

Grafting Apple Branches onto Pear Rootstock—the Linnaean Enigma

By: Donald Kasper 4/22/2022

We are told in botany that based on a kingdom-phylum-class-order-family-genus-species classification that Linnaeus developed for plants and animals, we can graft any varieties of the same species at the lowest level of this classification, but cannot do so for inter-species plants. For example, we cannot graft apple cuttings (scions) onto pear rootstock. Then, a gentleman on YouTube began posting his grafts of just that, and followed up with the grafts over many years as they later produced pear fruit and the original branches produced apple fruit (“Hydroponic Gardening & More with Brent”).

The author purchased several years ago apparently from Lowe’s a pear tree. As it produced fruit, it was inedible, tough, woody, garbage. Talking last year at a food fair to a horticulturist from a Central Valley, CA university, he proposed that the nursery accidentally supplied a root stock graft on a root stock. The root stock is the actual tree trunk that determines tree height and shape. On the trunk is grafted a clone cutting of a specific variety of fruit stock. The seeds themselves of fruit trees will revert back to native fruit tree without the desired fruit qualities of the parent. They are cloned as fruit stocks that are actually branches onto the root stock trunk.

This year, the author cut all of the main branches of this pear back in winter and grafted two varieties of apples from his yard in local spring, which this year was just starting in February. The author had no other pears to graft. Grafting is technique and compatibility, and last year some cuttings of a brand new purchased pear all failed on the root stock pear. This was tried with a grafting cutting tool whose problem is cutting compatibility of even slightly different host to scion wood diameters. This year, that tool was not used and direct slicing of the cambium with a carpet razor blade knife was used.

So far, the success rate of fully developing apple graft on this pear are about 50%, but multiple tries with different scions were used if they did not adapt and take hold. Main trunks that are the tallest in the host all succeeded. Smaller side trunks and branching off them often did not. Also, smaller scions seemed more successful than large diameter scions. Typically, 4 bud node lengths are used, but the author used up to one foot long, 20 node scions. This was to get more length in the new branches in one year instead of waiting several years. There was no information available online to know if longer scions would work.

Like the YouTube gentleman, the author is getting budding out with flowering of his apple cuttings on the pear. One branch cutting is leafing out and growing well. The two apples used are quite different, one blooming a full six weeks before the other, so some appear okay on the slow bloomer variety, but are not yet clearly growing, but not shriveled and dying with hard, brittle buds. Until the buds crack open and show red centers of the flowers, it is not easy to tell if they are okay.

Why can two different species in the same genus be compatible? The Linnean system deals with outward observable features that are not linked obviously to cell structure. Its problems cause biologists to use the term “clade” to define an interspecies grouping of similar features and growth behavior. This is the case in current plant botany and in fossil or paleobotany. The author notes that both apples and

pears are indeed quite similar in their fruit structures, composed not of broad pulp and fluid accumulation like a peach or apricot, but are dense fruits from stone cells that make them fibrous.

Since fruits are not preserved due to their ease of decay and decomposition in volcanic ash flows that will preserve large wood trunk and root structures as petrified wood, we don't get all the information to classify our fossil plants completely. Also lost in fossils are the flowers, cones, seeds, needles and other structures of small mass that won't survive a volcanic ash flow unless they are blown down into a lake or river or marsh.

Attached below is a current picture of this year's cuttings of the author's apple on pear grafting work.



Spring 2022 apple cuttings on pear rootstock. The tall trunks and branches are all rootstock. The Linnean mentality that interspecies grafting cannot work is simply false and an urban myth. Earlier picture on left, month later on right. Left central stem is in the center-background on the right. Cuttings joins are wrapped in plastic tape, and sometimes the top cuts to slow down drying that may damage top buds.