

Recognising common nutrient deficiencies

This article gives guidelines on how to identify the most common nutrient deficiencies that can occur in some of our favourite summer vegetables.

Organic gardeners are continually building up a healthy soil - full of nutrients available in a balanced form, well aerated and a good crumbly texture. However, problems can arise along the way due to nutrient deficiencies in the soil and subsequently, in the plants grown in that soil.

A good long-term remedy is to regularly add compost to your soil - the importance of this natural fertiliser can't be overemphasised. Make plenty of this wonderful stuff from a variety of ingredients and problems will rarely arise. There are many articles in previous *Canberra Organics* on making compost, and compost-making features in almost all books on organic growing.

First, a word of warning: If you think there is a possibility of a significant nutrient deficiency in your soil, before you start adding amendments to correct the supposed imbalance, test your soil pH.

If the pH is outside a range of about 6.0 to 7.0 - the best range for growing most vegetables - certain nutrients may be present in the soil, but will not be present in a form that is accessible to your plants. Adding more is unnecessary. You will need to correct the pH, but usually this is only necessary every 3 or 4 years.

Nitrogen is an essential component of chlorophyll which gives leaves their green colour. It improves the quality of leaf crops and is very influential in determining the size of the fruit.

Deficiencies in this nutrient show up clearly in the overall slow growth of the plant and the colour of the leaves which are typically light green to yellowish. Be careful correcting any imbalance as excessive nitrogen can lead to lush foliage but little or no fruit on your plants.

Particular symptoms, in addition to leaf colour and slow growth, for common vegetables are:

- *Tomatoes* Flower buds turn yellow and drop off. Fruit will be small.
- *Corn* Leaves have yellowish centre streaks. Lower leaves affected first, become brown and drop off.
- *Potatoes* Young top leaves may curl upward. Tubers will be small.
- *Cucumbers* Fruit light in colour and pointy at blossom end (ie the part furthest from the vine).

Phosphorous is important for the hardy growth of the plant, playing an important role in root development and cell activity.

When a deficiency in phosphorous exists, particular symptoms can include:

- *Tomatoes* Leaves dark green, purple underneath. Very slow growth.
- *Corn* Stalks small. Leaves purple at the tips and along the margins.
- *Potatoes* Stunted plants; leaves may curl upwards. Tubers may have brown specks inside, often radiating from the core (note that extremes of temperature or viruses can cause similar effects).

Potassium is an essential element for plants, and is involved in a wide range of physiological and biochemical functions.

Specific symptoms of a deficiency in this nutrient are:

- *Tomatoes* Leaves dark green and bunched together. Older leaves become yellow, then brown at the edges. Fruits fall off soon after ripening, and often have hard white 'core'.
- *Corn* Lower leaf tips become scorched and brown. Poor root system. Stems can become so weak that they snap off
- *Potatoes* Leaves very dark green, may turn brown at edges and die.

Calcium is a component of cell walls, and stimulates root and leaf development and activates enzymes involved in plant metabolism. In tomatoes, calcium deficiency is exhibited as blossom end rot. This is also associated with uneven watering, which means that calcium does not reach the flower in time for fruit set. Tips of new growth are stunted.

Magnesium is needed for photosynthesis to occur. It also stimulates the uptake of phosphorous. In plants such as tomatoes and beans, deficiency causes older leaves to turn yellow while the veins stay a bright green. They eventually turn brown and die. Only a few flowers and fruit form.

Generally to know if you have a deficiency in any of the **trace elements** you will need to have, your soil tested, as deficiencies cause a wide range of problems which vary from plant to plant.

More information

For more information on these nutrients, including references and tips on how to address deficiencies, visit the articles section on the COGS website at <http://www.cogs.asn.au/articles>

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