

Though tall for all but the outskirts of the rock garden, I could not omit the meconopsis, especially the famous blue kinds, such as *Meconopsis* × *sheldonii* 'Slieve Donard'.

Finally, though I have concentrated on easy-going plants, I cannot resist mentioning two that I have struggled with. The first is *Campanula zoysii*, with its extraordinary flowers crimped at the mouth, which have been described as tiny blue torpedoes. Though reputed to be a martyr to slugs this was not the trouble in this case. Instead, the plant flowered itself to death. The plant I conclude with is another oddity, *Calceolaria darwinii*. The strange flowers are borne on stems only an inch or so high. I am constantly on the brink of losing it, as plants are apt to wither off for no apparent reason. I wonder if it is a virus, for this calceolaria is a favoured food of the greenfly.

PROPAGATION OF CHOICE ALPINES

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Anglia Alpines is a wholesale alpine nursery. The ultimate aim of any propagation enterprise is to produce a plant that is saleable at the right time. When wholesaling to retail customers this generally means a good potful in flower. In order to achieve this, potting and propagation must occur at the appropriate time, this being dictated by the sales period.

The natural conditions in which mother plants produce cuttings may not fit this desired production timing, but manipulation of the mother plant by altering its environment, and pruning as well, can be used to achieve this goal.

Another method is to take cuttings when optimum conditions prevail and, by manipulating the rooting environment, ensuring that the plant is ready for potting when required. For example, with *Helianthemum* spp., semi-ripe cuttings taken in September will root in a cold frame and be ready for potting in April. For later potting in May or June, softwood cuttings from forced mother plants can be rooted under glass with bottom heat.

In the commercial propagation environment the methods used are not necessarily the only ones possible, but are ones which give the greatest multiplication rate, or are most suited to a particular production cycle—the most cost-effective in each circumstance.

If you study a treatise on the propagation of alpines, there are as many different methods as there are plants grown, but for

streamlined management as few different regimes as possible are employed. At Anglia Alpines three principal methods are used:

1. Glass and basal heat
2. Cold glass or polythene
3. Cold frame

A standard compost is used throughout propagation, where suitable, as well as a standard tray size, to enable ease of handling and space allocation.

As we have just mentioned, there is a wide range of desirable alpines. Many of these, although easy to propagate, are more difficult to grow on to saleable specimens in a commercial environment. These become specialist collector's items. The genera I have chosen to illustrate alpine propagation are those which are popular with plant buying customers, and also display the use of a wide range of propagation techniques.

CAMPANULA

Campanula is a genus we grow in large volumes in a wide variety of species and cultivars, as they give us flowering subjects all summer in varying shades of blue through to white.

Seed-raised cultivars are used where suitable subjects are available; otherwise, all are propagated from softwood cuttings. Seed is commercially available in regular quantities of a good range, and as this is an economical and easy propagation method we use it where we can.

Seed is sown in standard seed trays, containing 75:25 peat: fine grit compost, which also contains a small amount of fertilizer and lime. After sowing, seeds are not covered. A germination cabinet is used to start seeds off. This has a thermostatically controlled heating element to maintain a constant growing temperature. For *Campanula* spp. a stable but not too high temperature is required; temperatures above 21°C tend to inhibit germination. Once germination has started trays are removed from the cabinet and seedlings grown on with basal heat until large enough to handle. Pricking out is done into modular trays containing the same compost as the seed trays, but with a higher level of fertilizer. These are grown on in a frost-protected, or cold tunnel, depending on the time of year, until the plants are large enough to pot.

We have carried out some experiments with direct seeding of modules, with a pinch of seed per cell. This has proved successful except that an extensive germination area is required to accommodate the large number of modules produced.

Many of the named cultivars of *Campanula* spp. cannot be produced by seed, and so cuttings are used. Suitable cutting material is readily produced from the rhizomatous growth of these plants, rooting occurring from the etiolated base.

The action of taking cuttings encourages further production of suitable cutting material. Cuttings are taken by passing a knife about ¼" below the soil surface severing the shoots which can then be easily lifted.

