The average monthly effective rainfall calculated by Equation 24 cannot exceed either average monthly rainfall or average monthly *ET*. If the application of this equation results in an *ER* which exceeds either, then *ER* must be reduced to the lesser of the two.

Equations 24 and 25 were developed using a daily soil moisture balance procedure. Such a procedure necessarily fails to consider two factors which may affect *ER*. These factors, soil infiltration rates and rainfall intensities, were not considered because sufficient data were not available, and they are too complex to be readily considered. If, in a specific application, infiltration rates are low and rainfall intensities are high, large amounts of rainfall may be lost to surface runoff. Sloping land surfaces would further reduce infiltration amounts. In such cases, the *ER* values obtained from Equation 23 would need to be modified appropriately.

The Everglades Agricultural Area (EAA), as described in Section 3.1 and by Mierau (1974), was used as example to demonstrate the application of Equations 24 and 25 for determining effective rainfall. The average available water capacity in the top 60 cm layer of Pahokee muck (*Lithic Medisaprists*) is about 0.3 cm of water per cm of soil (Stewart et al., 1963). If irrigations are scheduled at 50% of the available water capacity, the usable soil water storage, D, is 9 cm.

Effective rainfall was computed from Equation 24, using rainfall data (Table 5), potential *ET* from the Penman method (Table 6), and $D = 9$ cm. The results are shown in Table 11. Effective rainfall was computed to be 825 mm compared with 1494 mm of rainfall (55% of rainfall). However, if only the irrigation period (Nov.–May) was considered, the effective rainfall was computed to be 312 mm compared with 468 mm of rainfall (67% of rainfall).

Field data, based on a water budget for the EAA, showed that the actual effective rainfall values were 305 mm during the irrigation season and 805 mm on an annual basis. The good agreement between the field data and the model predictions for effective rainfall implied that the effective rainfall estimated from the Soil Conservation Service (1967) method is a satisfactory approach for the south Florida organic soil watershed.

4.3 IRRIGATION REQUIREMENT

Irrigation requirement is defined as the quantity of water, exclusive of precipitation, that is required by a crop growing without water stress. It is calculated as the difference between evapotranspiration and effective rainfall, i.e.,

$$IRR = ET - ER \tag{26}$$