MEASURE AND MANAGE

A KEY TO NUTRIENT DEFICIENCY SYMPTOMS

NUTRIENT	PLANT SYMPTOMS	OCCURRENCE
Nitrogen	Stems are thin, erect, and hard. Leaves are smaller than normal, pale green or yellow; lower leaves are affected first, but all leaves may be deficient in severe cases. Plants grow slowly.	Excessive leaching on light soils.
Phosphorus	Stems are thin and shortened. Leaves develop purple colouration, first on underside and later throughout. Plants grow slowly, and maturity is delayed.	On acid soils. Temporary deficiencies on cold, wet soils.
Potassium	Older leaves develop grey or tan areas near the margins. Eventually a scorch around the entire leaf margin may occur. Chlorotic areas may develop throughout leaf.	Excessive leaching on light soils.
SECONDARY AND MICRONUTRIENTS		
Boron	Growing points die; stems are shortened and hard; leaves are distorted. Specific deficiencies include browning of cauliflower, cracked stem of celery, blackheart of beet, and internal browning of turnip.	On soils with a pH above 6.8 or on crops with high boron requirement.
Calcium	Stem elongation restricted by death of the growing point. Root tips die and root growth is restricted. Specific deficiencies include blossom-end rot of tomato, blackheart of escarole, celery blackheart, and carrot cavity spot.	On acid soils, following leaching rains on soils with very high potassium levels, or on very dry soils.
Copper	Yellowing of leaves. Leaves may become elongated. Onion bulbs are soft with thin, pale yellow scales.	Most cases of copper deficiency occur on muck or peat soils.
Iron	Distinct yellow or white areas appear between the veins on the youngest leaves.	On soils with pH above 6.8
Magnesium	Initially, older leaves show yellowing between the veins; continued deficiency causes younger leaves to become affected. Older leaves may fall with prolonged deficiency.	On acid soils, on soils with very high potassium levels, or on very light soils subject to leaching.
Manganese	Yellow mottled areas, not as intense as iron deficiency, appear on the youngest leaves. This finally results in an overall pale appearance. In beet, foliage becomes densely red. Onion and corn show narrow striping of yellow.	On soils with pH above 6.7.
Molybdenum	Pale, distorted, very narrow leaves with some interveinal yellowing on older leaves. Whiptail of cauliflower; small, open, loose curds.	On very acidic soils.
Zinc	Small reddish brown spots on cotyledon leaves of bean. Green and yellow broad striping at base of leaves of corn. Interveinal yellowing with marginal burning on beet.	On wet soils in early spring; often related to heavy phosphorus fertilization.