

January

Dear peony grower,

Weed control

Weed control in peonies does not go without problems. Especially now – the period before the growth of the eyes – it is best to spray Kerb in combination with Chloor IPC or Stomp and add a binder to it. Kerb and Chloor IPC have a strong effect at low temperatures (lower than 12 C°, but best around 5C°) against seed weeds – like stinging nettle. Chloor IPC works best on moist soil in cloudy weather. The results will be minimum in warm weather. **Do not ever spray in the rain.**

The rain will let the herbicide soak in the soil, what causes damage. Never spray Chloor IPC when the new shoots appear above the ground. The result of direct contact between a peony and Chloor IPC is that the plant will not grow that season. There has been tested with *dual gold*. This herbicide may cause damage when there is illuviation. The result is a limited growth.

Do not use Stomp in the greenhouse! This herbicide may cause damage to the peony.

It all happens in the soil

When the soil *verslemt* (as it is called in Dutch), the top layer of the soil hardens. The susceptibility to this hardening is mainly caused by the organic matter and so-called *lutum* level. Soil with very little or more than 20 percent *lutum* are not sensitive for this hardening process.

Problems mostly occur on parcels with *lutum* percentages between 11 and 20 percent. When there are sufficient organic substances in the ground, *verslemping* occurs less often. A potential danger of this situation is a lack of air which can be problematic for the root development. Not all varieties are strong enough to break through the hardened soil. Even after the plant has passed through the top layer a shortage of air may occur. The soil can also stay wet for a long time and can be difficult to work on. You can reduce these problems by increasing the organic matter content of the soil.

Keep an eye on the Ca level, because Ca ensures an improvement of the soil structure. It is important to give chalk on the right moment. If you still have to sprinkle chalk at this point, than a young chalk is best in this period – like *DCM Zeewierkalk Korrel*. This is soft, works fast and contains 45 percent calcium. It is the best solution for a spring application!



Organic matter is of great importance for soil fertility. It is capable of retaining moisture, it is important for the workability and it can bind nutrients and also deliver them. The organic matter content decreases – among other things – because it serves as a food for the soil life. When this happens nitrogen, sulfur and other nutrients are released and can be absorbed by the plant.

The organic matter content can drop quickly, but not rise quickly. It is therefore important to ensure that this content remains the same. To keep the organic matter content at the same level, you can supply this via animal manure (cow) and compost. Use this knowledge for a healthy soil-life and an organic matter content, and use other fertilizers if necessary.

The soil life has a big impact on the plant growth. The soil life must release the nutrients from the organic manure that are indispensable for the plant. But the soil life has some other functions too:

- Taking care of a good soil structure
- Limiting excessive numbers of pathogenic organisms
- Construction of organic matter that is only slowly degraded
- Degradation of plant remains, manure and dead soil organisms and releasing nutrients

Measuring

Take soil samples so that you will get a better picture on the needs of your plants.

Fertilization

Top quality peonies require good fertilizers. Peonies that have been growing for a couple of years can exhaust the soil and surely need fertilizers. The plants have preferences as it comes to the order of the fertilizers. In the first stage of the growth they need sulfur followed in order by boron, silicon, calcium, nitrogen, magnesium and last but not least phosphorus. The availability of these elements - especially boron, silicon and calcium - are essential for a good start of the plants. The grow will start slower when these elements are not (enough) available.

Main elements

The element **nitrogen** is most easily absorbed by the plant. Lots of nitrogen is needed during strong growth - as in the first weeks at the vegetative stage (length growth). A lack of nitrogen causes light green or yellow foliage, less length growth, flowering too early and vulnerability to fungus diseases.

An excess inhibits Ca/Mg uptake.

Phosphate works favorable in forming the main root system. This element improves - together with potassium - the forming of the flowers several weeks before the blooming. It is advised to apply extra phosphate and potassium before flowering time. A lack of phosphate results in smaller leaves, less colourful flowers, possible later flowering and red/purple colouring of the leaves. But a too large application of phosphate will cause that the plant cannot take up magnesium and this results in a lack of magnesium.

Potassium ensures firm foliage and stems. This element is used for larger and fuller flowers at the flowering time. When a plant has enough potassium, it can protect itself better against fungus and bacteria. A lack of potassium causes yellow leaf edges. The foliage will also get smaller and the stems thinner. Too much potassium could cause salt damage and a poor plant growth.

Magnesium gives the plant its fresh, healthy green appearance. It also has a function for the cells and the firmness of the tissue. It is a building stone for some enzymes. When there is a shortage of magnesium you will see the leaves turn yellow, while the leaf nerves stay green. This element is limited available during drought, a cold spring & a low pH value. Excessive growth does not occur.

Calcium is used by the plant for its firmness and to build up cells. Calcium is essential for the water regulation of the plant and is indispensable at higher temperatures. The plant will evaporate a lot at higher temperatures and needs to take in more water. A shortage of calcium occurs when the growth is too fast and the humidity is too high, causing less evaporation in the plant. When the plant cannot evaporate it cannot absorb any water with plant food. Young leaves will wither and the plant will be more susceptible for fungus diseases.

Micro elements are the vitamins and mineral for the plant. Micro elements are: Fe = iron, Mn = manganese, B = boron, Zn = zinc, Cu = copper and Mo = molybdenum (high numbers often mean a high pH value). All these elements have an important function. They are the building stones of the plant. Micro elements are also needed for the water regulation, dividing of cells and metabolism of the plant. The micro elements are absorbed by the plant through its roots. Therefore it is important to grow strong roots. The plant food that is sold in the trade contains little to no micro elements. Therefore it is important to apply those during feeding.

