

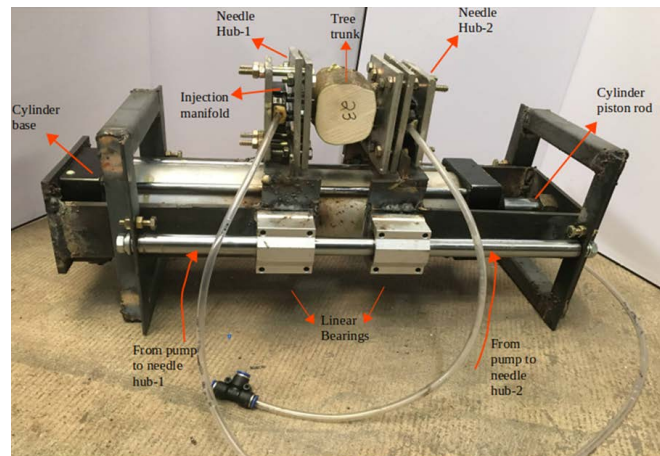
# Delivering Therapeutic Materials Through Trunk to Treat HLB-affected Citrus Trees

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Current devices for the introduction of liquid materials to citrus through the trunk consist of relatively large-sized and single injectors used in combination with substantial pressure, which can cause considerable harm to the tree. Our project goal is to develop an automated delivery system (ADS), consisting of multiple injectors that will reduce injury and effectively deliver therapeutics to citrus vascular tissues through the trunk for improving plant health and performance. Several prototypes of ADS (see photos) that were developed at UF/IFAS SWFREC in Immokalee

are effective in gripping and penetrating the trunk of mature citrus trees from two sides. The most current device does not cause any noticeable damage, but longer-term effects need to be determined. We are trying to inject different types of therapeutics into trees including bactericides, nanoparticle metals, peptides, nucleic acids, agrochemicals, plant defense inducers, growth regulators, nutrients, and traceable dyes to understand their uptake, movement, and distribution in the plant. We already observed significant reduction of bacterial titer in treated young plants

although this was achieved with a high concentration application of the bactericide in the greenhouse, which also reduced the number of shoots produced in non-bearing trees. We hope to see similarly effective control of HLB and improvement of tree health in fruit bearing trees 6-10 months after treatments in the grove. We are now further modifying the current ADS device to reduce or eliminate extensive shear and tear due to its repetitive use on mature trunks so that hundreds of trees can be treated without frequent needle replacement.

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