



Drought Stressed Corn Timing is Everything

R.W. Heiniger
Vernon G. James Center
North Carolina State University



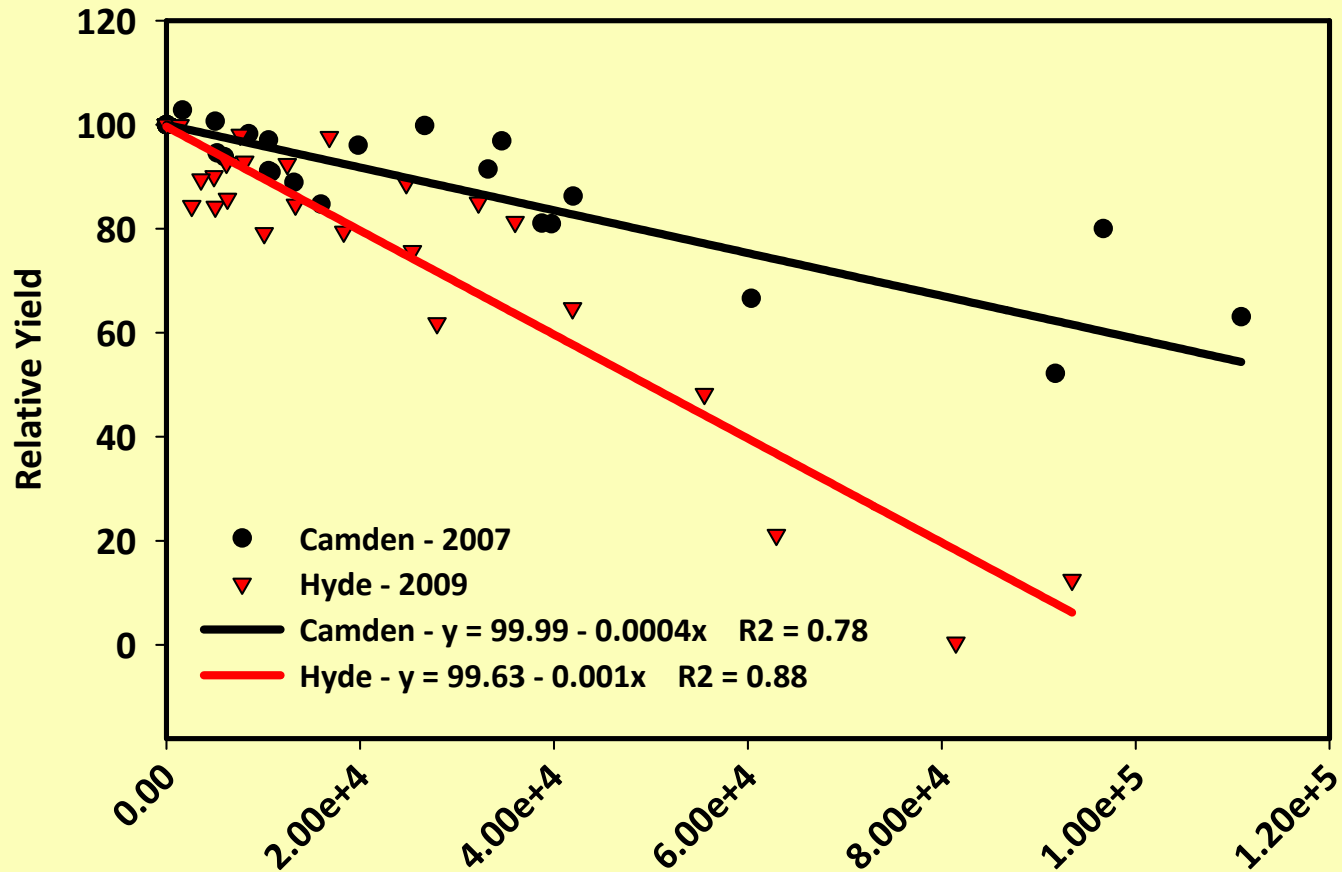
Maximum Corn Yields are Obtained:
when the corn plant collects the maximum
amount of light possible without
heat or drought stress

