

## Rooting American chestnut stem cuttings (12/2021-07/2023)

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We have achieved a rooting rate of close to 50% with American chestnut stem cuttings with 100 PPM 1-Naphthaleneacetic acid (NAA) treatment for two hours. Here are some major findings:

1. The current year cuttings that are semi-lignified and have new buds are suitable for rooting. Cuttings from springtime barely rooted.
2. It takes at least two months for adventitious roots to emerge. During this period, keeping leaves alive /green is the key.
3. Adventitious roots can be formed with and without callus formation. Adventitious roots formed without callus formation seem larger and more vigorous.
4. Due to the regulation associated with *Agrobacterium rhizogenes*, we did not proceed to apply this bacterium. Instead, we tested a growth-promoting bacterium, *Bacillus subtilis*. The strain was QST713. We found that QST713 did not increase the rooting rate, while it seemed to enhance root length.
5. A manuscript, entitled “Histology of Adventitious Root Formation and Phytohormone Analysis of American Chestnut Cuttings”, has been accepted for publication in *Journal of Environmental Horticulture*.
6. Below are a few examples of chestnut adventitious roots:

