The Cultivation of European Alpine Primulas

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The primulas discussed here all occur in the section *AURICULASTRUM*, which comprises twenty-one species divided into seven subsections. Many of these species hybridise freely and *PRIMULAS OF EUROPE AND AMERICA* identifies twenty-three naturally occuring hybrids and twenty-seven artificial hybrids.

Within these crosses growers have selected countless varieties, offering a huge choice. Fortunately the greatest majority appear to thrive under similar growing conditions. I offer a brief description of these conditions, followed by a calendar of events throughout the year.

Some early authors were suprisingly dogmatic about the conditions required; I have sought to suggest that a range of materials and parameters are employed by successful growers.

European Alpine Primulas are not difficult to grow, but are demanding! This means that you need to be constantly observant and to take action immediately it is necessary.

A casual approach, a 'leave it a week' attitude results in rapidly escalating problems, which debilitate the plants, may be fatal and lead to the unwarranted reputation for difficulty! Perhaps the most essential ingredient for success is that you need to love them.

Do not believe that any single piece of information will provide a panacea that will ensure success. You need to establish a regime in which composts, drainage, watering, ventilation, shading, pest control, hygiene and propagation all play a part.

Composts:

Composts comprise a mixture of loam, humus and grit in varying proportions. Loam is usually J.I.2 [John Innes] or J.I.3. Humus may be peat or leaf mould, or a mixture of both. Some growers prefer to sterilise the leaf mould. Grits range in size from 1mm to 6mm and may be coarse river sand, Cornish grit, crushed granite, fine gravel or pea shingle. I prefer the smaller sizes and use 3mm crushed granite or unsieved Cornish grit.

Drainage and Watering:

The drainage is controlled by the amount of grit and whether the pots are clay or plastic, free-standing or plunged, which in turn affects the watering regime. One acknowledged expert recommends a compost of 50% loam, 20% peat, 30% grit using free-standing clay pots and in summer waters every day - in very hot weater twice a day.

Another recommends twice the grit in a 20-20-60% compost and free-standing clay pots. I use this compost for *Primula allionii* cultivars and 25%-25%-50% for the hybrids.

When I started growing primulas I had a very demanding job and seldom saw my plants except at weekends and could not water so frequently. I used and still use clay pots plunged to their rims in coarse sand; under these conditions watering in the hottest weather is seldom needed more than weekly. This regime is perhaps more suited to modern day lifestyles.

I water directly from the mains supply (pH 7.6). The hose terminates in a homemade lance with a tap to control the flow rate and to avoid splashing the leaves; this device cut the time required to water my collection by 70%.

The frequency of watering is greatly reduced in winter, as detailed in the programme of events.

Always water between the plant and the pot, keeping the foliage dry at all times except when spraying for pests or diseases.

Ventilation:

I cannot stress too strongly the need for ventiliation; you simply cannot have too much. An ideal arrangement employs adjacent louvres all along the sides of the house at bench level, except where corner bracers would interfere and alternate glass and louvres at ground level under the bench, at least two louvres in the closed end a wire mesh gate to keep cats and birds out when the glazed door is left open. Roof vents alternate with glass along both sides of the roof.

This offers variable finger-tip control and allows reduction of the ventilation on the weather side in adverse conditions. In such an alpine house these ventilating accessories will cost as much again as a plain glazed greenhouse. Whilst convenient, they are not essential and first class primulas can be grown when the glass has been replaced by wire mesh, though care must be taken to avoid rain directly wetting the plants.

Shading:

Shading is required as detailed later. It may be provided by slatted wooden roller blinds which are expensive but have the advantage of being easily removable in prolonged spells of dull weather.

Plastic shading comes in two forms: a square mesh offering about 50% shade and a heavier woven form offering 70-75% shade. If the side of your alpine house is exposed to full sun, the heavier form is advised.

Shading also comes in the form of a white, water-resistant liquid, easily applied, but this does require scrubbing off in September. A friend, an expert grower who uses this form consistently, produces primulas absolutely covered in flower.

Pests and Diseases:

ROOT APHIS, RED SPIDER, THRIPS and CATERPILLARS are the major pests that you may encounter.

BOTRYTIS, ROOT ROT and CROWN ROT are the most likely diseases to attack your plants.

Controls for these pests and diseases are outlined in the programme which follows.

Hygiene:

When buying new plants bare root them, examine and pot in your own compost. If unable to do this at once, quarantine the plants. The worst outbreak of root aphis I ever experienced came from a source I had considered impeccable!

If a plant looks sick, don't hope that it will get better - it won't! Have it out of its pot and examine the roots. Grey/white patches on the outside of the root ball indicate the presence of root aphids. In more severe cases white cottonwool-like deposits occur around the stems at soil level.

