

Nutrient Deficiency Symptoms in Rice

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Common Foliar Symptoms of Nutrient Deficiencies in Rice

- Uniform chlorosis
- Interveinal chlorosis
- Necrotic spots
- Bronzing
- Tip chlorosis or necrosis

Behavior of Common Nutrients in Rice

Mobile Elements

Nitrogen

Phosphorus

Potassium

Magnesium

Immobile Elements

Calcium

Iron

Manganese

Zinc

Sulfur

Influence of Nutrient Mobility on Symptomology

- **Mobile Nutrients**

- Deficiency symptoms appear in oldest (lower) leaves first
- Nutrient moves to youngest leaf – sink

- **Immobile Nutrients**

- Deficiency symptoms appear in youngest (upper) leaves first
- Nutrient becomes part of plant compound

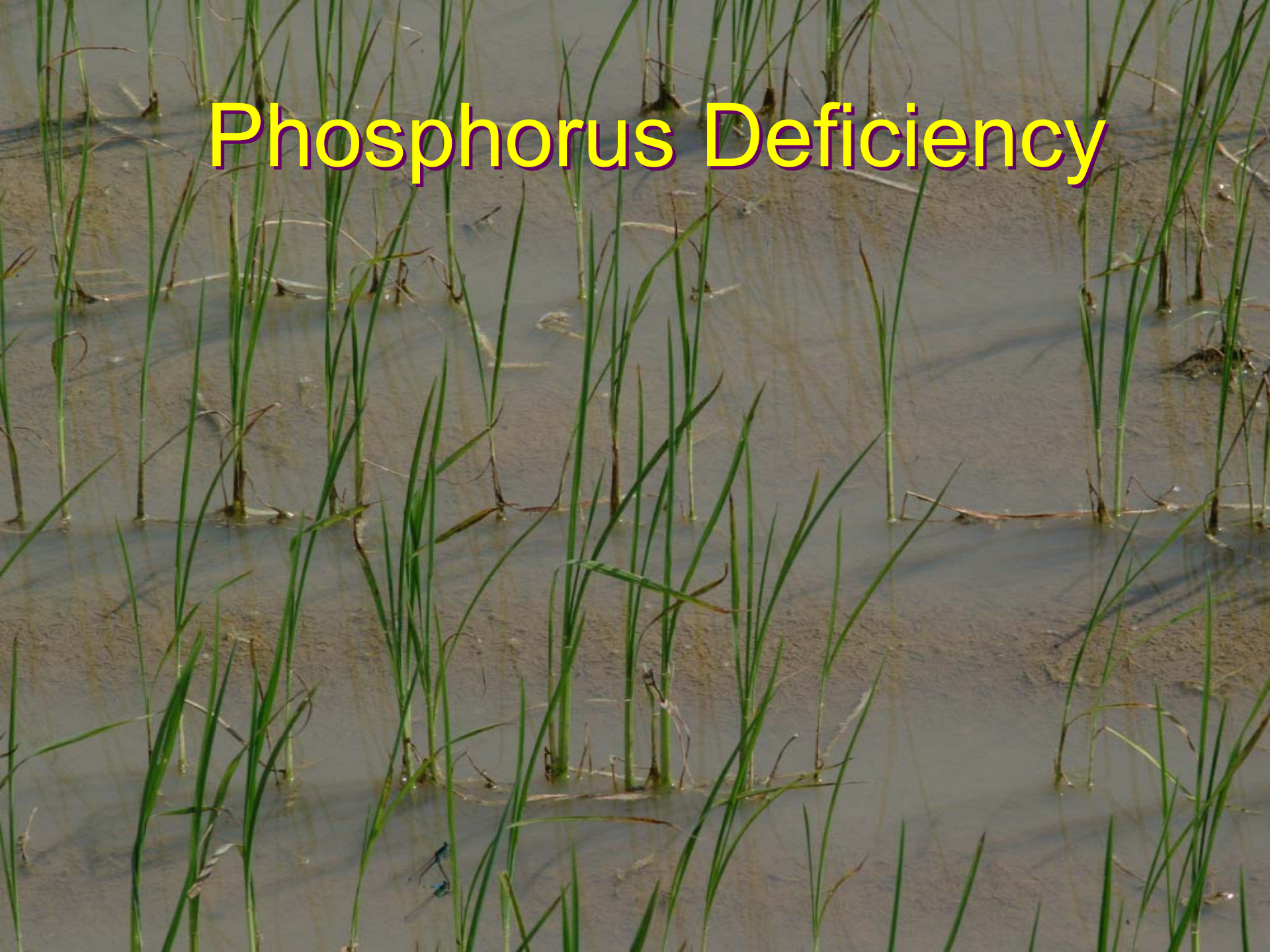








Phosphorus Deficiency







Interveinal
chlorotic and
necrotic
spots





Potassium deficiency (or
late season sulfur
deficiency)


A close-up photograph of several young grass leaves. The leaves are primarily green but show significant signs of damage, particularly at the base. The youngest leaves, which are the most tender and recently emerged, are heavily affected, showing extensive yellowing and browning. The damage appears to be concentrated at the leaf sheath and the point where the leaf meets the stem. The background is a blurred, dark green, suggesting a natural, outdoor setting.

