

# New Mexico Crop Information

**Pecan crop coefficient(k) to calculate evapotranspiration(ET) where  
 $Et=k*Eto$**

Eto = reference evapotranspiration or potential evapotranspiration referenced to grass.

188

T.W. Sammis et al. / Agricultural Water Management 69 (2004) 179–190

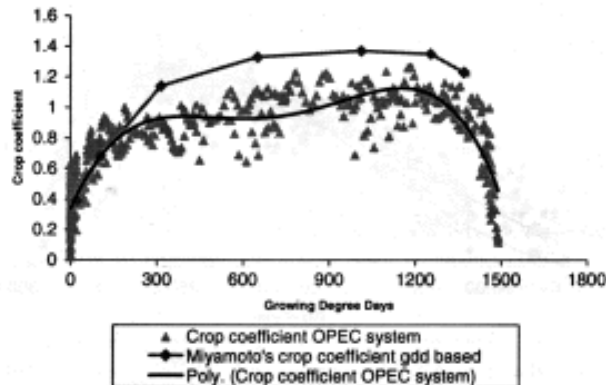
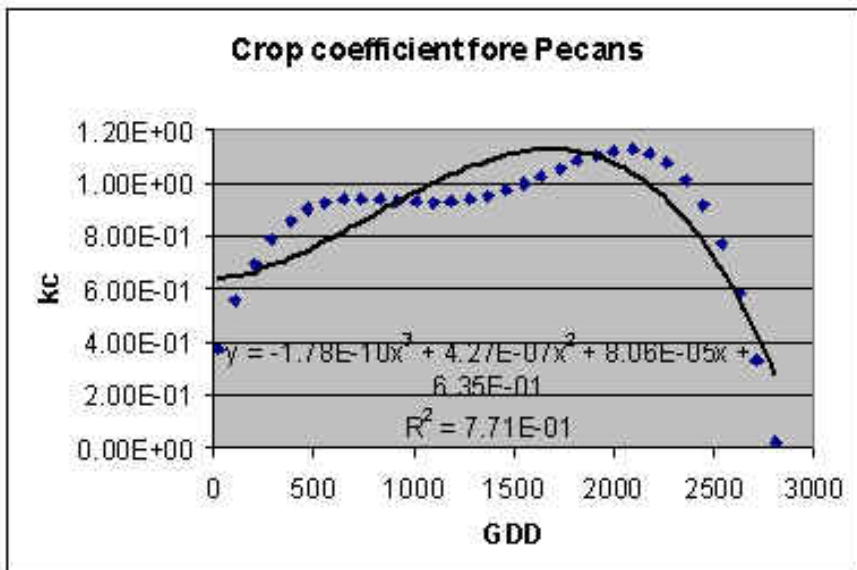


Fig. 4. Daily crop coefficients for pecans using GDD as a time base for 2001–2002.

a 0.81 coefficient of determination (Fig. 4). The equation is

$$Kc = -3.866 \times 10^{-12} GDD^4 + 1.11 \times 10^{-8} GDD^3 - 1.08 \times 10^{-5} GDD^2 + 4.31 \times 10^{-3} GDD + 3.34 \times 10^{-1}$$

Crop Coefficient is based on GDD where a base temperature of 15.5 Degrees C and no cutoff were used. This is the combined data from 2002 and 2003. When a third order polynomial is fitted to the data and the temperature converted to degrees F the result is



The Base temperature is 60 F and no cutoff temperature.

The crop coefficient when expressed a days of the year is:

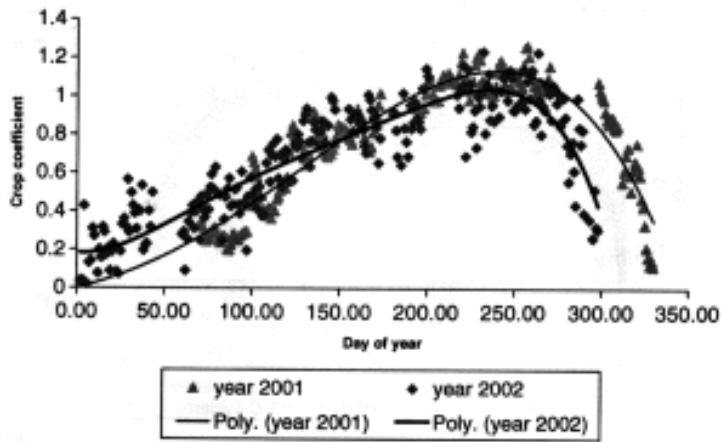


Fig. 3. Daily crop coefficient for pecans using day of the year as a time base for 2001–2002.

Year 2001 fits a four order polynimal when forced through 0.

$$Kc = -3.19 \times 10^{-10} \text{DYEAR}^4 + 2.72 \times 10^{-8} \text{DYEAR}^3 + 2.22 \times 10^{-5} \text{DYEAR}^2 + 2.24 \times 10^{-3} \text{DYEAR}$$

Year 2002 fits a fifty order polynomial and the coefficient of determination

$$Kc = -8.01 \times 10^{-12} \text{DYEAR}^5 + 5.05 \times 10^{-9} \text{DYEAR}^4 - 1.19 \times 10^{-6} \text{DYEAR}^3 + 1.25 \times 10^{-4} \text{DYEAR}^2 - 9.24 \times 10^{-3} \text{DYEAR} + 1.85 \times 10^{-1}$$

Reference T. W. Sammis J. G. Mexal and D. Miller 2004 Evapotranspiration of flood irrigated pecans. *Ag Water Management* 69 :179-190