

ALBA TREES
Plc

**Handbook
on the Use of
Alba Cell Grown Plants**



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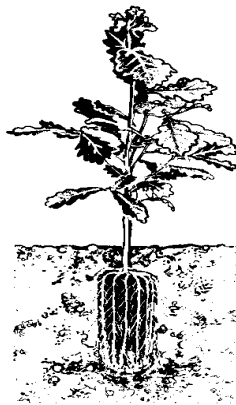
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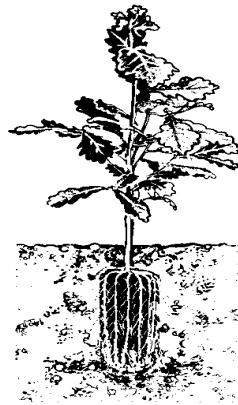
What are Cell Grown Plants?

- Cell Grown Plants (CGPs) are plants which have been raised in small containers (or cells) , filled with a growing medium, and which have various structures incorporated into the design of the container aimed at preventing root spiralling and promoting fibrous root growth.
- Although CGP's have been used all over the world for many years, particularly in North America, Canada and Scandanavia, they have only been available in significant numbers in the UK since the early 1990's.
- The most significant difference between a CGP and traditional bare-root plants is the ability of the nurseryman to provide a fully functional root system to the customer. Bare-root plants inevitably suffer damage and consequent stress when they are lifted from the nursery beds. The root systems on CGPs remain intact, and the fine fibrous feeding roots are sent out with the plant enabling rapid establishment once planted out. There is relatively little check when a CGP is planted out compared to a bare-root plant.
- Generally, the age of CGPs tend to be younger than bare-root stock and the sizes offered are on average, smaller. Commonly available sizes are 20-40cms and 40-60cms plants for broadleaved trees whilst shrubs are generally trimmed back to encourage sideshoots and are sold as 15-30cms plants. Conifers are generally made available as 10-20cms and 20-40cms plants.
- What is important in a plant is the root to shoot ratio. The larger the plant, the more difficult it is to achieve this balance whilst retaining a root system that can be easily planted. Although CGPs may on average be smaller than bare-root plants, they have been found to establish well – especially in exposed sites - where larger plants can suffer due to a root system which finds difficulty in keeping the shoot supplied with moisture and nutrients.
- Over the past decade CGPs have gained wide popularity amongst foresters, landscapers and also nurserymen who use them for accelerated production of 2litre stock.



The Benefits of Using Alba Cell Grown Plants

- Our plants can be safely graded and despatched from the nursery all year round without damage to the roots.
- They may be safely planted over an extended season, i.e. from September to May or even longer provided they do not experience drought conditions.
- Very high establishment percentage will be achieved, i.e. minimal losses.
- The plants do not “check” on planting, hence rapid early growth is made.
- They are easy to plant and little if any ground cultivation is required.
- If planting is delayed the plants can be held for several weeks provided the roots do not dry out.
- The root plug contains both naturally occurring mycorrhizae (a symbiotic fungus which enhances the absorption of nutrients by the feeding root hairs) and added fertiliser .
- Our growing containers are designed to eliminate root-spiralling, thus improving tree stability in the field.
- Our special packing systems permit and ensure careful handling of plants in transit.
- We specialise in producing native trees from British seed sources of known provenance.
- Our computerised production management and stock control system ensures complete traceability from seed collection to plant delivery.



Getting It Right First Time

Whether or not your planting scheme is being grant aided by the Forestry Commission, failure to establish woodlands at the outset results in the need to replace dead trees and extended weeding and protection programmes. This costs time, money and effort. And the original objectives of the planting scheme are unlikely to be met. Forestry Commission surveys repeatedly show that the most successful schemes are those where the job was got right first time without any necessity to go back and replace trees which have failed. *Think about the costs over the 3-5 year establishment period - not just the first year.*

