

Bud placement and apple grafting educational programming

AT A GLANCE

Idaho master gardeners proposed research into proper placement of bud grafts onto rootstock. Through research, students learned basic bud graft placement.

The Situation

Southeast Idaho master gardeners have received instruction pertaining to the grafting of apple trees for the past 20 years. In the fall of 2021 Idaho Master Gardener students and advanced Idaho master gardeners postulated a research question pertaining to the placement of the bud graft on the rootstock. They proposed that bud survival may be dependent on whether the bud is inserted at the node as opposed to the traditional placement at the internode. Master gardeners felt that meristematic tissues located at the node would promote grafting bud survivability due to plant hormone interactions.

Our Response

Research monies for a bud grafting placement study were procured through the University of Idaho Extension Innovative Project Funds. This grant provided the resources necessary to purchase apple rootstock, scion bud sticks and grafting tools, as well as educational programming supplies. Apple trees were grafted in the fall of 2021 and again in the spring of 2022. Grafts were placed at the nodes and internodes. The study included six varieties of rootstock and two varieties of scion wood. Grafts were evaluated for survival the following year.



Bud graft preparation and placement. Photo credit: Reed Findlay.

Results of the bud grafting research were presented at each Master Gardener grafting workshop in southern Idaho, as well as the regional Master Gardener Symposium of 2022.

Program Outcomes

Forty-eight master gardeners from southern Idaho received training in modified and updated bud grafting techniques. The updated bud grafting techniques included modified bud placement techniques developed from University of Idaho Extension grafting research. The students evaluated their grafting knowledge before and following training. They specifically evaluated their knowledge in the following areas: 1) basic grafting techniques, 2) understanding of rootstock

development, 3) understanding of scion wood production, 4) formation of callus material and factors affecting bud graft survival and 5) knowledge of updated bud grafting techniques including grafting at the node.

Students' knowledge significantly increased in each of the five areas that were measured. The largest increase in knowledge was in the area of updated bud grafting techniques and graft placement at the node (Figure 1).

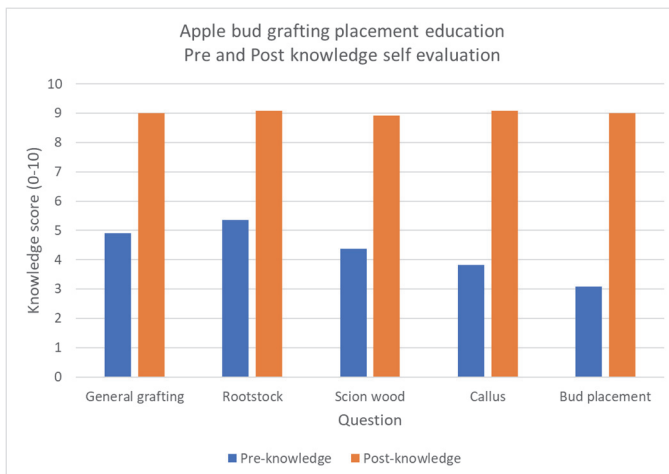


Figure 1. Results of grafting education on student knowledge in five areas.

The Future

UI Extension grafting research is continuing. Updated grafting techniques will again be evaluated in the fall of 2022. These grafts will be evaluated for survivability in the spring of 2023. The results of this continuing

research will augment and further refine grafting techniques that will be taught in the future. It is vital that UI Extension educational programming be based on and supported by new and innovative research.

Cooperators and Co-Sponsors

This work was supported by southern Idaho Master Gardener students and Bannock and Bingham counties advanced Idaho master gardeners. These volunteers donated time and energy into the development of updated and novel bud grafting techniques for apples.

Bannock County also provided the land for the greenhouse. This greenhouse was used to grow plant materials as well as house and protect the grafted apple trees.



Idaho Master Gardener students preparing for grafting class. Photo credit: Reed Findlay.

FOR MORE INFORMATION

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