INTRODUCTION

Leucospermum 'Tango' (L. lineare 'Student' × L. globrum 'Hedgerston') is one of the most cultivated pincushions in Tenerife, where many of the soils in seven suitable areas for 'Tango' rootstock have been selected as rootingstock for this type of soil (Rodríguez-Pérez, 2007).

Different methods have been used in the propagation of Leucospermum cuttings, which can be divided into: chip budding; cutting-grafting (Brits, 1990); wedge-grafting; and modified chip budding and cutting-grafting (Brits, 1990). The cutting-grafting method, already used in the propagation of Leucospermum, has been described in previous works (Brits, 1990; Ackerman et al., 1997). In the cutting-grafting method, scions are grafted onto unrooted cuttings of the rootstock, then tied to the rootingstock and placed in propagating trays with mist, to promote simultaneous rooting of rootstock and scion callus, thus allowing new grafted plants to consolidate rootstock and scion rooting.

In propagation by cuttings of Leucospermum, the standard rooting medium is a mixture of peat moss and polystyrene, but good results have also been obtained by using coconut fiber alone or combined with polystyrene (Jacobs and Steenkamp, 1975; Malan, 1992 and 2012; Rodríguez-Pérez, 2007). The basal rooting media, alone or combined with other treatments (IBA), has been used to stimulate root formation in some species (Rodríguez-Pérez, 1990; Rodríguez-Pérez et al., 1995; Rodríguez-Pérez et al., 1997; Rodríguez-Pérez et al., 2005). Leaf area reduction of scions has been used to control leaf desiccation (Brits 1990). Leaf surface area is reduced to about 5% of its original size. The present study was carried out to study the influence of wounding, rooting media, and reduction of foliar area of the scion on grafting cuttings of Leucospermum 'Tango' onto L. 'Spider'.

MATERIAL AND METHODS

The trial was carried out in winter in March-October at the Escuela T.E. del Agua, Campus del Cabildo, University of La Laguna, E.U.L. 'Spider' was used as a rootstock and L. 'Tango' as a scion. The experimental design was a completely randomised block design with 2 × 5 × 2 treatments and 3 replications. The treatments resulted from the combination of 2 types of rooting medium: (a) coconut fiber and (b) peat moss and polystyrene grains (5 cm × 5 cm × 1 cm) in the rooting media with or without wounding of cuttings. The wounding-grafting technique was used. Scions 5.7 cm long with 3-4 leaves reduced an area of 0.5 cm², depending on the treatment, were prepared from terminal semi-hardwood stems of L. 'Tango'. At the basal end, two sloping incisions 2 cm long were made, to form a wedge.

Terminal semi-hardwood cuttings of L. 'Spider', 15-20 cm long, from the current season's growth were employed in rootstock cuttings. Cuttings were diced and several leaves from the basal and top were removed, leaving a few leaves on the central section of the cutting. A vertical incision was made at the top of the cutting, 2 cm long, where the scion was inserted. The scion was tied in place with 10 cm-long parafilm strips.

The basal 2 mm of the cutting was made at the base of the unrooted cutting grade. Then they were wounded or not, depending on the treatment, and the basal 2 mm was excised with a 2 mm × 2 mm × 2 mm block of rootstock cuttings, followed by a dip in a 2,000 ppm solution of IBA for 5 s. Next, they were placed in the rooting media in plastic propagating trays. The trays were placed on a bed with bottom heat (22 ± 2º C) under a fog system in a glasshouse, with 50% reduced natural light. Day ventilation started when temperature rose above 25º C. Fog started to operate when the relative humidity of the air was less than 70 ± 5% (IBA), at 24º C, with a relative humidity of 5% (IBA), at 24º C, with a relative humidity of 5%

RESULTS AND DISCUSSION

At six weeks from planting, the combination of scions with reduced leaves × unwounded cuttings, rooted in peat moss-polystyrene grains gave 78% grafted plants, followed by the combination of scions with unwounded leaves × wounded cuttings, rooted in the same substrates (58%) (Table 1).

At the end of the trial, at 12 weeks, the treatment that showed the highest percentage of grafted plants was the combination of scions with reduced leaves × unwounded cuttings rooted in peat moss-polystyrene grains (81%) followed by the combination of scions with reduced leaves × wounded cuttings rooted in peat moss-polystyrene grains (64%) (Table 2). The type of rooting medium, nor the reduction of the leaf, nor wounding favored the production of grafted plants. Nor were the interactions between these factors significant (Table 2).

CONCLUSIONS

- Under the conditions of this experiment, it is advisable to use the L 'Spider' rootstock for propagation of the cultivar 'Tango' by cutting-grafting, employing the standard technique for rooting, without reducing the leaf and without wounding the cutting-base of the cutting.

- Satisfactory percentages of grafted plants of L. 'Tango' on L. 'Spider' are thus obtained in a reasonable space of time.

LITERATURE CITED


Table 1. Percentages of grafted plants obtained in cutting-grafting of Leucospermum 'Tango' on L. 'Spider' at 12 and 16 weeks from planting. At 6 weeks from planting, the combination of scions with reduced leaves × unwounded cuttings, rooted in peat moss-polystyrene grains gave 78% grafted plants, followed by the combination of scions with unwounded leaves × wounded cuttings, rooted in the same substrates (58%) (Table 1).

Table 2. Influence of wounding, rooting media, and reduction of leaf area of the scion on cutting-grafting of Leucospermum 'Tango' on L. 'Spider' at the end of the trial. The present study was carried out to study the influence of wounding, rooting media, and reduction of foliar area of the scion on grafting cuttings of Leucospermum 'Tango' onto L. 'Spider'.

The results in percentages of grafted plants were subjected to variance analysis, after arcsine transformation. Significant differences in means were separated using Duncan's multiple comparison test. Likewise, root length data were transformed using the square-root transformation (X + 0.5) before analysis of variance.