Pointers for successful tree establishment

Choose the best and forget the rest

- Sturdy plants with fibrous roots will survive and grow better than spindly plants
- Avoid 'J' rooted plants - they are more difficult to plant correctly
- Cell grown plants can also be planted outside the normal planting season
- Genetically improved seed sources are a sound investment for the future
- Plan ahead - keep your nurseryman informed of your plans

Treat your trees like Bone China - a little TLC goes a long way

- Don't allow plants to be thrown around on site
- Store plants out of drying winds & under shade to protect against freezing or over heating
- Plants arriving on site and not in bags or boxes should be protected from browsing by vermin
- Use a purpose designed planting bag to protect delicate root systems

Give your trees the best start

- Plant trees when soils are moist and free from frost
- Cultivated soils will generally provide a better medium for root development and plant growth
- Cover the root plug with 25mm of soil; firm the soil well around the roots



- Take advantage of micro sites suitable for planting; avoid wet hollows and tree stumps

Bugs & Beasties abound - even if you think you haven't any!

- Shelters offer certain advantages, but think about fencing for larger areas
- Don't forget vermin from neighbouring properties and use an appropriately sized shelter
- Shelters are not maintenance free; budget for maintenance and then do it!
- Consider using insecticide treated trees when restocking conifer stands

Weeds are your plant's worst enemy

- Weeds compete for water and nutrients in the rooting zone of young plants, restricting their growth
- Tall weeds, especially bracken, can collapse and smother young trees
- If using chemicals to weed young trees remember to protect the trees from spray drift
- Maintain a 1 metre diameter weed free spot around the tree - remember to check inside shelters!!

How Your Plants are Packed

It takes us many months to produce a healthy fibrous root plug. It can take a few seconds of mishandling to damage the root system to the detriment of the plant and its subsequent growth. With this in mind we constantly review both our internal handling procedures and those on the planting site.

The plants are graded into packs with the root plugs wrapped in protective plastic film "Planter Packs" - which can, in turn, be packed in a variety of ways. Working closely with customers and contractors we have developed three handling systems.

PlanterTrays are ideal for receiving plants in bulk into holding nurseries or where stock is being purchased for potting on. Whilst generally used for orders over 2500 plants, smaller orders are sometimes delivered in Plantertrays. All orders collected from the nursery are presented in PlanterTrays unless the customer requests alternative arrangements to be made. PlanterTrays are white plastic trays 40cms x 50cms and are transported on metal racks, with plants standing upright. The racks can be unloaded by hand or forklift, but must be returned with the truck. The trays are returnable by prior arrangement with ourselves if the customer wishes.



Approximate plant capacities:

Broadleaves – 150 Conifers – 240

This is our preferred despatch method for orders of 2500+ trees

PlanterCrates for maximum plant protection. Plants are packed flat (see PlanterBoxes for storage issues). Crates can be stacked to allow the maximum number of trees to be transported on site. Ideal for helicopter distribution in remote areas. The crates nest inside each other for economical return from the field. Eliminates waste packaging. Each of the plastic crates and lids is identified by a bar-code and is returnable. We will arrange a mutually acceptable collection point for the crates when we are notified they are empty.



Approximate Plant Capacities:

Broadleaves – 180-240. Conifers – 360-480

PlanterBoxes, being packed flat, can be stacked for ease of transport to the field. During the dormant period, plants can remain in the PlanterBoxes for several days. However it is best to open the boxes, stand the plants up in order to allow them to breathe and to be watered in the event of a delay in planting. Transported via national carrier, the waxed cardboard cartons are non-returnable.



Approximate Plant Capacities:

Broadleaves – 180-240 Conifers – 360-480

This is our preferred method of despatch for orders up to 2500 plants

How Your Plants are Sent to You

Depending upon the time of year, the ability to combine loads and the geographical location, delivery can be by our own truck or a local contract haulier who we have used for several years. Where time is off the essence we use national carriers capable of offering a next day service.



When we deliver using our own truck we normally stack plants on metal racks or stillages which can be forklifted off the truck, emptied and the racks returned to the nursery.



