CUCUMBER GRAFTING USING THE HOLE INSERTION METHOD

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Overview

Cucumber grafting can help improve its yield potential. Grafting involves using cuts from selected cucumber varieties (scions) and matching them onto cut ends of selected squash or black seeded pumpkin varieties (rootstocks) with desired traits such as disease resistance. Each scion and rootstock joint is held together usually with a clip after grafting so that the tissues can heal together as a plant. The technique produces vigorous plants that are less susceptible to diseases and therefore positioned to provide higher yields.

Cucumbers are typically grafted using the splice, the hole insertion and the tongue approach methods. However, this fact sheet primarily describes cucumber grafting using the hole insertion methods using an Oriental Hybrid Summer Delight cucumber (*Cucumis sativus*) variety and a Japanese hybrid squash (Tetsukabuto) (*Cucurbita maxima* X *Cucurbita moschata*). Other cucumber varieties including Southern Delight, Hybrid (*Cucumis sativus*) can also be grafted using Tetsukabuto as a rootstock.

Fig 1. Cucumber seedlings

Fig. 2. Japanese hybrid squash seedlings (A); grafted cucumber plants transferred into an opened biodome seed starter (B); grafted cucumber plants in closed biodome seed starter (C).

Steps for the Hole Insertion Grafting Method

1. Sow cucumber seeds in seed starting trays containing promix to establish cucumber seedlings.
2. After three days, sow Japanese squash hybrid seeds in trays containing promix to establish seedlings.
3. Water the seeds every other day as needed.
4. Graft when the first true leaves of the cucumber and squash are fully extended. This usually occurs between 8 to 12 days after planting. Note: The cucumber scion seedling size needs to be smaller than the squash rootstock seedling at the time of grafting.
5. The squash is used as the rootstock, so cut the it from the middle of the stem/hypocotyl using a sterilized razor blade.
6. Remove the true leaf including the growing point of the squash using a razor blade with a scoping motion.
7. Make a hole at a slanted angle at the mid-section of the cut squash, using a thin bamboo stick.
8. Slant cut the hypocotyl/stem section of the cucumber to a tapered end, and insert it into the hole that has been made in the squash rootstock. Hold the cucumber scion and squash root stock together at the joint using a clip.
9. Transfer the grafted plants into a Biodome Seed Starter which consists of a bio dome, planting block, biosponge, and a tray you can fill with nutrient solution. The transfer involves inserting the grafted plants into biosponges held in the planting block which sits in nutrient solution contained in the tray.
10. Cover Biodome Seed Starter with its lid. The lid keeps a 95% relative humidity in the healing tray, and temperature of 28-29^{o}C (82-84^{o}F) to increase callus formation at the union. Place the Biodome Seed Starter containing the plants in a dark room for 24 hours to begin the healing process.
11. After that, place Biodome Seed Starter containing the plants in a climate control area like a greenhouse. Open the adjustable vent located on the lid after 48 hours. Adjust the opening gradually a little wider every day until it is fully opened as the grafted plants acclimatize and become hardy.
12. Approximately 2 weeks post grafting the plants would be healed, hardened and ready for transplanting.

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