The earlier or later the stress occurs the
lower the impact on yield

The shorter the period over which stress
occurs the lower the impact on yield



Yield Decline Resulting From Length of Time and Amount of Leaf Loss



Corn Defoliation Progress Curve

Water Use in Corn

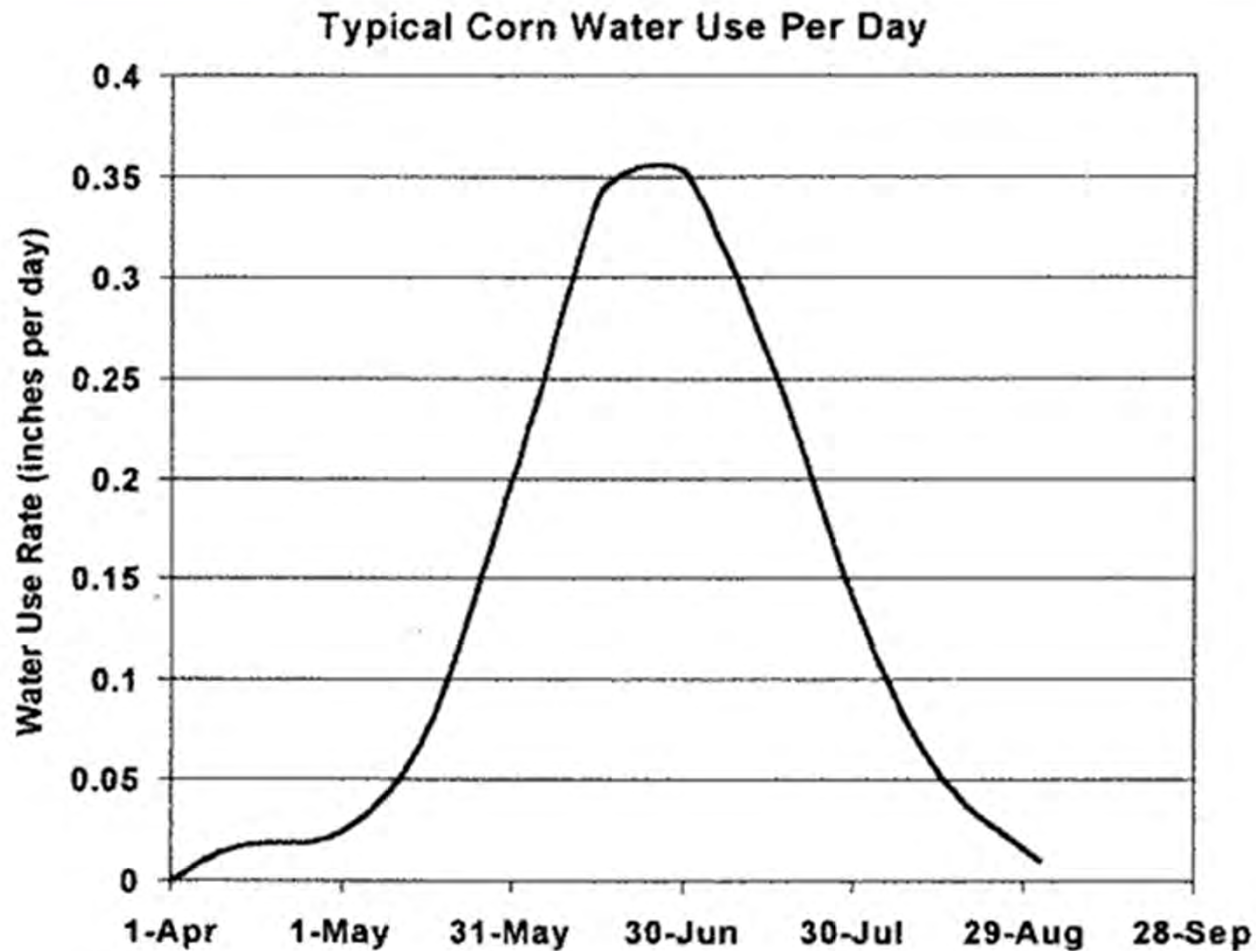
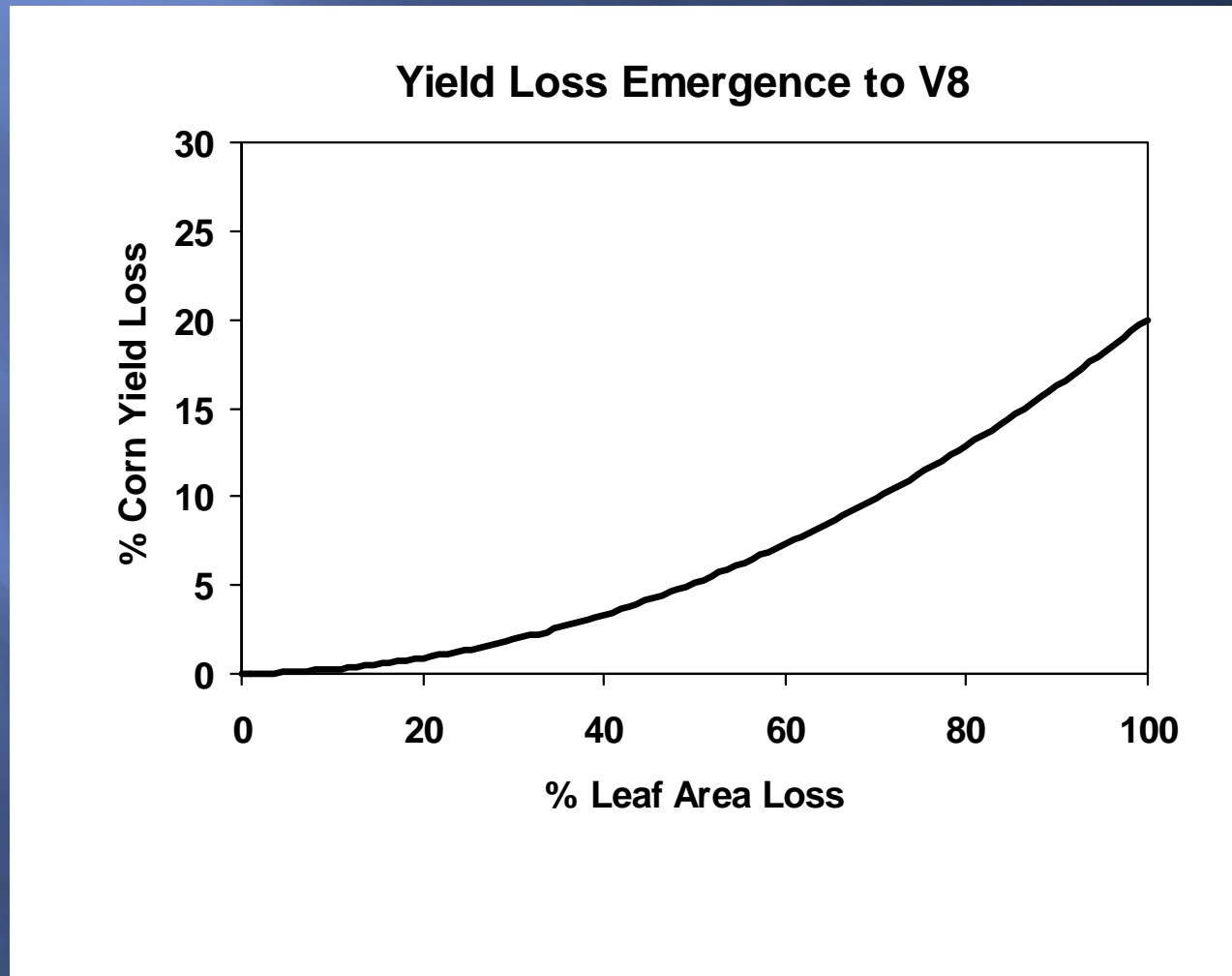


Fig. 4-1. Amount of water used per day by a growing corn crop planted on April 1 at a plant population of 30,000 plants per acre.

