With a view to the successful implementation of the SUD Directive – Indicators for the sustainable use of Plant Protection Products – ECPA View

Introduction and context

Agriculture is facing a number of challenges today. By 2030, global population will have grown from 6.8 billion to 8.3 billion and it is expected to grow by 40% to up to 9 billion by 2050. The growing population and the increasing number of malnourished people, is putting agriculture under pressure to meet increasing demand for food, feed and renewable resources.

As, agricultural land is a limited factor, there will be a need to produce more food to nourish a growing population on the existing agricultural land base, while at the same time adapting to the impact of climate change, taking care of the environment and keeping high quality food affordable for all consumers.

Agriculture consequently needs to become more efficient and agricultural productivity be increased. Plant protection has a critical and essential contribution to increasing agricultural productivity and the use of innovative plant protection products is indispensable to ensure the production of a wide variety of high quality food at affordable prices.

Although Europe is one of the advantaged agricultural production areas world-wide, these challenges have to be kept in mind during the transposition of the new Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides (hereafter abbreviated Sustainable Use Directive).

As the Sustainable Use Directive is now being implemented, it needs to be ensured that the role plant protection products play in supporting sustainable food production is properly considered. Plant protection products play a key role in securing resilient and competitive food systems and it needs to be ensured they are used in a sustainable way.

Appropriate Indicators for the Sustainable Use Framework Directive

Member States are now implementing strategies to transpose and fulfil the objectives of the Framework Directive on the sustainable use of pesticides, and in this context the question of appropriate measuring tools (indicators) is currently under discussion, in particular as the Directive allows Member States to adopt appropriate indicators at national level (article 15).

With a view to identifying suitable indicators the following will need to be considered.

General comments

Not only reflected in its title, but also stated in the first article defining its scope, the overall goal of the Framework Directive is “achieving the sustainable use of pesticides”.
This not only requires that due consideration be given to the concept of sustainability, but also to the fact that the Directive targets the use phase of plant protection product. The Directive also refers to further reducing “risks and impacts from the use of pesticides”.

The concept of sustainability integrates three components: economical, environmental and social.

As such, sustainable development, encompassing environmental, social and economic aspects, can only be achieved if appropriate methods for measuring all these different components are available.

Indicators should be able to demonstrate progress, and as such performance measurement towards the goal of achieving sustainable use. ECPA believes that this is the starting point for any further discussion on suitable indicators at national and later on at European level.

For Member States, the key challenge will not only be to identify the most appropriate strategies and respective measures, that will deliver the greatest benefits, but also to identify the indicators that can quickly and clearly identify which measures are working most effectively, and are best capable of achieving the desired outcome in each individual Member State. Without these measuring tools any future adaption of measures or for example the revision of the National Action Plans will not be possible.

Consequently, indicators need to be identified that can determine the measures having the greatest impact in successfully delivering on objectives of the SUD and allow a systematic comparison to the base line. Indicators will reflect over time the efficiency and success of the adopted measures and the continuous improvement (trend) over time.

Furthermore, using indicators that are relevant to the wider aspects of sustainability will be crucial to the widespread adoption and implementation of the best strategies and measures to achieve sustainable use.

Requirements for efficient indicators

In addition to the above-mentioned general setting for indicators, there are several requirements which useful indicators need to fulfil.

Indicators need to be:

1) Relevant: The indicators must reflect the context and the principal interactions appropriately. There must be sufficient reaction of indicators to changes and measures. In the current context, appropriate indicators need to be associated with the use of plant protection products and be able to provide trends towards the desired objectives.

2) Comparable: The indicators must allow comparison over time and areas (e.g. respectively over years and countries), in order to measure improvements, impacts of measures, and comparisons between countries.

3) Practical & Feasible: Indicators should not be derived solely by theoretical means (e.g. via models), but reflect the reality, in particular with regard to results being achieved due to the implementation of measures. Acceptable cost to obtain data and calculate the indicator will need to be considered.

4) Understandable: Indicators should be user friendly and understandable by various target audiences, and provide a clear indication of progress being made.

5) Verifiable: Solid and adequate data for the indicators must be available, and the indicators need to be able to demonstrate the results actually being achieved (on the ground).

ECPA noted that so far, most current indicator models are not fulfilling the above requirements. They are designed to calculate theoretical risks (often linked to product properties and end-points), and are not reflecting the reality of sustainable production on the ground including mitigation measures adopted during the use phase of plant protection products. At the same time, these models do not allow measurement of the effectiveness of the measures being implemented, as required to evaluate the success of the respective policies towards sustainable use being implemented at country level.
Suggestions of suitable indicators

In light of the above, the following table outlines suitable indicators (fulfilling the above-requirements), categorised according to the three dimension of sustainability.

These indicators are able to measure progress towards the objectives of the Sustainable Use Directive, including risk and impact reduction during the use phase of plant protection products and at the same time can be linked to measures being part of the National Action Plan.

