

PHC Fertilizers

100 % plant-based



PHC
Plant Health Cure

We Grow Soil.

10 reasons to choose for PHC Fertilizers:

1. Good bonding, does not rinse;
2. 100% plant based and organic;
3. Very complete amino acid profile;
4. Long-term and controlled release of minerals;
5. Entirely produced out of residual flows;
6. Increases stress tolerance and yield;
7. Low salt content, no risk of burning;
8. Easy to absorb, even at low temperatures;
9. Easy to absorb, even at low temperatures;
10. Approved for use in organic farming;



Fertilizers that feed both the soil and the plant.

Synthetic fertilizers provide a very limited part of what plants really need. Soil analyses show what can be absorbed. Not what needs to be absorbed. The soil is increasingly and more quickly confronted with shortages of minerals that are necessary for plants (despite the very small amounts). It is a fact that the use of artificial fertilizers leads to the impoverishment of soil life. Healthy soil biology is essential for healthy crops.

Soil must be nourished as a living organism. Plant-based fertilizers, beneficial soil fungi and soil bacteria stimulate soil life and make plants resilient. The aim is to reduce the use of artificial fertilizers, pesticides and chemistry as much as possible, without loss of production. The best crop protection comes from its own plant resilience.

PHC basic fertilizers.

Crops that mainly require basic elements can be provided with vegetable Basic Plant Feed fertilizers. These fertilizers serve as an addition to the existing fertilization programs. Basic fertilizers are rich in the main elements such as nitrogen and potassium.

The plant-based amino acids are often low, but the fertilizer does contain a lot of carbohydrates and organic matter. Carbohydrates are an important source of nutrition for bacteria and other life forms in the soil. BPF 5-0-3 is mainly suitable for fertigation.



BPF 5-0-3

Rich in organic nitrogen and contains no phosphate. In addition, this fertilizer is homogeneous in solution.

The best protection comes from its own plant resistance.



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PHC complete fertilizers.

The products in this line contain specific and 100% plant-based amino acids in different proportions. They are excellent for crops that require balanced fertilization with the best guarantees of healthy growth and plant resilience.

The plant-based ingredients are rich in macro and micro-elements and phytonutrients. The elements are partially stored in organic matter, resulting in a controlled release. An additional and important advantage here is that leaching is prevented.



OPF 7-2-3

Contains a high level of glutamic acid. Is effective in de-stressing and rich in amino acids. Due to the high content of organic matter, this OPF is excellent as a growth fertilizer, soil improver and foliar fertilizer.



OPF 5-2-5

Provides a balanced nutrition and is rich in sugars. The balance of nutrients and amino acids activates the function of the stomata. Ideal as fertilizer for cuttings and seedlings.



OPF 4-2-8

This product is rich in natural potassium. In addition, it contains a wide range of trace elements. Use of this product improves fruit quality and reduces growth disturbances. Very suitable before and during fruit ripening, and as a foliar fertilizer.



OPF 11-0-5 Granular

Product with high nitrogen content which has a slow release; 50% nitrogen is released during the first 4 weeks. OPF Granular is rich in amino acids and sugars. In addition, the product is 40 metres spreadable and contains more than 9% SO₃.

NIEUW!



OPF 7-0-7-S PolyGranular

A mix of 70% OPF 11-0-5 Granules and 30% natural Polyhalite. OPF PolyGranular contains an optimal sulfur content, which saves one spreading time. Calcium and potassium (sulphate forms) are easily absorbed. The nitrogen / sulfur ratio ensures a favorable amino acid profile in the crop.

For more information and advice, please contact +31 (0) 13 - 7200 300 or info@phc.eu. In addition, our website www.phc.eu contains a lot of useful information.



