

Agronomic Benefits of In-Season Nitrogen Applications

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Determining nitrogen application rate

- Traditionally, nitrogen applied at rates in excess of crop need, to compensate for nitrogen loss
 - Buy “insurance” with excess rates
- Nitrogen rates generally based on yield goal
 - Yield goal is only one factor to consider
 - Optimum nitrogen rate will vary from field to field and from year to year

Problems with pre-season applications

- Difficult to determine appropriate N rate before season begins because of “unknowns”
- Weather conditions during growing season will affect:
 - Rate of crop growth
 - Rate of nitrogen uptake
 - Amount of soil nitrogen made available
 - Amount of nitrogen leached from soil

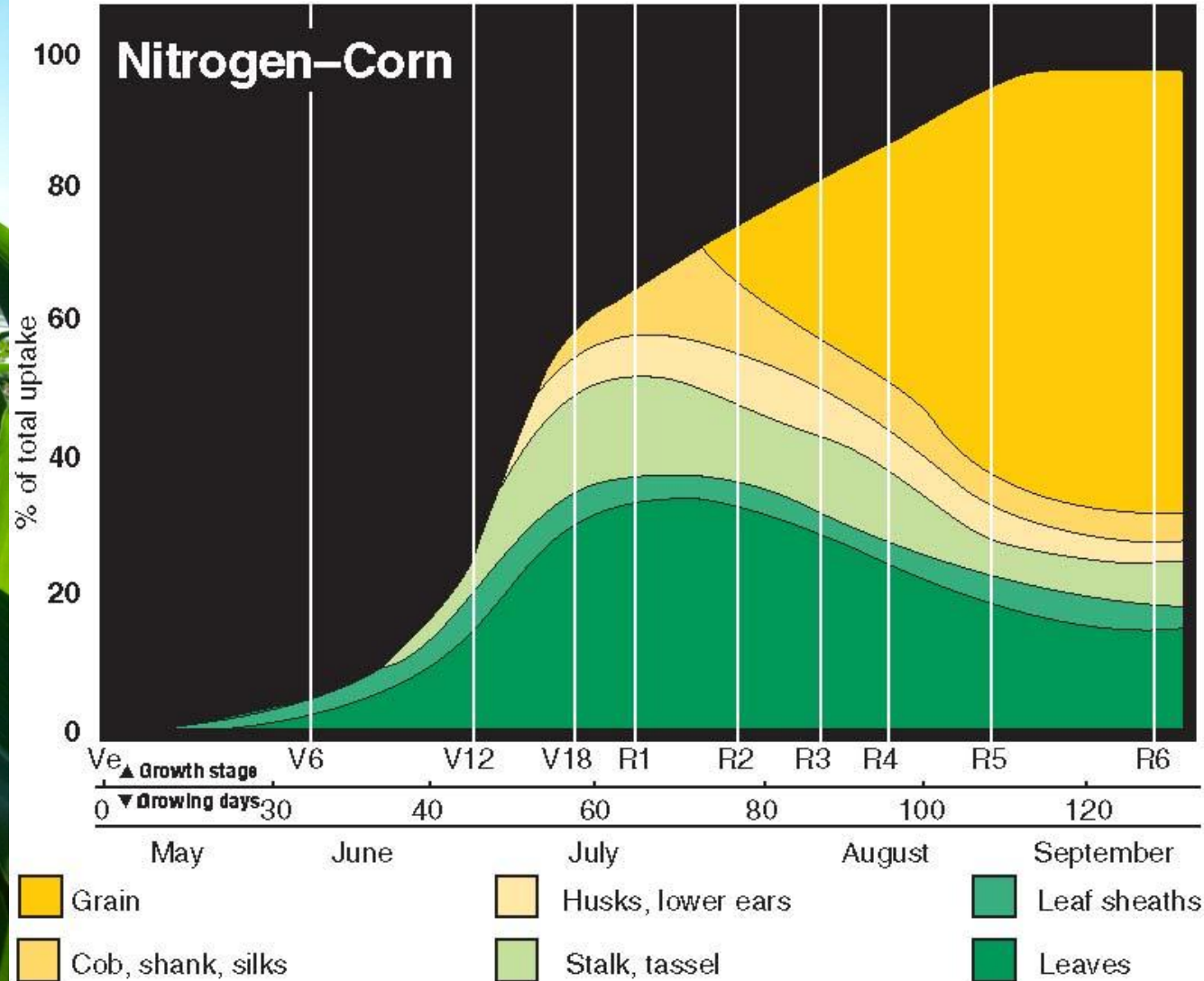
From a corn plant's perspective....

