season, these storms can produce a large amount of water in excess of that which can be stored in the soil profile (Allen et al., 1982). This excess is lost either to surface runoff or to percolation below the root zone. Thus, the effectiveness of rainfall in the wet season is relatively low. Conversely, during the dry season frontal storms of small magnitude and low intensity are typical. Under nonirrigated conditions, this amount of rainfall can usually be stored in the soil, resulting in a higher rainfall effectiveness.

When the *ET* rate is high, the available moisture in the soil profile is depleted rapidly, thus providing a relatively large storage capacity for receiving rainfall. That is, a higher *ET* rate will increase the effectiveness of rainfall, while lower *ET* rates will decrease rainfall effectiveness.

When the soil-water storage capacity is large, the potential to store rainfall is high. Thus, the effectiveness of rainfall would be relatively high. Conversely, if the soil-water storage capacity is low, only a small amount of rainfall can be stored in the soil and the resulting rainfall effectiveness will be low. Infiltration rates are usually lower and the potential for runoff is greater for soils with greater water-holding capacities.

Antecedent soil water content influences the amount of rainfall which can be stored. For this reason, an untimely or excessive irrigation would reduce rainfall effectiveness. If soil water levels are maintained high by irrigation, rainfall effectiveness will be lower than for nonirrigated areas which are otherwise identical.

Soil Conservation Service scientists analyzed 50 years of rainfall records at each of 22 locations to develop a predictive technique for effective rainfall (1967). They predicted effective rainfall (*ER*) from:

$$ER = (0.83548R_t^{0.82416} - 0.29352)(10^{0.09553(ET)})(F) \qquad (24)$$

where ER = average effective monthly rainfall, cm;
R_t = total monthly rainfall, cm;
ET = monthly evapotranspiration, cm; and
F = soil water storage factor.

The soil water storage factor was defined by:

$$F = 0.531747 + 0.116206D - 0.008943D^2 + 0.000232D^3 \qquad (25)$$

where D is the usable soil water storage in cm. D is usually calculated as 50% to 70% of the available water capacity of the soil, depending upon the irrigation management practices used.

A solution to Equation 24 for D = 7.6 cm is given in Table 10. For other values of D, the *ER* values must be multiplied by the corresponding soil water storage factor given in the lower portion of Table 10.