

# Consumptive-Use and Yield of Alfalfa in Northwestern New Mexico

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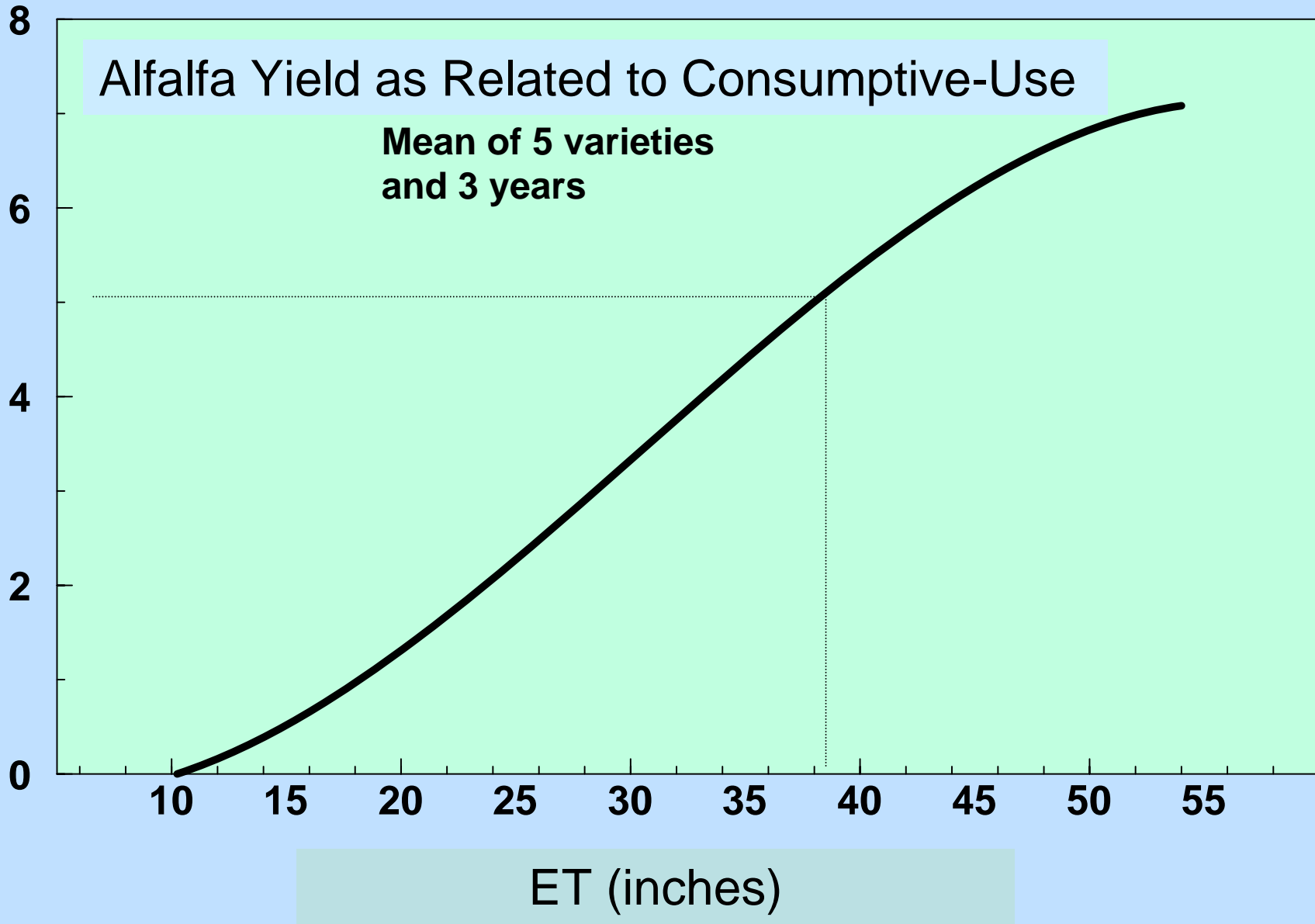
# Note

- The fine line in the graph on the next slide designates ET at the average San Juan County, NM yield of about 5 tons per acre (ET at this yield = ~ 38 inches)
- Yields of greater than 7 tons per acre, however, are common at this location under good management.

