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# IPMINFO

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## Integrated Pest Management for the Home Environment

### TITLE

### PLANT SYMPTOMS THAT ARE ASSOCIATED WITH DEFICIENCIES OR EXCESSES OF CERTAIN NUTRIENTS

If a problem with plant growth has been associated with a low nutrient level it can be corrected with the proper fertilizer. Plant growth depends on at least sixteen basic elements sometimes called "essential elements." All except carbon, hydrogen and oxygen are taken from the soil. Some essential elements are known as "macro-elements," because they are used in large amounts. Nitrogen, phosphorus, and potassium are examples of macro-elements that may have to be added to the soil. Other essential elements used by plants in relatively small amounts are called "micro-elements," and examples are-zinc, iron, and copper. A deficiency of any essential element will cause poor growth, and the micro-elements are just as important as the macro-elements; the microelements are simply used in smaller quantities.

Soil testing is the best way to determine the actual concentration of soil elements. Many tests can be done on the spot, but a thorough soil analysis is best performed by a reliable laboratory. How acidic or basic a soil is dependent on the "pH." The pH of the soil as determined through testing, is expressed on a scale ranging from zero to 14, with seven being neutral. Any soil that tests below seven is considered acid, and anything over seven is alkaline. For most ornamental plants, a soil that has a slightly acid pH is best; such as 6.5 or 6.8. In this range, nearly

all essential elements are readily available to the plant.

#### DEFICIENCY SYMPTOMS

**Nitrogen.** Nitrogen deficiencies frequently show up as a yellowing of the mature leaves of the plant, and a general decrease in the growth rate. Because nitrogen has a dramatic effect on the growth of plants, it should be applied only when plants are growing, and not when they are dormant.

#### Symptoms:

- Plants have fewer leaflets and leaflets are smaller than on non-deficient plants
- Leaves drop earlier than usual
- Small shoot diameter that may be reddish to reddish-brown in color
- Heavy bloom but light fruit set
- Small highly colored fruit that matures early

**Phosphorus.** Phosphorus deficiencies are often difficult to detect because much of the effect of phosphorus is only apparent underground, in the root system of the plant.

#### Symptoms:

##### (Above ground)

- Leaves are green to dark-green and slightly smaller than non-deficient ones.

- Petioles or lower leaf surface reddish-purple when young
- Lower pine needles die
- Shoot is of normal length, unless the deficiency is severe, then it is small in diameter
- Light bloom, with fewer and small fruit

**Potassium.** Moderate deficiencies of potassium are difficult to detect in home gardens. The usual symptom is a general reduction in growth, which is not easy to determine unless the size of the plants can be compared with others that are grown in a similar place and have enough potassium.

Symptoms:

- Leaf crinkling and upward rolling of older leaves
- Chlorosis appears, followed by scorched margins of the entire leaf
- Shoot tips dieback late in the season
- Lateral buds grow to a short, bushy appearance

**Iron.** Leaves develop interveinal chlorosis (which refers to the yellow color between the veins), and the veins remain green.

Symptoms:

- Young leaves are yellow with green veins
- The older basal leaves remain green
- The shoot length is normal, when severe twig dieback occurs shoot diameter is small

**Boron.**

Symptoms:

- Leaf is red, bronzed or scorched
- Young leaves are affected first
- Veins of leaves are yellow
- New growth of shoot dies

- Flower and fruit are deformed

**Zinc.**

Symptoms:

- Leaf is yellow and small ("little leaf"), and may be deformed
- Tuft of leaves at the shoot tip
- Leaves may be mottled with necrotic spots
- Shoot has short internodes with a 'rosette' of leaves
- Twigs may dieback
- Shoots may have a small diameter
- Light fruit set and small, pointed, highly colored fruit

**Sulfur.**

Symptoms:

- Entire leaf pale yellow-green
- Leaf may be small on some species

**Magnesium.**

Symptoms:

- Interveinal and marginal chlorosis of old leaves
- Thin and brittle leaves
- Drop earlier than usual
- Shoot growth not restricted until severe deficiency

**Manganese.**

Symptoms:

- Young leaves yellow with wide green bands along the veins
- Necrotic spots on the leaves

PLANT SYMPTOMS THAT MAY BE ASSOCIATED WITH EXCESSES OF CERTAIN ELEMENTS

**Boron.**

- Leaf may have margin and tip scorch
- Dark, interveinal necrotic spots, progressively worse from tip to base of shoots
- Swelling and cracking. below buds may occur on the shoots

**Sodium.**

- Leaf may have margin and tip scorch

**Manganese.**

- Yellow margins with necrotic spots on the leaves
- Leaves drop earlier than usual
- Stunting of the shoot when severe

**Bibliography**

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