What is the advantage to applying nitrogen in-season?



Credit: Iowa State University,
How a Corn Plant Develops:
Special Report No. 48

Maximum nitrogen uptake occurs when corn is hip-high to nearly tasseling



Value of in-season nitrogen applications

- Fertilizer is applied as close as possible to period of rapid crop uptake
- Improves nitrogen use efficiency (NUE)
 - Higher percentage of each pound of N being utilized by corn crop
- Allows growers to achieve full yield potential while basing nitrogen rate on crop status and condition

Ideally, we would like....

- #1 - To tailor the nitrogen application rate to the particular *year*, the particular *field*, and the particular *hybrid*
- #2 – Apply this rate immediately prior to time of greatest uptake
- Can do this by “reading” the crop’s color and basing nitrogen application rate from reading
 - Yellow leaves indicate nitrogen deficiency

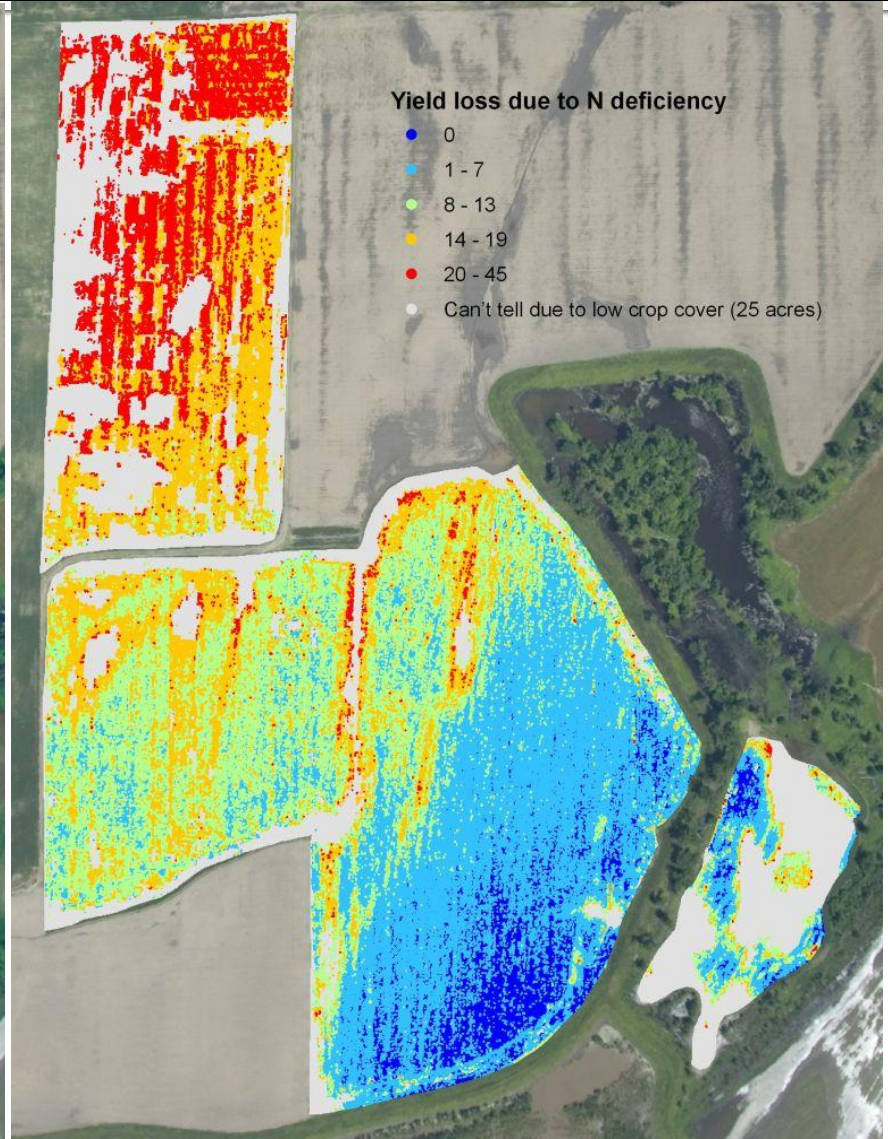
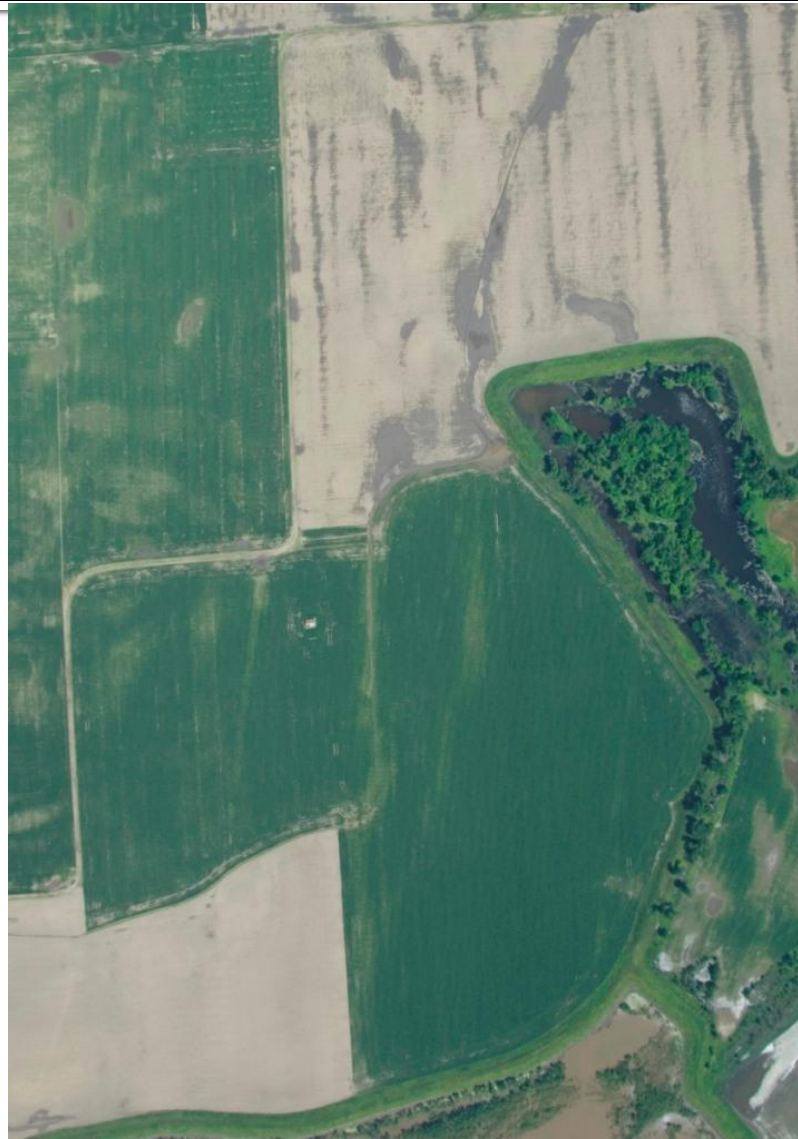
Utilizing the crop to determine N rate

