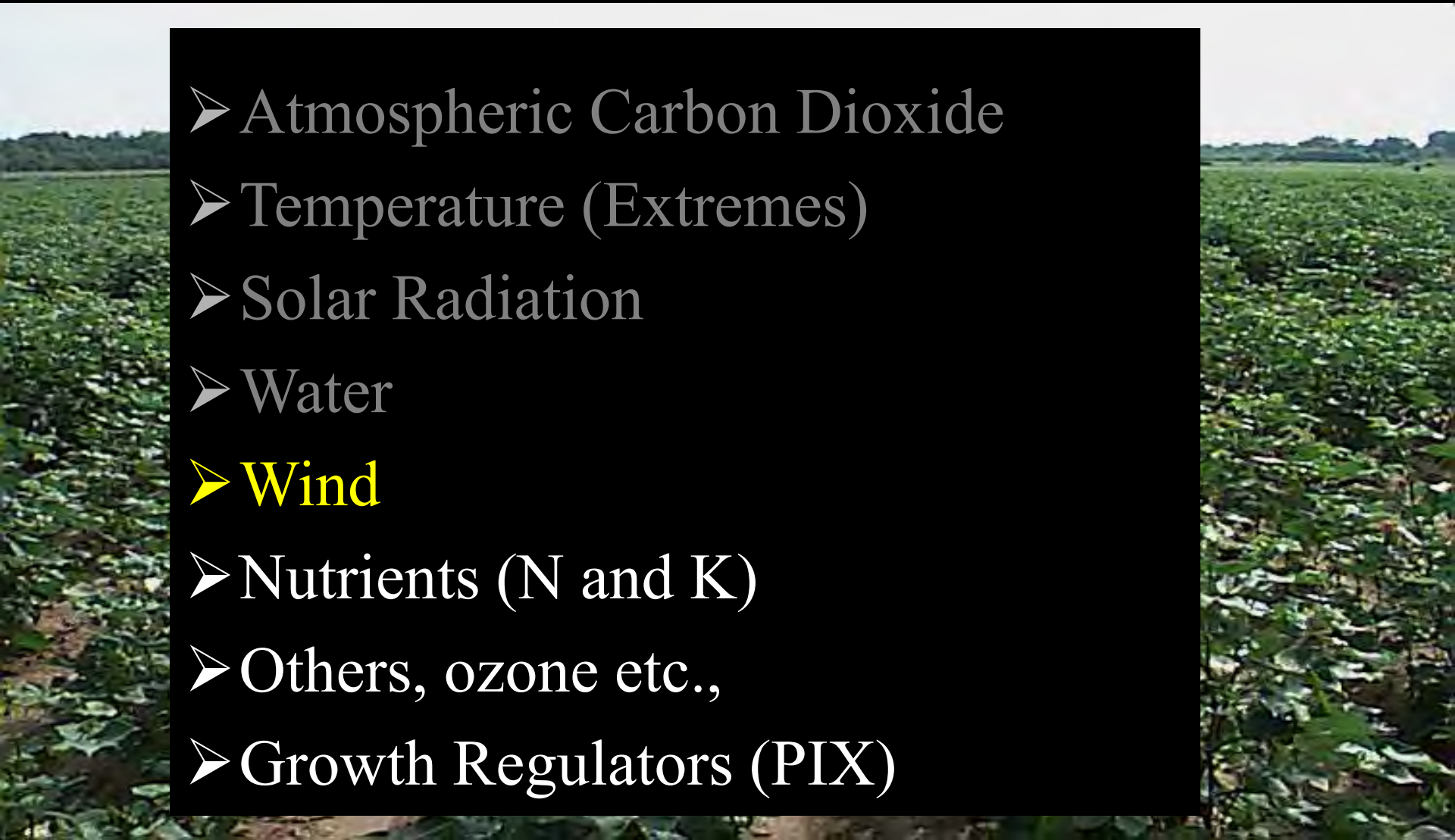
Environmental Factors
Wind

K. Raja Reddy
Krreddy@ra.msstate.edu

Environmental and Cultural Factors Limiting Potential Yields



- Atmospheric Carbon Dioxide
- Temperature (Extremes)
- Solar Radiation
- Water
- Wind
- Nutrients (N and K)
- Others, ozone etc.,
- Growth Regulators (PIX)

