9.22 Producing New Flush at Will in Citrus to Study ACP-Plant Interactions

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Asian citrus psyllids (ACP) produce their nymphs only on new citrus leaves from where they multiply and possibly transmit the pathogen Candidatus Liberibacter that causes the ‘greening disease’. Research efforts to understand and control the lethal ‘greening disease’ require a constant supply of new flush to use in various studies. We have therefore tested various environmental and surgical treatments that could produce abundance of new flush in citrus plants throughout the year. Our results have shown that through environmental manipulations (i.e., by changing day and night temperatures, and length of induction period), we can not only produce new flush at will, but we could also control if the new flush will be vegetative or flowering. Thus, the technique may be useful for studies even on other insect interactions where insects may be more attracted to flowers versus vegetative shoots. The technique is also useful for nurseries to induce branching to enhance market value of the potted trees. In addition to environmental manipulations, we have also found that surgical removal of leaves prior to subjecting the plants to induction conditions greatly enhance the production of flush in different citrus cultivars. These results and the design of an inexpensive walk-in type growth chamber ($6K vs. $100K of commercial growth chamber) for such studies will be presented.