

**AGRY 515 – see PowerPoint file:
PlantResponseNutrientStress_2008**

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*