

The background of the slide is a photograph of a plant with large, green, heart-shaped leaves. The leaves have prominent veins and some small brown spots, possibly indicating nutrient deficiency. A blue rectangular box is overlaid on the top right of the image, containing the title text.

Nutrient Deficiency Symptoms

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Sixteen Essential Elements

❖ Oxygen	45%	❖ Sulfur	1000 ppm
❖ Carbon	45%	❖ Chlorine	100 ppm
❖ Hydrogen	6%	❖ Iron	100 ppm
❖ Nitrogen	1.5%	❖ Boron	20 ppm
❖ Potassium	1.0%	❖ Manganese	50 ppm
❖ Calcium	0.5%	❖ Zinc	20 ppm
❖ Magnesium	0.2%	❖ Copper	6 ppm
❖ Phosphorus	0.2%	❖ Molybdenum	0.1 ppm
		❖ Nickel	<0.1 ppm

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Mobility of Nutrients in Plants

❖ Relates to location of deficiency symptom

❖ Mobile

- ✓ Nitrogen
- ✓ Phosphorus
- ✓ Potassium
- ✓ Magnesium

❖ Immobile

- ✓ Boron
- ✓ Calcium
- ✓ Copper
- ✓ Iron
- ✓ Manganese
- ✓ Molybdenum
- ✓ Sulfur
- ✓ Zinc

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Nutrient Deficiency Symptoms

- ❖ Insufficient amount of available nutrient in soil
 - ✓ Chemical characteristics of soil
- ❖ Nutrient positionally unavailable in soil
- ❖ Underdeveloped root system
 - ✓ Cool, wet, dry, compacted soil
- ❖ Root Injury
 - ✓ Mechanical, insect, disease, fertilizer
- ❖ Genetic makeup of plant

Nitrogen



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Phosphorus



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Potassium



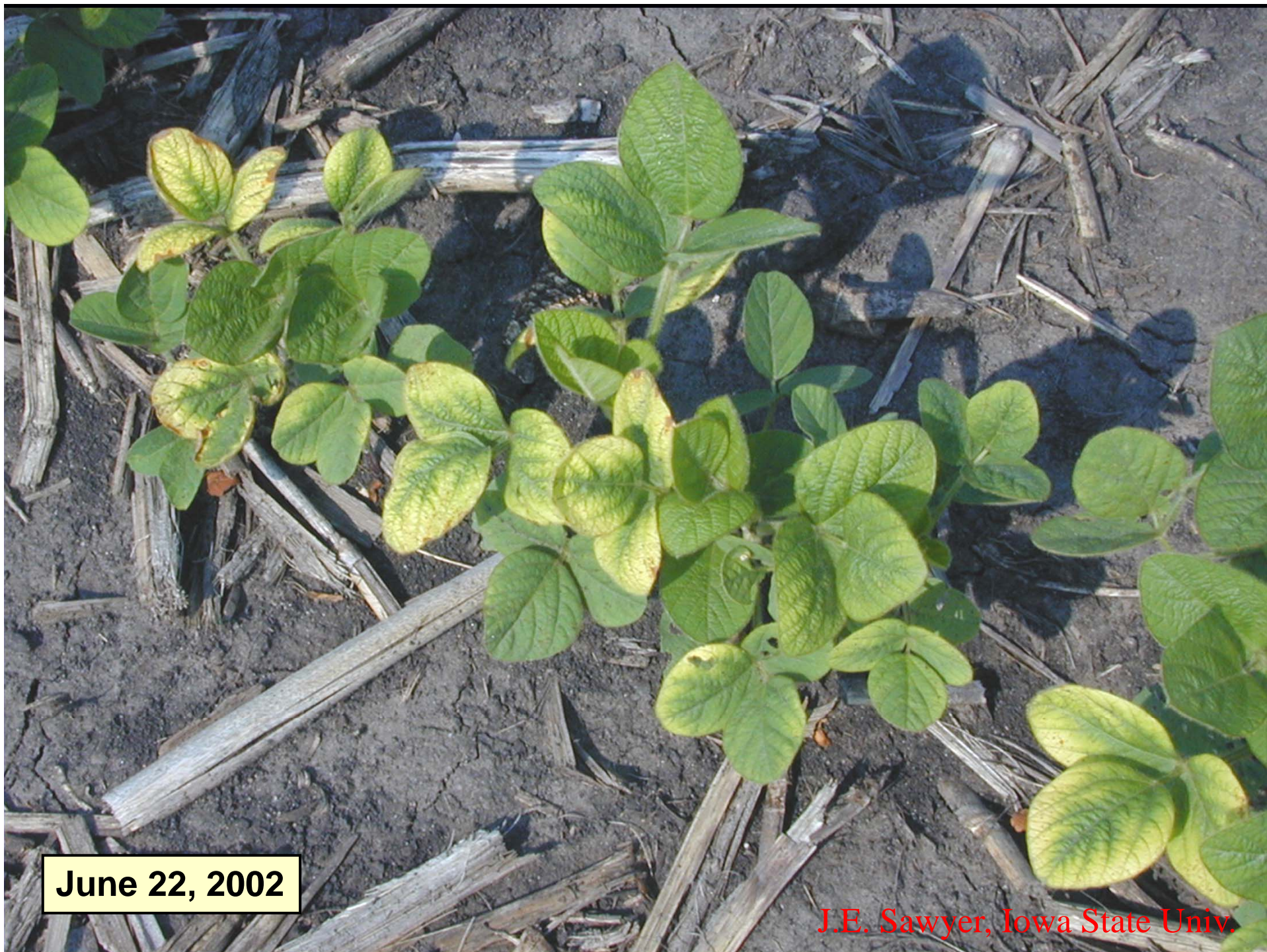
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July 18, 2002

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Sulfur



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Zinc



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Iron

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Boron

BORON STARVED



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