Dry Forage Yield (tons/acre)

# Alfalfa Yield as Related to Consumptive-Use

Mean of 5 varieties  
and 3 years

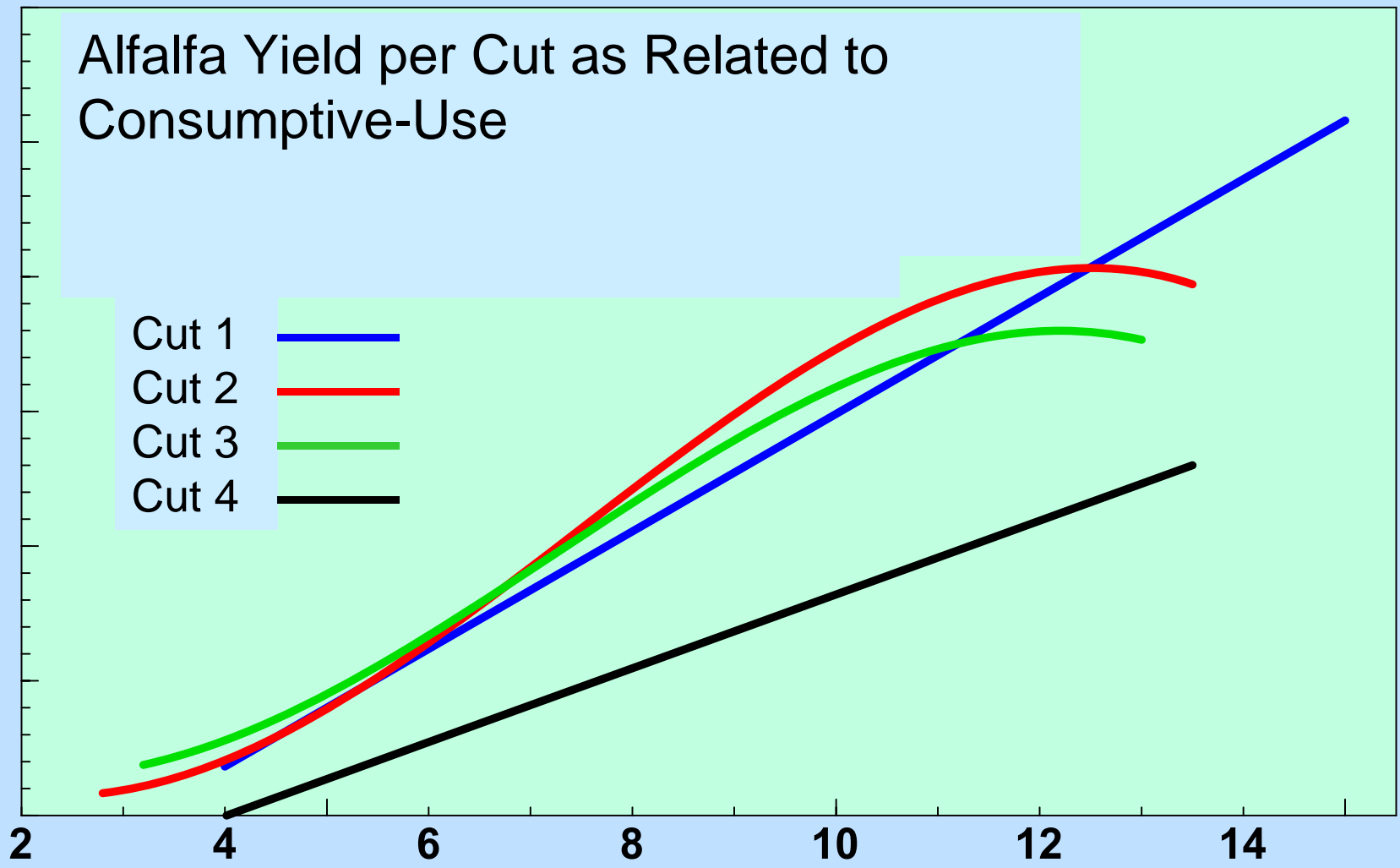


# Alfalfa Yield per Cut as Related to Consumptive-Use

Dry Forage Yield (tons/acre)

