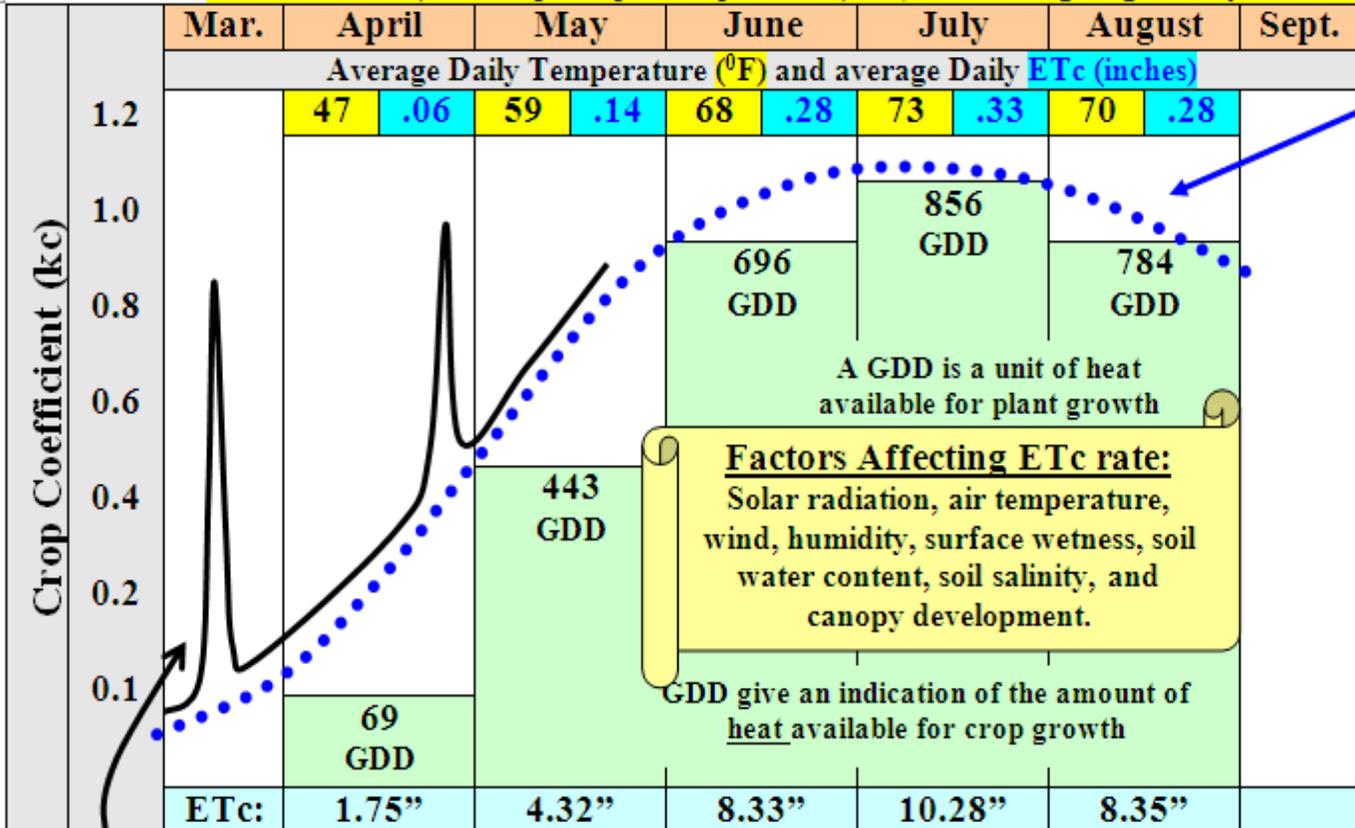


Section 4 of 22 (4a - Crop Evapotranspiration (ETc) & Growing Degree Days Guide (Corn Silage example))



The blue dotted line is the Basal Crop Coefficient (Kcb): it is a coefficient used to relate the ET from a crop that is not stressed for water and where soil surfaces are dry, to that of a grass reference crop (ET₀).

Growing Degree Days (GDD) are calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (this base Temperature (T_{base}) can be 40, 45 or 50 °F, which is the most common).

$$GDD = T_{max} + T_{min}/2 - T_{base}$$

Example GDD for July
 $GDD = 83.7 + 61.4/2 = 72.6$
 $GDD = 72.6 - 45 = 27.6 \text{ GDD/day}$
 $27.6 \times 31 \text{ days} = 856 \text{ GDD/month of July}$

Total GDD to reach Crop maturity = 2,848

Factors Affecting ETc rate:
 Solar radiation, air temperature, wind, humidity, surface wetness, soil water content, soil salinity, and canopy development.

GDD give an indication of the amount of heat available for crop growth

Planting---Emergence-----Rapid-----Effective---Maturation---Harvesting
 Growth Full Cover

The solid black line represent a temporary increases in the kc due to irrigations causing surface wetness (high evaporation)

- Kc is the ratio of the actual Crop ET to a reference Crop (e.g. grass) ET₀ at a specific time.
- Kc for harvested grass and forage legumes drop at harvest and then increase as regrowth occurs.
- When crops are stressed because of lack of water and/or elevated soil salinity, the ETc rate decreases.
- When the crop completely shades the soil surface, the Kc may exceed 1.0 (i.e. the crop has a higher ET rate than grass reference crop; e.g., alfalfa would have a higher ET rate than grass prior to harvest).

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