Is soilless culture sysytem suitable for plant hormone and water relation studies on fruit trees?

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In plant growth regular (PGR) and water relations studies on fruit trees, the precise level of PGR and water stress (WS) application are importatnt. In WS experiments on fruit trees, control of water is difficult due to dynamic nature of water. Researchers, usually choose different methods for controlling water in WS experiments that each of them may has advantages and disadvantages. The common and most frequently used methods, especially under field conditions, is with holding irrigation (WI) from the soil. The other method involves use of various osmotica such as NaCl, polyethylene glycol (PEG), manitol, dextran, or mixtures of these compounds. The use of semipermeable membrane or other techniques to separate the osmotic compounds from direct contact with the roots is the other method. The regulation of hydraulic conductivity by adjusting the height of the water column may also use in WS experiments. Although, each of these methods has disadvantages. For example, the use of PEG may has toxic effects on plant tissues. In addition, if WI has employed for inducing water stress experiment under greenhouse or growth chamber condition, the plants may show rapid dehydration depending upon the kind of media, species and cultivars. In precise PGR and water relation studies, perhaps using soilless culture system (aeroponic & NFT system) is suitable alternative to the above mentioned methods. Only water and nutrients use in this technique. In the present discussion, the management of an aeroponic system as a tool for conduction a PGR and WS experiment is discussed in regard to the already obtained results from the research which had conducted on young apricot trees at Massey University, New Zealand.