



# ACRES OF GOLD

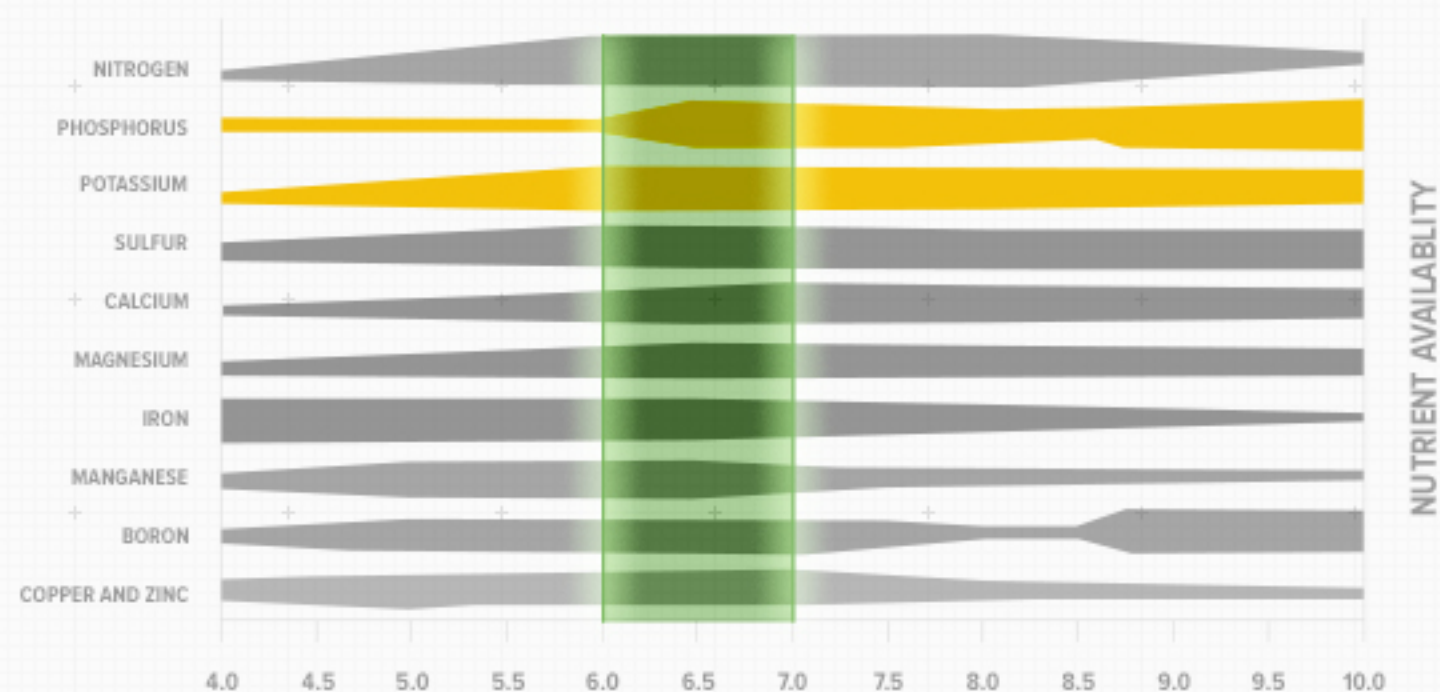
THE CORN YIELD OPTIMIZATION GUIDE

## FERTILITY

### PRESEASON

## THE IMPORTANCE OF SOIL pH

Using current soil test values and determining crop removal rates of nutrients like Phosphorus (P) and Potassium (K) can help guide fertility management decisions.



