

SELECTING THE RIGHT RISK INDICATORS TO SUCCESSFULLY IMPLEMENT THE SUSTAINABLE USE DIRECTIVE

O P E R A



EUROPEAN OBSERVATORY ON
PESTICIDE AND RISK ANALYSIS

Research Center of
Università Cattolica
del Sacro Cuore



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OPERA (European Observatory on Pesticide and Risk Analysis) is a research center of the Università Cattolica del Sacro Cuore. It is an independent, not-for-profit scientific think tank, committed to the successful integration of agri-environmental measures within European legislation, to help achieve the desired objectives of the European Union Pesticides Package. Within this context OPERA reviews and advise in the implementation and measurement of risk reduction methodologies, which are crucial for the successful implementation of the Directive on Sustainable Use of Pesticides.

The fundamental contribution of OPERA is to use the potential of existing scientific researches and knowledge to support the stakeholders in their political and technical decisions concerning agriculture, and particularly the management of agricultural risks relating to pesticides and the environment. One objective is to create a list of recommendations to policy makers on improving the effectiveness of agriculture policies in EU.

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Across the EU, Member States are now committed to implementing strategies to transpose and fulfil the objectives of the Sustainable Use Directive as part of the European Pesticides Package. As part of this process, Member States will have to select adequate and appropriate Risk Indicators that can identify the impact of strategies and identify those options that will deliver the greatest benefit.

OPERA has been tasked with preparing a review of existing Risk Indicators, and to pose potential options that may prove of value to Member States in selecting both the indicators and the strategies to meet their objectives.

The key challenges will be to focus on the most appropriate mitigation strategies that will deliver the greatest benefit, along with selecting the Risk Indicator measures that can quickly and clearly identify which tools are working most effectively, and are best capable of achieving the desired effects for each individual Member State.

Most current Risk Indicators are designed to measure change at the final point, such as identifying any possible pesticide residue in water courses, for example. Such indicators are typically not sufficiently refined to identify the success of any mitigating measures implemented at a farm level.

Recognising that it is better to prevent pesticides reaching water courses at the earliest opportunity, the success of any measure should be identified and quantified at the point it is working. Additionally the environmental benefit derived from such measures may not be captured and quantified by existing Risk Indicators.

Furthermore, these current physical Risk Indicators do not take into account other aspects of sustainability. This includes the social aspect of providing resources for the wider community and the vital economic element that can ensure rural communities remain viable. Implementing strategies that achieve the Sustainable Use Directive, but that come at an unacceptable cost to the rural communities, the social fabric and the environment may prove counterproductive.

The Risk Indicators are only a part of a tool that delivers the risk reduction. Furthermore it is not always – or maybe never – a single indicator to show the reduction. A systematic comparison to the base line may be required to show over time the efficacy, the trend and the efficiency of the adopted measures.

Utilising Risk Indicators that are sympathetic to the wider aspects of sustainability and that can measure the overall success of mitigation strategies more effectively will be crucial to the widespread adoption and implementation of such strategies.

In all instances OPERA aims to prioritise strategies and Risk Indicators that are pragmatic to implement and achievable by all those stakeholders involved. This includes evaluating Risk Indicators that can be extracted from, or integrated with, existing data collection and recording, to minimise duplication or generating additional information, and to avoid further burden on administrative systems or those supplying the information.

Based on the Pareto principle, that addressing 20% of causes can deliver 80% reward, the aim is to focus on strategies implementing proven scientific research that have been shown to create a high level of benefit – measured by environmental, social and economic factors – with the minimal demands for change.

OPERA recognises that, despite the desirable increase in harmonisation across the EU, some strategies and Risk Indicators specific to individual Member States or groups of countries will be necessary to successfully implement the Sustainable Use Directive.

To further progress with this initiative, and to enable OPERA to generate additional guidance of value to policy makers within the Member States, it would be highly beneficial to extend the dialogue with all stakeholders and policy makers. This will enable efforts and initiatives to be focussed on the areas that will be of greatest benefit.

