‘Santonia Golden Lights’: A Novel Intergeneric Hybrid of Sandersonia and Littonia (Colchicaceae)

Ed R. Morgan, Garry K. Burge, and John F. Seelye
New Zealand Institute for Crop & Food Research Limited, Private Bag 11 600, Palmerston North, New Zealand

Andrew G.F. Warren
Bloomz, Joyce Road, R.D. 3, Tauranga, New Zealand

David J. Brundell
Geophyte Exotics, P.O. Box 8, Waiuku, New Zealand

Additional index words. Sandersonia aurantiaca, Littonia modesta, flower breeding, Colchicaceae

Sandersonia aurantiaca Hook. (Colchicaceae) is a relatively new and increasingly popular cut-flower crop. It is from South Africa, where it is found at altitudes of 600–2000 m and in summer rainfall areas (Brundell and Reyngoud, 1986). This species produces stems up to 1 m long, with up to 12 flowers on a stem (Brundell and Reyngoud, 1986). The flowers are 2–2.5 cm long and 1.3 cm in diameter. Flowers are golden-orange, lantern-shaped, and hang down from curved, wiry flower stalks originating at the leaf axils. The leaves are soft and narrow, ranging up to 10 cm long and 2 cm wide at their widest point before tapering to a thread-like tip. In mature plants, stems arise from the single growing point on the tip of each of the two lobes of the stoloniferous corm (Dahlgren et al., 1985). New Zealand growers refer to the stoloniferous corm as a bolus, and plant each leg separately to ensure that all growing points give rise to new plants. A bud is present at the tip of each leg, and gives rise to the new plant, which consists of a tuber comprising two legs joined to form a “vee” shape and a stem that is produced from the center of the joint. During the growing season the original leg completely withers and is lost.

In New Zealand, S. aurantiaca is grown for both cut flowers and as tubers for forcing. The export value of S. aurantiaca cut flowers in 2001 was just over NZ$5.6M compared to NZ$0.2M in 1990, with much of the New Zealand crop going to Japan. The 2001 export receipts for S. aurantiaca stems are down from the NZ$5.6M exported in 1995. New Zealand growers and researchers have been successful in developing S. aurantiaca as a floricultural crop (Clark, 1994). Other countries, e.g., South Africa, are now beginning to produce S. aurantiaca. For New Zealand to maintain its market share, new cultivars must be developed and introduced to the industry. Sandersonia aurantiaca is a monospecific genus in which little variation has been observed among seed-propagated plants. Therefore, hybridization programs must include species from related genera. Sandersonia aurantiaca is a member of the Colchicaceae (Dahlgren et al., 1985) and any breeding programs must involve other genera from this family.

Littonia modesta Hook. (Colchicaceae), also of South African origin, is sometimes used in horticulture as a cut flower or as an ornamental plant. It is a relative of S. aurantiaca that climbs using tendrilous leaf tips to cling to supporting structures. Stem length depends on tuber size, but plants can reach in excess of 2 m. Flowers are golden-orange and bell shaped with six separate tepals. The flowers are borne on pedicels that usually originate in leaf axils. Leaves are hard-textured and up to 20 cm long and 3 cm wide, terminating in a tendril. Shoots grow from the tips of fork-shaped tubers similar to S. aurantiaca.

‘Santonia Golden Lights’ (S. aurantiaca x L. modesta) was released by Sanza in New Zealand in 1998. Plant variety rights have been obtained for this cultivar in New Zealand.

Origin

‘Santonia Golden Lights’ is an F1 hybrid with S. aurantiaca as the female parent. The hybrid was produced by in ovulo embryo culture (Morgan et al., 2001).

Description

Plants have leaf and flower morphologies intermediate between the two parent species. Leaves of ‘Santonia Golden Lights’ terminate with tendrils whereas those of S. aurantiaca do not. The flowers of ‘Santonia Golden Lights’ have six tepals that are fused for half of their length. In S. aurantiaca the tepals are fused for almost their entire length and in L. modesta the tepals are barely fused. The flower color of ‘Santonia Golden Lights’ and the two parents is the same (RHS colour chart 23A), although

Received for publication 29 Jan. 2002. Accepted for publication 2 July 2002.

Fig. 1. A flowering stem of ‘Santonia Golden Lights’, showing the morphology of the flowers and the arrangement of leaves on the stem.
there is often some reddening of flowers when grown in cooler outdoor environments at a range of locations in New Zealand. Up to 30 flowers can be produced on a single stem. Flower form and the arrangement of leaves on a stem are shown in Fig. 1.

Stem length is dependent on both tuber size and the growing environment. Under ambient outdoor growing environments in New Zealand stem length is about 80 cm, but under warmer (minimum 18 °C) greenhouse conditions stem length can be over 2 m.

Characteristics and use

Most aspects of ‘Santonia Golden Lights’ tuber and flower production are similar to those of S. aurantiaca. However, there are differences, some of which are crucial for the production of quality cut stems or tubers. ‘Santonia Golden Lights’ tubers are much larger than those of S. aurantiaca (some >100 g) and the tubers often have three or more legs, making multiplication by tuber division more rapid. Tuber dormancy is broken with storage at 3–10 °C, and tubers are much larger than S. aurantiaca, the two legs of the tuber are separated to ensure that the growing point at the tip of each leg will produce a flowering stem. Shortly after the stem begins growing, a new tuber (daughter) is initiated at the lowest node on the stem; this daughter tuber is the propagule that survives to the following season. If grown incorrectly, secondary tubers can be produced at the tips of the two legs of the daughter tuber in the same growing season. Secondary tubers are a problem as they are small and easily break off the daughter tuber, leaving the larger daughter tuber without growing points. The frequency of secondary tuber formation is increased by high nutrition levels and less dense tuber spacings to the following season. If grown incorrectly, secondary tubers may occur but can be controlled using fungicide dips, as reported for S. aurantiaca (Clark, 1994).

Tubers are dormant when the stem senesces. Tuber dormancy is broken with storage at 3–10 °C for 6 weeks as for S. aurantiaca (Clark, 1994). Tuber dormancy is broken with storage at 3–10 °C for 6 weeks as for S. aurantiaca (Clark, 1994). Tuber dormancy is broken with storage at 3–10 °C for 6 weeks as for S. aurantiaca (Clark, 1994).

Availability

‘Santonia Golden Lights’ is a sterile hybrid that can only be propagated vegetatively. Plant material is available from Sanza, c/o Bloomz, Joyce Road, R.D. 3, Tauranga, New Zealand. This cultivar has been granted Plant Variety Rights in New Zealand. Inquiries as to availability of plant material for evaluation in other countries should be made to the above address or to http://www.bloomz.co.nz.

Literature Cited