

## Magnesium

Magnesium is an essential ingredient of chlorophyll, the green plant pigment that gives leaves their colour and enables plants to make food from sunlight.

**Magnesium is essential for enzymes in plants and especially in chlorophyll – the green pigment that enables plants to carry out photosynthesis. Magnesium is a metallic element represented by the symbol Mg.**

### Soil pH

How well plants grow can be strongly influenced by whether the soil is acid or alkaline. It's best to get the pH right before dealing with other nutrient problems.

### Lack of magnesium

This appears as a lack of green in the leaves. The area between the veins of leaves, especially the lower older ones, goes yellow. Sometimes the leaf margins also lose their green colour. Plants of the cabbage family sometimes develop a purplish colour.

Sandy soils are most likely to lack magnesium. This deficiency is also seen when there is plenty of magnesium in the soil, but the roots cannot take it up because of poor soil structure, drought or waterlogging. When the underlying problems are resolved, the magnesium deficiency disappears.

Fast-growing plants may show a temporary magnesium deficiency in the older leaves. This usually sorts itself out when the plant begins to grow more slowly. There is no need to add extra magnesium.

### Common magnesium fertilisers

The amount of magnesium in fertiliser has to be stated on the packet. However, few compound fertilisers contain it, as plants need much less magnesium than nitrogen, phosphorus and potassium. Both Epsom salts (10% Mg) and kieserite (16% Mg) are fast-acting, water-soluble fertilisers containing magnesium sulphate.

Kieserite contains less water in its crystals than the more frequently sold Epsom salts and is usually cheaper to use when treating large areas. Because it is less soluble, it can be used in seedbeds, where Epsom salts could scorch delicate young roots. Epsom salts are used for foliar feeding, as they are more soluble in water than kieserite. Neither fertiliser is organic.

Magnesium is easily washed out of soils that contain little or no clay. Since these soils are often acid and need lime, maintain the pH using magnesian limestone. This ground limestone, derived from magnesium-rich rocks, is also known as Maglime or Dolodust. See the Lime Factsheet (GWF394) for details of how much to use and where to get it.

Magnesian limestone is acceptable to organic growers, but do not use it where you intend to grow acid-loving plants like rhododendrons and heathers. Foliar-feed these plants instead – especially rhododendrons which can suffer from magnesium

deficiency.

Some liquid fertilisers contain a little magnesium – these are a useful pick-me-up for container-grown plants – tomatoes in growing bags, for example

Manure, seaweed, compost and mushroom compost contain small amounts of magnesium. Cattle manure, for example, contains 0.04%Mg.

### Magnesium and potassium

High levels of potassium (K) in the soil suppress plants' uptake of magnesium, so avoid overdosing with fertilisers containing potassium. Conversely, overfeeding with magnesium fertiliser can induce a potassium deficiency in plants. Foliar feeding helps overcome this imbalance.

### General guidelines

If your soil has not been analysed recently and you believe that plants are showing magnesium deficiency, try a foliar feed in the first instance. If this has some effect, the soil may be deficient, and applying a magnesium fertiliser should be worthwhile. Spreading 30g a sq m (1oz/sq yd) of Epsom salts or kieserite will provide sufficient magnesium for most soils.

### Bulky organic manures

Where the magnesium level is low or very low, manure, mushroom compost or garden compost are unlikely to provide enough and you will need fertilisers to boost

levels for good growth. Where levels are high or very high, use good-quality manure or compost at 4.5kg a sq m (10lb a sq yd).

Manures and composts are highly variable in composition, depending on what they have been made from, how they have been stored and how well-rotted they are. Also, they can vary greatly in water content.

If in doubt, consider the organic matter as a soil conditioner and add fertiliser to provide nutrients.

### Foliar feeding

Wetting the leaves of plants suffering from a magnesium deficiency with a solution of Epsom salts can provide adequate magnesium. However, you may need to foliar feed again during the growing season and every time vulnerable plants are grown. Susceptible perennials, for

example, typically need three or four applications per year. Spraying young foliage during warm, humid weather gives the best results. Foliar feeding doesn't work so well on drought-stressed plants with sparse foliage.

Avoid foliar feeding during hot, dry weather as the solution may dry too quickly, and the resulting concentrate could scorch the leaves. If you're in doubt about the suitability of weather conditions, apply the feed in the evening.

Use 20g of Epsom salts per litre of water (3oz per gallon of water). Add a little washing-up liquid – this will act as a 'wetter' to stop the solution running straight off. Check if there is enough wetter by dipping a leaf in the solution – if it runs off without wetting the leaf, more is needed. Too much wetter can damage plants – if you're doing the whole of a precious

plant, check by spraying a small shoot and leaving it for a few days before spraying the remainder.

### Suppliers

Magnesian limestone, Epsom salts and kieserite:

Garden Warehouse  
Standroyd Mill,  
Cottontree, Colne,  
Lancashire BB8 7BW  
01282 873370  
www.lbsgardendirect.co.uk

Garden Direct  
40 Hillgrove Business Park,  
Nazeing,  
Essex EN9 2BB  
01992 890770  
www.gardendirect.co.uk

### Fertiliser guide

		Before planting or sowing add g per sq m (oz per sq yd)		Treating established plants add g per sq m (oz per sq yd)	
Soil magnesium level	Soil magnesium index	Kieserite (16% Mg)	Epsom salts (10% Mg)	Kieserite (16% Mg)	Epsom salts (10% Mg)
Very low	0	47 (1½)	75 (2)	12 (¼)	19 (¾)
Low	1	23 (¾)	37 (1)	None	None
Moderate	2	12 (½)	19 (¾)	None	None
High	3	None	None	None	None
Very high	Over 3	None	None	None	None

### Soil analysis

To find out how much magnesium your soil contains requires soil analysis. This should give you a 'magnesium level' from very low to very high, or a 'magnesium index' from 0 to 3. You can then use the tables to determine what to add. Alternatively, a *Which? Gardening* soil analysis will tell you the levels and recommend what action to take. Contact us for more details.

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