Youngest
leaves
affected
most



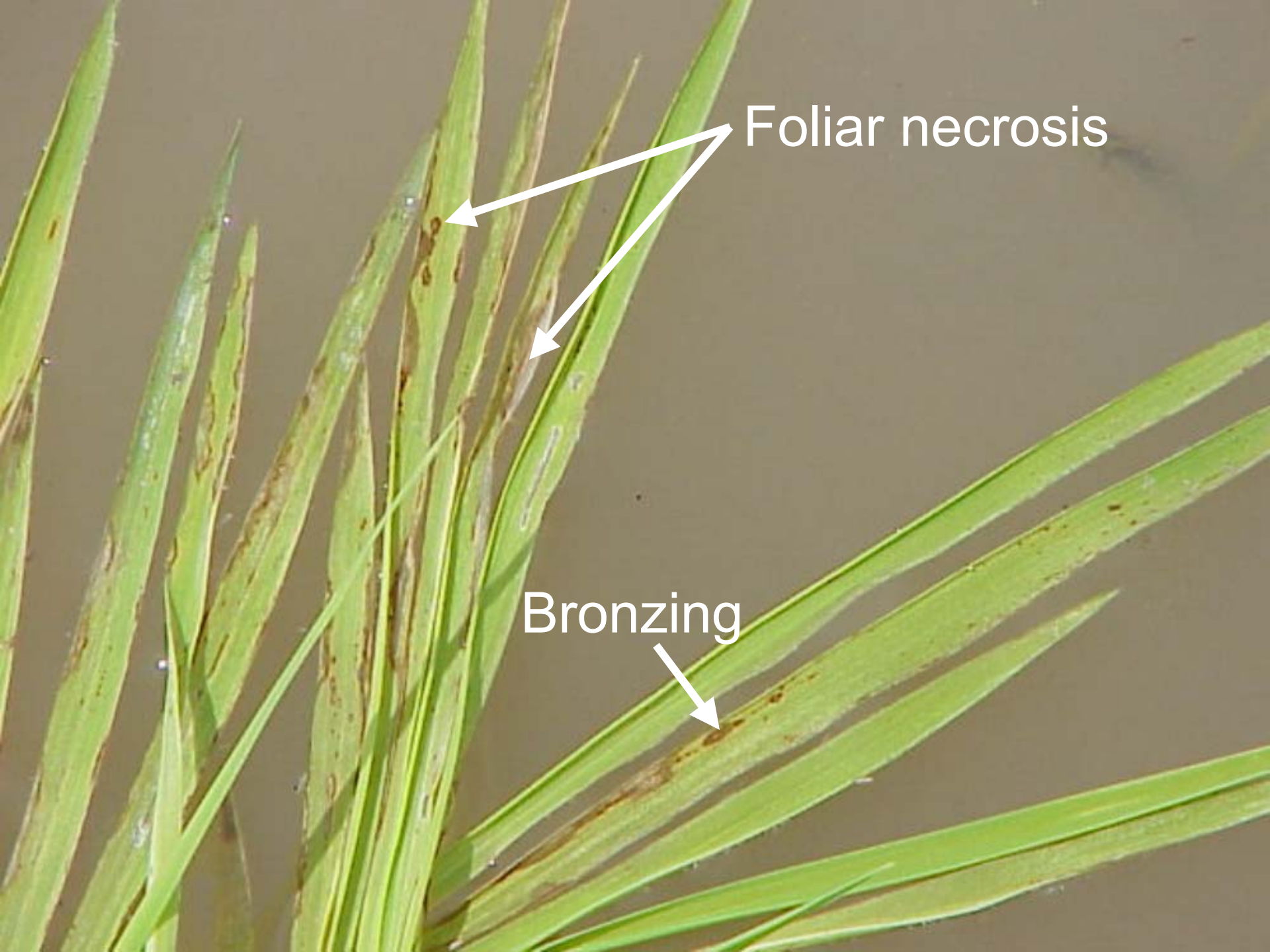




The image shows three vertical green plant leaves against a blurred green background. The leaves exhibit numerous small, brown, necrotic spots, particularly concentrated along the veins, which is a classic symptom of potassium deficiency. The text is overlaid in the center in a bright yellow font.

