Trunk Injection and Wounding

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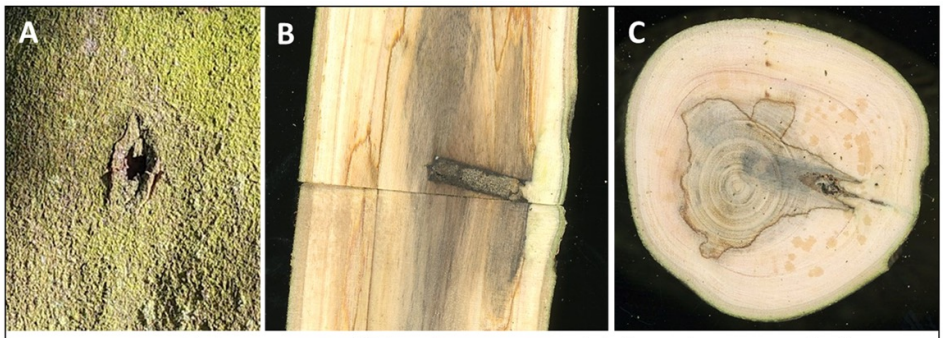

Injection wound (A). Longitudinal (B) and cross section (C) through citrus trunk after OTC injection. Note the discoloration of the wood.

Take Home Message:

- Trunk injection causes injury.
- Wounds heal faster during spring and summer.
- Care should be taken to minimize injection damage.

Summary: Trunk injection is an alternative technique for applying crop protection materials. This technology has now been approved to deliver oxytetracycline (OTC) for huanglongbing (HLB) management in Florida. Injections cause injury and best practices need to be established to minimize injection-induced tree damage. We injected 5-year-old 'Valencia' trees with water or OTC to measure seasonal differences in the rate of uptake, wound closure, and internal wound compartmentalization. Wounds closed faster when trees were injected during spring or summer (when trees are metabolically more active) than during fall or winter. OTC injection delayed wound closure compared to water injection. When using water, all wounds were closed within a few months after injection. When using OTC, it took up to one year after injection for the wounds to fully close. Unlike humans and animals, trees do not heal but compartmentalize wounds to prevent spread of decay and dysfunction. We found that citrus trees can effectively compartmentalize wounds when injecting water, but OTC impedes this process. This is evidenced by a large area of discoloration inside the trunk. Whether this will affect trees negatively in the long-term is still unknown. Nonetheless, the new (sap) wood formed during the next growth cycle is healthy, and fruit yield and soluble solids content are consistently improved after OTC injection. The benefits of trunk injections of OTC may therefore outweigh the risk associated with this technology under the current production conditions. We found no benefits associated with the application of wound treatments such as pruning sealants or fungicides.

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