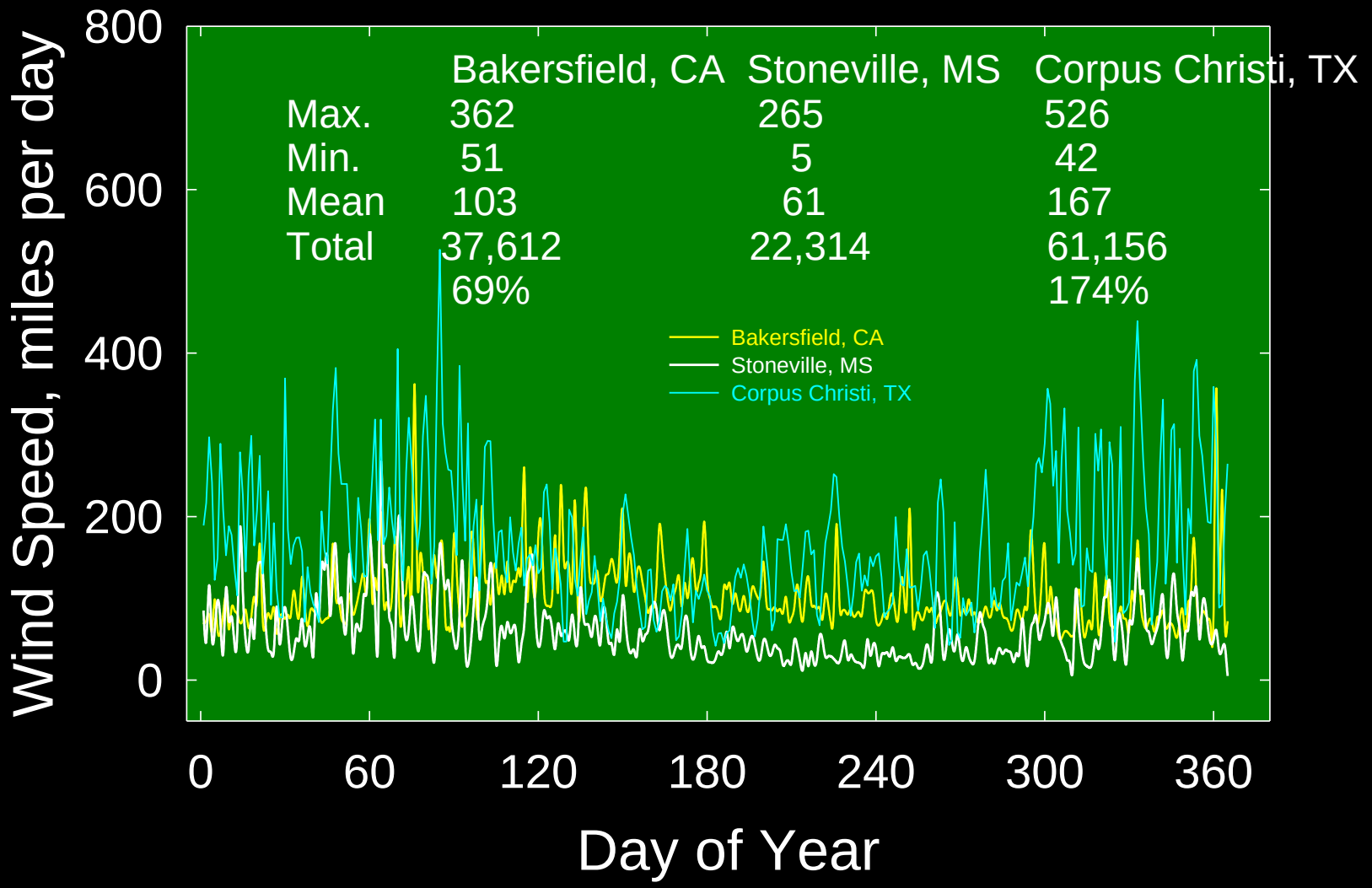
Wind - Objectives

The objectives of this lecture are to:

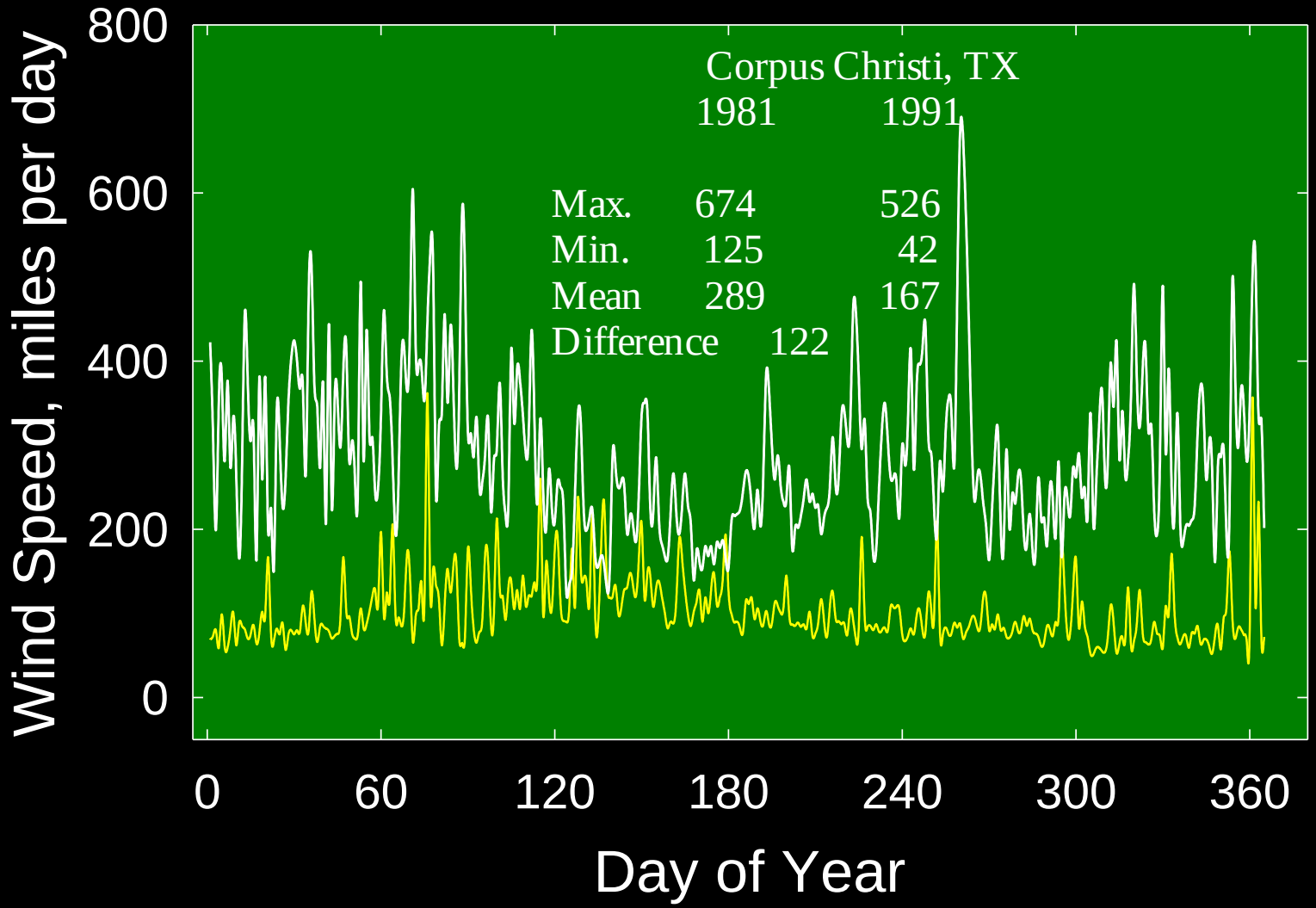
- Learn temporal and spatial variability in wind run.
- Effects on plants.

