



## ENVIRONMENT

### PRESEASON

## OPTIMIZING CORN YIELD POTENTIAL

Optimizing corn yield potential requires a balanced management approach that strives to maximize corn yield in favorable conditions while managing weather-associated risks. *Table 1* shows the hierarchy of “corn yield wonders” as established by the research of Dr. Fred Below with the University of Illinois. In his research “weather” accounts for 27% of total yield potential.

7 WONDERS OF CORN YIELD
Weather
Nitrogen
Hybrid
Previous Crop
Plant Population
Tillage
Growth Regulators

Figure 1

### SEEDBED PREPARATION & PLANTING

## SOIL TEMPERATURE

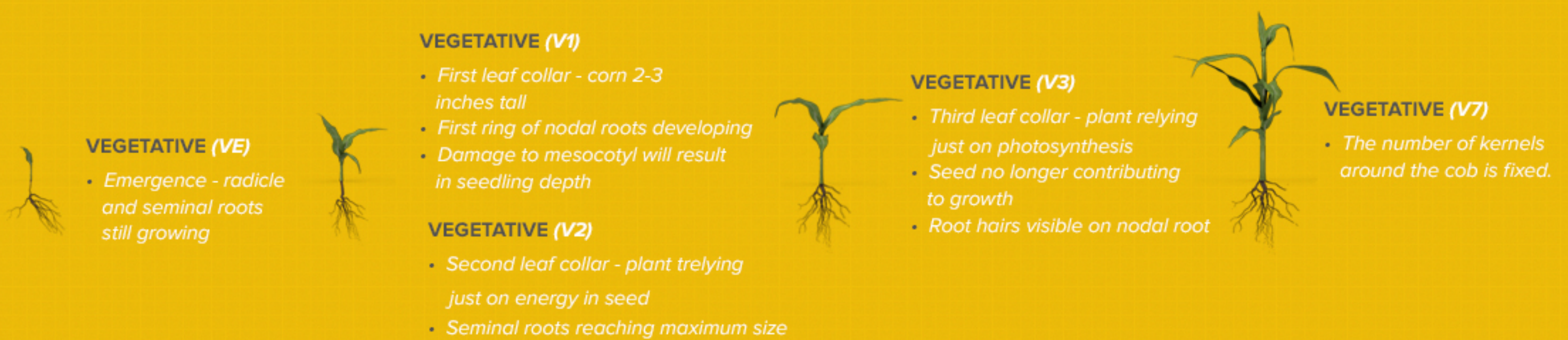
Establishing the desired corn stand is a key element of maximizing potential yield and profitability. Weather is a major factor that must be considered.

- Avoid planting according to calendar date
- Evaluate variable soil moisture and temperature
- Be careful planting in wet soil
- Use a temperature probe

### EARLY SEASON

## CORN PLANT DEVELOPMENT

Evaluating corn stands soon after emergence is a critical step to understanding the success of your planting operations and to begin establishing yield expectations and associated management opportunities for each field.







# ACRES<sup>OF</sup> GOLD

THE CORN YIELD OPTIMIZATION GUIDE

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### MID-SEASON

## CORN PLANT DEVELOPMENT

Continuing to evaluate corn stand development is key to optimizing on-farm success throughout the growing season.



#### VEGETATIVE (V10-V11)

- New leaves emerging every 2-3 days.
- Period of rapid uptake of nutrients and moisture and rapid plant growth.



#### VEGETATIVE (V12-NTH)

- Brace roots develop.
- Number of kernels in row length on the cob is determined.
- Plant reaches full height.
- Ear size being determined, stress can result in significant yield loss.



#### VEGETATIVE (VT)

- Tasseling - 2-3 days prior to silking.
- Pollen shed lasts for 4-6 days on an individual tassel.
- By the end of this stage, the plant has absorbed about 65% of the total N, 50% of the total P and 85% of the total K it will require for the entire season.



#### REPRODUCTIVE (R1)

- Silking - One of the most critical stages in determining yield potential.
- Successful pollination must occur for kernel development.
- K uptake complete, N and P uptake is occurring rapidly.
- Leaf analysis for nutrients at this stage highly correlates with final yield.



#### REPRODUCTIVE (R2)

- Blister - Kernels form a small blister containing clear fluid.
- Embryo is developing in every kernel.
- Kernels 85% moisture.





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### LATE SEASON

## CORN PLANT DEVELOPMENT

Continuing to evaluate corn stand development is key to optimizing on-farm success throughout the growing season.



#### VEGETATIVE (R1)

- New leaves emerging every 2-3 days.
- Period of rapid uptake of nutrients and moisture and rapid plant growth.



#### REPRODUCTIVE (R2)

- Blister - Kernels form a small blister containing clear fluid..
- Embryo is developing in every kernel.
- Kernels 85% moisture.



#### REPRODUCTIVE (R3)

- Milk - Clear fluid in kernels begins to turn milky white as starch accumulates.
- Stress during this stage can cause kernel abortion.



#### REPRODUCTIVE (R4)

- Dough - Starch has dough-like consistency
- Drought or disease stress will usually result in reducing kernel depth and test weight.
- Kernels 70% moisture.



#### REPRODUCTIVE (R5)

- Dent - Kernels are dented.
- Occurs about 35-40 days after silking.
- Cob has distinct color - white, pink or red.
- Kernels 55% moisture.
- Silage harvest begins sometimes during this stage, depending on desired whole plant moisture.



#### REPRODUCTIVE (R6)

- Black Layer - Physiological maturity
- Final yield potential has been determined, frost has no impact on yield.
- Kernels 30%-35% moisture.

### HARVEST

## HARVEST SCOUTING & SCHEDULING

Monitoring fields closely after black layer (R6) to determine optimal harvest timing can be essential to help maximize harvest efficiency, potential grain yield and profitability. Key things to consider include:

#### GRAIN MOISTURE

- Shoot for a grain moisture level that strikes a good balance between minimizing harvest losses and managing grain drying costs.
- Allowing corn to dry too long in the field can increase mechanical losses due to ear drop, stalk lodging and kernel shattering.
- High temperatures, drought and low relative humidity after R6 can all contribute to more rapid drydown.

#### STALK QUALITY

- Fields that have encountered stress post-pollination are particularly susceptible to stalk cannibalization, stalk rots and associated lodging potential. Scout to prioritize fields with potential stalk quality concerns for early harvest.

#### GRAIN QUALITY

- Fields where ear molds such as Aspergillus, Diplodia, Gibberella or Fusarium are present should be considered for early harvest to help preserve grain quality. Continued field drying can allow prolonged development of ear molds and increase potential mycotoxin development.