“To successfully use abscission agents for ‘Valencia’ sweet orange mechanical harvesting throughout the harvesting season, unwanted flower, fruitlet and leaf drop must be assessed and minimized.” This statement was made by Abscission team leaders Bob Ebel and Jackie Burns in the UF/IFAS Abscission and Harvesting 2009-2010 Final Report. A study was conducted using two abscission agents, Ethephon and CMNP with a kinetic adjuvant control being applied to ‘Valencia’ branches at various times from full bloom in March 2006 to end of the full bloom in March 2008. The effects of these treatments on fruit detachment force as well as developing and mature fruit, flowers and leaves was recorded. In the first 100 days after bloom showed high initial response followed by decreasing sensitivity, the second (100-225 days after bloom) showed little to no response and the third (225 days after bloom to harvest) showed a gain in sensitivity. For further information on this study visit http://citrusmh.ifas.ufl.edu.