‘LB8-9’ Sugar Belle® and Lemons Tolerate HLB: How Do They Do That?

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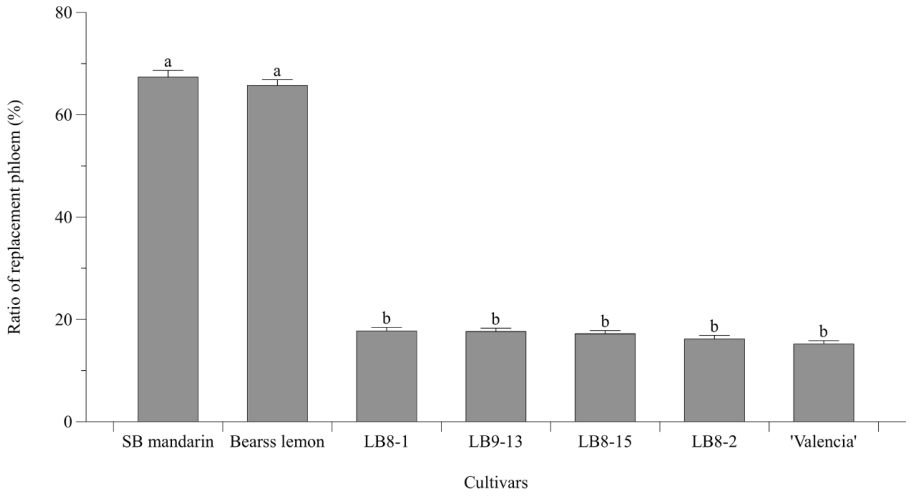

Two tolerant and five sensitive varieties, showing the ratio of the size of the new phloem compared to the old, damaged phloem tissues.

Although Sugar Belle® and lemon trees are capable of being infected with *C*Las, and some symptoms of HLB are found, they generally continue to grow well, producing dense canopies and usually good crops of fruit. Most people will refer to these varieties as HLB-tolerant. If we can understand the mechanisms behind their behavior, this may help us in breeding new tolerant varieties, or perhaps to develop management strategies to improve tolerance of other more sensitive varieties. We learned previously that tolerance of rough lemon was based partly on the ability to regenerate phloem tissue. Phloem is where *C*Las lives in the plant, and it causes damage to make the phloem non-functional. Phloem is one of the tree’s plumbing systems through which sugars produced in the leaves are transported to meet the energy needs throughout the plant; HLB compromises this plumbing system, which is one of the ways the pathogen causes tree decline. If your home plumbing is plugged, and you cannot clean out the pipes because they have already collapsed, then the only option available to move water again is to put in a new set of pipes. We learned that this is what Sugar Belle® and lemon trees do. Their damaged and blocked phloem plumbing system is replaced with new, healthy phloem cells, and the trees can now go about their business. The trees have other mechanisms in place that fight the bacteria, too, but this physical aspect, plumbing system repair, plays a major role in tolerance.

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CRDF Citrus Research and Development Foundation, Inc.

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