Wind Speed - Seasonal Trends

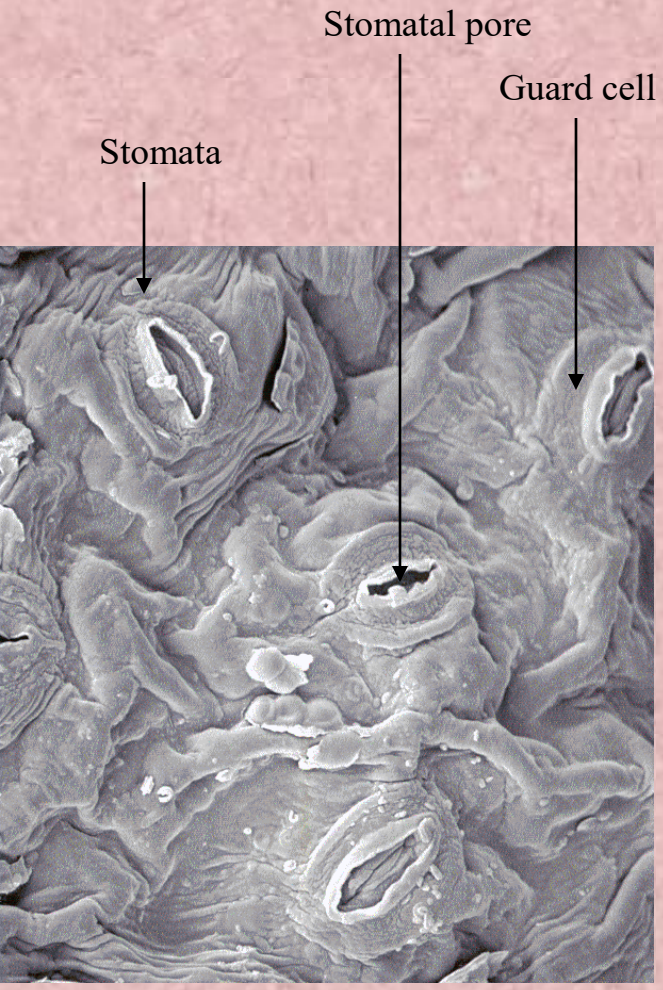
Bakersfield, CA, Stoneville, MS and Corpus Christi, TX - 1991



Wind Speed Trends - Season to Season Variation
Corpus Christi, TX - 1981 and 1991



