

The exquisite orange lantern-like flowers of Sandersonia aurantiaca were once a common sight throughout its grassland and forest margin distribution range in the Eastern Cape, KwaZulu-Natal, Swaziland and southern Mpumalanga. Severe habitat loss from agricultural expansion and indiscriminate picking of flowers has made it a rare sight in the wild today. However, New Zealand bulb growers have successfully commercialized this plant, and a few years ago it was their country's second-most important export horticultural crop after orchids.

The cultivation and propagation of Sandersonia aurantiaca

by Graham Duncan, Kirstenbosch

andersonia aurantiaca was discovered by Scottish journalist and amateur botanist John Sanderson in KwaZulu-Natal in 1851 and described by Sir William Hooker, director of Kew Gardens, in Curtis' Botanical Magazine in 1853. It is called 'Christmas bells' as it flowers at Christmas time in the wild, and the species name aurantiaca refers to the orange colouring of the flowers. Sandersonia is a deciduous, summer-

growing genus of which S. aurantiaca is the sole representative and it belongs to the family Colchicaceae (formerly a part of the Liliaceae). It is endemic in South Africa and Swaziland and is closely related to Gloriosa and Littonia. Other southern African members of the Colchicaceae include Androcymbium, Onixotis (formerly Dipidax) and Wurmbea, while the largest genus, Colchicum, is found in the Mediterranean and

western Asia. *Sandersonia* flowers can last up to two weeks in water, which has made it a much sought after cut-flower around the world and it is particularly popular in Japan, where the lantern-like blooms hold great appeal.

Cultivation

Unlike its close relatives *Gloriosa* and *Littonia*, *Sandersonia* is not easily maintained in cultivation over an extended period, as the rootstock has a tendency to rot, particularly in the absence of a dry winter rest period. Conversely, *Gloriosa* rootstocks easily withstand garden irrigation during their winter dormant period provided they are grown in a very well drained sandy medium and they grow wonderfully well in the deep sandy soil of gardens on the Cape flats where wet winters are experienced. As *Gloriosa* rootstocks are often taken by molerats when grown out in the garden it is highly likely that those of *Sandersonia* would also be taken, another reason to grow it in containers rather than in the garden.

Sandersonia requires a well drained and well aerated, slightly acid growing medium containing plenty of organic matter such as equal part of finely sifted, well decomposed acid compost, vermiculite and coarse riversand. I recommend the use of deep plastic pots with a diameter of 25 cm, but if terracotta pots are used, a wider diameter is necessary because of the more rapid drying of the growing medium. Place a layer of crocks over the drainage holes and follow this with a 2-3 cm layer of pure decomposed acid compost, then fill two thirds of the pot with the growing medium. Place a narrow stake about 80 cm long in the centre of the pot, carefully plant three to five mature Sandersonia rootstocks in a 1-2 cm layer of pure river sand and then fill the rest of the pot with another layer of the recommended growing medium. It is important to note that Sandersonia rootstocks should never be stored loose during the dormant period, but always be stored in dry soil, otherwise they soon desiccate and die. Always handle them with care as they are brittle and easily damaged. Containers should be placed in a sheltered area that gets morning sun and afternoon shade and not in situations where the container will overheat on very hot days. Water thoroughly after planting and once growth becomes visible I recommend a good watering once a week. Carefully tie the delicate growth stems to the stake every few weeks.

Mature sandersonias respond well to applications of slow-release fertilizer like Osmocote and seedlings can be fertilized every two weeks with a liquid feed such as Supranure which contains a growth stimulant. Sandersonias can be grown successfully in temperate climates but require the protection of the greenhouse in very cold areas. Pots of *Sandersonia* can be brought indoors while flowering and placed in good light where their blooms can be fully appreciated. If flowering stems are picked for the vase be sure to leave at least three leaves on the remaining stem in order to feed the developing new rootstock. Seed usually sets when plants are grown in well ventilated areas and hand pollination is not necessary.

Towards the end of summer, gradually decrease watering as the leaves begin to turn yellow, until the plants are completely dormant when the growing medium must be absolutely dry. Cut off the dried stems and store the pots in a cool dry place for winter.