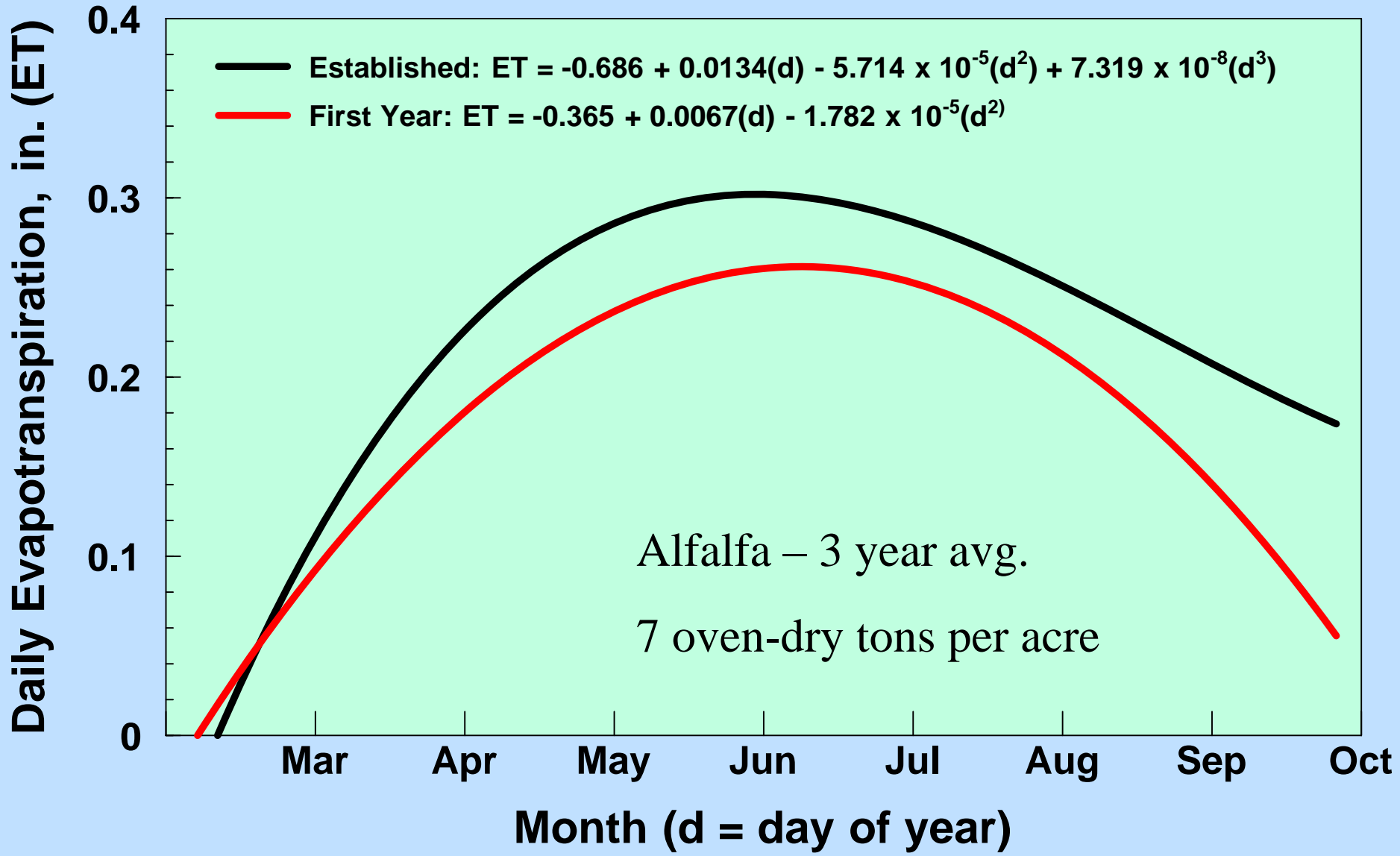
- Cut 1 (Blue line)
- Cut 2 (Red line)
- Cut 3 (Green line)
- Cut 4 (Black line)

ET (inches)