**Return for grower,
crop and soil!**



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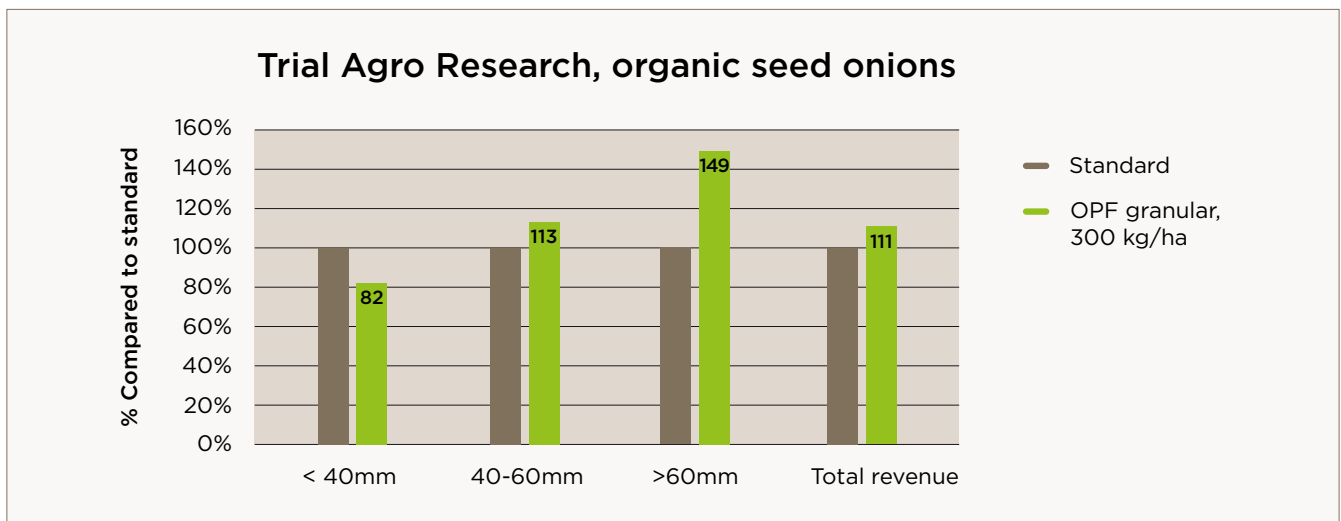
Research shows the effect of OPF Granular.

Research into the effect of OPF Granular in organic seed onions, carried out by Agro Research, shows a better crop position and yield. The seed onions developed a significantly better colour and were in better condition. OPF application gave more yield in the larger sizes, with an improvement in the overall yield.

OPF Granular also provides interesting yields during early spring and late autumn crops.

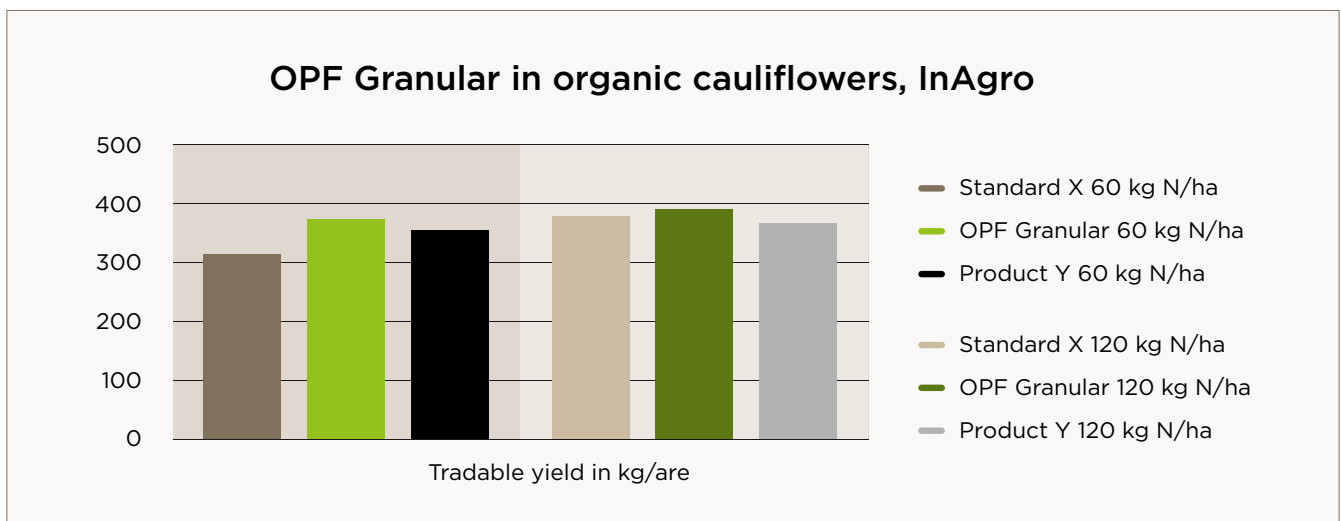
The nitrogen supplied by amino acids is better preserved in the building structure and is less susceptible to leaching.