- Crop color is the best tool for determining nitrogen deficiencies and the appropriate N rate
- Crop color can also be used to determine the associated yield loss, due to N deficiency

Value of In-Season N Applications in Years with Excessive Moisture

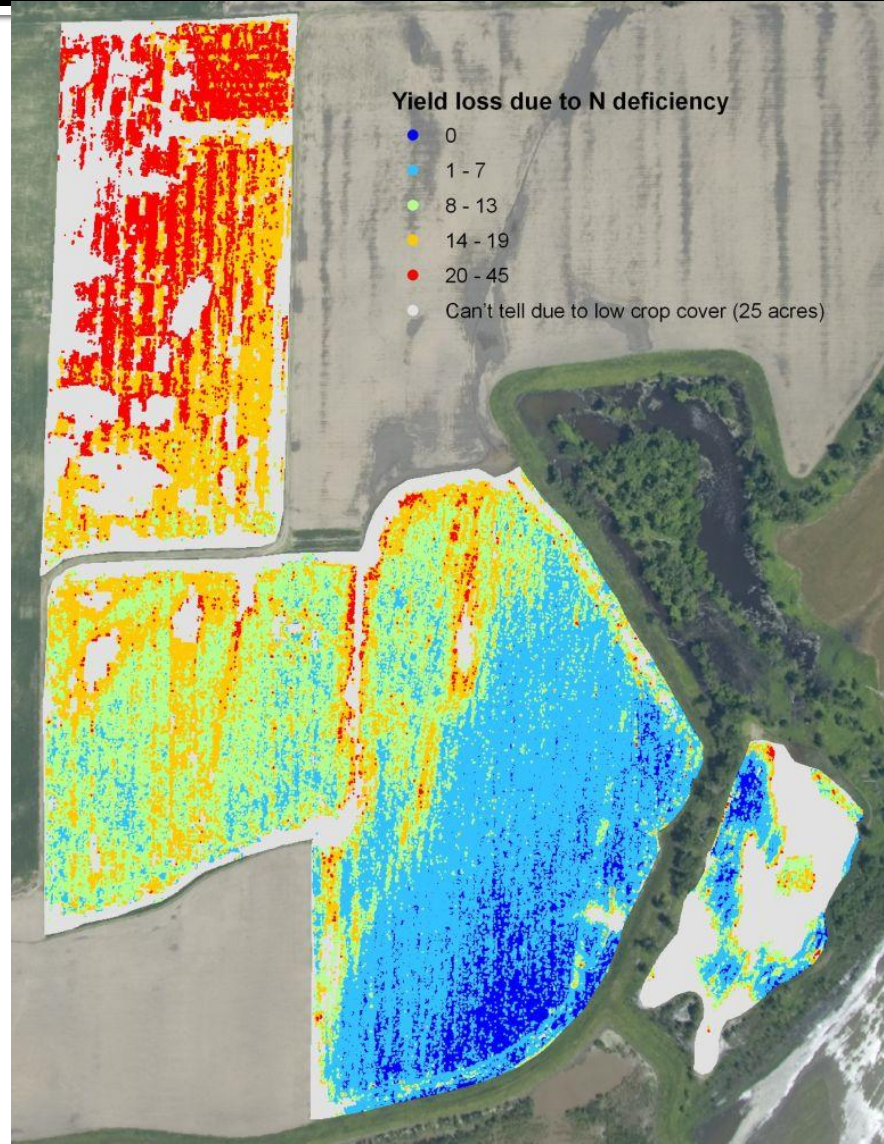
160 lbs N/ac spring-applied anhydrous

Aerial image taken June 9



No rescue nitrogen treatment applied

Aerial image taken July 24



Overview

- From a risk management and agronomic standpoint, in-season N applications make sense
 - Potentially reduces fertilizer costs
 - Improves nitrogen use efficiency
 - Nitrogen is available to crop during critical yield-determining stages
- Logistics of applying in-season N to corn

Questions?