The results of a shortage of a specific micro element are as follow:

Fe = iron: young leaves will turn light green, yellow or white between the nerves.
Absorption problems at low temperatures, too wet or dry soil and a high pH value.

Mn = manganese: older leaves will turn yellow between the nerves.
Absorption problems at low temperatures, too wet or dry soil and a high pH value.

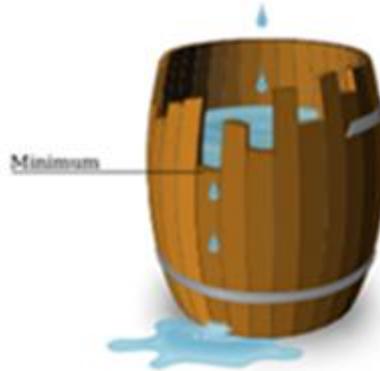
B = boron: growing problems and malformation of the foliage.

Zn = zinc: growing problems and unwanted spots on the foliage.

Cu = copper: dying flower buds, young leaves will curl and turn yellow or grey.

Mo = molybdenum: multiple problems with younger and older leaves.

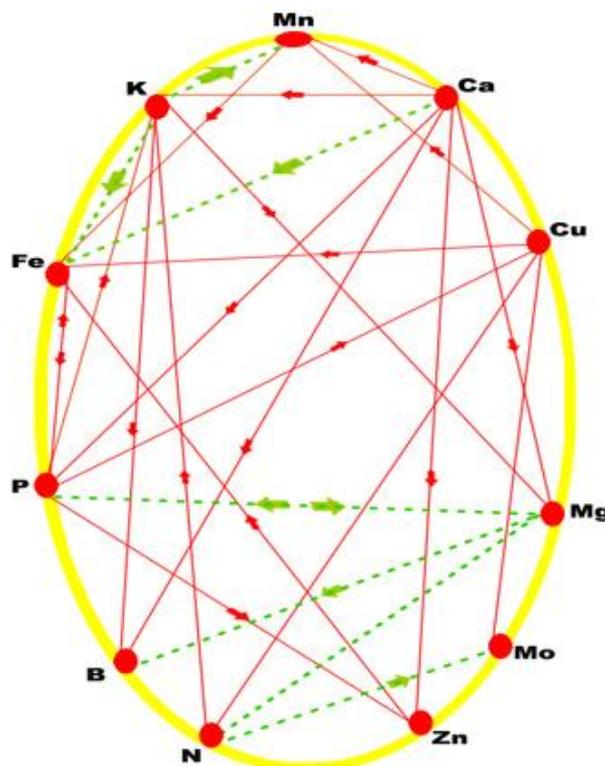
Liebig's law of the minimum, often simply called Liebig's law or the law of the minimum says this: **growth is dictated not by total resources available, but by the scarcest resource available.**



In the winter, supplementation with compost is advisable. Especially for the parcels with more mature peonies. All plant food must be given in the right proportion to each other. Otherwise there will be a limited factor of antagonism, which also means repression. The plant food element that is more present represses the plant food element that is less present and is therefore no longer absorbed by the plant. An excess of potassium for example has an inhibitory effect on the absorption of calcium. Too much calcium might cause even larger problems, because calcium represses almost all nutrients besides nitrogen.

Antagonism (red line): an element represses the absorption of another element.

Synergism (green line): an element promotes the absorption of another element





Watering

In the greenhouse and in the tunnel, the water supply is decisive for the result. Moisture leads cold into the ground. Moist soil and a proper organic matter content are important for the uptake of the fertilizers above. Drought during this period will damage flower production for the coming season.

Slugs: the sneaky killers in your peonies!

Slugs can cause a lot of damage in the winter months and early in the spring. Under glass, but also in your peony fields. Therefore be alert for gluttonous slugs and prevent damage to your peonies.

Slugs (without a shell) and snails (with a shell) are mollusks. Slugs mostly appear under glass and they can cause much damage in many varieties. They are not very particular in their choice of food. Snails prefer the young leaves, but also the sprouts of your peonies. Both species are active at night and they retreat during the day. Therefore they are not easy to be found on damaged plants. When a plant is damaged, it can be susceptible for all kinds of fungus diseases.

Botrytis

The first treatment against Botrytis has to take place when the plants start to emerge. The fungus lingers during the winter at the surface of the soil. Therefore the new shoots will be infected when they emerge from the soil. Drenching the soil with Collis or Luna Privilege can reduce the number of infected plants – for example with a sensitive variety like Flame – by more than 90 percent.

We would like to emphasize the importance of treating the plants timely and preventively. There is an advantage in doing so. The dosage is a maximum of 4 liter per hectare. It works best when it is drenched on the plant as much as possible in combination with a lot of water (for sensitive plants 0,20 liter per plant). Due to resistance, it is not an option to use Collis regularly. Loosening the top layer of the soil in the tunnels and greenhouses can significantly reduce damage by Botrytis.

Have a look at [our website](#) or contact us for more information:

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Green Works supplies young planting material for the professional cultivation of pot plants and (summer) cut flowers. Green Works is also a large grower of peonies for the successful cultivation and trade in the Netherlands and abroad. We supply within the Netherlands and globally to professional growers and (export) traders. With support in cultivation, promotion and sales, Green Works offers a total package to put an unique and healthy product on the market: <http://www.green-works.nl/en>

Green Works can never be held liable for any cultural information given and only to be used as a guideline. The grower is at all times responsible for his own action and to read the label of the chemicals being used.