During a trial in leek, there was 30% less nitrogen leaching after a fairly rainy period, with 70mm of rainfall. Volatile nitrogen forms provide a lower net yield compared to amino acid bound nitrogen. Also, the amino acids cost the crop much less energy to use.



During a trial, conducted by Inagro, the application of OPF Granular in organic cauliflowers at different Nitrogen dosages systematically gave the best results.

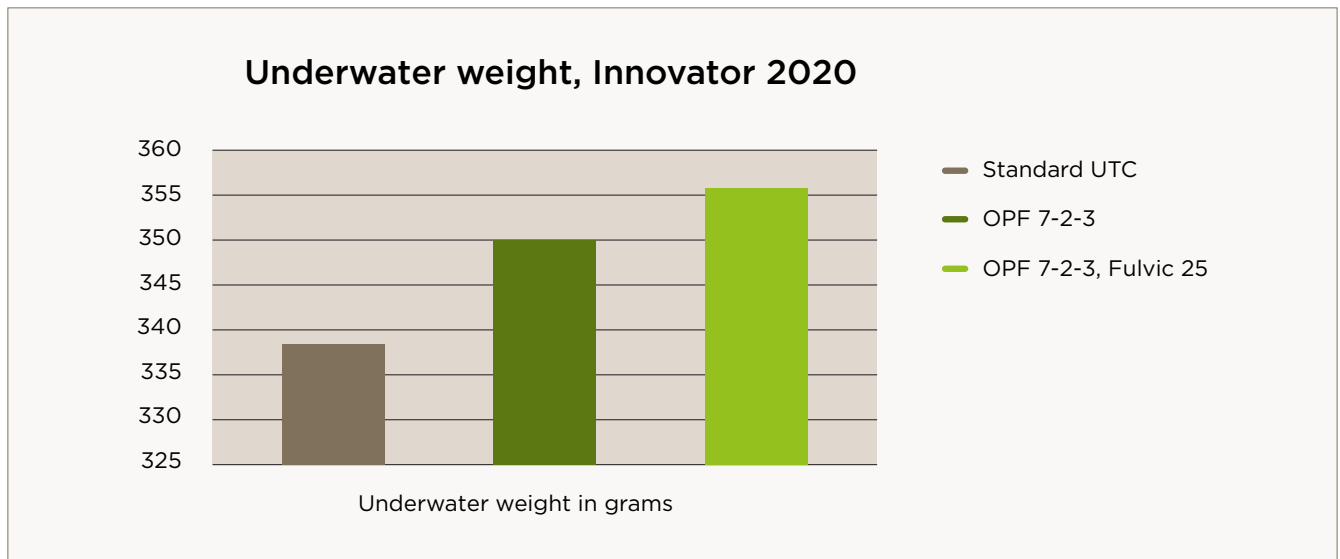
The tradable yield as well as the total yield turned out as the highest with OPF Granular.



OPF liquid increases underwater weight.

Foliar fertilization with OPF 7-2-3 is a common application. Research into the effects of foliar fertilization with OPF 7-2-3, carried out by Cultus Crop Research, shows a positive effect on the underwater weight. During the harvest previous year (2020) no differences in yield were observed.

The standard group was rejected due to a low underwater weight. The treatments with both OPF and OPF with Fulvic 25 were suitable for the French fries industry. Foliar fertilization in combination with Fulvic 25 resulted in an increase of 5% underwater weight.



Practical examples as argument.



