



English summary of the report:

Next move for sustainable crop protection up to supermarkets

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'Next move for sustainable crop  
protection up to supermarkets'**

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# The next move in sustainable plant protection is up to the supermarkets

## Summary

Chemical pesticides and their negative effects on humans and the environment are currently topics of great interest. Attention has focused on the possible impact of neonicotinoids (a group of insecticides) on bee mortality and other effects on the ecosystem, exceedances of water quality standards for natural habitats and drinking water and the possible effects of spraying for local residents.

For a number of years, Greenpeace has actively promoted more sustainable agriculture and horticulture, particularly regarding plant protection products. Greenpeace wants to encourage supermarkets, in partnership with growers, to initiate a system change in plant protection. Greenpeace has summarised the system change in targets for sustainable, 'bee-friendly' agriculture and horticulture in 2020. The most important targets are:

- A reduction of 50% in the use of chemical products (herbicides, insecticides and fungicides) in 2020 relative to 2013, expressed in kilograms of active substance.
- Phasing out plant protection products which have an increased risk for human health or the environment, beginning with products having the greatest risk for bees, products that must be substituted with priority based on EU legislation, problematic substances for drinking water extraction and the products that have an increased risk regarding multiple criteria.
- Replacing chemical plant protection products with ecological methods as much as possible.

These three targets are linked together. Plant protection products differ greatly in the risks they pose for the surroundings. Reducing total use is therefore only part of the solution. It is particularly important to reduce the use of high-risk products. This is why Greenpeace has chosen all three targets. Change can be achieved through a twofold strategy: making optimal use of national and international knowledge and practical experience with non-chemical measures and ecological methods, while at the same time reducing the environmental effects of chemical plant protection.

## Research questions

Greenpeace requested CLM to conduct an exploratory study to answer the following questions:

- (1) how can Dutch growers achieve these ambitious objectives, and
- (2) how can supermarkets best support them in this process?

To make the problem manageable, it was decided to focus on four crops:

- ware potatoes (arable farming),
- apples (fruit production),
- field-grown strawberries (outdoor small fruits and vegetable cultivation), and
- tomatoes (greenhouse vegetable cultivation).

## Method

The exploratory study was conducted in the following six steps:

1. Analyse the use of plant protection products
2. Establish lists of high-risk products and determine the consequences of phasing out these products
3. Survey the available products and measures and those to be developed
4. Review/test the new products and methods in practice with growers and advisors
5. Analyse the role of supermarkets in relation to sustainable plant protection
6. Synthesise results and suggest opportunities for supermarkets.

## Feasibility of reducing pesticide use in the four crops studied

With additional attention and effort from the growers, it is feasible to cut the use of pesticides by 50% in three of the four crops studied (potatoes, apples and tomatoes), which maintaining the same level of production. It is also possible to use fewer plant protection products from the high-risk list, as stipulated by the *Milieukeur* and – to a lesser extent – *Schoon Water* certifications. However, some of the high-risk products are also used in sustainable conventional crop production. In this area, the target is less attainable and innovation is required to continue phasing out high-risk products.

In the organic cultivation of the four crops, the use of plant protection products is limited to biological products that are not listed as high risk. In addition, organic cultivation works primarily with ecological and mechanical methods. The yield of organic crops is lower, but the growers receive a higher price for their products.

Based on previous studies and experience in practice, substantial reductions also appear feasible for other crops in arable farming, fruit cultivation, field-grown small fruit and vegetables and greenhouse vegetables. The differences in pesticide use between growers of the same crop are substantial, also in the same regions and with the same plant varieties. For example, due to their use of integrated pest management, growers certified by *Milieukeur* and *Schoon Water* often use fewer kilos of active substances and fewer high-risk products than their non-certified colleagues in conventional production. This means that substantial reductions can also be achieved in other crops.

## Measures and methods for sustainable plant protection

To initiate a system change in plant protection, one of the targets of Greenpeace is to phase out specific high-risk plant protection products and to replace them with ecological methods. In this report, we describe the methods and measures that are currently possible in relation to the targets of reducing the use of active substances and phasing out high-risk substances. We also describe methods and measures that are in development and can contribute to achieving these objectives in the future.

