



James E. Ayars, PE

James E. Ayars, PE, is the recipient of the 2024 Netafim award for Advancements in Microirrigation for cutting edge research leading to the use of micro irrigation on all crops in all soil types.

Ayars is a retired research agricultural engineer for the USDA-ARS. His research focused on managing irrigation and drainage systems in the San Joaquin Valley of California. This involved field studies of irrigation and drainage water management to reduce drain flow, reuse of saline drainage water for supplemental irrigation, water management studies of irrigation districts, studies of the effect of irrigation management on drainage water quality, integrated management of irrigation and drainage systems in arid areas, determining water requirements for horticultural crops, determining water requirements of biofuels (sugarcane), and lastly, determining the potential for deficit irrigation of wine, raisin, and table grapes. The ability to accurately manage the depth application of water was critical for this research.

Ayars's successful research career has led to several advances in irrigation. He used surface trickle irrigation to apply saline drainage water to meet the crop water requirements of crops in a field with shallow saline ground water. This study established management practices that enabled long term use of saline water for irrigation of salt tolerant crops without yield loss. He developed a fully automated subsurface drip irrigation (SDI) system controlled by an irrigation algorithm that included in-situ crop

water use from shallow ground water in the water balance calculation. Ayars established procedures for the integrated management of irrigation and drainage systems in drainage impacted irrigation areas in the semi-arid and arid areas of the world. The results of these studies are included in the Integrated Farm Drainage Management program sponsored by the California Department of Water Resources and the Natural Resources Conservation Service (NRCS) and were incorporated in a set of Best Management Practices (BMP). These BMP's were implemented in irrigated areas of Australia. The World Bank has included the BMP's as recommended reading in the World Bank Agriculture Investment SourceBook.

A 46-year member of ASABE, Ayars is also a member of the US Committee on Irrigation and Drainage, the International Committee on Irrigation and Drainage, and previously the American Society of Agronomy, Soil Science Society of America, and Environment and Water Resources Institute.

Ayars has won several awards and is author or coauthor on 224 publications including 80 refereed publications, 108 conference proceedings, 22 book chapters and 14 project reports.