

# **Recent developments in EU statistics on pesticides, fertilizers and water**

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## **Abstract**

This paper presents an overview of the practical approaches proposed by the European Commission to improve the quality of the statistics on the agricultural inputs (pesticides, fertilizers, water) in order to better measure the integration of environmental concerns into the agricultural policy.

## **1. Overall context**

One of the tasks assigned to the European Community by its founding treaties (European Community 1997) is to promote a high level of protection and improvement of the quality of the environment. Since 1997, it is a requirement under the EC Treaty (Article 6) that "environmental protection requirements must be integrated into the definition and implementation of the Community policies [...] in particular with a view to promoting sustainable development".

The Cardiff Process (European Community 1998) launched by the European Council in June 1998, required different Council formations to integrate environmental considerations into their respective activities, putting article 6 of the EC Treaty into practice. The importance of this integration is reaffirmed in the Sixth Environment Action Programme (2002-2012) and its 7 thematic strategies towards sustainable development (European Commission 2002).

The 2006 Commission Communication on the development of indicators for monitoring the integration of environmental concerns into the common agricultural (European Commission 2006-3) policy suggested to set up a stable and permanent arrangement for collecting 28 agri-environmental indicators, identifying at the same time important gaps in the data required for their calculation, especially concerning agricultural inputs.

In the framework of the Community thematic strategy on the sustainable use of pesticides, the Commission proposed a Regulation concerning statistics on plant

protection products (European Commission 2006-4). These statistics will be essential to calculate risk indicators and measure the progress of the strategy, especially in terms of risk mitigation and reduction in the use of pesticides.

When preparing the future Community surveys on the structure of agricultural holdings (European Commission 2007-2), Eurostat is also looking at the possibility to develop new surveys on production methods that would include specific questions on irrigation.

Eurostat also plans to collect fertiliser statistics and will therefore support pilot surveys in the Member States with a focus on two complementary approaches: data collection on the total amount of fertilisers used at farm level with a direct link to the farm structure or detailed data on N-P-K inputs by crops with the aim to calculate detailed balances.

## **2. Pesticides statistics**

Eurostat is presently collecting data on sales of plant protection products on the basis of a so-called “gentlemen’s agreement”. Data refer to amounts of active ingredients but are mainly reported by category of products (insecticides, herbicides, fungicides, others) rather than by individual substances. Moreover, since there is no common methodology and no obligation to collect data, the comparability of the results between Member States is often very limited. Additional information on the situation in specific countries is required for any detailed assessment of the risk associated with the use of plant protection products.

Since 1992 until 2003 an alternative source of information on the use of plant protection products has been the data stemming from three special surveys, based on panel surveys and expert judgments, made by ECPA, the European Crop Protection Association. These are so far the only available figures detailed by crop at the level of individual active substances in all the Member States (European Commission 2007-1).

To remedy the situation, the Commission has adopted in December 2006 a proposal for a Regulation concerning statistics on plant protection products (European Commission 2006-4). This proposal aims at making mandatory for all Member States (27) the collection of national statistics on the placing on the market (annually) and use (every 5 years) of plant protection products detailed at active substance level. Data on use of plant protection products will cover only the professional use in agriculture and will have to be split by crop. The main objective of the Commission with this proposal is to collect the data necessary to evaluate the progress of its Thematic Strategy on the Sustainable Use of Pesticides (European Commission 2006-1 and 2006-2) and to calculate harmonised indicators on the risk associated with the use of plant protection products. These indicators are based on the results of the HAIR research project financed by the 6th Research Framework Programme (HAIR stands for 'HARmonised environmental Indicators for pesticide Risks) (European Commission 2007-3).

## 2.1. Special requirements for pesticides statistics

According to the proposal from the Commission data should be collected on a regular basis for both sales and use of plant protection products. When preparing the proposal with an EU expert group on pesticides, the Commission was confronted to the complexity of the task which is mainly due to the broad diversity of products used, to the large number of actors, and to the numerous practices associated with usages of pesticides. Technical compromises thus had to be done to conciliate on the one hand the Commission's objective to measure the progress towards a more sustainable use of pesticides and the evolution of risk and, on the other hand, the resource constraints of the Member states.

To build its proposal Eurostat mainly disposed of the experience of a few Member States in a regular collection of usage data on pesticides, on the guidelines for data collection prepared by its pesticide task force (Thomas 2002) and on nearly 40 pilot experiences carried out in most of the Member States under two successive grant programmes (TAPAS actions from 1992 to 1999 in the EU-15 and PHARE programme 2002 in the new Member States).

Ideally the evaluation of the risks associated with the use of pesticides should be based on very detailed information on their use. The parameters described as the definitive outline requirements for the calculation of risk indicators in the framework of the HAIR project (European Commission 2007-3) cover the time and place of application (year, application date, region, field identifier), the crop (identified with a unique code number, the area grown), the treatment (active substance identified with a unique code number, the formulation, the application rate, the area treated, the application volume, the number of applications, the application intervals, the crop stage), mitigation measures (such as buffer zones or other measures reducing risk). Some of these parameters should be directly covered with data collection on pesticide use, others could be inferred from basic information (formulation from product name) or from expert judgements (crop stage).

Compared to use data, sales statistics are usually considered as easier and cheaper to collect but less representative of real use and affected by hoarding up or re-export of products. The main advantage of sales statistics is that they can be collected on a more regular basis. In addition, they cover all sectors of use including some sectors which can be difficult to investigate with classical surveys. Combined with detailed statistics on use and appropriate expert judgement to allow their allocation to specific uses, sales data can be considered as a good proxy or complement to use statistics.