Of the four crops considered in the present study, the most prominent measures and methods were the following:

- improving the soil and increasing the organic matter content,
- using green manure to improve the soil,
- using mulch or other soil covering to suppress weeds,
- using decision-support systems (DSS),
- using organic products and plant strengtheners,
- disrupting insect mating with pheromones,
- growing resistant cultivars,
- choosing products with a low environmental impact,
- expanding crop rotation,
- using permanent tractor paths,
- implementing mechanical weed control,
- using techniques to reduce spray drift and dosage, such as wing sprayers and air-assisted sprayers.

With a smaller assortment of products it is still important to alternate products to prevent development of resistance. Using products (such as microbiological products) that do not induce resistance as quickly can help achieve this aim.

Besides this combination of organic and chemical methods, ecological management of field margins can also contribute to natural pest control.

For growers, it is crucial to be able to intervene when a pest or disease gets out of hand. By permitting the use of certain high-risk products – under strict conditions and only on prescription – as corrective measures against specific insects, growers can optimally deploy biological controls without fearing severe infestations or failed crops.

#### *Costs*

Integrated crop protection at the level of the *Milieukeur* certification raises the cost of production due to additional measures such as more expensive plant protection products, additional crop inspections, a crop protection plan and the use of warning systems. In addition, the certification entails additional administration and inspection costs and fees. The costs of mechanical techniques, which are certainly available, are usually somewhat higher than chemical controls, both for the additional labour and fuel. However, reducing the use of chemical products also reduces costs.

#### *Research and development*

Ongoing research is required into topics such as: biological agents and microorganisms, stimulating soil organisms, non-chemical weed control, stimulating biodiversity to benefit natural enemies of pests by planting strips of flowering plants and herbs, flowering hedgerows, etc., and developing resistant cultivars.

### **Challenge for the supermarket**

What are the most promising and effective measures available to supermarkets which they can use to put growers onto the desired path outlined above? And what are the costs and benefits, also for the supermarkets themselves?

We have made a distinction between three categories of measures:

1. inform growers and customers and/or improve their awareness,
2. share the additional costs for growers, and
3. establish conditions of purchase for growers.

Schematically, this appears as follows.

Inform/improve awareness	Share the additional costs for growers	Conditions of purchase
a. Contact growers about their cultivation methods b. Implement sustainable cultivation concept c. Cooperate with NGOs d. Use integrated plant protection e. Promote 'green competition' f. Inform customers g. Implement crop registration and certification h. Give feedback on residue data to growers	a. Pay higher prices for sustainable produce b. Establish long-term relationships with growers c. Share certification costs d. Launch sustainability prize e. Share costs of biological products f. Contribute to/promote new techniques g. Promote resistant cultivars	a. Purchase certified sustainable produce b. Develop new intermediate segment c. Establish list of high-risk pesticides d. Create growers 'black list' e. Modify aesthetic conditions of purchase f. Indicate preference for seasonal vegetables

We believe that the most effective and promising of these measures is rewarding growers for sustainability by paying higher prices for their products. From the list of measures linked this financial issue, the following five steps are most prominent:

1. Pay higher prices for sustainable produce: the most persuasive contribution supermarkets can make to sustainable cultivation is the price that they pay to the growers. Regarding organic production, higher prices are already in place and these higher prices are passed on to the customer. Other sustainability efforts usually do not lead to higher prices. For sustainable conventionally grown products, such as those grown with *Milieukeur* and *Schoon Water* certification, a higher price is generally not available in the market. With a small additional price for these products, it would be possible to implement effective crop protection with a reduction in chemical pesticides.

Other sustainability efforts can also be supported by supermarkets, such as measures to improve conditions for pollinating insects and natural enemies of pests: flowering field margins, flowering hedgerows, nesting opportunities, etc.

2. Purchase certified sustainable produce: with targets for purchasing certified sustainable fruit and vegetables, with deadlines and higher prices, supermarkets can provide a strong impulse to sustainable production. The incentives for certified growers may include preferential purchasing relative to non-certified growers, sustainability certification as a firm condition of delivery and/or a premium price for the product. To justify the higher costs of sustainable production, for growers it is indeed important that most of their production is certified, which they can therefore sell for a higher price. Purchasing targets can also be established for other aspects of sustainability, such as the percentage of resistant potatoes.