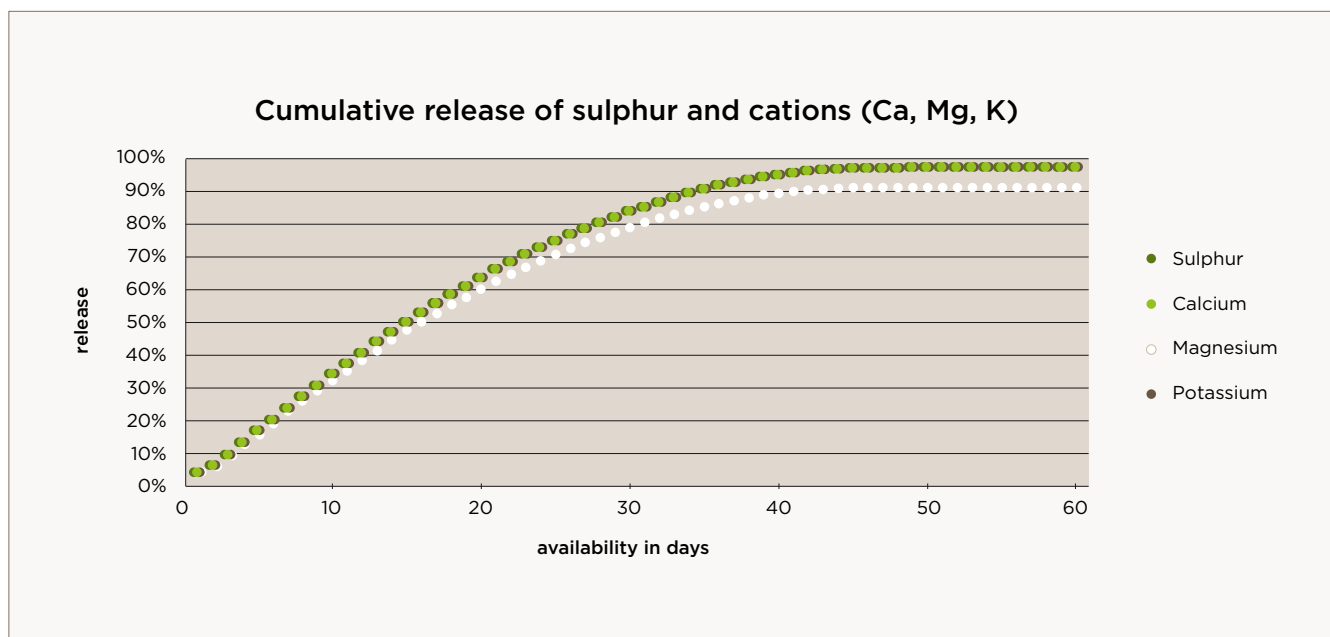
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OPF PolyGranular

OPF PolyGranular is rich in plant-based nitrogen with calcium and sulphur. The product contains 7% nitrogen, 7% potassium, 8% calcium and 8% sulphur. The release of the cations (calcium, magnesium, potassium) and sulphur is gradual over a period of 60 days.

The first 20% becomes available after approximately 10 days. The availability of calcium, among other things, is therefore more direct compared to calcium sulphate, which is relatively slower.



De-stress crops during heat with OPF 7-2-3

During the summer period, the temperatures of the crop can rise considerably. The high radiation with rising temperatures creates a lot of stress. The heat stops photosynthesis, which means that the crop has to use its reserves. Of course, sufficient water is important, but not enough to prevent growth stagnation.

The stop of photosynthesis not only causes growth retardation, but also the interior of the crop, which becomes susceptible to insects. When the plant is using its reserves, Ammonia comes free in the leaves,

which is disadvantageous for plant resilience.

Foliar application with vegetable amino acids and fulvic is an effective solution for reducing plant stress. Plant based amino acids provide the crop with energy free of charge and can replenish the necessary reserves during this period. OPF 7-2-3 is rich in plant based amino acids, sugars and essential trace elements. OPF also contains an important element that lowers ammonium in the leaf. The addition of fulvic by using the product Fulvic 25, ensures a better and more efficient absorption.



Resistant to heat stress.

TIP!

In addition to vegetable fertilizers, PHC develops useful soil fungi (mycorrhiza) and soil bacteria that stimulate soil life and make plants resilient. Mycorrhiza is a fungus species that connects with roots. This increases the absorption capacity of the plant or tree by up to 700%. Colonized plants are much more resistant to drought or lack of nutrition. Mycorrhiza promotes plant and fruit growth, prevents loss and ensures healthy and resilient crops.

For more information visit www.phc.eu/mycorrhiza



Fine solution, OPF

At PHC we are continuously working on optimizing our products. We listen to our customers. For example, our OPF liquid fertilizers are screened after mixing and before filling to a particle size of 200 microns. This significantly improves sprayability, which means that OPF can be used in practically all spraying systems. An additional advantage is an even better stability of the formulation. The high concentration of plant based amino acids and the specific composition of minerals make OPF a good choice in the tank mix.



Healthy from start to harvest.



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PHC special fertilizers.

For specific applications where normal fertilizers are too active or where special requirements are set. Because PHC produces its own fertilizers, we are also able to make custom fertilizers.



OPF 7-0-2

The fully organic raw materials of plant-based origin make this product a unique innovation. OPF 7-0-2 is rich in organic nitrogen. The low phosphate content fits perfectly within agricultural methods where sufficient phosphate is present. The sophisticated percentage of Boron and iron make an important contribution to the formation of proteins and the construction of cell walls.



