POLICY DOCUMENT ON SUSTAINABLE CROP PROTECTION: SUMMARY OF THE INTERIM EVALUATION

Crop protection methods in the Netherlands have become more sustainable since 1998 as a result of efforts made by growers. However, at the moment the environmental quality of surface waters does not meet the statutory standards. Without measures directly aimed at tackling the substances of greatest concern and the sources of pollution arising from crop protection, the desired water quality will not be achieved by 2010 throughout the whole country.

Background

In the policy document on sustainable crop protection the Ministry of Housing, Spatial Planning and the Environment and the Ministry of Agriculture, Nature and Food Quality state that crop protection policy will be subject to an interim evaluation. At the ministries' request, this evaluation has been carried out by the Netherlands Environmental Assessment Agency (MNP). In cooperation with the National Institute for Public Health and the Environment (RIVM), RIKILT Institute of Food Safety and the Agricultural Economics Research Institute (LEI), the Agency has examined whether the policy is being implemented on schedule to achieve the stated targets for 2010, or whether the policy needs to be adjusted.

Policy on sustainable crop protection

The main goal of the policy on sustainable crop protection is to ensure that hazards and risks that can affect the ecological quality of surface waters due to the use of crop protection products are minimised. A proportion of the chemicals applied by growers to their crops to protect them against pests and diseases may find their way into surface waters. Reducing such contamination of surface waters is particularly important in the light of the Water Framework Directive, which directive sets chemical and ecological quality standards for surface waters. From 2009, EU member states will be required to report on the measures taken to reduce the concentrations of substances where they exceed the standards.

Environmental burden of agriculture substantially reduced

As stated in the policy document on sustainable crop protection, the interim target for 2005 is a 75% reduction in the environmental burden on surface waters from agricultural activities compared with 1998. The reduction in the environmental burden is 86% and so the interim target for 2005 has been achieved. The environmental burden is a measure of the ecological risk associated with plant protection products if they come into contact with surface waters via spray drift (direct emission). Three-quarters of the reduction has been achieved by growers adapting their application methods, including the use of low-drift spray equipment and not cultivating strips of land adjoining surface water bodies (crop-free zones). These measures are required by the government under the Open field cultivation and livestock farming (discharges) decree. The remaining quarter has been achieved by making changes to the package of authorised

substances. In the period from 1998 to 2005, 90 plant protection products were taken off the market, either because they were prohibited by the government or because they were withdrawn by the industry. In the same period, the industry introduced 39 new, less environmentally damaging products onto the market.

The policy document on sustainable crop protection carries forward the existing emissions and authorisation policy and introduces additional policy to stimulate integrated pest management. Growers have reacted positively to integrated pest management, but their enthusiasm has not yet led to a clear reduction in the environmental burden. It remains to be seen whether this can be achieved in the years to come.

Water quality standards still exceeded in many cases
The main goal of the policy document is to achieve a situation in which there are no further exceedances of the Maximum Permissible Risk (MPR) in surface waters in 2010. This goal is not yet in sight. In 2004 the MPR was still exceeded at about half of all the monitoring sites in the Netherlands. Pollution of surface waters has fallen sharply as a result of fewer direct emissions and the use of less toxic substances. Other causes of surface water pollution, such as leaching from agricultural soils, deposition, emissions from greenhouses, run-off from hard surfaces and contamination from foreign sources, are not included in the reduction target.

Interim target for drinking water not achieved
The quality of surface water as a source of drinking water has improved, but not enough to meet the interim target: a 50% reduction in the number of drinking water problems. A drinking water problem is defined as an exceedance of the drinking water standard at a site of water abstraction. In 2005 the number of problems had been reduced by 18% compared with the number in 1998. This reduction was due entirely to the prohibition on the use in the Netherlands of three weed control products. A significant proportion of the problems (at least 25%) are due to contamination originating from outside the Netherlands.

Fewer exceedances of maximum residue levels in food
To protect public health, statutory standards have been set for the maximum permitted levels of residues of plant protection products in food (MRLs). One of the objectives of the policy document on sustainable crop protection is to reduce the number of exceedances of the MRLs by 50% in 2010 compared with the situation in 2003. In 2005 the measured concentrations of residues on fruit and vegetables grown in the Netherlands exceeded the standards in 2.5% of all cases. In 2003 the equivalent figure was 3.5%. However, three years is too short a period to indicate a trend because the variation between years in the period before 2003 was sometimes greater than the difference found between 2003 and 2005. These reductions may result both from measures taken by growers and from changes made to the MRLs. The measures contained in the policy document on sustainable crop protection, such as European harmonisation, mainly involve adjustment of the MRLs and have led to fewer exceedances.

