Plum and Peach Rootstock Propagation

Plum and peaches rootstocks are used at the Macdonald Campus of McGill for European plum fruit trees. Both are in the *Rosaceae* family and in the *Prunus* genus which includes other fruit trees such as apricots, almonds and cherries. Due to Quebec’s Nordic climate, only the plum is commercially cultivated. *Prunus domestica*, the European plum, is available in farmer’s market at the end of the summer. Popular cultivars of this plus are the Mont-Royal (small, round and blue plum) as well as the Early Italian (small, blue and oblong).

The objective of this project was to obtain 100 plum rootstocks for Michael Bleho at the Hort center. M. Bleho wants to replant Macdonald’s campus orchard with plum trees that are not infected by black knot. As Michael suggested, I proceeded to cut rootstock material from healthy rootstocks present in the orchard in early February. I took enough material to have 200 cuttings of 20 cm length. Those cuttings were composed of European plums (*P. domestica*), peaches (*P. persica*) and American plums (*P. americana*). The aim was 50% rooting response for these hard to root species.

**Method**

At the base of orchard trees lie the rootstock, under the graft scar; when these rootstocks are producing new shoots, they can be used for HWC propagation. Secateurs were used to cut branches off the tree and only the ones that grew during the last season were used.

Working one species at a time, I cut all the branches to 20 cm cuttings that were then dipped into rooting hormone powder Stim-root #2 (0.4% IBA), the powder was in a separate container (not directly in the source pot) and the leftover powder was thrown away. The cuttings were shaken to take off excess powder. Then, using a stick I made holes in the substrate 7 cm deep into which the IBA-coated portion was planted. Substrate was then pressed around the cuttings to ensure stability. Polarity is important but easy to assess: dormant buds covered with scales points up. The bottom part of the cuttings were planted in the substrate, while the topmost emerged out of the substrate.

Three substrates were compared: 1 part perlite : 1 part G6, 1 part perlite : 1 part peat, 100% G6.

Cuttings were placed into a cold room at 13-15°C while bottom heat was used such that the substrate stayed at 18-20°C. Regular watering was done when the substrates seemed dry.

Figure 1 Cutting rootstocks to 20 cm
Results

Between 30 and 50% of the cuttings rooted, depending on the species and treatment. Callus formation was present in many cuttings, but without any roots yet.

It is important to note that in a propagation operation that has no constraint such as the end of a university semester, I would have left the cuttings undisturbed in the substrate for a longer time. Callus could then have formed roots. Then, up to 80% of the cuttings could have rooted.

The results of this experiment seem to mean that perlite is an essential component of a substrate mix. Indeed, in two mixes out of three, perlite accounted for 50% of the substrate. Those two mixes performed much better than the G6 alone. Interestingly, I was able to compare G6 with and without perlite and, clearly, perlite is advantageous in these experimental conditions. With perlite, rooting and callusing went from 0% in peaches to 81.8%, from 59.4% for *P. domestica* to 83.3%. Root system were also bigger and deeper in the substrate.

Perlite, a spongelike material of volcanic origin is extremely useful, it can hold 3 to 4 times its weight in water and helps to increase aeration in the mix. It is very popular as a rooting medium (Hartmann et al., 2011)

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References Cited