As in most cases an aggregation of different indicators is not feasible, it is suggested in general to use different single indicators for different subject areas in conjunction with the policies adopted at national level. Furthermore it seems suitable to consider with regard to the development of indicators the time-perspective of their implementation. Status of development and data bases will lead to a situation where some indicators can be calculated directly while in other cases a valid data base will need to be established first.

For practical reasons and in order to ensure cost-efficiency, use of currently available data should be made wherever possible.

In addition one needs to consider that indicators may be linked to micro-plane level (e.g. agricultural holdings) while others may be linked to macro-plane (e.g. agricultural sector). Depending on the subject both approaches maybe useful and decisions need to be taken in the light of the above requirements for indicators and data availability on a case by case basis.
**Table 1**

**Indicators on environmental sustainability linked to the use of plant protection products**

- Agricultural production area covered by trained, certificate holders (% compared to crop production area)
- Number of farms/holdings using remnant purification systems (in % total farms)
- Use of spray drift reduction nozzles (e.g. in % area covered)
- Installation of biobeds or other appropriate cleaning places
- Integrated Pest Management/Integrated Crop Management implementation rate:
  - Agricultural area covered by the application of the general IPM principles (comprising those applying ICM, IF) (in % of total crop area)
  - Implementation of voluntary crop-specific IPM guidelines (in % area covered compared to total crop production area(s))
- Modern machinery in use (such as with cleaning tanks, induction bowl) (e.g. in % of area covered compared to total cropped agricultural area)
- Spraying equipment passing the inspection (in % compared to spraying equipment in use)
- Number of cross compliance complaints linked to the use of PPPs
- Compliance with EQS on EU priority substances linked to Water Framework Directive
- MRLs exceedances (%) as a measurement of adherence to the Good Agricultural Practice (GAP)

**Indicators on social sustainability, including health aspects, linked to the use of plant protection products**

- Continuous professional development
  - Number of farmers/distributors/advisors holding plant protection training certificates (in % compared to total number of farmers)
- Number of professional users in the non-agricultural area applying the relevant IPM general principles
- Container management systems – recovery/collection rate
- Triple rinsing, continuous rinsing or equivalent techniques of empty containers (rinsing rates (%))
- Rapid alert (RASFF) notifications (with regard to MRLs exceedances), which actually lead to produce being either withdrawn from the market or being blocked from entering the market (in % of total alerts) (home grown produce only)
- Relation (comparison) of above to other food/feed contaminants leading to produce withdrawals in light of RASFF
- Harvest - level of mycotoxins (non compliance (in %) with legal limits)

**Indicators on economic sustainability linked to the use of plant protection products**

- Number of viable and registered solutions available for specific pest/disease problems
- Registered active compounds per key pest/disease problems
- Number of economical viable alternative non-chemical solutions available for pest/disease problems
- Pest pressures over the growing season
- Potential harvest losses due to pest pressure
Additional considerations

In light of climate change effects, limitation of available fossil and other resources, such as water and available agricultural land, the efficacy and resource efficiency of chemical plant protection compared to alternative approaches will need to be evaluated in the context of sustainable production.

In order to cover these sustainability aspects as well, it is suggested to also comprise a range of efficiency indicators for example with regard to water and energy use per output unit (i.e. for example tons of wheat harvested).

As in many cases, data to analyse these issues is limited at the moment, ECPA suggests that more research should be conducted in the areas of climate change impacts and resource efficiency and that the abovementioned aspects are included in any research evaluating and comparing different crop production/plant protection systems. Respective indicators should be developed in medium-term.

Furthermore, the economic viability of different agricultural production systems is and will be important to ensure long-term sustainability.

The use of plant protection products reduces harvest losses and increases agricultural productivity, which is particularly important in the light of limited resources. As such it is an enabler of growth in the European agricultural sector ensuring the production of high quality food, feed and fibre in an economic viable, highly productive and competitive way.

Consequently, the aspects of productivity, economic viability and growth in the agricultural sector will also need to be considered within the National Action Plans and by appropriate indicators. As the developments in agricultural productivity, production (production per ha) and growth are linked to a number of different factors, including plant protection, ECPA suggests that specific indicators such as on agricultural productivity and economic viability be developed which allow to measure impact of plant protection measures on yield and productivity. This should also embrace production costs per output unit, as well as more specifically direct and indirect costs of different plant protection measures.

It is therefore suggested that the following additional indications are included in the National Plans, to give a complete picture and reflect on the country specific agricultural production situation. These should be supplemented as work goes along with the results of further research on the different subjects in the medium-term.

Table 2

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<thead>
<tr>
<th>Additional data requirements to ensure sustainable use in context of sustainable agricultural production</th>
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<tbody>
<tr>
<td>Weather condition over the growing season</td>
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<td>Harvested yield (t/ha).</td>
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<td>Agricultural productivity (per ha and different crop)</td>
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<td>Cost of production per ha and crop</td>
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<td>Gross margin per ha (per crop)</td>
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<td>Resource efficiency:</td>
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<tr>
<td>• Energy use per output unit (e.g. energy per ton of cereal output)</td>
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<tr>
<td>• Water use per output unit (e.g. per ton tomatoes harvested)</td>
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