DECLARATION

This Thesis is my original work and has not been presented for award of a degree in any other university.

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ABSTRACT
Floriculture forms the most significant part in the Kenyan Horticultural industry contributing 50% of the total value in the export market despite myriad challenges like multiple standards and the ever changing market requirements. The objective of this study therefore was to determine why Kenyan cut rose (Rosa hybrida L.) flowers exported to Australia continued to fail the audit tests on devitalisation treatment requirement. The study involved a survey of the accredited facilities, establishing the effectiveness of Roundup®; a.i 360g/l and Glyphogan®; a.i 480g/l glyphosate formulations at preventing propagation at different dipping levels and assessing the effects of devitalisation on the cut flower vase life.

Nineteen out of the thirty eight AQIS accredited companies in Kenya were randomly selected and surveyed to ascertain the level of awareness and implementation of the Australian devitalisation protocol. For the propagation ability and vase life experiments, harvested export quality cut rose flowers; cv. Bellerose, obtained from Sian Roses Flower Company were dipped in glyphosate solutions of Roundup®; a.i 360g/l and Glyphogan®; a.i 480g/l following procedures prescribed in the Australian pre-shipment devitalisation treatment guidelines. Tap water acted as a control. For the propagation ability trial, 50 cm cut roses were dipped in the prepared glyphosate solutions at 15, 25, 35 or 45 cm depths. Data on percentage rooting, number of roots, root length and percentage necrotic stems was collected after 26 days in the propagation unit. To assess the effects of devitalisation on vase life, 40 cm cut roses were dipped in the prepared glyphosate solutions up to 35 cm depth and thereafter held in holding solution containing 2% sucrose and 1% sodium hypochlorite solution. Changes in fresh weight, water balance, leaf abscission, chlorophyll content, and vase life were determined.
The survey results showed that 100% of the company management and technical staff were aware of the import requirements on devitalisation by Australia an indication of a good communication link between the Kenya Plant Health Inspectorate Service (KEPHIS) and the accredited companies with their staff. Ninety four percent of the companies carried out regular trainings on devitalisation process. For the surveyed companies, 39% preferred Roundup®; a.i 360g/l formulation. However, 33% of the companies were not preparing the devitalisation solutions as outlined in the protocol. In addition, only 22% of the companies kept complete records that could aid in trace back in case of reports of non-compliance.

Devitalisation treatment in the current study was found to inhibit rooting even at low dipping depths of 15 cm besides triggering necrosis of the stems. The treatment further increased leaf abscission and wilting, reduced chlorophyll content and shortened vase life of cut roses by about 2 days while the petals remained intact. Glyphosate treated cut roses also recorded a lower negative water balance at -5.5g/day (Glyphogan®) and -3.5g/day (Roundup®) by the fourth day compared to the control at -1g/day. In conclusion, the industry needs more capacity building and sensitization so as to own the process and uphold transparency. Considering the bio-security concerns and the importance of this market, the observed negative effects of devitalisation on the cut flower vase life should not compromise the adherence to the requirements.