

3. How can technology help?

The use of technology has historically been the cornerstone of improving irrigation efficiencies, first in arid lands and modernized nations and more recently in developing nations. Examples of irrigation system components used to increase irrigation uniformity in specialty crops include drip, micro-irrigation nozzles, and matched precipitation sprinkler nozzles. These technologies have been incorporated into best management practices for production of specialty crops, with the goal of reducing runoff of nutrient- and pesticide-laden water from production sites. However, good uniformity is only part of what is needed to achieve high efficiency, with the other component being application of the appropriate amount of water, based on crop water needs.

Recently released commercial irrigation controllers that have improved irrigation efficiency in specialty crops include evapotranspiration (ET) based controllers and ET plus daily light integral (DLI) based controllers. While appropriate for homeowner applications, these controllers have proven to lack the accuracy required for many commercial agriculture applications, as data is frequently gathered for calculation of ET from weather reporting stations distant from the production facility employing the controller technology. Additionally, if located on-site, instrumentation used to calculate ET and DLI can be inaccurate due to improper installation, calibration, and/or maintenance. For this reason, a simpler to operate and maintain irrigation control system, based on sensing of environmental conditions, is required for long-term adoption and use in commercial specialty cropping systems.