



Crop protection and innovations for clean water

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Abstract

Win-win measures

Beside legal restrictions on admission and application of crop protection agents, innovations are key to diminishing emissions to water. Innovations will only be successfully adopted on large scale if they are win-win measures or techniques. Win-win measures are both good for improving water quality and for the farmer or contractor. Innovations are good for the farmer/ contractor when they:

- score high on applicability on his specific farm or business
- help to save money by reducing the costs for crop protection AND/OR
- improve the quality of the crop (less crop damage or less residues)

Examples of such innovations are: Emission reducing techniques (Wingsprayer, air supported spraying, GPS with section-closure etc.); resistant or less vulnerable races; choice of more environmentally friendly crop protection agents; use of decision support systems; early low dose system (LDS)-spraying etc.

Barriers

However, even if an innovation meets these requirements and thus qualifies as a real win-win technique or measure, its spread is seldom automatic. In an evaluation of a communication campaign on several of these innovations ('good practices' in the campaign "Duurzaam telen begint bij jou"), we learned that although many farmers knew of the measures (69-99%), application rate was far lower (13-96%).

We have identified several barriers for the autonomous spread of win-win innovations:

1. Risk perception, 'insurance spraying'- the potential financial risk of losing a crop through a disease or pest is much higher than the financial gain of reduced costs of spraying by diminishing the dose.
2. Influence of the crop protection traders and competition with conventional machinery – Most farmers receive only on-farm advice on crop protection by advisors that sell crop protection agents at the same time. These advisors/traders have no interest and are little keen to encourage lower spray doses and will emphasize the risks associated with it. Producers of conventional machinery will for the same reason often blackguard improved machinery.
3. Unfamiliarity with the technique and its payback time – Farmers are familiar with certain techniques and cultivation practices and trust their results. Before they will want to take the risk of trying something new, they want to be able to see and touch it nearby on a farm that is similar to theirs. A calculation of the payback time for their specific farm helps to overcome the idea that the technology is overly expensive.
4. Personal interest – If a farmer likes experimenting with new machinery, he will do so even if the financial gain is still low. On the other hand, if he does not like to work with a measure, he will always find an argument against starting to use it.

Overcoming barriers

Barriers can be overcome by regional approaches in which farmers gain a more intimate knowledge on pest and diseases and of the innovation through: demonstration, peer-to-peer communication, independent and capable guidance to surmount techniques' 'child diseases'.

Scientific innovations increase their chance of becoming successful when they are co-developed by farmers from an early stage as this increases their practical applicability.

(Extra-legal) market requirements form an extra incentive for farmers to explore new innovations.