For supermarkets it is important for them to understand that their efforts are also a valuable investment in the future. We therefore arrived at three additional measures, which should be considered together:

1. Establish long-term relationships with growers: this should not result from a need to limit entrepreneurial freedom, but from a commitment to transparency, trust and knowledge development. Through joint activity, gradual improvements in sustainability are possible (see point 4). It is a shared responsibility. It is undesirable if growers become more sustainable – thus incurring additional costs – while at the same time supermarkets elsewhere, for example in other countries, seek to buy cheaper products.
2. Implement the sustainable cultivation concept: by offering growers the possibility to become more sustainable in a step-by-step fashion as part of a long-term purchasing relationship, they will be prepared to commit to sustainability, including long-term measures such as improving soil health and using plant-strengthening products.
3. Share costs of new techniques and resistant cultivars: by supporting specific groups of growers (of strawberries, tomatoes, etc.) in their research into and development of new techniques and resistant cultivars.

A small sustainability surcharge on the consumer price (if this becomes available for the grower) creates financial space for using the above-mentioned measures.

## Conclusions

1. Rapid improvement is possible in plant protection. In three of the four crops in the present study (potatoes, apples and tomatoes), a 50% reduction the amount in active substance used appears to be feasible. Field strawberry cultivation is an exception; in this crop a 50% reduction does not appear to be feasible in the short term. Phasing out all high-risk substances in all four crops is difficult and requires additional efforts in research and development. However, gradual phasing out is possible, beginning with substances that impact bees (see 2).
2. Gradual phasing-out of high-risk substances is possible, especially when new methods and techniques are available and are used. In the sustainable conventional cultivation (*Milieukeur/Schoon Water* certification) of potatoes, apples and tomatoes, the pests and diseases are controlled effectively without using pesticides that impact bees (the 'Aldi list' of 8 pesticides). However, this results in higher costs.
3. The use of plant protection products and high-risk pesticides can be reduced substantially through broad and structural application of the latest insights and techniques of integrated plant protection. This is possible only when the chain is prepared to support the additional efforts and costs.
4. The use of a number of high-risk pesticides can be reduced substantially by linking the authorisation to a strict prescription system: the product can be used only as a correction agent after approval by an accredited independent authority. The advantage of such a system is that growers can intervene to prevent an imminent crop failure.
5. The deadline of 2020 proposed by Greenpeace for achieving its objectives is not realistic: many non-chemical techniques need more time for testing and development for practice and/or for them to have an effect, for example on improved soil quality. Based on our exploratory study, the target of reducing the total amount of active substance by 50% appears to be realistic. But phasing out high-risk products, achieving a better balance in the soil and making crops and the environment more robust will require more than 3 to 4 years. Nevertheless, it is important to give a clear push to this process now.
6. Supermarkets can give such a push to sustainable cultivation. As a chain partner of the growers, they have access to a wide range of possibilities, including providing information/increasing awareness, sharing the increased costs of growers and basing their purchasing conditions on sustainability.

One of the most effective measures, paying more for sustainable products and production methods, must emerge from the market. This can take the form of a sustainability certificate as a purchasing requirement and/or a higher price. For certified organic products, the latter is generally the case, but for less far-reaching schemes, such as *Milieukeur* certification, this has hardly been the case until now.

A small sustainability surcharge on the consumer price (if this is passed on to the grower) creates financial space for using the above-mentioned measures. A surcharge of 3 cents per kilo of ware potatoes would enable potato growers to implement sustainable plant protection over the short term at the level of *Milieukeur* certification. This would result in a substantial reduction in the use of chemical agents and a reduction in the number of high-risk substances. By increasing the surcharge to 4 cents, €5 million would become available annually for research and development, for example for refining mechanical weed control or developing and marketing resistant cultivars.

### **Recommendations for Greenpeace and the supermarkets**

1. Support growers in substantially reducing the use of high-risk plant protection products, without loss of product quality and with benefits for human health and the environment.
2. Offer a sustainable cultivation concept, in which growers have the opportunity to make their operation more sustainable – gradually but permanently.
3. Show that the targets are not as distant as they sometimes appear, but clearly demonstrate current sustainability practices.
4. Invest energy and resources in cooperative research and development of biological plant protection products and methods.
5. Give growers the right incentives for becoming more sustainable. More specifically:
  - pay higher prices for sustainable products and production methods,
  - set purchasing targets for certified sustainable fruit and vegetables,
  - do not purchase less sustainable products because they are cheaper.
6. Support the existing *Biologisch* (Organic) and *Milieukeur* certifications. Especially the latter, which appears to be a significant step in the direction of the desired transition, still lacks effective support in the market.
7. Make more frequent use of promising and image-enhancing measures such as ‘green competition’.

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