

some prefer other mixtures. Mixtures of equal parts of soil and sand and one or 2 parts of leafmould and 1 part of sand have given good results. The soil should be sterilised if possible for disease and weed control. Compost can introduce many weed seeds which germinate and grow much more rapidly than the begonias, and it is better avoided if leafmould or peat can be obtained.

The ingredients should be put through a $\frac{1}{4}$ in. sieve and thoroughly mixed. The mixture should be lightly firmed in the seed tray or pot and, after the surface has been made level, it should be topped off with some of the mixture through a very fine sieve. The seed should be sown thinly and not covered with soil. The box or pot should be covered with glass and paper. As the seed is very easily washed away, watering is better done by soaking the box in water, unless a can with a very fine rose is used. When the seeds germinate lift the glass and paper an inch or so and remove after a few days. Some shading on the glasshouse or frame will be necessary in spring and summer. As much air as possible should be given, because moist, stagnant conditions encourage fungi which cause damping off and rotting.

The seedlings are very small, making them difficult to handle, but they should be pricked out into other boxes about 2 in. apart as soon as possible. They are often easier to handle with a stick with a small V cut in the end than with the fingers. Whatever system is used the seedlings should be treated gently. The seed sowing mixture can be used, but the fertilisers can be increased to $1\frac{1}{2}$ oz of superphosphate, $1\frac{1}{2}$ oz of blood and bone, $\frac{3}{4}$ oz of potash, and $\frac{3}{4}$ oz of lime per bushel.

When about 3 in. high the seedlings will be ready for potting up into 3 in. or 4 in. pots and later they will have to be potted on to larger ones or flowering. Early sowings will probably reach 7 in. or 8 in. pot size. A John Innes potting mixture is suitable. It consists of 7 parts of soil, 3 parts of leafmould (peat or compost), and 2 parts of sand to which is added the fertilisers mentioned above for pricking out.

Many growers prefer a lighter and more open mixture made by adding 1 or 2 extra parts of leafmould and sand. The addition of some well rotted animal manure (cow, horse, or sheep) is favoured by many growers.

Cuttings

Cuttings, made from the shoots arising from the tubers when they break into growth, root easily. They are usually made when the shoots are about 2 to 3 in. long and are rooted in sand or a mixture of sand and leafmould. If cuttings are taken very early, bottom heat is of great assis-

tance, but later they can be rooted under normal glasshouse or frame conditions. After rooting they should be potted up into 3 in. or 4 in. pots in the mixture given for seedlings and later into larger pots.

Starting Tubers

Tubers may be started into growth in late winter if a glasshouse is used (heated in cold districts) or left until spring or early summer. It is not advisable to start them too early unless adequate facilities are available. The flowering season can be extended by starting some tubers early and others later. Where cuttings are required it is as well to start the tubers as early as practicable to give the cuttings a long season to develop, flower, and make a tuber.

A mixture of equal parts of sieved leafmould and sand makes a good medium. It should be moist but not wet. The mixture is put in a shallow box, lightly firmed, and the tubers pushed down into it and then just covered with more of the mixture. The box should be put in a warm place, but if heat is used it should not be forcing, or weak sappy growth will result. Sometimes it is difficult to tell the top of the tubers from the bottom. The top is usually concave. If any tubers appear to be slow in breaking into growth, they should be lifted and examined, for they may have been set upside down. Before tubers are put into the mixture they should be carefully examined. Rotted parts should be cut out and the cut surface dusted with sulphur.

Roots usually do not start to grow until the top growth is well advanced. The tubers should not be potted up until they have a mass of well developed roots. Except for basket varieties only one shoot should be allowed to develop on small tubers, but two or three may be left on three- or four-year-olds. In general the finest flowers are produced by one- or two-year-old tubers with a single stem. The other shoots can be used as cuttings if required. If not, they should be rubbed off as soon as they begin to grow.

For potting up rooted tubers some gardeners believe in potting into small pots (4 in. or 5 in.) and then potting on into 6 in., 7 in., or 8 in. as required; others pot direct into large pots. Both methods are satisfactory. The former has the advantage of taking up less room for a month or so, but means double handling; the latter requires a little more care in watering, but is a great time saver. When potting the top of the tuber should be very slightly below the soil level.

Culture

The culture of plants from seed, cuttings, or tubers is the same once they have been potted up. High temperatures should be avoided, the most satisfactory range being about 50 to



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Tuberous begonias are the most popular of summer flowering pot plants and are not difficult to grow.

70 degrees F. Where heat is used early in the season it should not be forcing. In summer begonias need plenty of ventilation and some shade. Too heavy shade, especially with high temperatures, will promote a soft, sappy growth which is very liable to disease and will also have an adverse effect on flowering.

Watering should be done with care. Water thoroughly and then leave until the pots show signs of dryness. A pot in need of water will give a ringing sound when struck sharply with the knuckles or a small wooden mallet. When wet it gives a dull sound.

Staking is always necessary and should be done at an early stage. Thin bamboo canes make good stakes and are inconspicuous. A thin wire bent into the shape of a Y with a very long tail is useful for propping up the flowers when necessary.

Until the plants are well developed remove the flower buds as they appear. The first few flowers produced by immature plants are usually small and their loss is more than compensated by increased vigour of the plants and better flowers later. Disbudding can regulate the time of flowering and can be done where a mass display is required at a certain time. The two small female flowers borne on either side of the large showy male flower