V8 – Eight Leaf Stage



Corn Yield Loss is a Function of the Amount of Leaf Area Lost From Rolling or Desiccation

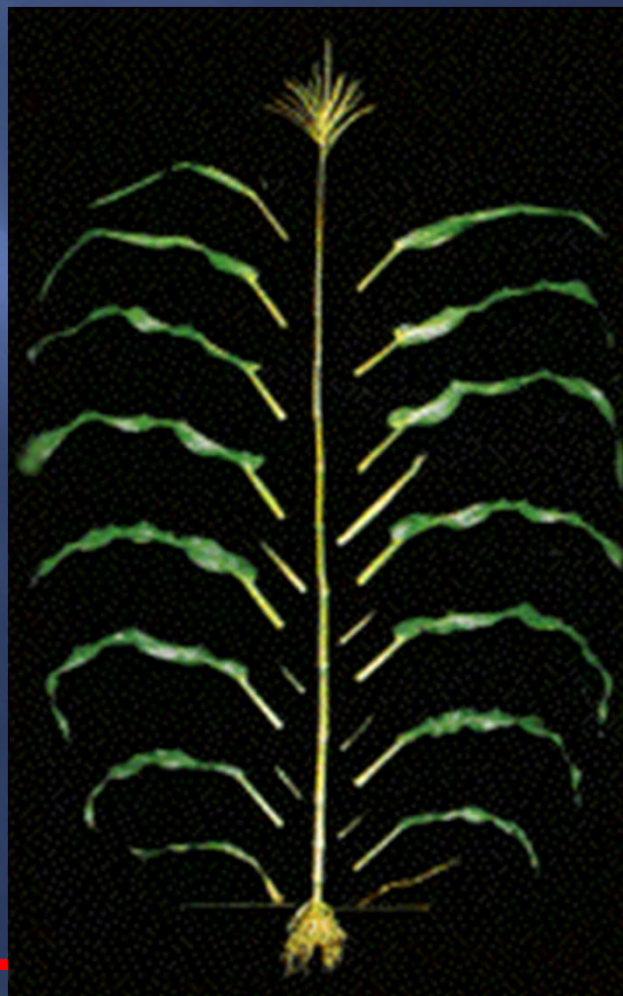




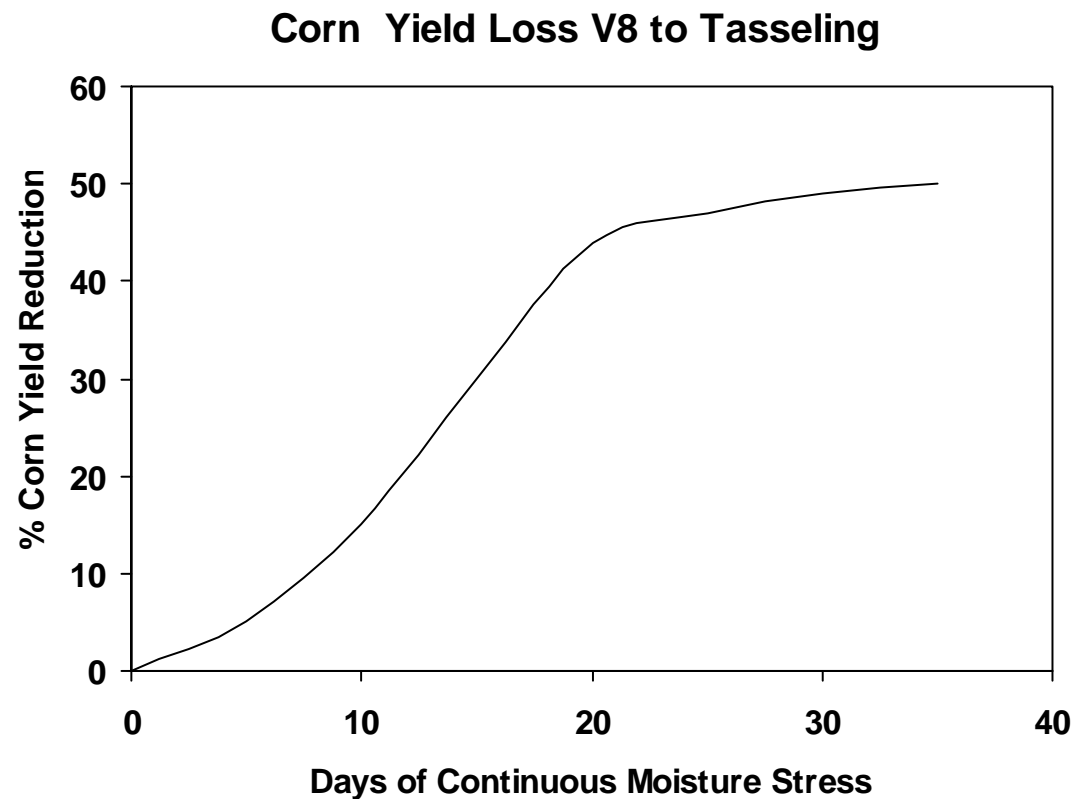
Leaf Loss Resulting From Sun Scald



VT – Tassel



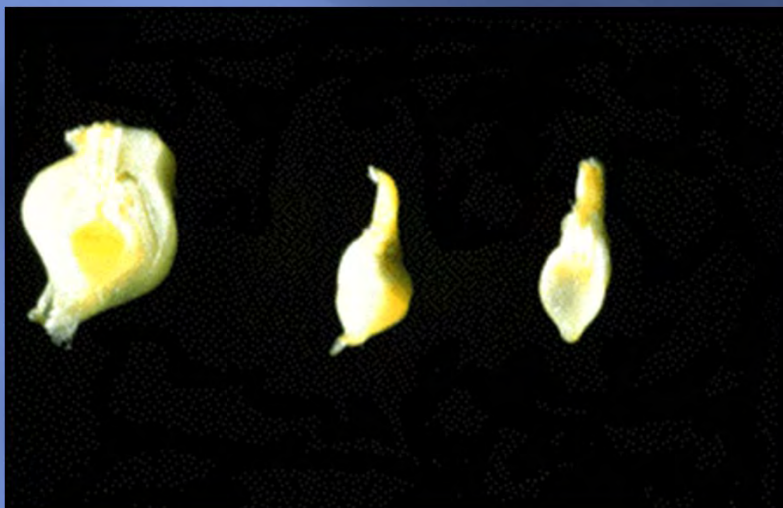
Corn Yield Loss is a Function of Each Day of Lost Photosynthesis – Lower Kernel Number



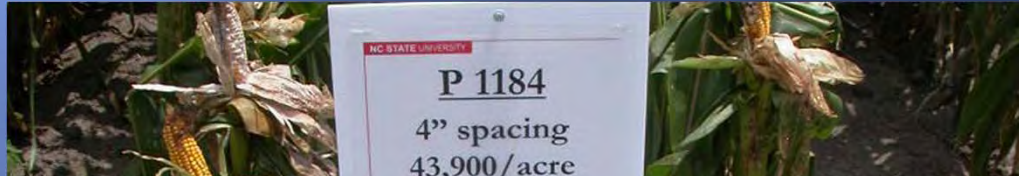
Reduction in Ear Size – Drought From V8 to VT