A serious attack of root aphis is almost invariably followed by root-rot, the punctured roots prey to the ingress of fungal spores. This may not become apparent until the following year. Attempts to coax such plants back to health merely waste time and effort; it is far better to chop the plant up into cuttings. Set in pure sand, they will root at any time of the year and if subsequently all potted in one pot, you will have a healthy plant with a brand new root system within a year. If you pot up another and give it to a friend, you will have doubled your insurance against total loss.

General cleanliness and tidying of dead, dying or diseased leaves is dealt with in the programme.

Propagation:

A collection of primulas may be increased in two ways: by vegetative propogation of established varieties and by growing seedlings. Seed offers the opportunity to produce new and unique varieties of your own, as it does not come true, but vegetative propagation is essential to the maintenance of a collection of selected clones. It is inconceivable to me that anyone should collect and grow primulas without being able to propagate them.

If a small increase is required (and it is advisable to have at least one small plant of each variety as a back up), it is a simple matter to nip one or two cuttings off the outside of a plant. Preparation and treatment of the cuttings is described later.

If a plant gets larger than you require, it may be divided. Divisions of one to three or four crowns require a generous supply of fine **fibrous** root and, potted up, shaded and watered sparingly, will grow away readily.

However, if you have divisions with thick stumpy ends of broken roots, do not think retaining these is advantageous. Planted, they almost always rot and die; far better to make them into cuttings, along with any broken-off shoots and have a fresh start.

Seed of *Primula allionii* is very seldom available, but producing your own is perfectly easy. Brief descriptions of pollination, collection, storage, sowing and growing appear under the relevant months of the calendar.

By far the biggest problem is to avoid over-production. The first evaluation of a seedling is of the flower which it produces. If the primula world is not to be flooded by a plethora of mediocre plants it is essential that selection is utterly ruthless and you are unlikely to have more than 20% which are worth keeping at this stage.

Over the next four to five years other parameters are evaluated: habit of growth, floriferousness, reliability, resistance to disease etc. Ongoing selection will reduce the selected seedlings to perhaps 2% of the original batch. This is how potential winners are produced.

Once you have established a successful regime DO NOT be tempted to change it.

Certain strains lose their vigour and while no signs of disease are visible, they simply don't thrive. Discard them! I struggled for years with 'Tranquility' and 'White Linda Pope'. Replacements obtained from Ireland grew more in a year than their predecessors had in five!

Finally, if you are a beginner, seriously contemplating a collection of your own, don't be beguiled by catalogue descriptions. A number of named forms available can most kindly be described as mediocre. Go to shows, note those that appeal to you, talk to exhibitors, fellow enthusiasts and nurserymen who will help you to locate a source of supply.

For me, the year begins with potting on in September and looking forward to a new season, so that is where I will begin.

A GROWER'S YEAR:

September:

This is a very busy month, when I most of my potting on. There is endless debate as to whether this should be done in spring or autumn. I don't think it matters greatly, or that it influences timing of flowering, if done in the first half of the month. Some growers bare root the plants completely; I prefer to remove about three quarters of the old soil. Small plants in 2-4 inch pots are repotted every year, larger ones only every two or three years as they tend not to flower so abundantly the first year after repotting. Move the plants on one pot size at a time. Overpotting will result in stagnant compost and encourage fungal problems.

This is also the best time to divide plants.

Plants are started in 2.5" plastic pots and moved on to 3.5" clay full pots. When they require pots over 5" in diameter, because of their low stature I much prefer to use half pots up to about 8" diameter and pans for any larger plants.

Prick out late seedlings early in the month.

Remove shading around the middle of the month.

Plan what cuttings you need and take them; these will remain in the cutting trays until April. Ideally cuttings should be 12-20mm long and 4-6mm diameter.

The base should be cut square and all exceot four leaves removed. The stem is then dipped in hormone rooting liquid and inserted in a tray of clean, washed, sharp sand. I use river sand but Bedford or Cornish sand are suitable.

If you have a rare or valuable plant, very much smaller cuttings can be used. Cuttings 6mm long and 2mm diameter will grow. These I insert in 2.5" pots which are plunged and watered

from the bottom, to avoid washing them out. They will take at least a year longer to make a small plant, but may well be worth the extra wait.

Vine weevils do not bother *allionii* or hybrids in the houses. This may be due to their sticky leaves, or the presence of chemicals (dimethoate). I have had trouble in cold frames where precautions are less rigidly observed. Should you find grubs when potting on, bare-root the plant. If more than half the roots are intact, trim the chewed ends, immerse in fungicide and repot. If less than half the roots remain, take cuttings. It then makes good sense to examine all neighbouring pots. Place the old soil, pot and plant remains in a bucket, cover with a strong solution of Jeyes fluid and leave for several days.