An alternative delivery system (when using our own vehicle) for customers planting large numbers of plants in remote locations is our PlanterCrate system. Plants are packed horizontally in these crates and the crates can be stacked 6 high providing maximum economy for transport. The crates can be left on site for onward distribution or to help protect plants against vermin. Each crate is individually bar-coded to enable us to keep track of where they are at any one time. We will arrange a mutually convenient place for uplifting the empty crates which stack inside each other when empty – making them extremely easy to transport.



Smaller orders (generally upto 2500 plants) will be sent out in our PlanterBox, (strong waxed cardboard cartons) using a National Carrier on a next day service. This means that the delivery will be made between 8am and 5pm on the day after we despatch. We are not able to provide a guaranteed time window for such deliveries, although usually they are delivered in the morning. Where customers require a timed delivery this can normally be arranged at an additional cost. On your instruction we can ask our carriers to leave the boxes without a signature for receipt. Alternatively, we can provide customers with the telephone number of their local depot, along with the consignment note number and they can make their own arrangements to uplift the plants.

Care and Maintenance of Stock Prior to Planting.

“Treat young plants like Bone China – they are fragile but if handled carefully will serve you well.”

- Danish School of Forestry -

The recommended method for receipt of cell grown plants is in our economic, shrink wrapped **Planter Packs**.



- ◆ Plants need not be heeled in on receipt. However, as the root plugs hold only a limited amount of water, they should be protected from desiccating winds.
- ◆ During the growing season stock should not be held in the dark for long periods. Short periods in the dark, such as when in transit are not detrimental.
- ◆ During the growing season, stock should be stood upright to ensure growing shoots do not become distorted.
- ◆ In the event that planting is significantly delayed, especially when trees are actively growing, regular checks should be made on the moisture status of root plugs. It is advisable to **keep root plugs moist**.
- ◆ Where watering stock becomes necessary, PlanterPacks can be stood together and irrigated from above - the packs will hold, and allow plugs to soak up, the water. Water carefully to avoid any risk of water-logging.
- ◆ Finally, whilst the PlanterPack wraps are photodegradable, do please collect all wraps, boxes and bags following planting and dispose of them sensibly.

Planting Cell Grown Plants

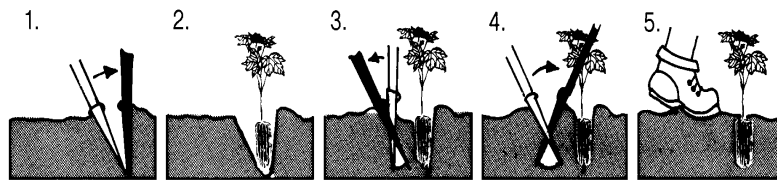
The uniform, compact size of cell grown plants makes the planting considerably easier than the planting of bare-root stock where long straggling root systems all too often become the victim of a sharpened spade.

The type of planting tool to be used for any type of stock is influenced by local planting conditions and personal preference of the planter. Whilst a traditional planting spade is quite adequate for planting cell grown plants, a purpose designed tool, the Canadian Planting Spear, has been found to be the most versatile. It is the easiest tool to use in ground which is stony and on restock sites penetrated by roots or covered with brash. In heavy clay soil, twisting the spear will "tear" the side of the hole rather than leaving a "smeared" side which might impede root penetration.

Whilst a traditional planting spade is quite adequate for planting cell grown plants, a purpose designed tool, the Canadian Planting Spear, has been found to be the most versatile.



1. Insert spear vertically, push back and forward slightly and then twist through 180 degrees. In heavy clay it may be necessary to insert again at 90 degrees to the first cut and twist again.
2. Place plant at correct depth - top of plug half an inch BELOW the level of surrounding ground.



3. Insert spear about 5cms toward the planter and pull handle toward planter to firm soil at bottom of plug and close any air pocket.
4. Push handle forward to firm soil at top of plug.
5. Close ground with toe - taking care not to scuff the plant.



When planted make sure the top of the plug is at least 2-4cms below the surrounding soil surface and covered by soil. This will prevent drying of the root plug.

