Benchmark Farms Project

1999 Potato Water Use
Technical Fact Sheet SJ99-FS2

About the Benchmark Farms Project

The Benchmark Farms Project is an agricultural irrigation monitoring project managed by the St. Johns River Water Management District (SJRWMD). SJRWMD monitors the water use at a representative number of sites in a crop area to evaluate crop-specific water use. Rainfall is also monitored at most sites. Grower participation in the project is voluntary. SJRWMD is responsible for the installation and expense of the monitoring equipment and the collection of data. The project is currently limited to monitoring irrigation water use of citrus, commercial ferns (leatherleaf and tree), and potatoes, the three largest agricultural water use crops, respectively, in SJRWMD. The entire Benchmark Farms Project network consists of 180 sites — 63 sites in the potato area, 68 sites in the citrus area, and 49 sites in the fern area.

In 1999, the monitoring network in the potato-growing area consisted of 63 sites; data from 38 sites were used to produce the results in this fact sheet. The potato site network is located in the tri-county area of Flagler, Putnam, and St. Johns, with these counties accounting for 7, 16, and 40 sites, respectively.

Potatoes are a seasonal crop, grown in the tri-county area from January through mid-June. Planting generally starts in early January and continues until late February; the harvest usually begins in late April and continues through mid-June. The irrigation season, however, is generally in the months of February through May.

Potato Water Use in 1999

During 1999, there were approximately 25,000 acres of irrigated potatoes in the tri-county area. The predominate irrigation method is seepage-pipeline irrigation.

The average annual water use for potato irrigation during 1999 was 17.38 inches. The month of April had the highest irrigation water use (Figure 1). The total volume of water used for potato irrigation in the tri-county area was 434,500 acre-inches (17.38 inches x 25,000 acres grown), or 11.80 billion gallons for the growing season. If this amount were used over the entire year, it would equate to 32.32 million gallons per day.

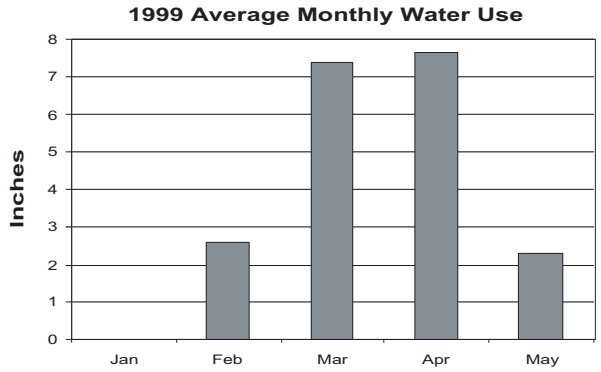

Figure 1

Rainfall

Compared to the 20-year average rainfall (NOAA rain gauge station at Hastings), the 1999 potato season received below-average rainfall from February through May (Figure 2).

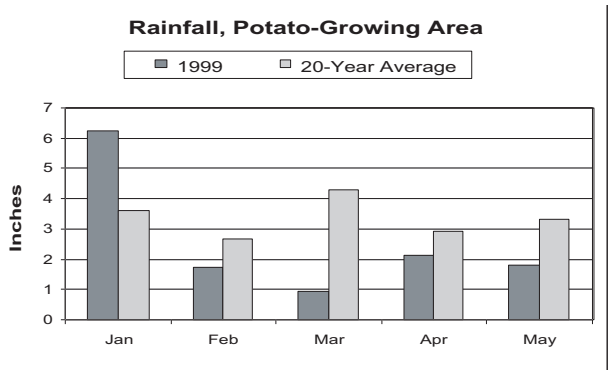

Figure 2

In 1999, rainfall during the typical irrigation months of February through May totaled 6.63 inches. The 20-year average total rainfall for this period (February through May) was 13.13 inches (NOAA rain gauge station at Hastings).

Variation in Use

Site-to-site variation: Irrigation water use for potatoes varies considerably among sites due primarily to differences in soil types, planting dates, rainfall patterns, and farm management. During 1999, the site water use ranged from a minimum of 6.55 inches to a maximum of 33.12 inches. The

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average annual use was 17.38 inches, with a standard deviation of 6.4 inches. Approximately 40 percent of the growers used less than 14 inches of water for irrigation, with 75 percent using less than 21 inches (Figure 3).

