

1. The 30,000' view.

Water quality and quantity are increasingly important concerns for agricultural producers and have been recognized by governmental and non-governmental agencies as focus areas for future regulatory efforts. In specialty crop systems, irrigation management is extremely challenging. This is primarily due to the limited volume of water available to container-grown crops after an irrigation event, varying cultivars within an irrigation block, and/or varying plant ages within an irrigation block. To prevent moisture stress, irrigation of specialty crops is often excessive, resulting in leaching and runoff of applied water and nutrients. For this reason, improving the application efficiency of irrigation is necessary and critical to the long-term sustainability of commercial specialty crop industries. The use of soil moisture sensing technology is one method of increasing irrigation efficiency, with on-farm studies described in many of the modules and impact statements located on this website. Since on-farm testing of these wireless sensor networks (WSNs) to monitor and control irrigation scheduling began in 2010, WSNs have been deployed in a diverse assortment of specialty crop operations. In deploying these WSNs, a variety of challenges and successes have been observed. Overcoming specific challenges has fostered improved software and hardware development as well as improved grower confidence in WSNs. Additionally, growers are using WSNs in a variety of ways to fit specific needs, resulting in multiple commercial applications. Some growers use WSNs as fully functional irrigation controllers. Other growers utilize components of WSNs, specifically the web-based graphical user interface, to monitor grower-controlled irrigation schedules.