A Comparison of Evaporation between a Class "A" Pan and a Galvanized Washtub

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A small galvanized washtub (class "T" for tub) pan was placed nearby a National Weather Service Class "A" evaporation pan at the San Jose Field Station. Measurements of water loss were taken weekly from May 11 through October 19, 1984, and from May 2 to October 31, 1985 to compare their accuracy for estimating evapotranspiration (ET).

The "T" pan was a galvanized No. 2 washtub and was 10.25 inches deep by 19.5 inches in diameter. ET measurements were made with a small plastic ruler attached to the side. The water level was set at a fixed height and returned to that point every week.

Total seasonal water use from the class "A" pan was 45.50 inches and it was 48.01 inches for the tub (2.51 inches difference). Maximum daily variation ranged from +0.058 to -0.091 inches and averaged 0.015 inches. Maximum weekly variation ranged from +0.44 to -0.67 inches, but the average variation was only 0.10 inches per week.

Statistical analysis of the evaporation data from the two pans showed that they were very well correlated and not significantly different at the 5% level. The tub lost about 5% more water on a consistent basis compared to the class "A" pan during the irrigation season (May to October).

The primary differences with the tub were its smaller size and the vertical ruler used to measure water loss. The water level measurement device on the class "A" pan was inclined and more accurate. This could explain the small differences in measured water loss from the two devices.

The main advantages of the tub are its ability to be placed anywhere a specific ET measurement is needed, low cost, and ease of use by growers and irrigation managers. In order maximize the accuracy of the tub, the ruler should be attached, so that measurements are taken at the exact same place each time and it should also be made of some type of non-fading plastic or non-corrosive metal.