

## Growing *Kalanchoe blossfeldiana* in the Subtropics

**Anne M. J. Soby**

Birkdale Nursery, 438 Old Cleveland Rd, Birkdale, QLD 4159

### INTRODUCTION

*Kalanchoe blossfeldiana* are spectacular in flower as either an indoor plant or a bedding plant. It is native to Madagascar and belongs to the Crassulaceae family. From experience, there is a set way of propagating and growing each plant species. Every crop has a set of optimum growing conditions, including propagation material, ideal temperatures, specific nutrient levels, and other relevant growing requirements.

Decisions regarding the growing requirements for new crops must be made with the benefit of experience gained over time, especially in the subtropics.

### STOCK PLANTS

Stock plants are kept in 300-mm pots, this allows control over the propagation material, which in the nursery (Birkdale) is only taken once a year. The nursery is only growing *Kalanchoe blossfeldiana* as a seasonal line, as the facilities do not permit year round production.

The stock plants are selected from the plants for sale. Only the best plants (strong, full flowering, good colour) are selected. The plants are triple planted in the 300-mm pots. All flowers are removed at the end of the season when the days become longer than 12 h. (Equinox 20th September). Plants are fertilised with Osmocote Plus, 3-4 month, at this stage (approximately 5 g litre<sup>-1</sup> of soil).

Eight weeks before cuttings are taken the stock plants are fed weekly with Aquasol at a rate of 1.5 g litre<sup>-1</sup> of water. At cutting (end January-early February) they will be lush, green, and full of new growth.

### PROPAGATION

Cuttings can be collected throughout the day. These are usually kept turgid, however, it is not detrimental for the cuttings to wilt slightly unless the day is very hot and dry.

*Kalanchoe blossfeldiana* tolerates a wide range of soil types provided they are well drained and sufficient nutrients are supplied. An EC of 1.6 to 1.8 is desirable, this should be maintained throughout the growing period by top dressing or by fertigation.

*Kalanchoe blossfeldiana* is sensitive to potting with secondary infections easily setting in. This set back due to potting delays growth and adds to the production time. The preferred method of propagation is, therefore, direct sticking into the sales pot. The cuttings are 2 to 3 node cuttings with two sets of developed leaves. No leaves are removed at planting and no hormone is used. The size of the sales pot can vary between nurseries but Birkdale uses a 125-mm pot. A pot 125 to 140 mm in diameter best suits the growth habit of the plant, if bigger sizes are used it is recommended to multi-plant, or carry over from the previous year.

The media is drenched with a fungicide before sticking. Chloroturf<sup>®</sup>, (1.5 g litre<sup>-1</sup>), is applied. It is also possible to drench immediately after sticking. The propagation

shed is a shade house with 50% shade cover. Watering is carried out once or twice per day. *Kalanchoe blossfeldiana* can be propagated under fog or mist, however, the cuttings must be more closely monitored for fungal infection.

### **PRODUCTION CARE AND TIMING.**

After 2 to 3 weeks the plants will have a well developed root system, and should receive a soft pinch to encourage side shoot growth. At this stage they are also fed with IBDU (1 g litre<sup>-1</sup>) and Osmocote Plus, 3-4 month (5 g litre<sup>-1</sup>). This application is sufficient for the remaining growing time.

Production takes 4 weeks growing time (including one pinch back to 2 to 3 sets of leaves), 5 weeks of short days, and an additional 6 weeks for flowering (the latter can be normal daylength if controlled environment is used, or short day if natural light is used).

The first equinox in the year (where day and night are equal lengths) is around the 20th of February. There are two equinoxes per year. Most vegetative growth must be completed in the 4 weeks before this day. From personal experience it is possible to obtain a good-sized plant despite later planting, however, planting should not be delayed by any more than 2 weeks. High temperature and humidity, and added fertiliser promote faster growth.