Is food also safer?

The reduction in exceedances of the MRLs is not all that can be said about food safety. Exceedance of the MRLs does not automatically mean that human health is at risk. The MRLs are set at the minimum levels achievable under good agricultural practices. One limitation, though, is that the MRLs apply to the combination of a single substance and a single foodstuff, whereas the impact on human health depends on the daily consumption of all foodstuffs. This is why the EU recognises the importance of cumulative exposure to multiple plant protection products that have the same effect in the human body. Assessment of this cumulative exposure should play a part in the authorisation procedure. The government has not yet adopted assessment criteria for cumulative exposure. This evaluation includes initial steps towards an analysis of cumulative exposure. The estimates of cumulative exposure obtained suggest a lower level of exposure in 2005 compared with 2003, but the level of uncertainty is high because residue levels are highly variable. The calculated cumulative exposure per kilogram of body weight is higher in children than in adults. Moreover, children younger than one year are especially vulnerable.

Maintaining economic prospects

A condition of the policy document on sustainable crop protection is that economic prospects for the agricultural and horticultural sectors are maintained. In 2005 the crop protection policy raised costs by one to two percent of total production costs, mainly due to the introduction of crop-free zones. Since 1998 the costs of plant protection products used have hardly risen at all. A number of plant protection products (or specific authorised uses of these products) for which authorisation had been withdrawn are now available again. In this respect the crop protection policy has made a positive impact on the economic prospects for the growers affected by these changes. The authorisation of these uses has resulted in a negligible increase in the environmental burden. The use of integrated pest management has also generated extra income for most growers, or has in any case not increased their costs. The majority of growers are reasonably satisfied with the package of plant protection products they are allowed to use. The only growers that are dissatisfied with the effectiveness of the package of plant protection products available for use are those who cultivate crops grown only on a small scale in the Netherlands. Authorisation of plant protection products by the government only partly determines the availability of these products. Often it is not profitable for the industry to make products available for a limited market.

Dutch growers are of the opinion that the Dutch authorisation policy for plant protection products has resulted in fewer products being available to them than their foreign colleagues are allowed to use, but they cannot substantiate this. It has not been demonstrated that this is the case, or that it affects the economic prospects of Dutch growers.

Conclusions summarised

Crop protection practices has become more sustainable. The interim target for the environmental burden on surface waters by agriculture and horticulture has been

Table A Trends in performance parameters for sustainable crop protection, the effects of policy on sustainable crop protection on these trends, and the likelihood of achieving the policy targets for 2005 and 2010.

	Trend 1998–2005	Policy contribution	Target for 2005 achieved?	Achievement of 2010 target?
Environmental burden of agriculture on surface waters	reduced	large	yes	uncertain
Environmental quality of surface waters				no[1)]
Surface water quality for drinking water abstraction	improved	large	no	uncertain
Food safety				
Economic prospects (in relation to this policy)	unchanged	variable		

1) Without additional policy; grey = indeterminate; white = no target designated

achieved, but water quality standards are still exceeded. The quality of surface water as a source of drinking water has improved, but not enough to meet the interim target. The evaluation period has proven to be too short to draw a conclusion for food safety. No facts have been uncovered that indicate a loss of economic prospects for Dutch agriculture and horticulture (see Table A).

The future

Consistent implementation of the policy on sustainable crop protection is a precondition for maintaining and building on the environmental benefits already achieved. Proper implementation of the policy will also further reduce the number of exceedances of the MRLs through further stimulation and application of integrated pest management, consistent implementation of the authorisation policy, and inspection and enforcement of the correct use of plant protection products. Effective control of food safety will also depend to an important degree on the inclusion of cumulative exposure in the authorisation process.

Although this evaluation reviews previous years and does not explore future trends, there are as yet no indications that the environmental benefits gained will be enough to achieve the desired environmental quality in 2010. This will require the introduction of several additional measures targeted on specific substances used in greenhouse horticulture and on problem situations resulting from emission pathways other than direct emissions to surface waters, which have been successfully reduced. If the Netherlands is to achieve the target for 2010 set out in the policy document, and thus meet the requirements of the Water Framework Directive, these remaining problems will have to be resolved.