

# Non-grafted and grafted seedless watermelon transplants: comparative economic feasibility analysis<sup>©</sup>

S.P. Galinato<sup>1,a</sup>, J.A. Wimer<sup>2</sup> and C.A. Miles<sup>2</sup>

<sup>1</sup>IMPACT Center, School of Economic Sciences, Washington State University (WSU), Pullman, Washington 99164, USA; <sup>2</sup>Department of Horticulture, WSU Mount Vernon Northwest Washington Research and Extension Center, Mount Vernon, Washington 98273, USA.

## **Abstract**

The use of grafted watermelon (*Citrullus lanatus*) transplants is becoming increasingly popular as an alternative strategy to manage soilborne disease in the USA. The inherent challenges and costs of producing grafted watermelon transplants include: additional greenhouse space that is needed to grow the rootstock and to graft the plants; extra labor that is needed to perform the grafting; and special facilities that are required for the proper healing and acclimation of the grafted seedlings. These facilities range from relatively inexpensive modified greenhouses to state-of-the-art climate-controlled growth chambers. The objectives of this study were to provide a general guide for evaluating the feasibility of growing grafted greenhouse seedless watermelon transplants, and using grafted transplants to produce seedless watermelon in Washington State. Data on grafting supplies and labor were obtained from related studies at the Washington State University, Mount Vernon Northwest Washington Research and Extension Center. Greenhouse production costs were estimated from a composite of information gathered in 2014 from growers in eastern Washington and Oregon who produce non-grafted transplants. Data on crop yield resulting from field utilization of grafted transplants were obtained from WSU field experiments in eastern Washington. Enterprise budget analysis was employed to estimate the costs and returns of producing non-grafted and grafted transplants in a greenhouse. Data from Galinato, Miles, and Wimer (2014). "2013 Cost Estimation of Producing Seedless Watermelon in Eastern Washington" WSU Ext. Pub. FS150E were used and adjusted to reflect 2014 prices. A partial budget framework was used to calculate the net change in profit that can be expected from the field utilization of grafted transplants. Results suggest that the production of grafted watermelon transplants can be economically feasible for commercial greenhouse propagators if the transplants can be sold at more than \$0.20/plant. The extra cost of grafted transplants can be acceptable to watermelon producers if using these transplants would provide a viable alternative to field fumigation and improve crop yield. From the watermelon producer's perspective, use of grafted over non-grafted transplants will be primarily based on the benefits gained from the effectiveness of grafted transplants as an alternative to chemical use in managing soil-borne disease. Benefits include reduced overall costs, improved yield, and maintained or augmented profit relative to using non-grafted transplants.

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<sup>a</sup>E-mail: sgalinato@wsu.edu