# Note

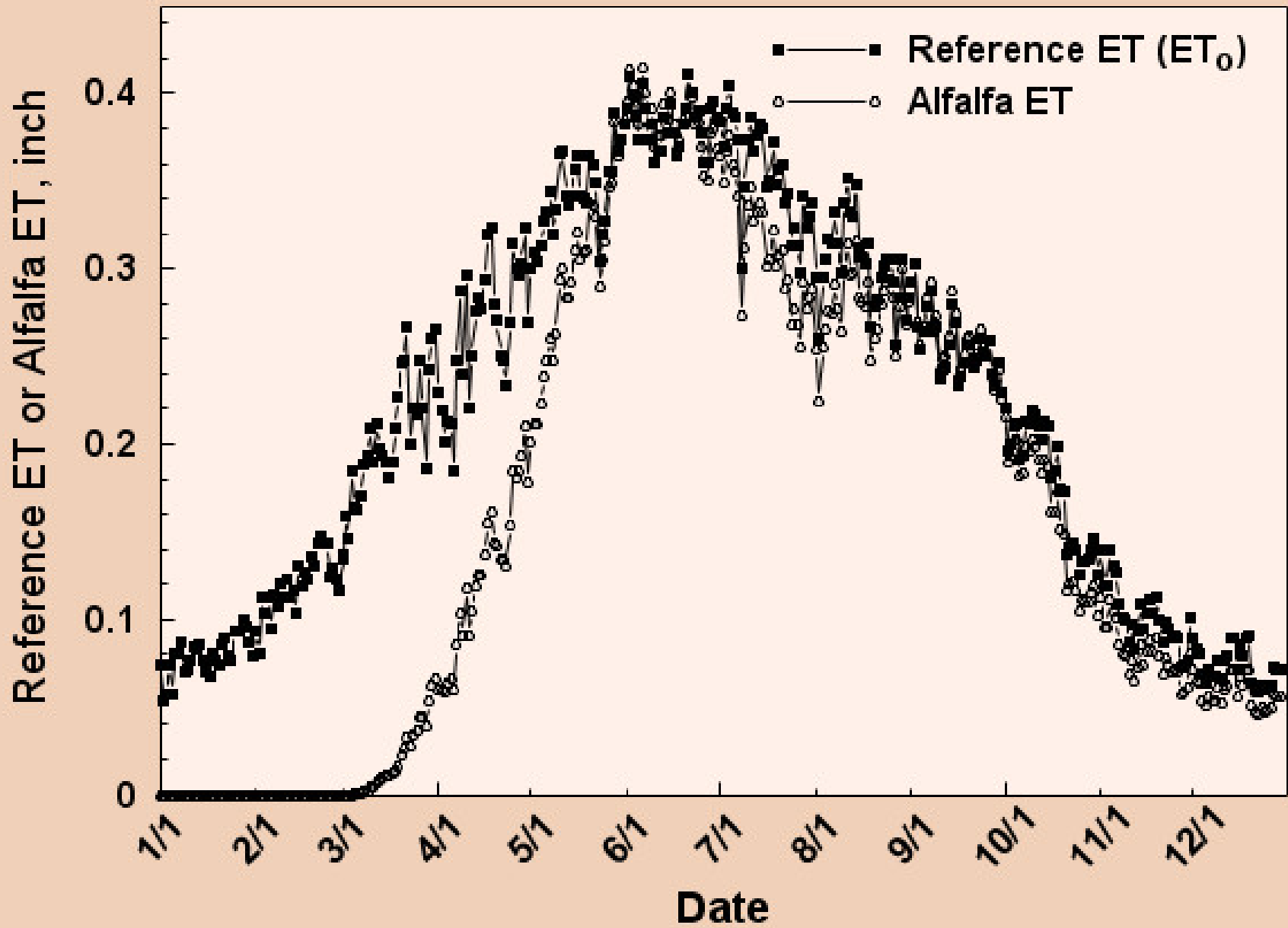
- The following graph shows 'smoothed' (or mean) curves for daily alfalfa ET over the entire first year and subsequent year growing seasons.
- The mean ET curves do not reflect daily ET variability during cutting periods:
  - For irrigation scheduling, the daily estimate of ET should be increased by about 20% (from the mean) for the 10 days before cutting and decreased by 20% for the 10 days after cutting.