Water Loss, Stomatal Aperture Size and Boundary Layer Resistance



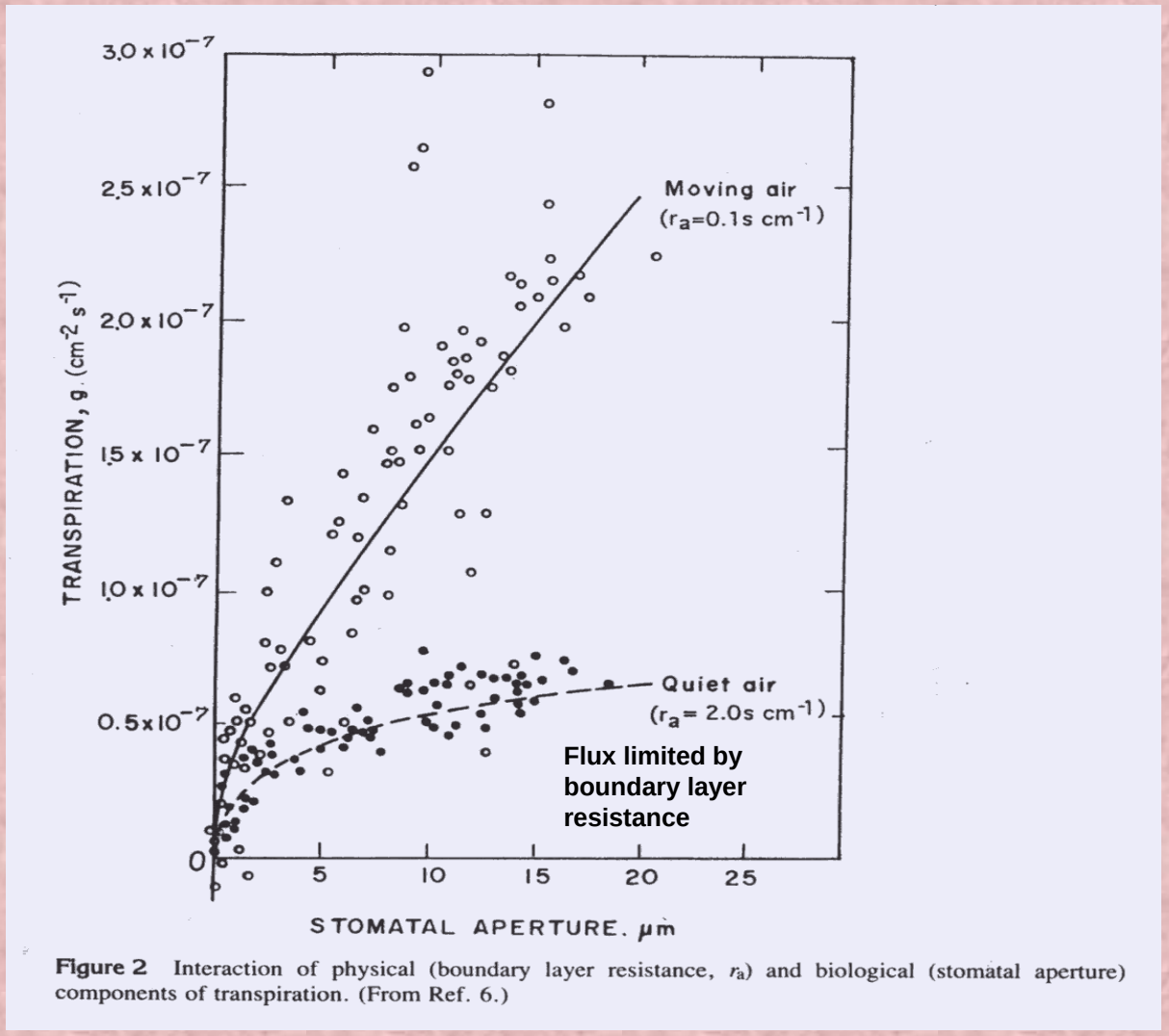
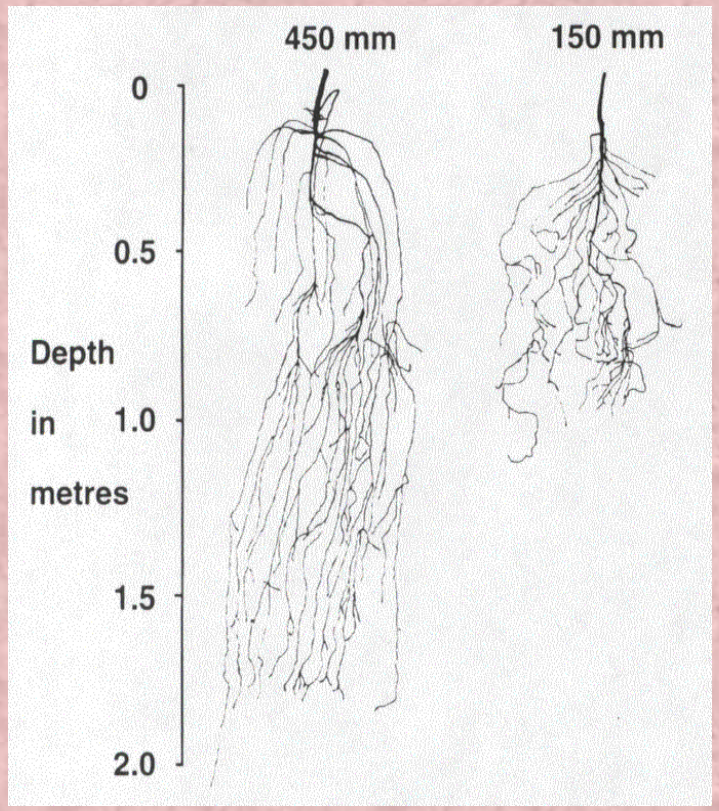