Seasonal Variation

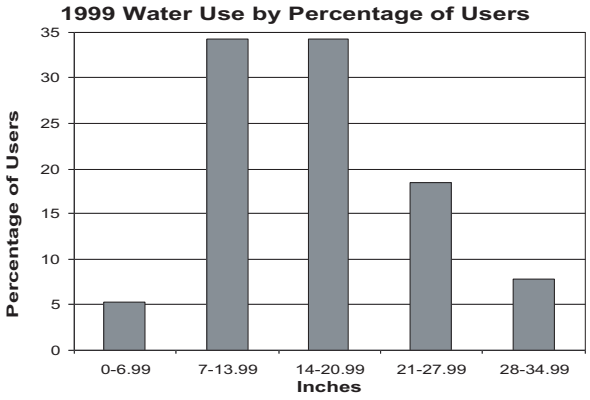

Figure 3

Environmental conditions — predominately rainfall — can cause irrigation water use to vary significantly from one season to another. During the 10-year period of 1990 through 1999, 77 percent of all growers used less than 16 inches of irrigation water per season (Figure 4).

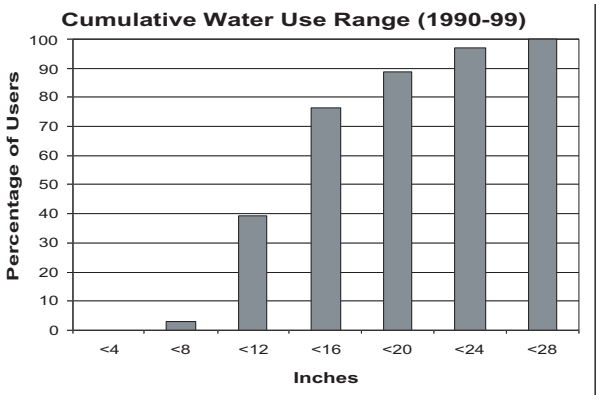

Figure 4

During this same 10-year period, the average annual water use was 13.70 inches, with a standard deviation of 4.46 inches. Average annual use during this period ranged from a low of 7.7 inches in 1991 to a high of 17.38 inches in 1999 (Figure 5).

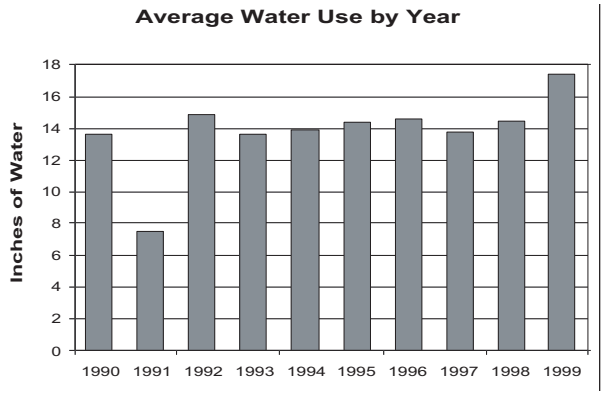

Figure 5

Future water use is expected to vary, depending upon weather patterns, management practices, and technological advances.

Project Accomplishments

The project has improved the water supply planning process by providing accurate assessments of agricultural water use. The project has also given staff the flexibility to adjust permit allocations to reflect realistic agricultural water use. The Benchmark Farms Project has benefited the district, the agricultural community, and the public by providing data, information exchange, district contact, and stakeholder involvement.

SJRWMD would like to thank all the farm cooperators, without whom none of this research would have been possible.

For More Information

The St. Johns River Water Management District is one of five water management districts in Florida. The District's mission is to manage water resources to ensure their continued availability while maximizing environmental and economic benefits.

To receive water use information on leatherleaf fern or citrus, or to receive additional information on potatoes, please direct inquiries to John Fitzgerald at the address below, by telephone at (386) 329-4876, or by e-mail at *jfitzger@sjrwmd.com*.