# Next Slide

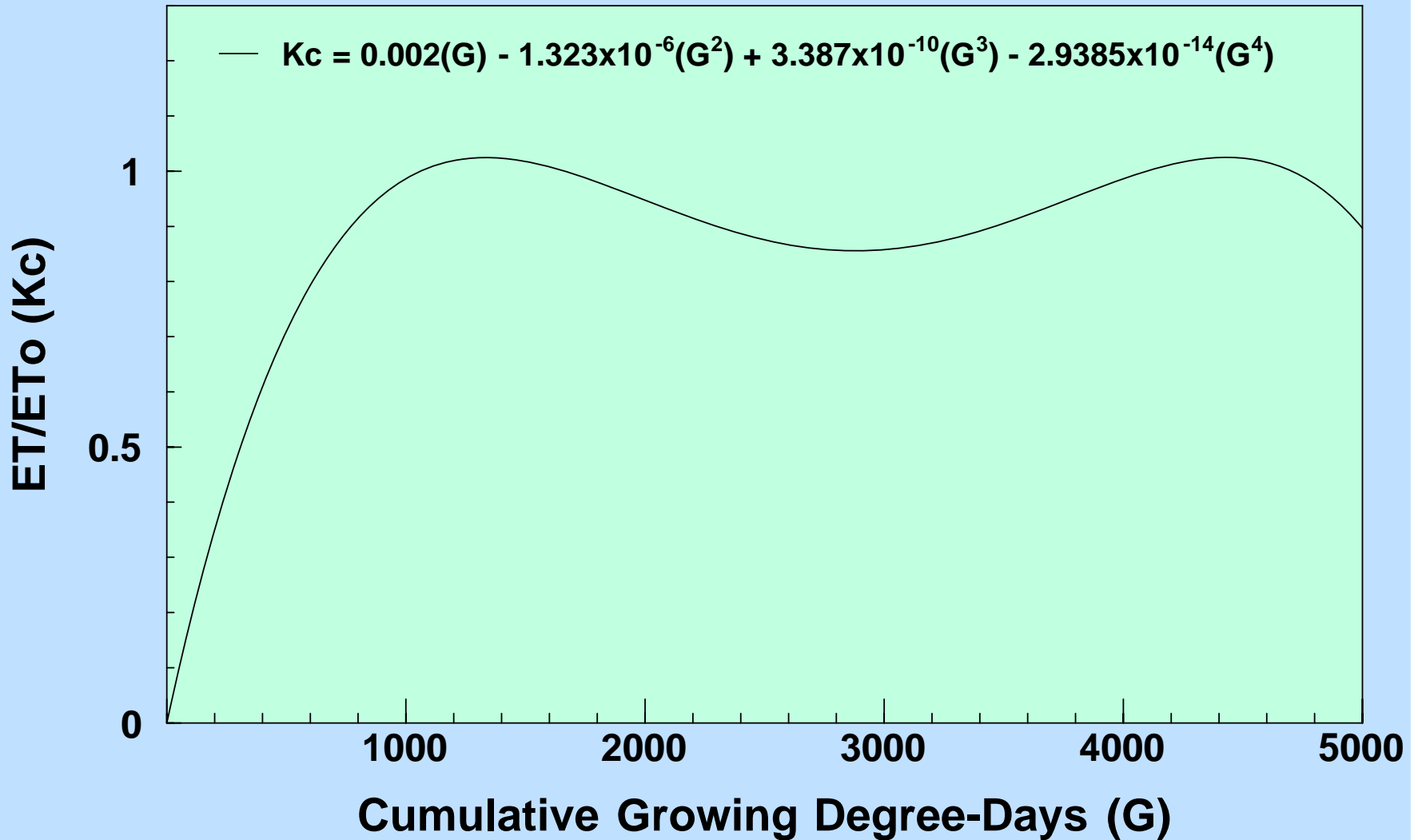
## Reference ET vs. Alfalfa ET

- The reference evapotranspiration (ET<sub>o</sub>) shown on the next slide is calculated by the standardized Penman-Monteith method as recently approved and supported by ASCE, ASAE and IA.
- FAO-56 Report  
<http://www.fao.org/docrep/X0490E/X0490E00.htm>





# Alfalfa Crop Coefficient ( $K_C$ )



# References

- NMSU Agricultural Science Center at Farmington Annual Reports: <http://farmingtonsc.nmsu.edu>
- Smeal, D., E.J. Gregory, and R.N. Arnold. 1992. Interseasonal variability in the water use – production function of alfalfa. *J. Prod. Agric.* 5:576-580.
- Smeal, D., C.E. Kallsen, and T.W. Sammis. 1991. Alfalfa yield as related to transpiration, growth stage, and environment. *Irrig. Sci.* 12:79-86.
- Smeal, D., J. Tomko, E.J. Gregory, and R.N. Arnold. 1994. Water-use and yield of alfalfa in northwestern New Mexico. *N.M.S.U. Agric. Exp. Sta. Bull.* 770.