Some *allionii* seed will ripen later in the month, the pods turn yellow then brown. The don't need to gape. Gather it, remove any husks, package, label and refrigerate.

October:

Continue to take cuttings.

Increase the interval between watering to around three weeks.

Continue to gather *allionii* seed and refrigerate.

Maintain maximum ventilation whenever possible, though it may be prudent to close roof vents and louvres on the weather side in heavy rain.

Clean the glass and gutters.

Wash used pots.

In humid conditions use fans and maintain a constant watch for botrytis. It appears as a grey fringe of mould on dead leaves and rapidly spreads to live tissue.

If caught early, you should be able to remove the leaf or leaves before it spreads further. Small brown areas on the stems can be pared away with a scalpel. If the centre of a crown is infected, cut out the crown at ground level immediately and increase your observation levels! Treat all cut surfaces with sulphur powder and spray the plant with fungicide.

November:

Maintain the watch for botrytis.

Further reduce the watering to a four to six week interval. Only water the sand plunge, not the pots.

In times of persistent fog, close down the ventilation and use fans continuously.

Catch up on October jobs. I always have a back log at this time of year. Wash more used pots - a never ending occupation.

At the end of the month it is time to begin the removal of dead and dying leaves. The only way is to shut one's mind to the passage of time and do it carefully and thoroughly. The reward is rows of clean green domes. This is especially true of the hybrids where removal of the long summer leaves may reduce a straggly heap to a neat bun a third of its size.

When cleaned up, the larger plants, with show potential, are turned through 180 degrees once a fortnight to ensure even flowering over the cushion.

December:

Continue to provide maximum ventilation whenever possible.

I close the ventilation only if the forecast night temperature is below -4 degress C, or snow or fog are expected.

I sow all the primula seed immediately after Christmas, very very thinly in 2.5" plastic pots. These are placed outside, covered with a wire mesh to deter birds and cats and subjected to the elements.

By the end of the month or early January, a few more leaves will have yellowed, requiring a second de-leafing, but far, far quicker than the first.

January:

An easier month, but one of mounting excitement. Tiny buds begin to appear.

Do not relax standards of hygiene. A small percentage of buds may abort and turn yellow - these must be removed with tweezers before they attract botrytis.

In periods of prolonged frost the plunge may freeze. Plants are in danger of dehydration, since the roots cannot take up water, which is still being expired through the leaves. After three or four days I introduce a heater set a +5 degrees C to gently thaw the plunge.

February:

The recent very mild winters have allowed some caterpillars to survive and emerge in February to create havoc among potential show winning plants by eating the buds. Since you cannot spray in early spring without spoiling the flowers, rigorous inspection is the only recouse. At the first sign of damage, tip the topping grit out; search it and the soil surface. If this offers no result, tip the pot on its side and give it two or three sharp taps - turn through ninety degrees and repeat. This should dislodge the culprit. If it fails, search the foliage with tweezers until you do find it. Persist - if you don't, the caterpillar will! Occasionally the culprit may have moved to a neighbouring plant; daily inspection of the adjacent area may reveal its whereabouts.

Early in the month the first *allionii* will begin to flower. Along with the pleasure of seeing them again after a long year comes added danger.

In humid, foggy or wet weather, mature flowers will collapse and become an instant focus for botrytis which will then attack the flower stems and the crowns in, literally, one or two days. To combat this, removal of the faded flowers and calyces is essential.

The seed pots are brought into the alpine houses as they germinate, to avoid slug damage. The remainder are brought in at the end of the month and most will germinate in the next two or three weeks.

Watering is increased to about three week intervals.

March:

The hybrids begin to flower and the *allionii* begin to peak about the beginning of the month.

There are national or local club shows (NAPS and AGS) for eight or nine consecutive Saturdays. Each Saturday show is preceded by two days preparation and Sunday morning is spent re-housing the plants. This is half of each week.

Then there is the pleasure of entertaining visitors and photographing the plants.

The need for general maitenance, especially the removal of spent flowers, increases.

Now occurs what is for me the most exciting aspect of growing primulas; the previous year's seedlings begin to bloom. That subsequently only one in five is retained does not diminish the pleasure. The best are numbered and a short description is noted. After further evaluation over three to five years, one or two may be named.

Now is also the time to pollinate if you wish to grow your own seedlings. Pick a warm sunny day. In periods of adverse weather I bring the prospective plants indoors in the morning and pollinate in the afternoon. Beginners are advised to transfer pollen from thrums to pins, the straightforward natural cross.

