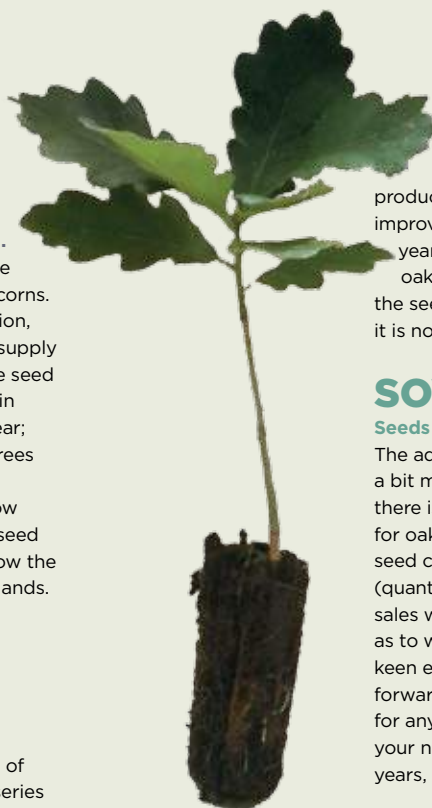
Seed is collected in autumn (October – November).

Seeds are picked out of woodlands; directly from the forest floor, or from nets deliberately laid to catch acorns. It is important to bag the seed in a dry, clean condition, and get it to the seed house with no delays. Acorn supply cannot be predicted more than a few months before seed collection; it is controlled by nature. Seed will form in the east of the country one year, or west the next year; wherever the springtime weather is kind when the trees are flowering. Oak breeding work is underway (see www.futuretrees.org/our-work/oak) however the slow growth of oak means a reliable supply of improved seed from seed orchards remains a pipedream, and for now the industry continues to collect from stands and woodlands.

STORE UP TO 1 YEAR

Seed storage is not traditionally possible with 'recalcitrant' species like oak, but now sometimes possible for one year.

New techniques are now beginning to allow storage of acorns from one season to the next! This helps nurseries



produce a steady supply of oak for the industry; great improvements from only a few years ago when poor seed years meant no acorns for nurseries, and disruptions in oak supply to foresters. Success of storage depends on the seed quantity and quality, and autumn weather though; it is not a guaranteed option every year.

SOW

Seeds are sown October – April.

The advancement of oak seed storage is starting to enable a bit more forward planning than previously, nevertheless there is still little point in placing an advance seed order for oak because supply cannot be confirmed until the seed crop is assessed. **Nurseries base their seed order (1)** (quantities and provenances of seed) on previous years sales with feedback from their customers and the industry as to whether demands might increase or decrease. A keen eye on the grant system situation, and an ear out for forward orders and contract growing are requisite tools for any nursery trying to forecast their markets. Talk to your nursery about your planting plans for the next few years, not just this year; your feedback and plans are truly

DOUGLAS FIR 2-20 years from seed collection to sale to the forester

COLLECT

COLLECT

Seed is collected in autumn (September)

Cones are picked from stands in the forest by hand, by climbing trees; a hands on task with no room for error! Picking seeds by tree climbing is more difficult, slower and more expensive than collecting seed from the forest floor or from hedgerows. Breeding work has resulted in a number of Douglas fir seed orchards in the UK, USA and Europe (particularly France). Seed from these seed sources is widely available in the UK nursery trade as well as seed from forestry quality stands in the USA and UK.

STORE 0-20 YEARS

Seed can be sown fresh or stored for over 20 years.

Following collection, seed is extracted over the winter months by heating cones gently in a kiln. The moisture content of the seed is calculated most commonly by weighing a small portion of seeds, drying them in an oven overnight and comparing the dried weight to the previous



weight. Carefully dried seeds can be stored for over 20 years in the cold store, which is great news for nurseries as supply can therefore be fairly reliable providing seed houses are happy to collect a lot of seed in good years and store it. **Forward planning of Douglas fir seed orders and sowing (1)** is a practical possibility, unlike some nursery species!