To this end OPERA would be grateful if interested parties could feedback opinions based on the following questionnaire. This will help evaluate and select the key Risk Indicators that can identify the measures having the greatest impact in successfully delivering the objectives of the Sustainable Use Directive.

OPERA QUESTIONNAIRE FOR MEMBER STATES'S ELECTION OF KEY RISK INDICATORS

Question 1: Which activities to be addressed by mitigation strategies (e.g. on-farm pesticide use, transport, storage, application equipment etc.) do you consider most important in order to achieve risk reduction in relation to pesticide use?

Question 2: What do you consider are the priority environmental factors (e.g. water, non-target organisms, soil, biodiversity etc.) that should be addressed by risk reduction measures and to be monitored by selected Risk Indicators?

Question 3: What are the key criteria you have identified for the selection of Risk Indicators to monitor the meeting of these objectives?

Question 4: Have you yet considered other elements of sustainability, including social, environmental and economic factors, in the development of mitigation strategies and the accompanying need for Risk Indicators?

Question 5: What are the most important data sets that you have available and that you would like to use in the calculation of the Risk Indicators?

Question 6: What is the primary information that you would like from OPERA with regards to Risk Indicator assessment, and what is the best means by which to present the information?

If you have any other concerns, additions, recommendation etc. please feel free to contact us at info@opera-indicators.eu

OPERA also invite nominations of specialists and experts from all stakeholder organisations with an interest in the European Pesticides Package to join the *Members' area of the web site and to get further involved in* development of appropriate strategies and the Risk Indicators to measure their success.

To encourage interaction and stimulate further discussions, we invite you to nominate and send together with the questionnaire the experts names involved with the European Pesticides Package implementation to be given access on the *Members' area* of the OPERA web site.

OPERA OPERATION AND INVOLVEMENT

The European Observatory on Pesticide Risk Analysis, OPERA - as an independent, non-profit scientific organisation, is committed to sharing and developing the best practices in agri-environmental measures in the context of European legislation, in order to help and achieve the desired objectives of the European Pesticides Package.

One of the objectives of OPERA is to provide a list of recommendations to policy makers that can improve the future effectiveness of agriculture policies across the EU.

For further information on the aims, structure and operation of OPERA visit the web site www.opera-indicators.eu

THE NEED FOR NEW RISK INDICATORS

The EU Thematic Strategy on the Sustainable use of Pesticides identified a more sustainable use of pesticides and a significant overall risk reduction that can be achieved by targeting the use-phase of the Plant Protection Products, including:

- improving the quality and efficacy of pesticide application equipment
- ensuring better training and education of users
- developing Integrated Pest Management (IPM) schemes
- introducing buffer zones to isolate field use from environmental features

The success of these and other mitigation strategies, and their direct impact in reducing risk to human health and the environment can be assessed by selecting appropriate Risk Indicators.

The objective of reaching a sustainable use of pesticides in agriculture now needs to be seen in a wider concept of sustainability of agriculture. This means that not only environmental, but also social and economic consequences and benefits need to be measured and judged to fulfil the definition of sustainability.

Compared to the well established indicators of economic and social aspects, the Risk Indicators for environmental and sustainable rural development are a relatively new phenomenon.¹

Most pesticide Risk Indicators currently used in Europe include quantitative measures, such as changes in volumes of pesticides applied and application frequencies. However, any indicator based on volume typically fails to acknowledge the benefits of that can be achieved by the implementation of precautionary measures, such as the role of buffer zones or innovative application techniques that can minimise environmental loss.

In this case, the risk reduction measures are not realistically assessed or their impact evaluated, although it is a crucial measure desired by pesticide users, consumers and policy makers.

There are a number of existing environmental Risk Indicators available to assess the impacts of pesticide use. However, whilst most claim to be risk-based, in practice they can only estimate exposure, since the impact of pesticides take place in the field and are particularly difficult to isolate.

Of the projects assessing current environmental Risk Indicators, funded by the EU, CAPER (Concerted Action of Pesticide Environmental Risk Indicators² concluded that although the indicators were believed to be important tools to reduce the contamination of water resources, changes were needed to the existing indicators to best meet this objective.