Propagation

Sandersonia is mainly propagated by seed and by division of the mature rootstock, while micropropa-



Sandersonia aurantiaca imported from New Zealand on sale at the Fukukaen cut-flower market in Nagoya, central Japan. Photos: G. Duncan.

gation using in vitro techniques is a promising new method that has not yet been perfected. Unlike Gloriosa and Littonia, which are very easily propagated by seed, those of Sandersonia are notoriously erratic. Propagation by seed is however still a recommended method for the enthusiastic home gardener, but beware, this long drawn out process is likely to test the patience of even the most resolute individual! Sow the seed in late spring or early summer in deep seed trays in a well drained medium that is rich organic matter, such as equal parts decomposed acid compost, vermiculite and river-sand. Cover the seeds with 3-5 mm and keep moist by regular watering with a fine rose. Place the seed trays in a semi-shaded position with good ventilation and, if necessary, protect them from heavy summer rain. Germination is usually very erratic and even with fresh seed, usually a very low percentage will germinate during the first summer after sowing. With the onset of autumn allow the seed trays to gradually dry out and the few seedlings to go completely dormant over winter. Begin watering again in the late spring and during this second season lift the young rootstocks very carefully and plant them at a depth of 3-5 cm into permanent pots, again keeping the growing medium dry over the winter dormant period. Do not discard the old growing medium from the seed trays but continue to water it every summer for a further two to three years as the remaining seeds will continue to germinate.

According to Finnie and Van Staden (1996) several germination-breaking techniques are practised by commercial growers of Sandersonia in New Zealand. These include leaving the seeds in porous nets in a cold mountain stream for the winter, letting the ovaries degenerate into a 'mush' and sowing the resulting 'mush'. They also report that using one or a combination of increased oxygen tension, scarification, stratification, endosperm damage or lipid mobilization significantly increases germination of Sandersonia seeds. Sandersonia seedlings usually bear flowers for the first time during their third season of growth.

Propagation by division of the adult Sandersonia rootstock is a recommended method of increasing particular forms of this species which will be exactly true to type. The adult rootstock is a v-shaped, stoloniferous corm consisting of two swollen, jointed lobes, with a single growth bud at the tip of each lobe. Wash the adult rootstocks with water prior to division, taking extreme care not to damage the growth buds and cut through the centre of the joint with a sharp knife to produce two divisions, each with a piece of the joint as well as a lobe with a growth bud. The cut surface should be allowed to dry for a day or two, then dusted with a fungicide such as captab (e.g. Kaptan) and then planted. This process is best undertaken in late winter, just before active growth begins. During the summer growth period, the old rootstock shrivels up and dies while a new rootstock is produced by the growth bud at the tip of one of the lobes. The growth bud at the tip of one of the lobes is always dominant over the growth bud at the tip of the other lobe and under normal circumstances the latter fails to develop. However, division of the mature rootstock stimulates the other growth bud to develop as well. Division is a useful method of propagation as two flowering stems can be produced from one rootstock during the same growth season in which the procedure is carried out.

Pest and diseases

Sandersonia is not particularly susceptible to pests or diseases. However, aphids may attack the new foliage in early summer but this seldom warrants the use of insecticides. Snout beetles occasionally cause damage to the stems and leaves from mid to late summer for which cypermethrin (e.g. Ripcord) can be used as a measure of control. Slugs and snails are partial to the foliage. The flowers can fall prey to the Botrytis fungus which can be controlled by thoroughly dusting the rootstocks prior to planting with a 50:50 mix of captab (e.g. Kaptan) and iprodione (e.g. Rovral). Fungal rotting of the rootstocks can be greatly reduced by ensuring that a well-aerated growing medium is used and by keeping them in dry soil during the winter dormant period. During the summer growing period a preventative drench of benomyl (e.g. Benlate) can also be applied against fungal attack.

Propagative material of Sandersonia is not easily obtainable in South Africa but mail order companies that advertise in South African general gardening magazines do occasionally offer rootstocks imported from New Zealand! Seeds will be made available to members of the Botanical Society of South Africa via the annual seed catalogue in the near future.

Further reading

Duncan G.D. (1989). Sandersonia. In Du Plessis, N.M. & Duncan, G.D., Bulbous plants of southern Africa. Tafelberg Publishers, Cape Town.

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