The approach recommended by the Commission in its proposal includes the collection of national statistics on sales and use, both detailed at active substance level. The scope of the Regulation has been limited to plant protection products excluding intentionally biocidal products for which no practical experience existed on data collection. Since the placing on the market of plant protection products is still subject to national authorisations, it is important to assure that all countries will report on the

same substances. An exhaustive list of active substances authorised at European level according to Directive 91/414/EEC concerning the placing of plant protection products on the market (European Community 1991) has thus been annexed to the proposal. The list also includes a classification of the active substances by chemical and functional classes to facilitate comparisons when data need to be aggregated for reasons of confidentiality.

Considering the diverse circumstances in the European countries, the proposal leaves to the Member States the possibility to collect data by means of surveys, reporting obligations applicable to suppliers, reporting obligations applicable to professional users based on records kept on the use of plant protection products, administrative sources, or a combination of these means, including statistical estimation procedures on the basis of expert judgements or models.

Sales data will be collected annually and cover all sales of plant protection products without any differentiation of the sectors of use.

The collection of use data is organised on a five year basis and should cover a representative part of all agricultural uses (75%). Statistics will be collected on the quantities of each individual active substance used and on area treated. Here again a large flexibility is left to the Member States on the way they organise their data collection during the five year reference period (timing, selection of crops, kind of survey, etc).

The comparability of the data between countries is mainly sought through the harmonisation of the outputs and the reference to common lists of active substances and crops. In addition, comparisons between countries and between sales and use data should be facilitated by the expert knowledge included in the quality reports attached to the data.

The first complete datasets on sales and use of plant protection products in Europe should become available respectively 3 and 6 years after the adoption of the Regulation.

## **2.2. Pesticide risk indicators**

In the framework of the European Community thematic strategy on sustainable use of pesticides, assessments on the evolution of the risk associated to the use of pesticides should be carried out at national or regional level by the Member states themselves and at European level by the Commission. Risk assessments should in the future be based on harmonised data and indicators. The HAIR project developed a set of indicators covering different compartments of the environment as well as human health (consumers and workers) which now has to be tested by the Commission and Member States.

The software package delivered by the HAIR projects includes several databases on product and active substance properties (formulation, toxicity and behaviour), crop

definitions and characteristics, soil parameters, endpoints, application techniques, consumption patterns, worker exposure, etc. It also includes geo-referenced information on localisation of crops (CORINE Land Cover), soil types, climate, etc. Most of this information can be used as default values or replaced by more realistic values. The most important variables at this stage of development are use data. The program contains a very limited data base on pesticides use in the United Kingdom that should be replaced in the future by a complete dataset covering all the European Union.

The HAIR software also includes algorithms for the prediction of environmental fate and exposure, and the resulting acute and chronic risks for aquatic and terrestrial organisms, groundwater, public health and applicators of the pesticides. The indicator outputs are available on different scales, providing high resolution results at the catchment and/or regional level, taking account of local conditions of soil, climate etc. and also aggregated and integrated results at the European level.

Eurostat has just started a 12-month project to test the HAIR indicators on the basis of the best available data on estimations of the use of plant protection products in the EU from 1992 to 2003 provided by the European Plant Protection Association (ECPA).

### **3. New surveys linked to the Farm Structure Survey**

The Farm Structure Survey (FSS) is the backbone of European agricultural statistics. The survey is harmonised between the Member States and, since the individual data are sent to Eurostat for processing, it is very flexible in terms of the possibility of producing ad-hoc tables for any kind of analyses over the national or regional borders. The survey will in the future be carried out every three years in 27 countries, with a full census every 10 years, covering some 200 variables on the location of the farm, the manager, the land use and animals, labour force, machinery, etc that can all be cross-tabulated.

The FSS is constantly being reviewed with a view to adapting the survey to new policy needs (Charlier 2007). The latest review has just been carried out during the last two years and a new EU regulation for the coming decade has been put forward to the European Parliament and the European Council at the beginning of 2007 (European Commission 2007-2). In this review, the data needs of the agri-environmental indicators had a great influence.

One of the major changes introduced to the FSS is that a new survey on agricultural production methods (SAPM) will be set up, closely linked to the agricultural census of 2010. In this survey data on tillage methods, soil conservation, actions against erosion and nutrient leaching, linear elements, animal grazing, animal housing, manure application and storage, plant protection, and irrigation will be collected, if the draft regulation is adopted. These data will be sent to Eurostat in the same way as the FSS data, i.e. on farm level, in a way that makes it possible to link the data from the FSS and the SAPM.

Another very important element of the proposal is that all farm data sent to the FSS should include a geo-reference of the farm. This will open up new possibilities to link

agricultural information on farm level to different geographical zones, for example river basins, environmentally sensitive areas, etc. This can be done over national borders, which in Europe is a very big step forward.

Eurostat is also planning to set up surveys on input use (mineral and natural fertilisers) that would be linked to the FSS, in the same way as the SAPM. The discussions are still very in the initial stages, so no indications on the potential success of these proposals can be given when writing this paper. Eurostat will finance pilot studies on setting up surveys on fertiliser use that can meet the diverse user needs, the outcome depending on the willingness of the National Statistical Institutes to carry out such pilots.

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