# Cultivation program greenhouse vegetables in soil



For profitable and sustainable cultivation







PHC cultivation programs are developed specifically to improve the health of soil, plants, people and animals while simultaneously capturing much more CO, in the soil. In this program, synthetic fertilization is gradually replaced by organic fertilization to build humus levels, soil life and mineral stocks. Optimum plant nutrition is more than the sum of minerals. The health of plants largely depends on the soil quality. Many plant diseases can easily be prevented by ensuring healthy soil, good growing conditions and a root system with mycorrhizae

# If you have any questions or need advice:

and root bacteria.

please contact your supplier, or send an e-mail to info@phc.eu or call PHC at +31 (0)13 7 200 300

#### Preparation



To enable plants to grow, all soils need to meet three conditions. The soil must be root penetrable, contain the right minerals in the best proportion and have the right soil biology. Soil is often worked so intensively (e.g. soil steaming) prior to cultivation that there is no soil life, let alone a healthy soil balance. Adding soil bacteria prior to planting or sowing will improve the soil and the important soil life.

#### Improving root environment



The absorption of water and minerals is regulated by the root system and the associated fungi and bacteria. More roots means more good fungi and bacteria, a greater absorption capacity and efficient nutrient intake. New and sterile soil contains no living mycorrhizae and very little or no useful bacteria. Making planting holes for the plant will also seriously disrupt the soil biology for a longer period of time. The pure mycorrhizal spores and selected useful root bacteria of PHC are easy to apply and will enable plants to establish and thrive quickly.

# Natural fertilisation



Soil that is fertilized exclusively with chemical fertilizers will lose all factors that contribute to the development of a healthy soil within a few years.

High nitrogen fertilizers encourage bacterial growth. However, these bacteria consume more carbons, resulting in deterioration of organic matter content. Plant-based fertilization stimulates soil life, which also significantly improves root penetrability and absorption. At the same time, the connection between mineral components and organic matter is restored. A healthy soil will then require considerably less fertilization.



## Plant strengthening and resistance



Plants are subject to stress during cultivation and are affected by various environmental factors and/or cultivation practices.

Variable weather conditions

with huge differences in light and day/night temperatures, and crop practices (such as pruning) cause stress, making plants more susceptible to unwanted bacteria, insects and fungi. Natural plant enhancers and the amino acids in the PHC foliar fertilizers help the plants to produce antibodies. PHC plant strengthening products with Harpine protein help reduce stress levels and activate the plant's own natural defence mechanisms.



## Water management



Good water management includes moisture balance and water quality.

Too little water in the ground results in the dehydration of plants and soil life. Too much

water causes oxygen deficiency. This kills soil life and the intake of nutrients becomes problematic. Limited oxygen levels produce an unequal bacterial fungal ratio, which can result in an increasing number of diseases such as Fusarium and Pythium.

The oxigen level in the water and soil should be at the right level for optimum fertilisation and biology. By using a favourable soil biology, the pH control is significantly more flexible.

Left: spinach seed plants after soil treatment with AgroAcid ( $HCO_3 = 1.3$ ). Right: untreated plot ( $HCO_3 = 1.8$ ). Fertilization: identical.

Salinisation of the soil occurs because the salt in greenhouse soil can hardly be washed down. This leads to a high bicarbonate content  $(HCO_3)$ . By spraying with AgroAcid-soil, Sodium is released from Calcium. By subsequently raining 20 mm, this flushes out and minerals can be absorbed again.







#### Product program for greenhouse vegetables in soil

When steaming, apply the PHC products only afterwards. During cultivation, we recommend having plant sap analyses carried out to monitor the nutritional balance and, if necessary, make adjustments. In mycorrhiza-dependent plants, also determine the colonisation degree. The dosage and application frequency can vary per plant and crop. More information can be found on the technical data sheets of the products below. Ask your supplier or PHC cultivation advisor for a tailor-made advice.

Seedbed preparation	Method	Dosage	Program
Biovin Powder / Biovin Granular	spread / mix	100 gr/m <sup>2</sup>	1
OPF Granular 11-0-5	spread / mix	100 gr/m <sup>2</sup>	3
VA-PWI	mix	0.1 gr/m <sup>2</sup>	2
Planting/sowing	Method	Dosage	
Compete Plus	drench / drip	0.2 gr/m <sup>2</sup>	2
Fulvic 25	drench / drip	2 ml/m <sup>2</sup>	3
Weekly application	Method	Dosage	
OPF 7-2-3	drench / drip	1 ml/m <sup>2</sup>	3
OPF 4-2-8	drench / drip	1 ml/m <sup>2</sup>	3
Fulvic 25	drench / drip	0.1 ml/m <sup>2</sup>	3
Yuccah	drench / drip	0.1 ml/m <sup>2</sup>	6
Compete Plus	drench / drip	0.02 gr/m <sup>2</sup>	2
Application - every 3 weeks	Method	Dosage	
Natural Green Forte	spray	0.09 gr/m <sup>2</sup>	3
PreTect*	spray	0.09 gr/m <sup>2</sup>	4
Water management			
BioPak (cleaning irrigation system)	add to irrigation water	0.1 % - 1 %	6
PondSaver* (keeps water clean)	add to irrigation water	0.1 % - 1 %	6
AgroAcid* (reduces bicarbonates)	add to irrigation water	as advised	5

\* PreTect, PondSaver and AgroAcid only for conventional crops

defence strengthening

water management

soil improvement
optimizing rhizosphere
natural fertilization



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