

Updated Consumptive Use and Irrigation Water Requirement Estimates for Washington

R. Troy Peters, Washington State University; Leigh Nelson, USDA-NRCS

The competition and demand for Washington's already limited water resources will increase steadily over time due to the following emerging issues: (1) the water demand to produce food to feed a growing population, (2) increased summer water shortages predicted as a result of climate change, (3) increased water demand to produce biofuel crops, and (4) the need to maintain instream flows for aquatic wildlife habitat. Good data are required to manage these water resources.

Irrigation and evaporation are responsible for the large majority of water use in the state. The Washington evapotranspiration (ET) and consumptive irrigation water requirements tables (crop-water-use tables) are used extensively throughout the state for irrigation system design and planning, irrigation scheduling and management, water rights discussions, water rights transfers, and hydrologic studies. The crop-water-use estimates currently being used were created in the early 1980's, and the tables are nearly 30 years old. With the changes in climate, crops, and irrigation systems, the foundation weather information which was then best available data has become old and out-dated. These tables are not available in electronic format and are therefore difficult for the public to access and use for improved irrigation planning and management.

The crop-water-use-tables are being updated using current weather data and more current and accurate methods, evapotranspiration equations, and crop coefficients. Additional locations and crops were added to expand the existing tables. The data and methods used will be discussed. The preliminary comparisons of the old data with the revised data and the methods to be used to present the data and make them available to the public will be demonstrated. The updated and more accurate data should be the basis for more equitable and informed water rights decisions, irrigation system designs, and irrigation water management decisions. Decisions made on more accurate data should result in better decisions for water quality and quantity management as well as improved profitability for agricultural producers.

R. Troy Peters

Troy Peters currently works at Washington State University as the Extension Irrigation Specialist at the Irrigated Agriculture Research and Extension Center in Prosser. Troy received his Ph.D. in Irrigation Engineering from Utah State University where he worked with Bob Hill, the Utah State Extension Irrigation Specialist. Following graduation he worked at the USDA-Agriculture Research Service Conservation and Production Research Laboratory in Bushland, Texas, where he designed a fully-operational automated center-pivot irrigation system based on remotely-sensed canopy temperature measurements and the time-temperature-threshold method of irrigation scheduling. He continues his work with automated irrigation systems in collaboration with the Washington Tree Fruit Research Commission and is also exploring the relationship between mint oil yields and weeds and pests under deficit irrigation with support from the Washington Mint Commission. Troy strongly believes that good irrigation management is the key to improving grower profitability, alleviating water shortages, and improving environmental water quality. In his extension position he spends most of his time working to understand and address the real issues involved with the lack of good irrigation management practices. He is working to address those issues through grower education and motivation and providing tools that will be used for improved irrigation management.