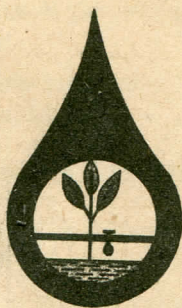


**PROCEEDINGS OF THE SYMPOSIUM ON DRIP IRRIGATION IN
HORTICULTURE WITH FOREIGN EXPERTS PARTICIPATING**

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IRRIGATION OF VINEYARDS WITH EVAPOTRANSPIRATION (ET) METHOD

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The term „evapotranspiration , ET” includes the sum of evaporation of water from the soil surface (E) and the water that evaporates from plant leaves, a process that is called transpiration (T).

Although there are several factors that affect ET, the most important are the climatic and the plant characteristics which are interrelated elements of the climatic factors: solar radiation, day length, wind, humidity, temperature and precipitation. Although there are these and other factors, by far the greatest influence on ET during the peak consumptive use period is attributed to the effects due to solar radiation.

At a given location ET rate may differ depending upon whether the field in question is surrounded by irrigated land or dry land. Adjacent fields of irrigated land depress the ET demand while the greater advective energy from the adjacent fields of dry land increase the ET of an irrigated field above the normal ET values.

Plant factors also include things such as the percent of ground surface covered by plants, stage of plant growth, plant physiological transpiration behavior and the crop surface roughness. Possibly the most important crop factor which affects the ET rate is the surface area of the plants intercepting radiation from the sunlight in relation to the soil area it covers. There is considerable variation in the groundcover condition from crop to crop. Some crops have approximately the same groundcover percentage throughout the year. For example, mature plants such as citrus and olives provide a nearly constant cover throughout the year. In contrast, mature vines provide a constant cover only after they are completely leafed out and have little ET demand in the winter months when the leaf areas are small. Small leaves shade a small portion of the ground, thus the vines will intercept a small proportionate segment of the energy available for ET. Determination of the vine coverage from the bud stage to the leaf maturity was the subject of this investigation.

ET was calculated using different approaches to estimate the percent cover and the calculations were compared to the actual consumptive use measured with the neutron probe. Because Thompson Seedless vines are trained on trellises in California, calculations of the total exposed surface area provided best correlation.

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