Potassium deficiency
induced by hydrogen
sulfide toxicity





Foliar necrosis



Bronzing



A close-up photograph of several green grass blades against a plain, light-colored background. The blades exhibit characteristic symptoms of zinc deficiency, including brown necrotic spots and streaks, particularly along the midrib and in the younger, developing leaves. The text 'Zinc deficiency' is overlaid in white on the right side of the image.

Zinc
deficiency

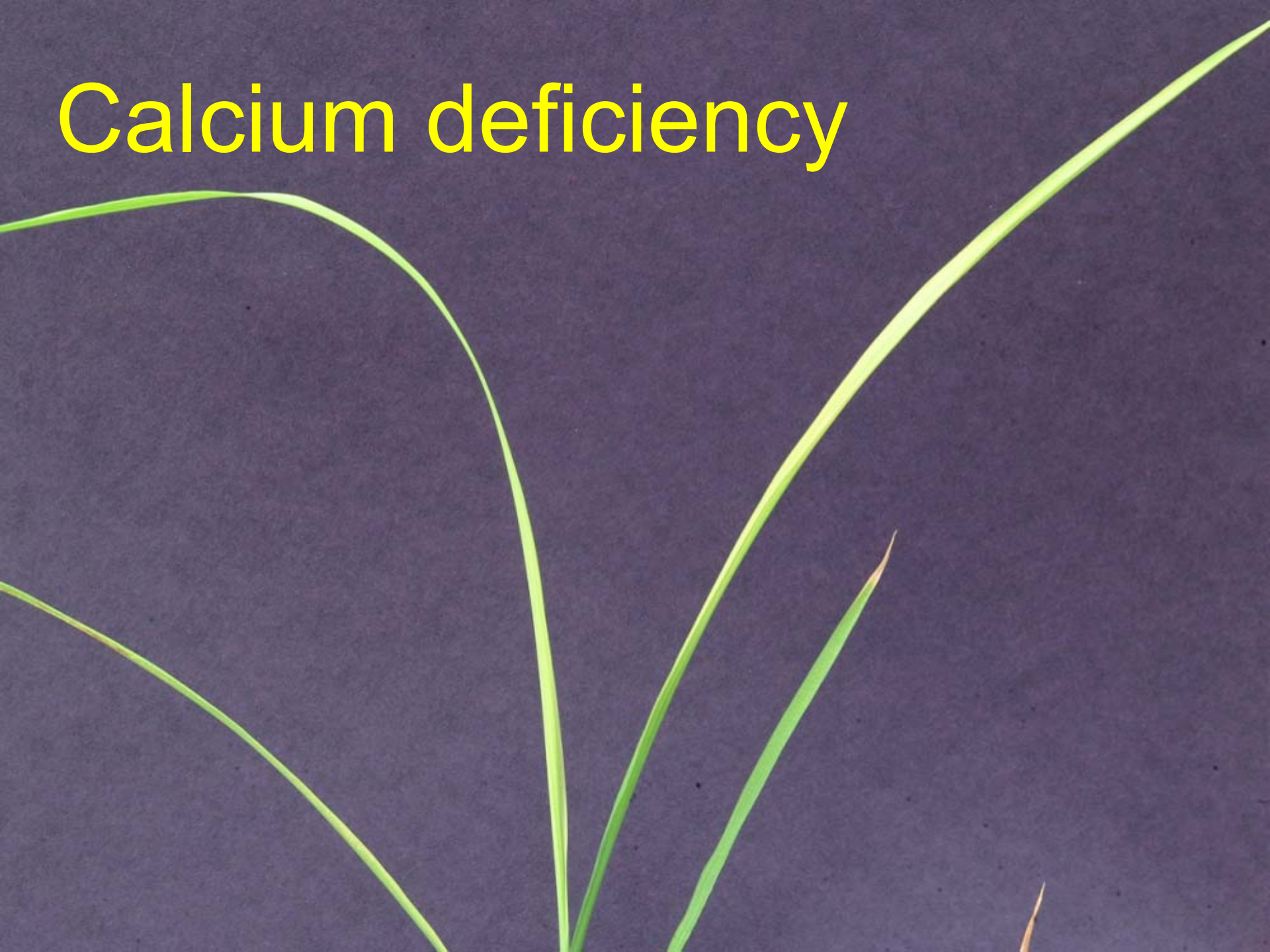
Chlorosis of *youngest*
leaves worst



Uniform
foliar
chlorosis



Calcium deficiency



Interveinal Chlorosis

Leaf veins



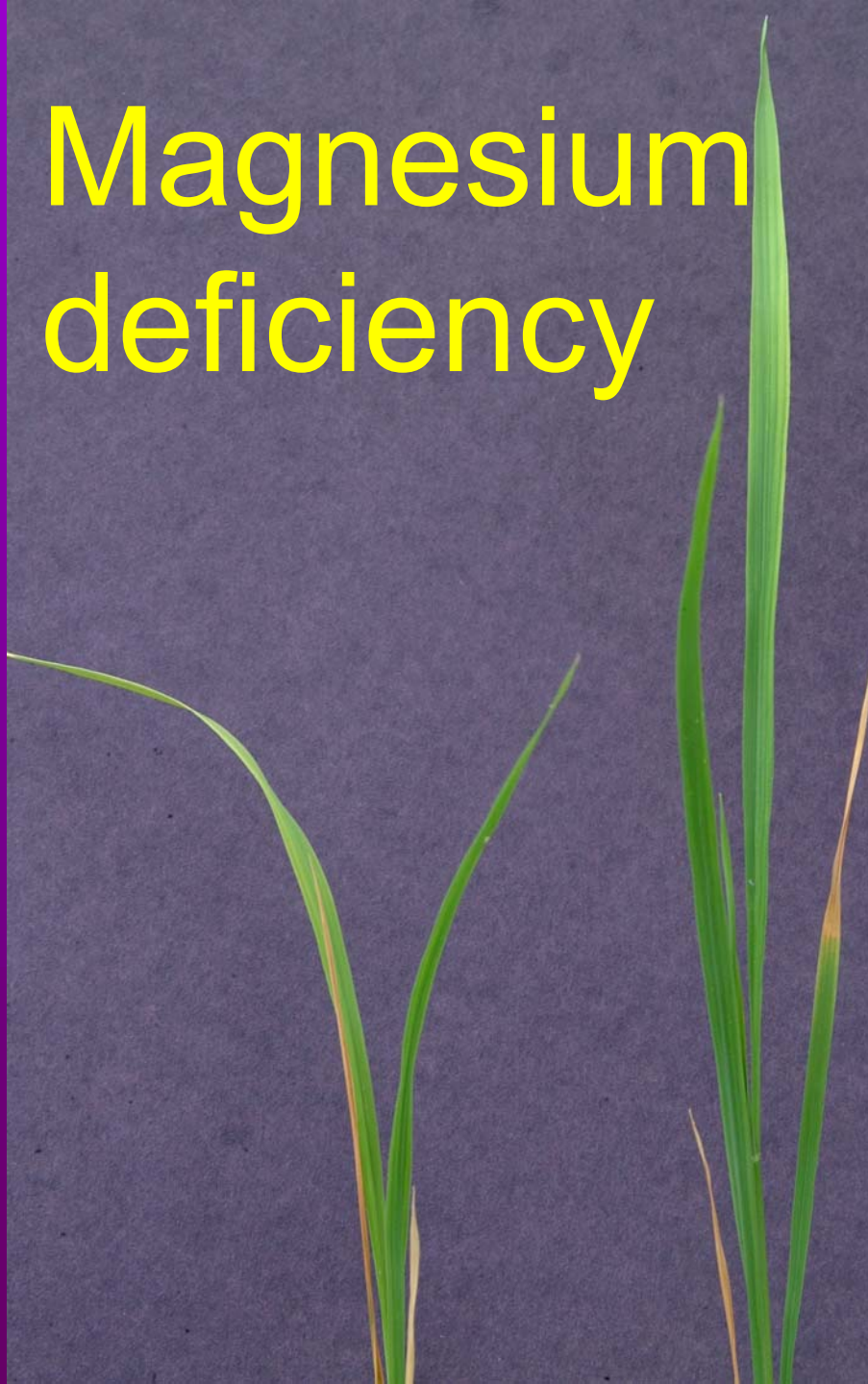
chlorosis



Symptoms
worst in
oldest
leaves



Magnesium deficiency



Diffuse
interveinal
chlorosis



Symptoms
worst in
youngest
leaves



Manganese deficiency



A close-up photograph of several green plant leaves. The leaves exhibit a clear pattern of interveinal chlorosis, where the tissue between the veins has become yellowish-green, while the veins themselves remain a darker green. The text "Very distinct interveinal chlorosis" is overlaid in the center of the image in a yellow font with a purple outline.

**Very distinct
interveinal chlorosis**

Both young and old
leaves affected



Newpath Injury



Foliar symptoms alone
can be very misleading
in diagnosing nutrient
deficiencies

To confirm nutrient deficiencies in the field

- Apply nutrient to a marked area in the field and follow up
- Take tissue samples
- Take soil samples





Rice grown
in high salt
in
greenhouse



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