After 4 to 6 weeks the plants should be of a sufficient size to be placed in the open field. The short day period should have commenced by this stage. Pots are spaced evenly at a density of 32 plants per m<sup>2</sup>. This allows good air circulation and a good coverage when spraying with chemicals, as well as reducing the number of slugs and snails, which are almost always present in a closely spaced succulent crop. Too close a spacing will also encourage the plant to elongate and develop a weak basal point. Despatch and transport of elongated plants is difficult and labour intensive, because of the additional packaging required.

*Kalanchoe blossfeldiana* usually have to be sprayed once or twice with a growth-controlling chemical to obtain uniform growth and shape, and to stop flower stalk elongation.

The desired plant habit should be low, compact, uniform, and have all flower heads close to the foliage.

Growing *K. blossfeldiana* in the open field reduces the need for fungicidal and pesticidal sprays, unless a period of cloudy and/or rainy days occur. It is, therefore, important to monitor the crop closely.

### **CHEMICAL GROWTH CONTROL**

Alar 85 (Daminozid 85%) is the product which is commonly used for growth control of *K. blossfeldiana*. The rate of application varies from cultivar to cultivar, as do the intervals between applications. The stronger and faster-growing cultivars should be controlled with a rate of 600 to 900 ppm (6 to 9 g litre<sup>-1</sup>). Slower and more compact-growing cultivars with 300 to 600 ppm (3 to 6 g litre<sup>-1</sup>). The growth retardant should be applied when there is an indication that stem elongation is occurring. This takes place around the 6th to 8th week, sometimes even earlier. Depending on the weather and other growing conditions another application might be needed when the flower buds start to set. The very last application to be applied should be as the flower stems start elongating and before any colour shows in the bud. Two to three applications are usually adequate for seasonal growing conditions (open field



growing). Four may be required in controlled (greenhouse) growing conditions.

This year it has been difficult to obtain Alar 85, and Bonzi, has been used as an alternative. At this stage it is unknown if this alternative is as effective and if the application rate has been correct (10 to 15 ml litre<sup>-1</sup>).

---

## Selection of *Lophostemon confertus* Provenances for Use in Urban Landscapes

**Geoffrey S. Williams**

Burnley College, Faculty of Agriculture, Forestry and Horticulture, University of Melbourne, Burnley Gardens, Swan Street, Richmond, VIC 3121

### INTRODUCTION

Among the many factors that limit urban tree establishment and growth, drought, compaction, and low soil oxygen levels are perhaps the most critical (Handreck and Black, 1994; Hitchmough, 1994; Kozłowski, 1985; Patterson, 1976). The potential for a given plant to succeed via its genetic make-up rather than the availability of resource inputs must be maximised. One genetic improvement strategy that has proved highly successful and is standard practice in forestry is provenance selection which is the process of tapping into naturally occurring within-species variation (Turnbull and Griffin, 1986). Trials have shown that provenances in many species differ in an enormous range of characteristics, including the factors of interest to landscape professionals such as drought tolerance (Pallardy, 1981) and temperature tolerance (Widrlechner, 1994). *Lophostemon confertus* is a widely used tree in urban south-eastern Australia. It is distributed naturally in habitats associated with rainforest along Australia's east coast. This species has many desirable urban tree characteristics such as an attractive, luxuriant canopy, long life span, and low incidence of limb shear. While generally reliable under a range of conditions, it is suspect on sites where drought, flooding, or compaction are of above average severity. It is likely that in many cases the current horticultural stocks are derived from the warmer, higher rainfall regions such as coastal northern NSW, simply because these areas are more conveniently located for seed collectors than drier sites further inland or colder sites at higher altitudes. Similarly, where natural variation in flooding tolerance occurs, there is no guarantee that cultivated forms are derived from the most flood-prone populations, which usually means those growing in riparian or other habitats that experience seasonal or prolonged periods of waterlogging (Gill, 1970). The fact that waterlogging tolerance is correlated with compaction tolerance in urban trees makes the identification of such populations even more imperative (Hitchmough, 1994).

### MATERIALS AND METHODS

**Species Selection and Seed Collection.** Seed collection was undertaken in Autumn-Winter 1992 and 1993. Twelve forms of *L. confertus* were collected across its range from coastal north-central NSW to Cairns and from a cultivated form growing in a street in the suburb of South Melbourne.