R1 - Silking



From VT to R2 Corn Yield Loss is a Function of the Number of Kernels aborted

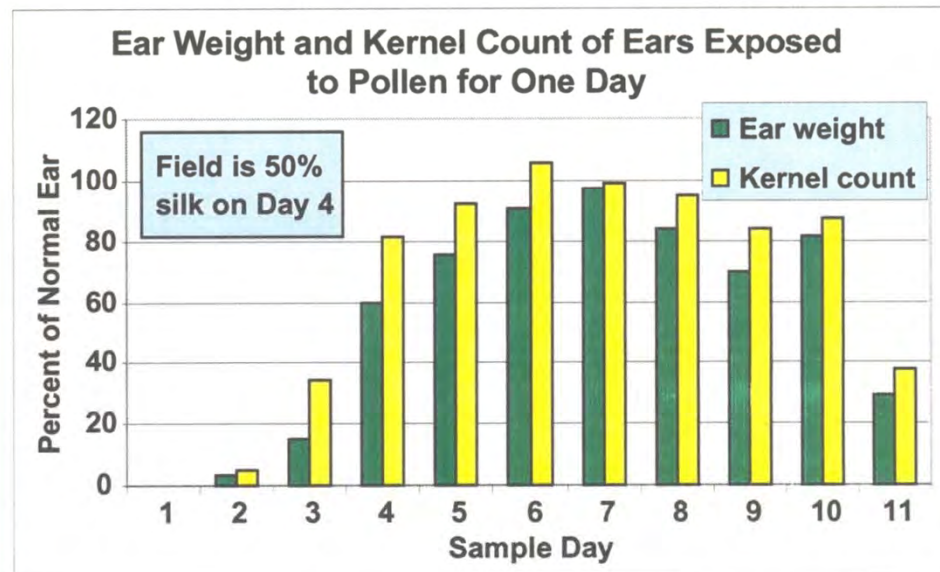


Effect of Pollination Timing on Kernel Set

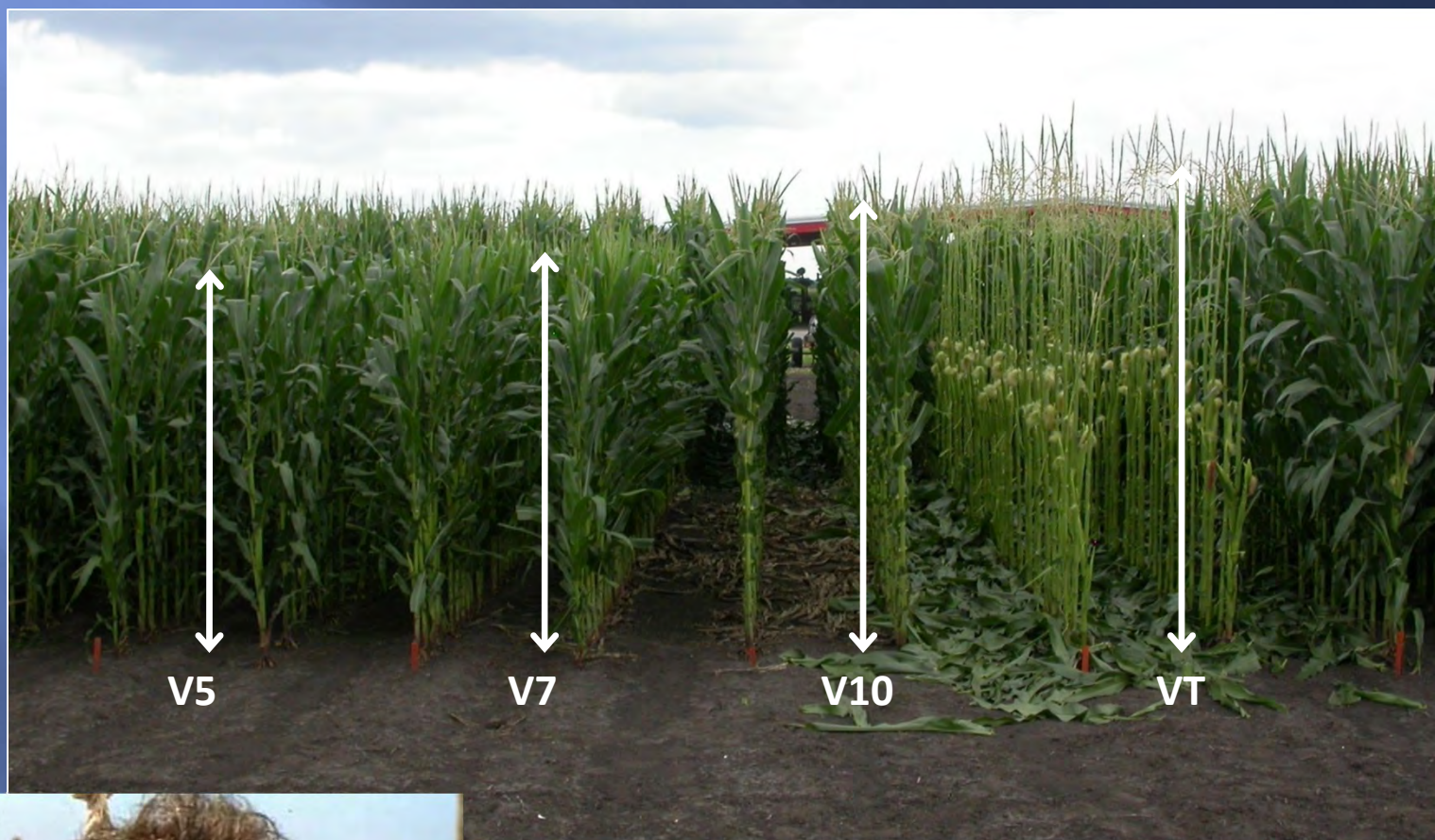