SOW

Seeds are sown April – July.

Douglas fir seed is usually broadcast and sown on the surface, and covered with a thin layer of substrate rather than being drilled down into the soil. The sowing machinery is carefully calibrated to scatter or position the seeds at an exact rate; the seedlings must be spaced precisely to ensure they grow into strong, balanced plants. Poor seed sowing resulting in seedlings being sown too densely or too sparsely will **greatly affect the crop quality, quantity and therefore profitability (4)**. There is no room for error by the nursery during sowing season!

STORE

In the next few editions of FTN we will be following the life journey taken by a tree as it passes through the hands of a series of growers, from seed to harvest and final use of timber. Certain themes recur several times during the Life of a Tree, numbered in text:

1. Prediction of future markets
2. Governance and external certification
3. Challenges for growers
4. Profits and purpose of growing



valuable! Acorns can be sown immediately after collection in the autumn, or in the spring. The seeds are drilled below the soil surface. Roots will begin growing downwards soon after sowing, but the seedlings will not emerge until spring. The variable size of oak seeds means nurseries often sow them sorted by size to produce a more uniform crop. Larger acorns usually mean larger plants, but the **profitability (4)** of a crop is really determined by its uniformity. **Number of saleable trees per nursery metre is key (4)**, and non-uniform crops where plants shade each other out, and which take longer to grade, are never preferable.

GROW

Growth on the nursery (1-2 years).

Oaks grow in spurts, or 'flushes', usually three a year. The oak tree will source much of the energy for its first flush



of growth from its acorn, but needs plentiful fertiliser and irrigation for subsequent growth. Oak crops must be checked by **Government Plant Health staff for notifiable pests and pathogens (e.g. oak processionary moth, *Cryphonectria parasitica* and *Phytophthora ramorum*) (2)**, and by nursery staff for more **commonplace problems (powdery mildew, aphids and oak bud midge).**

Nurseries apply pesticides to protect crops against commonplace problems (3).

When oak is imported to the UK from European nurseries, a 'pre import notification' (2) must be made by the purchaser; this enables Plant Health officials keep track of what's coming into the country, and where it's coming from. Buying home grown plants is the best option for British foresters and nurseries alike.



GROW

Growth on the nursery (2-3 years).

Douglas fir (like most conifers) is slower growing and will stay on the nursery about a year longer than most broadleaves. It is susceptible to **relatively few commonplace pests and diseases (3)**. Once the new seedlings are strong enough to be safe from damping off diseases, Douglas fir rarely struggles with pests or diseases on the nursery, and requires relatively few pesticide applications so long as it receives adequate nutrition.

Government plant health staff check Douglas fir crops are clear of notifiable diseases such as Poplar rust, and pitch pine canker, both of which can affect Douglas fir (2).

It would be a big deal and likely to be featured in Plant Health news if a notifiable disease were to be found on a British nursery; the crop would have to be destroyed and trading of that species may not be possible from that site in future years. Let's all hope no such headlines are featured any time soon! **Winter weather can affect conifers and evergreens on the nursery (3)**; drying winds can be especially desiccating to foliage when roots are frozen and unable to draw up water, and late spring frosts



(the nurseries worst nightmare!) can catch soft new growth once buds have burst. This is where the differences between seed provenances really become apparent; buds that burst even a few days later (thereby avoiding more frosty mornings) will make sure growth is not hindered during the growing season at all. With so much choice available in Douglas fir seed provenance, talking to your nursery to ensure they are growing the best seed provenance for your site is a must.

SALE AND DISPATCH TO THE FORESTER

Most despatching occurs in winter when the trees are dormant. Trees are lifted from the fields or trays, packaged and despatched according to the foresters requirements, ready to begin chapter 2 of the Life of a Tree (to be continued in the August edition of FTN).