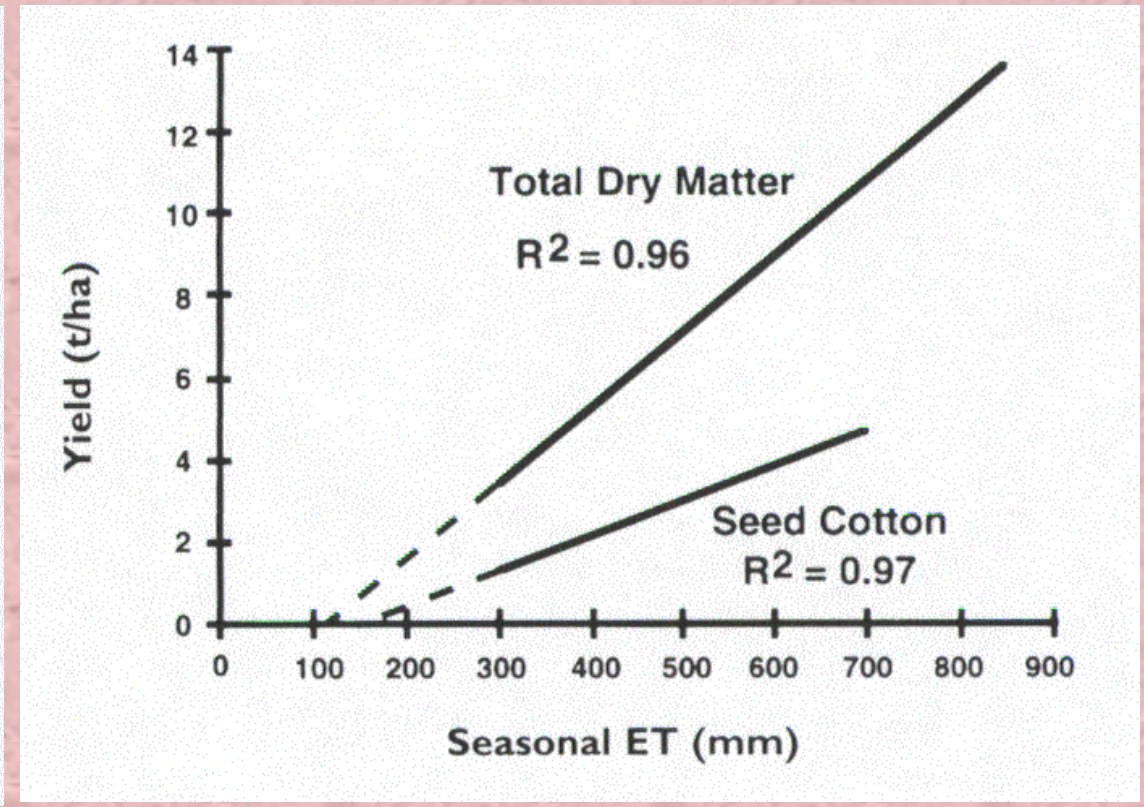
Figure 2 Interaction of physical (boundary layer resistance, r_a) and biological (stomatal aperture) components of transpiration. (From Ref. 6.)

Root Growth and Yield as Functions of Stored Water and Seasonal Evopotranspiration

a. Stored water on rooting depth



b. Yields as a function of seasonal ET



Summary and Conclusions

- Wind speed varies spatially and temporally within a year and over years.
- Wind speed, under normal conditions, affects plants indirectly by affecting evopotranspiration and thus water balance and finally yield.
- Extreme winds will have a drastic effects on plants.

Summary and Conclusions