Biovin Liquid

Excellent for fragile plants such as seedlings and cuttings that are sensitive to concentrated fertilizers. The balance of phytonutrients, amino acids and trace elements ensure healthy growth. This makes it also usable as a foliar application at times when nitrogen is not desired. Biovin Liquid is homogeneous in solution and very economical in use.



OLF-Ag

Leaf fertilizer made from plant-based ingredients, supplemented with specific plant-based amino acids and silver for healthy growth. Contains a rich variety of trace elements to increase nutrient density in plants.



OLF-Fe

Liquid natural iron fertilizer supplemented with Fulvic 25 and Yuccah. Contains 3% iron and 2% natural fulvic. The fulvic chelates the iron elements and ensures better absorption. Especially suitable for fulvic applications and very efficient in use due to the combination with fulvic and humic acids.

TIP!

To promote the effect of the fertilizers, we recommend combining the application with Fulvic 25. Fulvic acid is one of three components of humus and is produced during the digestion of plants by micro-organisms. It is a substance with extraordinary positive effects on plant and soil health. This is how fulvic transports nutrients to and in the plant.

More information: www.phc.eu/en/knowledge-base/fulvine-de-transporteur-van-de-natuur/



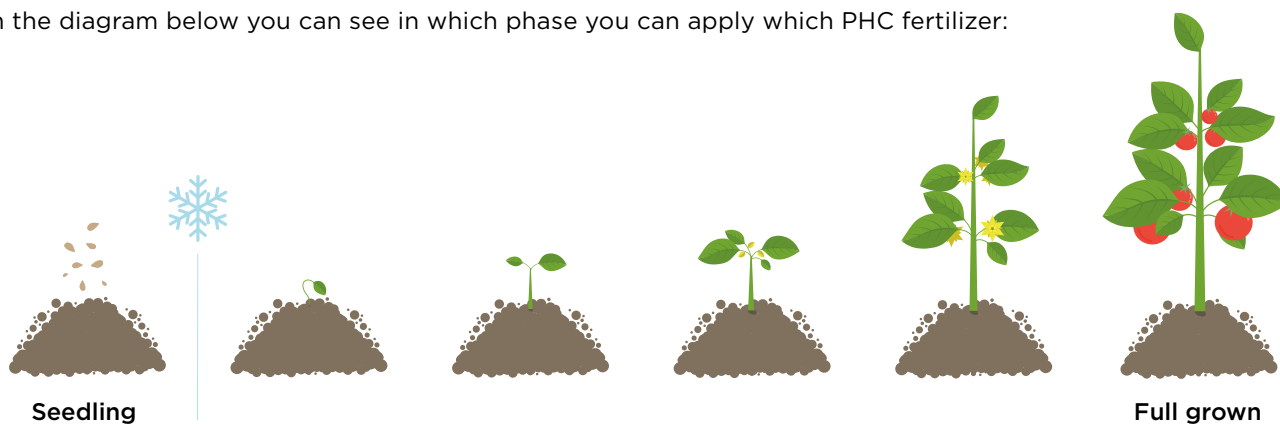
Product overview.

Fertilizer	Formulation	N %	P %	K %	Micro elements	Amin acids %		Organic matter %	Skal
						Total	D.O.		
OPF Granular	Grain	11	0	5	✓	10 - 11	0	72	✓
OPF PolyGranular	Grain	7	0	7	Sulfur / calcium	8	0	62	✓
OPF 7-2-3	Liquid	7	2	3	✓	19 - 20	14	52	✓
OPF 7-0-2	Liquid	7	0	2		0	0	43	✓
OPF 5-2-5	Liquid	5	2	5	✓	16 - 18	8 - 10	45	✓
BPF 5-0-3	Liquid	5	0	3		8 - 9	2 - 3	44	✓
OPF 4-2-8	Liquid	4	2	8	✓	13 - 15	6 - 8	35	✓
OLF Ag	Liquid	0	0	0	silver	11	5	39	
OLF Fe	Liquid	0	0	0	iron	0	0	7 - 7,5	✓
Biovin liquid	Liquid	0	0	0					✓

D.O. = Direct absorbable *admission pending. Check the input list for the current status.

Application advise.