Normal Ear* Day 2 Day 3 Day 4 Day 5 Day 6 Day 7 Day 8 Day 9 Day 10 Day 11

*silks exposed to pollen daily



Effect of Stress on Plant Growth and Development





Ear Size, Growth Stage, and Damage Intensity

V3



0% 25% 50% 100%

V10



0% 25% 50% 100%

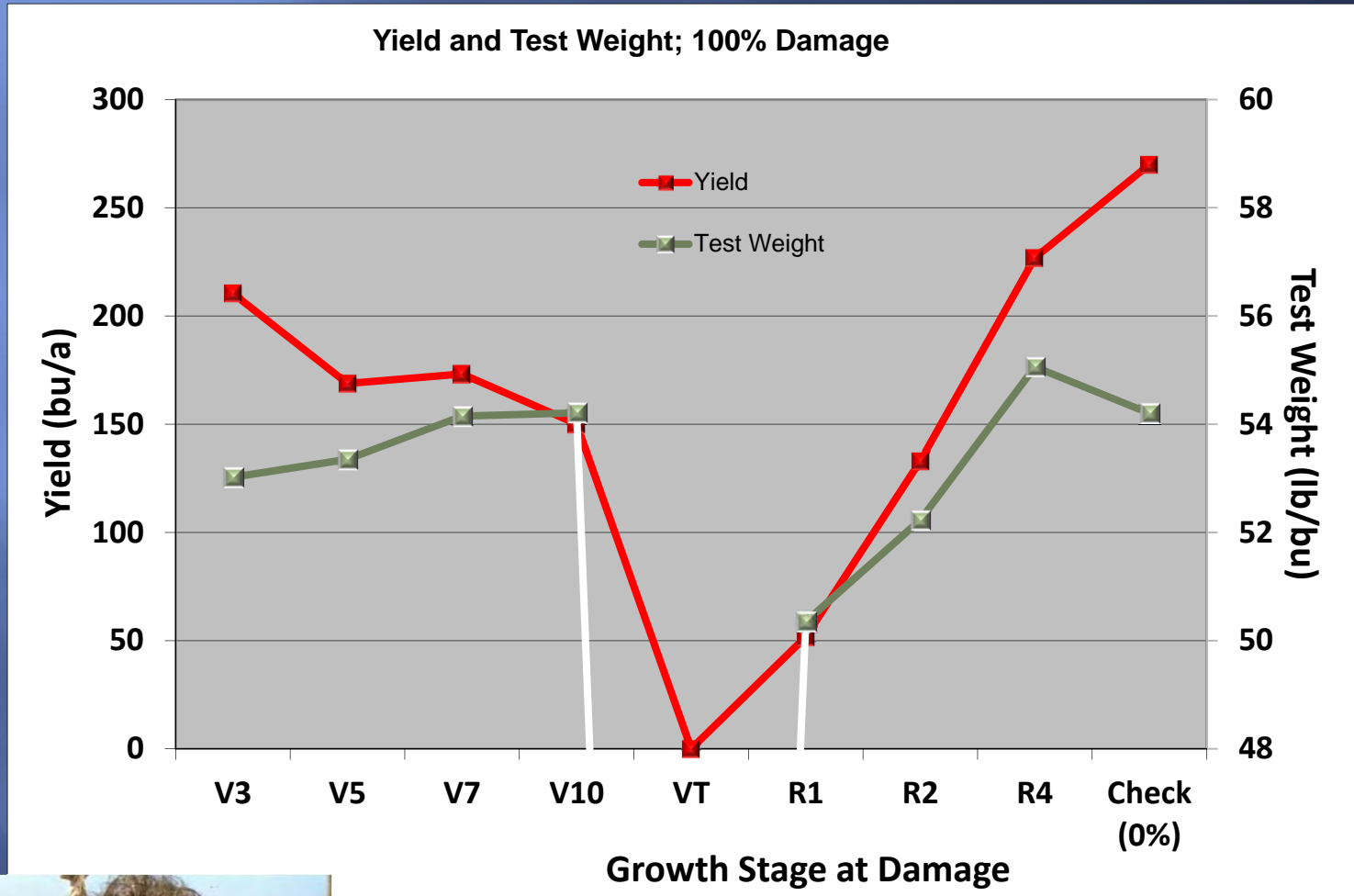
VT



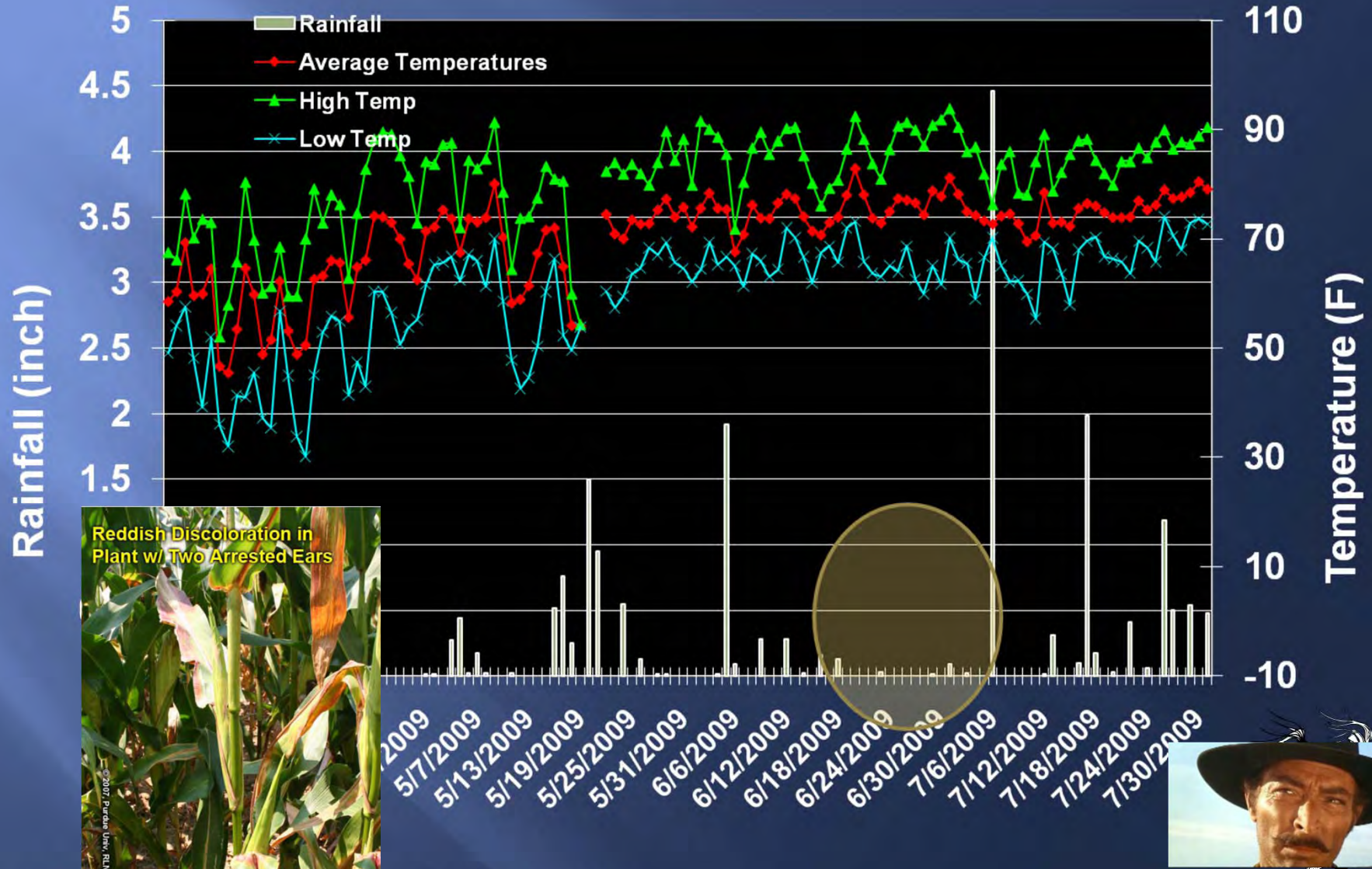
R1



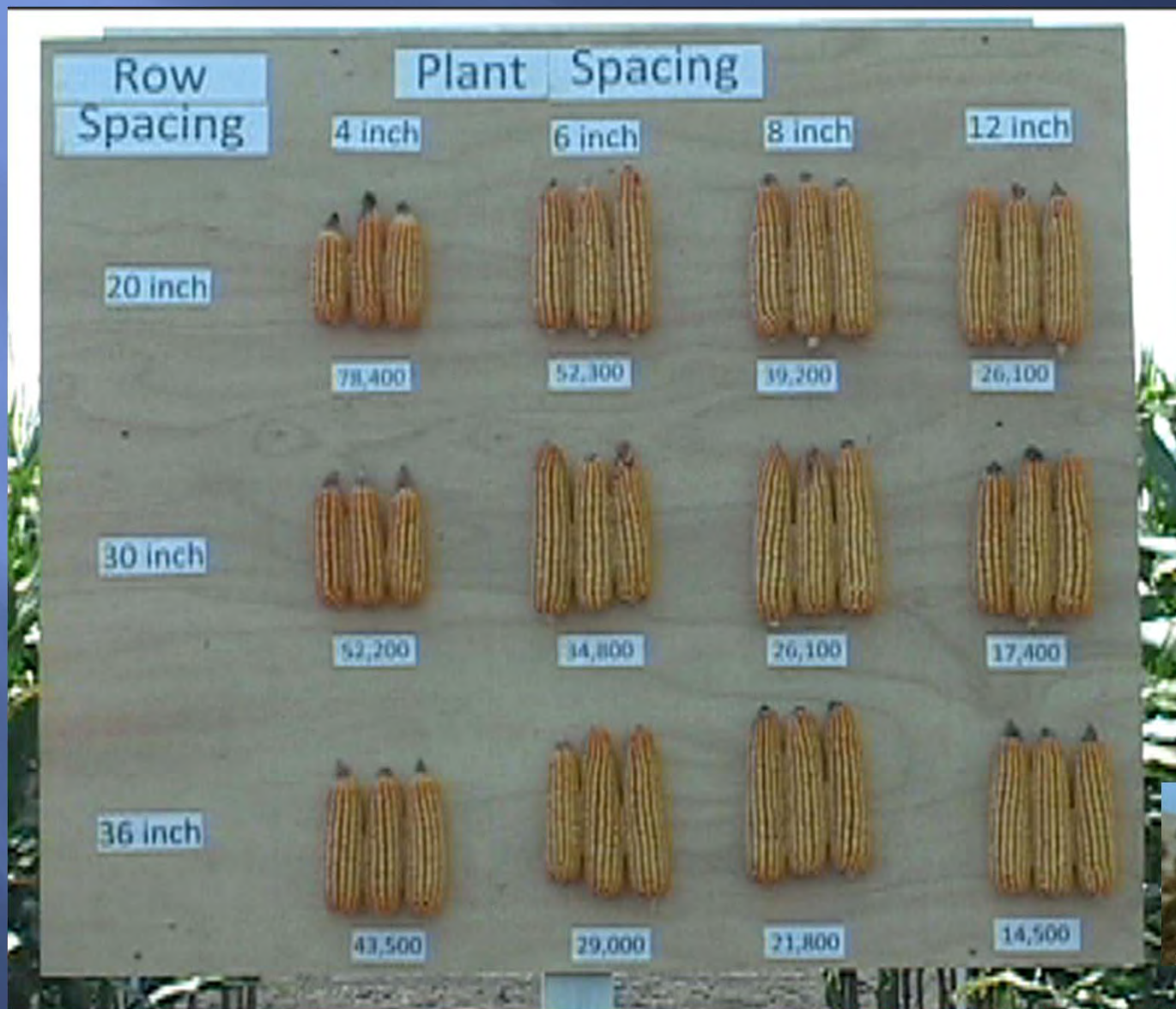
Effect of Timing of Stress on Grain Yield and Test Weight



