

Nutrient deficiency symptoms.

N. Plants with N deficiency are generally stunted and chlorotic. Older leaves affected first. Leaves eventually die. Grasses are especially affected. In grasses yellowing starts at tips then extends down centre. Soils at risk are especially sandy, low CEC and low OM. Broadleaved plants (Dicots) are less affected but may show stunting with pale yellow colour and smaller leaf size. Legumes only show N deficiency if root nodulation is poor. (Source Follett, Murphy & Donahue.). Causes low yields esp in tomatoes. Too much N causes an imbalance which creates lush growth but makes the plants susceptible to disease attack. Also fruiting may be affected. (Source Organic Gardening April 1996.)

P. Generally lower leaves develop dark purple pigments. P is translocated to younger leaves when in short supply. Produces stunting in alfalfa. Some varieties of corn and sorghum may show bronze colour. Generally (or may) produces stunting with often dark green leaves. Side branching may be restricted. Poor growth in grasses. In potatoes P def leads to lower yields. Celery and carrots develop poor root systems. Tomatoes and radishes may develop reddish pigments under leaves. Cabbage family plants and sweetcorn develop pigments after fading to pale green. Slow growth in many horticultural crops. Delayed maturity in many plants. (Source Follett, Murphy & Donahue).

Plants generally stunted, affects root crops first eg radish, turnip, beets. Availability likely to more of a problem than actual amount present. (Source Organic Gardening April 1996.)

K. Clover lacks vigour and grasses and weeds take over. Yellow green appearance. Grazed paddocks show patchy clover growth due to K in urine. Grasses sparse and stunted. No or little response to application of P. Typical low K weeds are flat weed, sweet vernal grass and bent grass. White daisies on red soil around Warragul and *Bartsia* indicate low K. White clover show spotting around outer part of leaf particularly in spring. The white spots become denser and extend to the main vein. Subterranean clover shows either marginal brown spotting or sometimes only a general yellow-brown-green discoloration. Healthy green leaves are seen only at the growing tips. (Source AgNotes)

Improves disease resistance. Gives strength to stems eg prevents lodging in corn. In general plants look stunted. Older leaves may have a burnt appearance. Fruit may be of poor quality. Beans and other legumes need more K. Beans are affected first therefore are good indicators of K deficiency. Poor yields and dead and dying leaves on beans means K deficiency. Tomatoes can be small and mishapen. Sandy and low OM soils most at risk. (Source Organic Gardening April 1996.)

Encourages strong growth incl more and stronger root growth. Improves starch content of grains and sugar content of fruits. Improves disease resistance of plant and longevity of fruits. Improves drought response. (Source Follett, Murphy & Donahue).

S. (Source Organic Gardening April 1996.) Plants which use a large amount of N also need S. Plants develop yellowing of leaves similar to N deficiency. Causes stunting and delayed maturity. Legumes are affected first. Grasses and corn may show striping of the upper leaves. (Source Follett, Murphy & Donahue.). (Source AgNotes)

Ca. Lack of Ca shows up as blossom end rot in tomatoes (black spot opposite stem). Can cause spindly growth and the leaves to stick together and not open. Acid sandy soils often low in Ca. (Source Organic Gardening April 1996.)

Symptoms usually show when Ca levels are critical. These include deformed younger leaves and weak stems. Leaves may be dark green. In corn under Ca deficiency leaves do not unfurl. (Source Follett, Murphy & Donahue.).

Mg. Older leaves show interveinal yellowing and may dry up and fall off esp in tomatoes. Translocated to younger leaves. Can be a problem on acid sandy soils. (Source Organic Gardening April 1996.)

Yellowing first occurs between veins. Eventually leaves may be reddish-purple. Older leaves affected first. In corn interveinal yellowing starts at the older leaf margins and progresses inwards. (Source Follett, Murphy & Donahue.).

Source Donahue et al. p 304. Mg deficiency is common on coarse textured acid soils with a high sand component. Esp if subsoil is coarse textured.

Mo. Occurs more on acid soils. N fixing legumes specially need Mo. Less growth of clovers and legumes. Def. symptoms same as N; stunted plants with small pale green or yellow leaves and reddish brown stems.

Cu. Not often seen in plants. More serious as requirement for animals. In clover plants become more erect and leaves become yellow-green. Wrinkling occurs around the edges of the leaves and the edges are drawn in to form a shallow cup.

Zn. Significant in Wimmera and in some alkaline coastal sands.

Co. Mainly Little Desert and some coastal areas.