

LEARN: Corn Stalk Nutrient Deficiencies

20-30 minutes

Purpose:

Participants will work in groups to complete a puzzle, testing their knowledge of corn stalk anatomy.

Materials:

- *Corn Stalk Model* slide presentation
- *Corn Stalk Deficiencies Note Sheet*
- Pen/pencil

Facilitation Steps:

1. Hand out the *Corn Stalk Deficiencies Note Sheet* to each participant.
2. Present slides 6-14 of the *Corn Stalk Model* slide presentation.
3. Have the participants take notes during the presentation.

Facilitator Notes:

Slide 6:

Healthy Leaf

General Info:

- Healthy leaves do not lack the proper nutrients for health growth
- Plant leaves are strong and deep in color

Visual Identification:

- Dark green to green plant color
- No major color changes from the top of the leaf to the bottom
- Leaves have full color in the veins and chlorotic tissue

Environmental Conditions:

- Nutrient rich soil
- Best pH is usually between 5.5-7.0

Slide 7:

Deficiency: Nitrogen

General Info:

- Nitrogen is a mobile nutrient in the plant; it starts at lower, older leaves and then moves up the plant as deficiency persists
- Plants may be lighter in color
- Older leaves are affected first

Visual Identification:

- V-shaped yellowing starting at the tip and moves down the midrib toward the base of the leaf
- Reds and purples may intensify
- Older leaves turn yellow, then dry out
- May shed

Environmental Conditions:

- Cold soil
- Dry soil
- Sandy soil
- Inadequate fertilization
- Flooded or ponded soil when temperature is warm
- Corn rootworm injury

Slide 8:

Deficiency: Phosphorus

General Info:

- Usually visible on young corn plants
- Death of tissue may follow
- Root growth can be poor
- Lower stems may be purplish
- Delays maturity

Visual Identification:

- Dark green leaf with red/purple leaf tips & margins
- Purplish tint on leaves

Environmental Conditions:

- Cold soil
- Soil too wet or too dry
- Compacted soils
- Root injury due to insects, herbicides, fertilizers or cultivation

Slide 9:

Deficiency: Potassium

General Info:

- Bronzing and dying of leaf margin
- Spotting between veins
- Brown spots throughout the leaf
- Will wilt readily

Visual Identification:

- Browning and death at the tip and margins
- Yellowing as it moves to the middle of leaf

Environmental Conditions:

- Dry soil
- Compacted soil
- Wet soil
- Sandy soil
- Organic soil

Slide 10:

Deficiency: Magnesium

General Info:

- Mottled yellow between veins
- Veins themselves will stay green
- Older leaves affected first
- May get dead spots around the edge of the leaf
- Striping will occur on lower leaves first

Visual Identification:

- Yellow-green striping
- Yellow areas may turn brown and die

Environmental Conditions:

- Acidic soils
- Sandy soils
- Moderate to high rainfall areas

Slide 11:

Deficiency: Zinc

General Info:

- Spotting of older leaves
- Central bud and leaves turn white, forming a broad band of tissue through the midrib.
- May reduce the size of the leaf due to deficiency

Visual Identification:

- Pale yellow to white between veins
- Light striping with whitish color
- Leaf tip usually stays green
- Pale in color of greens

Environmental Conditions:

- Plants can usually outgrow this deficiency
- Acidic soils
- Low organic material in soil
- Cool, wet soil

Slide 12:

Deficiency: Sulfur

General Info:

- Yellowing of the whole leaf and plant
- Usually starts with younger leaves
- Plants may be light green
- Stunted and exhibit delayed maturity

Visual Identification:

- Striping of the upper leaves may occur
- Usually more noticeable on younger plants
- More yellow by the base of the leaf, greener toward the leaf tip

Environmental Conditions:

- Acidic, sandy soil
- Soil with low organic material
- Cold, dry soils
- Issue may disappear as temperature and moisture conditions improve

Slide 13:

Deficiency: Iron

General Info:

- Yellow or white areas on young leaves
- Older leaves may stay green
- Veins typically stay green
- Chlorotic tissue turns pale yellow or white

Visual Identification:

- Pale color of yellow or white on the plant
- Veins usually light green in color
- Chlorotic tissue turns pale yellow

Environmental Conditions:

- Acidic soils
- Cold, wet soils
- Poorly aerated soils

Slide 14:

Deficiency: Boron

General Info:

- Youngest leaves may become lighter green
- May be distorted in leaf structure
- Reduced flowering and failure to fully grow
- May become breakable

Visual Identification:

- Unrolled leaves
- Lack of tip fill
- Leaves curl up
- May look like the leaf is scorched

Environmental Conditions:

- Sandy soil
- Moderate soil pH
- Drought
- Soil with low organic material