



WHITEPAPER

WASTEWATER TREATMENT IN THE GREENHOUSE HORTICULTURE. PREPARE YOUR COMPANY FOR 2027

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The greenhouse horticulture sector faces a challenge. By 2027, the emissions of fertilisers and crop protection agents must be virtually zero. In addition, a purification obligation has been in force since 2018: at least 95% of the crop protection agents must be removed from the water before it may be discharged. This means that circular water provision is more relevant now than ever. How do you achieve this in a sustainable and economical way?

WHY ARE THE RULES BEING TIGHTENED?

The rules regarding water usage in greenhouse horticulture stem from the European Water Framework Directive. This WFD obliges all European member states to ensure a good water quality for all rivers, lakes, coastal and ground waters. In addition, water must be used sustainably throughout Europe. This has consequences for those who influence the quality of surface water and groundwater, such as greenhouse horticulture. Much work has already been done in recent years to reduce water consumption and the emission of fertilisers and pesticides, but further measures need to be taken to achieve the targets.

WHERE ARE THE BIGGEST CHALLENGES?

- 1. The amount of water and fertilisation must be optimised for each crop in greenhouse horticulture.
- 2. Drainage water, from both soil-bound crops (often a mix of ground and irrigation water) and substrate crops, must be cleaned sustainably so that it can be reused (preferably several times): closing the water cycle.
- 3. We need a a sustainable solution for the irrigation water, now that summers are getting hotter and drier.

WHAT IS STOPPING CIRCULAR WATER PROVISION?

Many greenhouse horticulture companies are already working on a circular water cycle. However the possibilities for water reuse have proven to be limited, particularly due to sodium levels exceeding harmful thresholds over time. In addition, some growers are reluctant to reuse drainage water when crops are affected by disease, in order to prevent it from spreading. As a result, the water is discharged in many cases. This is bad for the environment and for the company, because the discharge of wastewater is increasingly limited. That must change.

CLOSE THE WATER CYCLE WITH FERRATE(VI)

Ferrate(VI) is the strongest oxidant in the world. In addition, it is very effective for water disinfection and reacts with dissolved substances, causing them to sink (coagulation). Ferrate(VI) is thus a three in one product. By treating the water with FerSol®, the liquid form of Ferrate(VI), the water becomes so pure that it can be reused over and over again. The result? A sustainable, closed water cycle.

LOWERING COSTS AND COMPLYING WITH REGULATIONS

FerSol®, the liquid application of Ferrate(VI), is the solution to meet the stringent residual water requirements by 2027. Ferrate(VI) replaces water treatment with ozone or UV light. Moreover it is the sustainable alternative for several hazardous chemicals from the treatment process, such as chlorine and caustic soda. In most cases, the use of FerSol® does not require any adjustment of the current installations.

5 THINGS YOU CAN DO NOW TO ACHIEVE 0 EMISSION BY 2027

- Remove biofilm from pipes: biofilm in irrigation pipes prevents complete recirculation of water. All kinds of unwanted viruses and bacteria can survive and mutate in this slimy layer of microorganisms. By cleaning the drip hoses with FerSol[®], the biofilm is tackled efficiently and sustainably.
- Handle crop rotation with care: stop watering in time so that substrate slabs are as dry as possible. Discharge drained and cleaning water to the sewage system instead of the surface water.
- Track down leaks: a study by Wageningen University & Research (WUR) shows that about 1.5% of water consumption leaks to the ground. This percentage can be further reduced by regularly checking connections and resolving defects.
- 4. Invest in technology: a lysimeter and drain meter show the leaching to the subsoil or the drainage system. Soil moisture sensors provide insight into trends in soil moisture content. As a result, the watering and fertilisation processes are increasingly in balance.
- 5. Have your residual water tested by Ferr-Tech for free to see which fertilisers and pesticides it contains. Based on our analysis, we make a proposal for safe and responsible reuse

FERRAAT IN PRACTICE

Ferrate(VI) is currently being put to the test in practice. One of our launching customers, a renowned horticultural company, is very satisfied with the results:

"We performed ATP measurements after treating drain water with Ferrate(VI). The results of the measurements were very good. The decrease was substantial, from 858 Pg / mL to 55 Pg / mL and well below our target of 200 Pg / mL. We are now looking at what Ferrate(VI) can do for us in practice. We are investigating the possibilities of cleaning the tubes with for instance. We also want to make our water process circular with this green chemical."

¹ https://www.rivm.nl/kaderrichtlijn-water-krw

² https://www.glastuinbouwwaterproof.nl/nieuws/praktischemaatregelen-om-lekkages-vanuit-kassen-te-voorkomen/