

The Effect of Healing Chamber Design on the Survival of Grafted Vegetables[®]

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Successful grafting of vegetables requires high relative humidity (RH) and optimal temperatures for approximately 1 week following grafting to reduce transpiration of the scion until rootstock and scion vascular tissue are healed together and water transport is restored. This study evaluated the effect of three healing chamber designs on the survival of grafted eggplant (*Solanum melongena* L.), tomato [(*Solanum esculentum* (syn. *Lycopersicon esculentum*), and watermelon (*Citrullus lanatus* Thunb.). The three healing chamber designs were: (1) an industry design that was hand misted, (2) a research design that contained a humidifier, and (3) shade cloth only that was hand misted. The research healing chamber had higher mean RH than the shade cloth only healing chamber, but there was no significant difference in mean temperature between the two structures. All plants were self-grafted using the splice grafting technique, placed in the healing chambers for 7 days and evaluated for signs of wilting and graft failure from Day 6 to Day 14 after grafting. The industry healing chamber had higher mean temperature and RH (24.9 °C, 98%) than both the shade cloth only (23.3 °C, 52%) and the research healing chamber (23.4 °C, 81%). Graft survival in the research healing chamber (66%) and industry healing chamber (69%) were similar, and both had higher survival rates than the shade cloth only healing chamber (52%). The three crops all had significantly different survival rates regardless of healing chamber design; tomato had the highest percent survival rate (98%) and watermelon had the lowest survival rate (7%) with eggplant survival at 82%. The very low survival rate of watermelon was most likely due to the grafting technique used in this study, which was not optimal for watermelon. There was no interaction between healing chamber and crop. A healing chamber such as the research design in this study that has a humidifier has higher costs than the hand-misted industry healing chamber and at the same time has equivalent graft survival rates, suggesting that a humidifier is not cost effective for grafting.