Growing Season Weather 2009



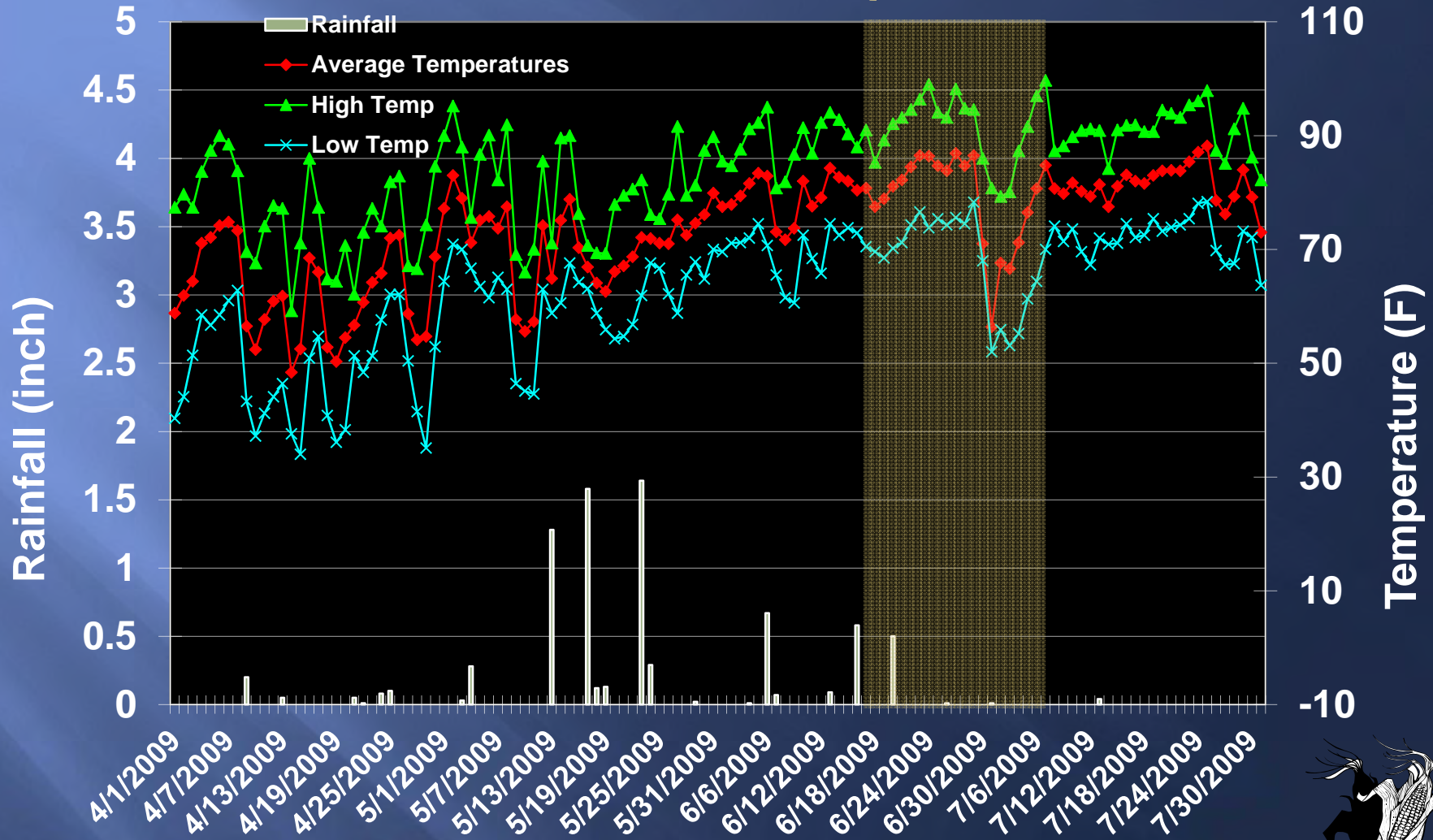
Corn Row Spacing – 2009



Science

College of Agriculture and Life Sciences

Growing Season Weather Plymouth 2010



DKC68-05 Populations - 2010



Lesson #1: When the Chips are Down Good Hybrid Selection is Your Salvation

- Stress and Heat Tolerant Hybrids Produced Superior Yield in 2010.

DKC 68-05 at 6" spacing



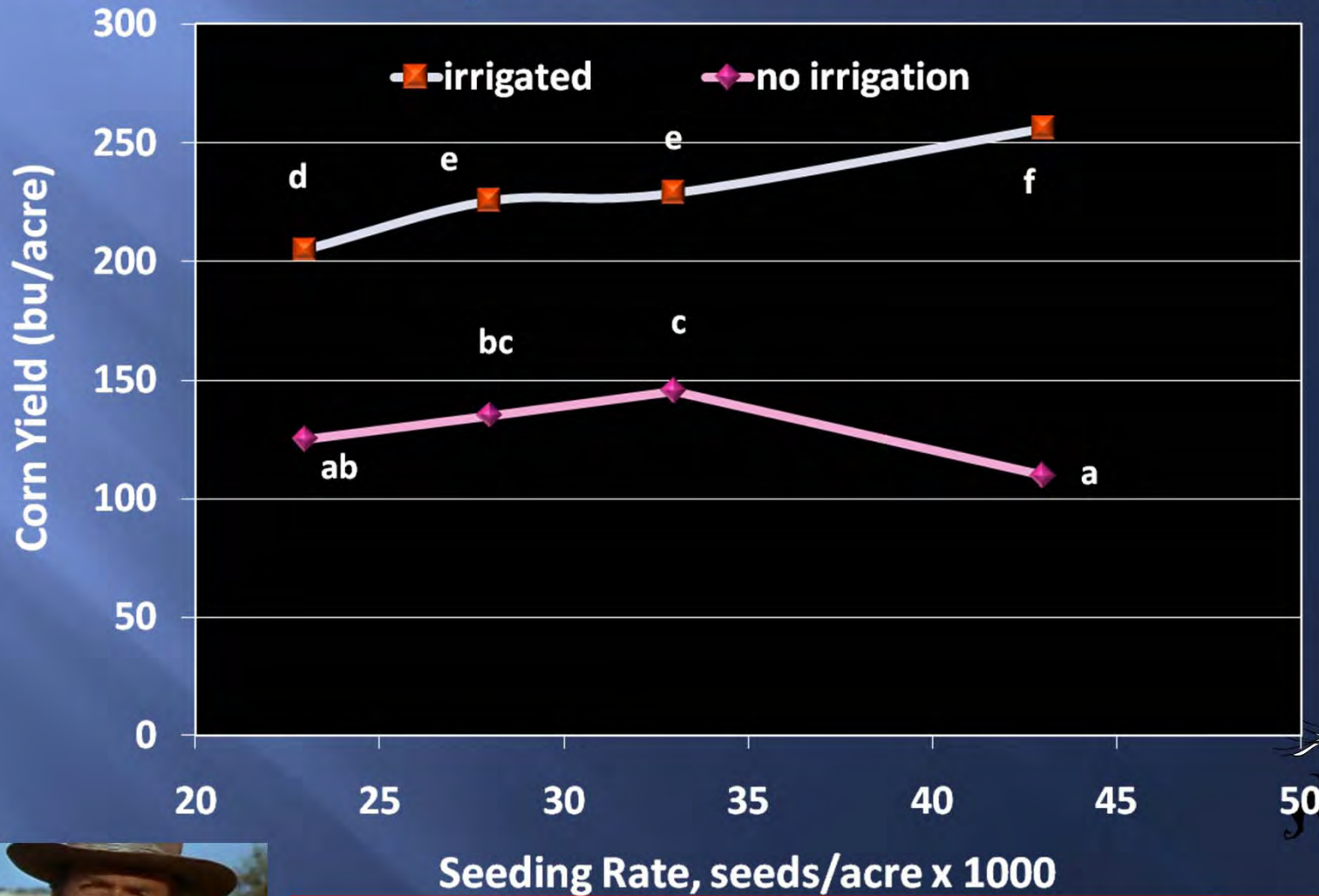
DKC 69-71 at 6" spacing



34,000 plants per acre



Corn Yield Response to Limited Irrigation



The Value of a Timely Rainfall

Yield Gain From Single Rainfall in Late June 2009 ~ 25 bu / acre
x price of Corn \$4.50 per bushel \$112.50 / acre

If only 1/10 of the state received that timely
moisture

90,000 acres X \$487.50 = \$ 10,125,000

A single timely rainfall that covers Beaufort County (46,000 acres)
only needs to result in a yield increase of 3.6 Bushels to be worth
\$1,000,000. – Less than one additional kernel per ear





Questions