(Canadian Planting Spears are available from Alba Trees Plc)

Canadian Planting Harness

It takes many months of careful tending to produce a fibrous root system capable of supporting a plant when it is planted out, but it can take a few seconds of careless plant handling during the last few minutes between plant holding area and planting spot to destroy a root system and jeopardise the survival of the plant.

To protect plants being carried we recommend use of the Canadian Planting Harness:



- Curved shoulder straps for greater comfort
- Cushioned straps
- Excellent back support
- Adjusts to fit all sizes
- Made of waterproof nylon
- Three rigid-bottom bags included

The Canadian Planting Harness has been designed to:

- ◆ Ensure there is no “scuffing” of root systems and loss of compost or slow release fertiliser.
- ◆ Allow for species to be kept separate.
- ◆ Allow the maximum amount of plants to be carried with the minimum discomfort.

The harness itself is fully adjustable and generously padded for comfort. The pouches are constructed from high visibility, light, tear resistant PVC fabric. The pouches can be folded down to provide a shallower bag for carrying smaller plants. The base of each pouch is made from solid plastic which is curved to fit closely to the body, whilst ensuring maximum protection for the plant’s root systems.

By benefiting plants and planter alike the harness ensures optimum planting and maximum plant survival.

If only 300 plants are saved – the harness has paid for itself in the value of the plants alone, ignoring the labour costs of replacing the lost plants! The harness will therefore pay for itself after the most modest of planting jobs.



Planting trees is not the only use for the harness. It can also be used for:

- ◆ landscape planting
- ◆ bedding plants
- ◆ bulb planting
- ◆ seed collecting
- ◆ fertiliser application
- ◆ litter collecting

(Canadian Planting Harnesses are available from Alba Trees Plc)

Specification of Cell Grown Plants

The following text is recommended when Tenders are prepared for Cell Grown Plants (CGPs) for use in UK Woodland & Landscape Plantings

General

All Cell Grown Plants (CGPs) shall have been grown in a system designed to prevent the spiralling of growing roots or any other deformation likely to lead to poor long-term growth. Where such seed is available, they should be raised from UK provenances. The plants shall have been raised in the UK.

Specification

Root plugs shall have a cohesive fibrous structure, without spiralling. Unless agreed otherwise, CGPs shall have been grown as follows:

Category	Height (cms)	Minimum Cell Size (ml)	Minimum Root Collar Diameter (mm)
Conifers	10-20	100	3
	20-40	100	4
Broadleaves	20-40	100	4
	40-60	150	6
	60-90	200	8
Shrubs	10-20	150	5
	20-40	150	5

Packaging

The plants shall be taken out of the growing container prior to supply and the root plugs packed together in packs of 15 (broadleaves) or 30 (conifers). The root plugs should be protected from desiccation by wrapping in plastic film.

Transporting & Storage

CGPs shall be protected in transit by either:

1. Transporting standing upright in correx trays
- or** 2. Packing flat in waxed white cardboard cartons or rigid plastic crates

Trees received packed flat should be stood upright if they are not to be planted within 1 week when dormant or within 24 hours when actively growing. The trees shall be stored out of desiccating wind and the root plugs kept moist.

Planting

The top of the root plug shall be covered by planting the CGP's so that the root plug is 2-4cms below the level of the surrounding ground. Under no circumstances shall the root plug be left exposed.

Please Note:

Specifications cannot always be absolute.

Seasonal variations, differences in nursery practices, geographical location and genetic variation provide a complete spectrum of possible plant sizes. Not all grade of stock will be available every season. And when dealing with shrub species, such as roses and thorns, the nurseryman will often cut these back to no standard sizes to promote strong growth and better form. A grading of 15-30 cms for cut back stock may fall outside these proposed specifications but the plants may be entirely suited to their purpose.

Supplying larger sizes

The usual sizes growing British nurseries are up to 40cms for conifers and up to 50 cms for broadleaves. There is no perceived advantage in growing conifers (other than Larix species) in cells to sizes greater than 40 cms. Large broadleaved sizes (60-90 cms) can be grown, and nurserymen will grow these to specification, and usually on contract, in larger cells.