The research project, HAIR (HARmonised environmental Indicators for pesticide Risk), aimed to deliver a set of harmonised environmental and human health risk indicators. However, the HAIR indicators were, for the most part, built on data which came from modelling. Moreover, the indicator system and the software involved did not allow for monitoring effects of risk mitigation factors.

Thus these Risk Indicators resulting from the HAIR project, do not reflect the actual risks on environmental or on human health. They are estimates and, usually, are based on conservative assumptions due to the lack of data.

Clearly the role of an environmental Risk Indicator has evolved fundamentally from a crude measure of the volume of product used, to a more sophisticated approach that can assess and influence strategy that encompasses sustainability in a wider context, including the environmental, economic and social factors.

¹ The Rio Conference on Environment and Development in 1992, and other similar environmental milestone activities and happenings, recognized the need for better and more knowledge and information about environmental conditions, trends, and impacts (Lisa Segnestam, 2002).

² Reus et al., 1999; 2002

The purpose of sustainable Risk Indicators selected to assist Member States meet the Sustainable Use Directive will include providing:

- farmers with recommendations and suggestions to adapt their crop protection practices;
- an information tool for policy-makers seeking mitigation measures to minimise environmental impacts of pesticides;
- an estimate of environmental performance of mitigation measures;
- an assessment of the risk of pesticides impacting on water quality or organisms.

To achieve this and reach the objective of practical reductions in risk and sustainable use of pesticides, there will be some key phases to work through, typically:

1. to clarify the risk reduction target;
2. to gather baseline data on the current performance and identify data that pinpoints problems;
3. to identify the primary causes of exposure to risks;
4. to implement solutions that can address the causes of exposure and thereby reduce the risk;
5. to evaluate the applied mitigation measures, and identify opportunities to replicate and improve upon them.

Therefore, more sophisticated Risk Indicators are expected to be required that capture information and trends not directly related to the volume of pesticide used, but that have equally been shown could have a significant impact in reducing the risk from pesticide use, including:

- The educational level of farmers and continued involvement with training
- The age of farmers and their attitude to risk
- The degree of adoption of “*best practice techniques*” by farmers, which could completely avoid non-target effects by 2010³.
- The correct use of protective equipment
- The correct disposal of packaging
- The establishment of buffer strips to protect water resources

³ In a recent study in Netherland for example, it was predicted that pesticide impacts could be cut to zero (de Jong, 2008) in a future scenario (2010), if non-crop borders were increased to 2.25 m for potatoes (compared to 1.5 m in 2005 scenario) and 1 m for other crops (compared to 0.5 m in 2005 scenario)

There are a range of possible approaches that use and combine habitat protection considerations (buffer zones), technical aspects (drift reduction equipment, drift deposition modelling), regulatory aspects (label restrictions) and non-legislative activities (education & training programmes, including best practices). All of these have to be reflected in the indicators chosen.

Systems should be designed to make it easy for a farmer to provide the data, without time and administrative disproportional burden. This should be a national priority.

Thus the risk indicator should be workable at the different levels. It is e.g. important that the farmer can demonstrate the sustainability of the farm in order to receive subsidies. Indicators by policy makers/regulators on the other hand are there to reduce risk, increase sustainability and improve the data gathering. During this process of harmonization it is very important to take the different uses needs of farmers and policy makers into account and to maintain the flexibility while harmonizing amongst European countries.

CONCLUSION

One of the key objectives of the Sustainable Use Directive is to provide – in the long term – a substantial reduction of the risks associated with farming and in particular with the use of pesticides. At the same time the directive wants to measure step-by-step improvements made from an initial assessment, towards the final objective.

The Risk Indicators presently available in the Europe all have their specific purpose and methodologies. However, at present there is no universal ideal indicator which can be used for pesticide and environmental policy monitoring and evaluation.

Utilising Risk Indicators that are sympathetic to the wider aspects of sustainability and that can measure the overall success of mitigation strategies more effectively will be crucial to the widespread adoption and implementation of such strategies.