I use a needle for this purpose. It is readily cleaned by wiping it between finger and thumb. The flowers need to be three or four days old. If you look closely, you can then see pollen grains free on the stamens. The surface of the stigma (pin) should look wet and is then sticky. You can easily see the pollen grains adhering to it. Label the fertilised flowers immediately. It is perfectly feasible to make several crosses on the same seed parent, fertilising small groups of two or three flowers round the periphery.

A problem exists, particulary with *allionii*, where the developing seed capsules are entirely obscured by the new growth of foliage. Seed collection is facilitated by marking the capsules with cocktail sticks. It is also easier to locate the capsules if small plants are used as seed parents.

It is far more interesting to have a breeding objective in view, rather than aimless dabbing of pollen here and there. Experts with a specific breeding objective will root a number of cuttings of a chosen seed parent. When they flower the following spring each will be crossed with a different pollen parent, all sharing some common trait.

It is not only hares that go mad in March!

April:

The first two or three weeks continue much as March. The removal of spent flowers continues as a priority. The hybrids take over and monopolise the shows.

Subject to weather conditions, the shading is replaced early in the month.

Watering is increased to average summer levels - every two weeks.

Some plants will have made sufficient growth to require potting on. Keep them in a cool place for two or three weeks until settled and pay attention to watering throughout the summer.

Pot up over-wintered cuttings. Three or four weeks after flowering is an excellent time to take new cuttings, when the new growth is firming up. Rooting can be expected in six to eight weeks.

Prick out seedlings as soon as they reach the four leaf stage. Seed trays provide a more stable environment than individual pots and are less work. Prick out twenty-four hybrids (6x4) or thirty-five *allionii* (7x5) to a standard seed tray. It is advantageous to move them on early in order to get as many as possible to bloom the next spring, so that early evaluation can reduce the numbers.

Keep seedlings and cuttings cool and shaded - do not allow them to dry out.

May:

The spring madness is now receding and the regime assumes a more orderly progress.

Seedlings not large enough to prick out this month ae best kept until September.

The potting up and taking of new cuttings should be completed.

Now is the time to spray with a systemic insecticide. I greatly favour those based in dimethoate due to its effectiveness against the major scourge - root aphis. It also offers protection against white fly, red spider mites and thrips. I wait for a fine, warm, breezy day and spray overhead - thoroughly wetting the plants. I do this in the early morning and the plants suffer no harm. Spraying is much quicker than drenching the soil, uses much less insecticide and appears to be equally effective.

If you find vine weevils a problem, Provado will offer protection and it is best applied in May.

If cuttings which were taken late are subject to a spell of hot weather, the use of a hood for a week or two, no longer, will help keep them turgid. Do not use hoods at any other time.

June:

A quiet month.

The cuttings taken in April should be rooted, but do wait for a cool period and pay attention to after-care; when potted up, place them in a cool position and don't let them dry out.

Spray again at the end of the month with dimethoate.

July:

I hate July. While there is little to do, apart from general maitenance, it was in July 1994 that I experienced an outbreak of collar rot of epidemic proportions and in six weeks lost forty-five show plants.

Collar rot is a fungal disease, which causes the stems to rot completely through at ground level. Both the stems above ground and the roots appear perfectly healthy. I know of nothing writeen about it, but other growers have experienced it. It occured in a poorly ventilated house in heat wave conditions, with the noon temperature in the house reaching 35 degrees C - 95 degrees F. I was damping down the floor three times day and seriously over-watered the benches, creating very high humidity. Strangely, it only affected the hybrids. *Allionii* on the opposite bench were virtually immune.

Since then, I have trebled the ventilation, stopped damping down completely and firmly rejected the impulse to over-water.

The value of constantly growing on cuttings was demonstrated, since I had backup for forty-two of the plants lost, though this did not compensate for the four to six years it took to grow them.

On a more pleasant note, gather hybrid seed as soon as the seedpods turn brown (they don't need to gape), package, label and refrigerate.

August:

A good time for a holiday as there is little to do.

I always spray towards the end of August with an insecticide specifically for use against caterpillars, which can be a serious pest through to mid-October.

This brings us to September again, when thoughts turn to spring and flowering time. Memory stirs of wall-to-wall blossom in the houses, of a thousand nuances of colour, delicacy and scent, soon to be repeated. Ample reward for your tender care, each plant a joy and delight.

[Since I wrote these notes. the *allionii* appear to flower earlier every year. I also note that dimethoate and Jeyes Fluid have been withdrawn. I have yet to identify reliable substitutes - Jeyes Fluid has subsequently been reinstated.]