



Reducing the emission of plant protection products from greenhouses

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Abstract

Despite a high degree of IPM in the Netherlands, plant protection products (PPPs) used in greenhouse horticulture are exceeding environmental quality standards for surface water. In the Netherlands 75% of the greenhouse crops are grown in soilless growing systems, where nutrient solutions are recirculated. These systems are in theory better equipped to minimize emissions of nutrients and PPPs than soil-grown crops. However, figures from Water Boards and recent model studies show that the emission from these systems can be significant. Vermeulen *et al.* (2010, Report RIVM 607407001) showed that the current procedure for registration of PPPs underestimates the amount of discharge and therefore underestimates the emission percentage 2 to 50 times. The Dutch government is now working towards an adjustment of the procedure, which will result in a more realistic but also more stringent judgement of PPPs. For these reasons the Dutch National Action Plan on the sustainable use of PPPs focusses not only on further development of IPM, but also on decreasing the emissions of PPPs via water flows.

Discharge of nutrient solutions is the main emission route for PPPs, whether as spray or drip application. Therefore our research has been focussing on gaining insight into the reasons for discharge. Part of it is unnecessary and due to ignorance. Another part is more difficult to solve and is caused by the crop needs for high quality water and the grower's needs to avoid risks. We are also developing solutions for bottlenecks in recirculation. An example is our research on the presence of growth hampering substances in recirculation water. But we are also evaluating water purification techniques to be able to offer the growers end-of-pipe solutions for situations when discharge is still advisable.

The presentation will focus on our research on solutions for the emission of PPPs from greenhouses.