As with the majority of alpine cuttings on our nursery, module cells are used with a 50:50 peat:perlite compost, which contains a base dressing of trace elements and superphosphate. Basal heat under glass, or in a tunnel, is applied in the early part of the year, but unheated structures later in the year give good rooting.

Growth or holding of rooted cuttings is achieved by supplementing the base dressing in the compost with liquid feeds of varying N.P.K. ratios.

SAXIFRAGA

Saxifraga plants comprise a large part of our early year sales as the wide variation of flower colour and foliage type lend themselves to production in volume.

The saxifrages grown at Anglia Alpines fall broadly into 3 categories: (1) mossy types, (2) kabschia types, and (3) encrusted types. For propagation purposes we treat these as two groups, putting kabschia and encrusted types together.

As these plants flower early in the year, propagation from cuttings occurs once flowering has finished in June or July. The cutting material of these plants is generally small and slow growing and a large propagation period is needed, often 1 year from rooting to potting, and a further year to sale. Cuttings are stuck into coarse fertilized sand, either directly in a cold frame or in seed trays.

We have found *Pythium* spp. to be a problem in the propagation environment of these plants, especially after rooting. A routine spray programme plus fertilizer in the rooting medium to prevent stress after root initiation has largely cured this problem.

Kabschia saxifraga cuttings are very small and thus difficult to keep positioned in a rooting medium. In order to help with this, mother plants are forced using higher than ambient temperatures and shading to produce elongated shoots which are easier to handle.

Encrusted saxifraga types are rosette-forming, and although easier to handle, have a very short stem which needs careful insertion to get good contact between its base and the rooting medium, thus sand is used as a medium as the small particles give good contact with the cutting's base.

One problem we have encountered with both these saxifraga types is the lodging of weed seeds in the rosettes and fine leaves. The germination of these seeds in the propagation environment is rapid, and cuttings can be quickly engulfed. To prevent this, apart from

keeping mother plants away from weed seeds, has been to wash cuttings to dislodge any seeds prior to insertion.

Mossy saxifraga subjects fit more conventionally into the propagation systems used for other alpiners on the nursery. Individual rosettes are cut off with a long stem to enable insertion into a cutting medium (50:50 peat:perlite) in modules. Young, fleshy growth roots readily and mother plants forced under glass are used to produce these early in the year. This allows potting to take place early and a saleable plant is produced for autumn or following spring sale.

SEDUM

Sedum spp. cover a wide range of plant types, including evergreens, herbaceous perennials, and monocarps. Accompanying this range of plant types is a correspondingly wide range of propagation methods. The main ones used at Anglia Alpines being: (1) division, (2) direct sticking into pots, (3) conventional cuttings, and (4) seed.

Division. The mat-forming species lend themselves to division as the creeping shoots root into the ground as they travel. As these are non-woody subjects, these mats easily pull apart and portions of plant from one shoot to a handful can easily be planted.

Direct Sticking. Another way of handling the mat-forming species, which also works for many of the clump forms, is direct sticking into the market container. A few shoots from the mother plant are broken off and bundled together and their bases firmed into the compost: A 3 in. pot can be ready for sale in 2 to 3 weeks. The ability of some of these sedum species to root so readily can cause problems. *Sedum acre*, the yellow stonecrop, has become a major weed in some orchards. Portions broken off by birds, people's feet, and tractor tyres root where they fall, spreading the problem.

Cuttings. The newly emerging shoots of the herbaceous perennial types root readily from the etiolated base, if taken as conventional cuttings. A supply of suitable cutting material can be maintained by keeping mother plants cut down.

Seed. Many of the *Sedum* spp. can be raised from seed but as they root so readily and form saleable plants quickly, seed propagation is a method we employ for the herbaceous perennial types only. Seed sown in seed trays on a peat/grit compost, germinates rapidly at 15 to 18°C, and can be pricked out for growing on to potting size.

Alpines offer a wide scope for the propagator to use a range of techniques, and although much mystery has been attached to alpine propagation, it is just the application of the principles used in shrub and herbaceous perennial production, scaled down to accommodate the small nature of the propagule.