In the diagram below you can see in which phase you can apply which PHC fertilizer:



Product	Period of use	Amount
OPF Granular	[Bar chart showing application period]	200 - 500 kg/ha
OPF PolyGranular	[Bar chart showing application period]	200 - 400 kg/ha
OPF 7-2-3	[Bar chart showing application period]	50 - 70 L/ha
OPF 7-0-2	[Bar chart showing application period]	30 - 50 L/ha
OPF 5-2-5	[Bar chart showing application period]	30 - 50 L/ha
BPF 5-0-3	[Bar chart showing application period]	30 - 50 L/ha
OPF 4-2-8	[Bar chart showing application period]	30 - 40 L/ha

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Leaf fertilization.

Originally, most plants are part of a larger ecosystem. Due to a closed canopy, smaller plants receive little light and root competition is fierce. As a result, most crops for consumption, fruit trees, house plants and shrubs developed a system that allows them to absorb the organic matter, amino acids and humic in water droplets through their leaves. This is not done through stomata as it is often thought, but through a system called Endocytosis. This is a process at the cellular level, in which a cell absorbs substances by embedding

them in the cell membrane. For example, nicotine can also be absorbed through the skin via a plaster. This form of absorption only works for very small particles. That is why the minerals in PHC (leaf) fertilizers are smaller than 4 microns (about the same size as a bacterium). The technology to achieve this size is applied exclusively by PHC. This makes PHC fertilizers perfect for leaf fertilization.

More information: www.phc.eu

It starts with a fertile soil.



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Amino acids in PHC fertilizers.

Plant-based or animal-based amino acids?

PHC consciously chooses plant-based amino acids. It is known that some forms* of animal-based amino acids take on an antagonistic role, as a result of which the absorption of amino acids and plant growth can be blocked.



OPF leaf fertilization

- Healthy growth
- Fruit quality
- Plant resilience
- Nutrient density



Proline, Lysine

- Pollen fertility
- Cell wall strength



Histidine

- Good fruit maturation
- Control of immune system



Alanine, Valine & Leucine

- Improving fruit quality



Glutamic acid

- Chlorophyll formation
- Increased photosynthesis
- Formation of metabolites
- Protein production



Arginine

- Cytokine production
- Root system development



Glycine

- Stimulates development of root hairs
- Chelating function



Stimulator rhizobacteria

- Development rhizosphere
- Production of metabolites



Mycorrhiza

- Essential in the absorption of nutrients and water
- Facilitates the absorption of amino acids
- Efficient water absorption



*Hydroxyproline and hydroxylysine

Start with switching.

Completely switching to a system without synthetic (nitrogen) fertilization can be a big step. However, you can always start, in any cultivation. As leaf spraying, the trace elements and amino acids are well-absorbed, for example, OPF 7-2-3 is very suitable for this purpose. There is as yet no complete microbiology to take steps towards healthier and naturally resilient cultivation. The use of animal based fertilizers in combination with mineral fertilizers also contributes to plant health. You can always start!

Supplement with OPF 11-0-5 granulate

As a spreadable fertilizer, this product can be used to supplement amino acids and organic nitrogen. It can also be mixed with potting soil for pot plants. OPF 11-0-5 is a perfect transition fertilizer to gradually reduce the synthetic nitrogen content and build up organic fertilizer. This product is highly recommended for growers in transition.

Leaf spraying with OPF 7-2-3

OPF 7-2-3 is perfectly suited as a leaf spray to improve plant resilience and stress tolerance. The amino acids in OPF 7-2-3 are available to the plant and do not take the plant energy. Leaf application in case of heat, important plant physiological changes or stressful conditions ensure that the plant continues to grow better and has less growth deceleration. In addition, the large amount of carbohydrates in OPF 7-2-3 provides an external source of nutrition for beneficial bacteria, providing not only above-ground stimulation but also underground stimulation. In combination with pesticides/biocides, OPF reduces stress impact on the plant and prevents slowing down the growth.

Fertigation with BPF 5-0-3

BPF 5-0-3 serves as a fertigation fertilizer.



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Admissions

Most PHC fertilizers are allowed for organic cultivation.

Check the current authorizations at inputs.bio, inputs.eu, omri.org and infoxgen.com.

More information

Would you like more information about the steps you can take to make the switch to more sustainable cultivation? We are happy to inform you about all possibilities and cultivation guidance.

Tailored advice

For questions or tailor-made advice, please contact us at:

Phone: +31 (0)13 - 7200 300

Email: info@phc.eu

Points of sale

A complete overview of our points of sale can be found at:

www.phc.eu/verkooppunten

Our cultivation advisors are at your service.

