

**AGRY 515 – see PowerPoint file:  
PlantResponseNutrientStress\_2012**

## **Some Physiological Aspects of Plant Mineral Nutrition**

### **❖ Growth Analysis – Quantitative approach to determining growth response**

- *Advantages and disadvantages*
- *Crop Growth Rate (CGR) (Figure A)*
  - $CGR = LAI \times NAR$
  - LAI describes relationship between leaf area and land area
  - NAR describes the efficiency of the leaf area or the true net assimilation rate of the plant

### **❖ Nutrient Stress...**

- *may reduce total growth and yield ( Figure B1 and B2)*
- *may reduce tissue concentration (Figure C)*

*Why are P deficient plants \_\_\_\_\_ in color?*

### **❖ Nutrient Stress...**

- *limits LAI and Net Photosynthesis (Figure D)*

- leaf growth rate inhibited by low N or P
  - # of epidermal cells
  - smaller cells - induced water deficiency
  - reduced photosynthesis
  
- *reduces leaf area duration*
  
- *restricts the number of nodes, spikelets per ear, grains per cob*
  
- *hastens/delays development (Figure E)*
  
- *differentially effects plant parts (Figure E)*
  
- *alters source-sink relations (Figure F)*
  
- ❖ **Short-term nutrient stress**
  - *intensity vs duration*
  
  - *critical growth or development periods*