### SEEDBED PREPARATION & PLANTING

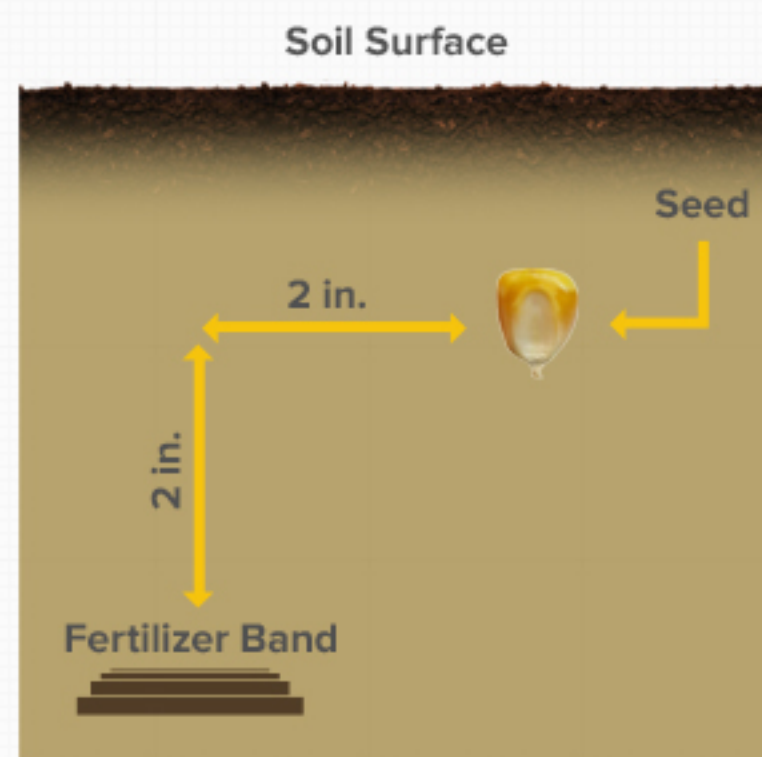
## NITROGEN AVAILABILITY

A study from the University of Wisconsin found that "regardless of the rate or source, the fate of fall- and spring-applied N is mostly impacted by weather conditions in early spring." Determining the amount of nitrogen available for plant uptake this spring and identifying further management steps this season is critical to maximizing corn yield potential.

COMMON NITROGEN FERTILIZER OPTIONS			
Fertilizer Type	% Nitrogen	Risk of N Loss and Other Considerations	Suggested Use
Ammonium Nitrate	33 – 34	Half ammonium N and half nitrate N; not recommended for soils subject to leaching or denitrification; can be surface applied where volatilization of urea is a concern.	Side-dressing Corn
Ammonium Sulfate	21	Little risk of loss to surface volatilization on most soils; requires 2 – 3 times more lime to neutralize acidity compared to other N fertilizers.	Spring Pre-plant Side-dressing Corn Fall Application
Anhydrous Ammonia	82	Converts to Nitrate N slowly, so less risk of loss due to leaching or denitrification; must be injected into the soil, therefore little loss to surface volatilization; can be hazardous to handle	Side-dressing Corn Fall Application
Urea	45 – 46	Converts to nitrate relatively quickly; denitrification on wet/compacted soils can be serious; leaching can be a problem; surface volatilization can occur when temperatures are above 50° F, therefore needs to be incorporated.	Spring Pre-plant Side-dressing Corn Fall Application
UAN	28 – 32	Usually consists of urea and ammonium nitrate; each component has the same loss mechanisms as mentioned above	Spring Pre-plant Side-dressing Corn

## FIELD CONDITIONS

Starter fertilizers, or nutrients placed close to the seed in small quantities at planting, can promote early growth in corn, potentially resulting in larger, more uniform plants; earlier flowering, earlier maturity and the potential for higher yields.



The Most Common Placement of a Starter Fertilizer is the 2 x 2 Band

### FIELD CONDITIONS MORE LIKELY TO SHOW A RESPONSE TO STARTER FERTILIZER

Heavy Residue
Cool Soil Temperatures
Low Phosphorous (P)
Sandy Soils w/ Low Organic Matter (DM)
Irrigated Sandy Soils
Some High pH Soils





## FERTILITY

### EARLY SEASON

## NUTRIENT DEFICIENCY SYMPTOMS

In order to optimize corn yield potential, it is critical to ensure adequate Nitrogen (N) is available to the developing corn plant.

### THE POTENTIAL FOR N LOSS IS INFLUENCED BY MANY FACTORS INCLUDING:

1. Timing of application
2. Form of N applied
3. Use of volatilization (urea or UAN) or nitrification (NH<sub>3</sub> or UAN solution) inhibitors
4. Soil type and organic matter content
5. Environmental conditions after application

In years where conditions following Nitrogen (N) applications have been conducive to loss, it is imperative to evaluate the potential amount lost and determine needs for supplemental applications during early vegetative growth to help ensure adequate N is available to optimize corn yield potential.

### MID-SEASON

## MID-SEASON NUTRIENT DEFICIENCY

When nutrient deficiency symptoms appear, results of tissue testing around silking combined with an in depth soil analysis can help determine if the observed deficiency is due to lack of soil availability or plant uptake.

- Yellowing along the midrib on lower leaves consistent with nitrogen deficiency
- Stalk lodging due to cannibalization
- Phosphorous deficiency symptoms of stunting and purpling
- Potassium deficiency symptoms of leaf margin yellowing

### HARVEST

## SOIL SAMPLING & ANALYSIS

Soil tests are recommended at least every 4 years; however, sampling more often can be beneficial in identifying and addressing potential fertility issues impacting yield. In most geographies, fall is the best time to collect and analyze soil samples.

### KEY ITEMS TO CONSIDER WHEN COLLECTING SOIL SAMPLES

- Depth of sample
- Tillage practices
  - Nutrients may become stratified in no-till and reduced-till systems.
  - If this is the case, a separate soil analysis should be run on the soil from the upper 2" of the soil cores.
- Time of year
  - For consistency of results samples should be pulled during the same timeframe each year (ideal window is between harvest and when the ground freezes).