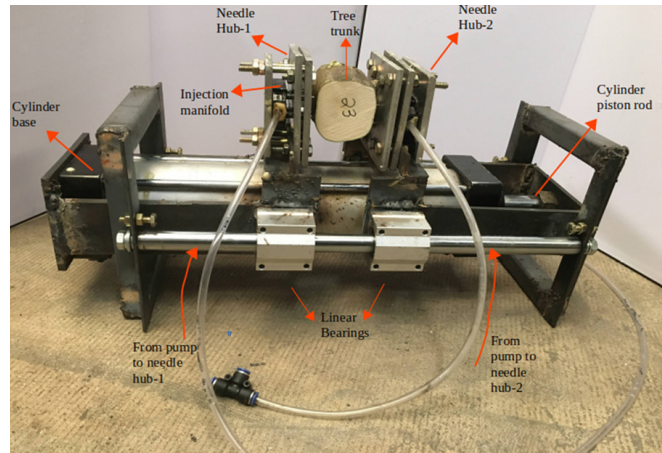


Delivering Therapeutic Materials Through Trunk to Treat HLB-Affected Citrus Trees

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Current devices for introducing liquid materials to citrus through the trunk consist of relatively large-sized 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 to reduce injury and effectively deliver therapeutics to citrus vascular tissues through the trunk to improve plant health and performance. Several prototypes of ADS (see photos) developed at UF/IFAS SWFREC in Immokalee

effectively grip and penetrate 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 therapeutics into trees, including bactericides, nanoparticle metals, peptides, nucleic acids, agrochemicals, plant defense inducers, growth regulators, nutrients, traceable dyes, and study their uptake, movement, and distribution in the plant. We have already observed a significant reduction of bacterial titer in treated young plants.

However, 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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