

## **TOPPS: A EUROPEAN PROJECT AIMED AT REDUCING PPP POINT SOURCES**

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### **ABSTRACT**

Point sources are considered responsible of more than 50% of the water contamination due to plant protection products. The European Project TOPPS (Training the Operators to prevent Pollution from Point Sources, <http://www.topps-life.org>), funded by the European Union and by ECPA (European Crop Protection Association) is aimed at identifying Best Management Practices and disseminating them through advice, training and demonstrations at a larger co-ordinated scale in Europe with the intention of reducing plant protection products (PPP) point sources contamination of water. TOPPS is a 3-year, multi-stakeholder project, it has started in November 2005 and covers 15 European Countries structured in 4 clusters (North, Midwest, East and South Europe). DEIAFA –University of Torino represents Italy and co-ordinates the South Cluster working group (Southern France, Spain and Portugal).

In the first year of activity, Best Management Practice have been prepared and have been officially presented at EU level in February 2007. On the basis of these BMP guidelines, training courses for intermediaries will be activated in the demo farms established in the countries involved in the project and TOPPS demo stands will be arranged to disseminate TOPPS activities in the main agricultural European exhibitions.

In each Cluster a pilot catchment area has been defined to evaluate the impact and the effects of TOPPS project, through the monitoring of surface water quality or through the monitoring of farmers behaviour in managing PPP during the project period. Italian TOPPS demo farm will be Fontanafredda farm ([www.fontanafredda.it](http://www.fontanafredda.it)), in the vineyards region of Alba (Cuneo), where also the pilot area has been defined.

**KEY WORDS:** PPP, point source, sprayer, remnant, dissemination.

### **INTRODUCTION**

Several studies carried out in Northern Europe (Kreuger, 1998; Maillet-Mazeray et al., 2004; Neal et al., 2006) have pointed out that between 50% and 70% of water contamination from plant protection products (PPP) is due to point sources. Especially the phases of PPP mixture preparation and loading into the sprayer, as well as the management of the spray mixture residue at the end of the application and the rinsing of the spraying equipment are considered responsible for PPP point sources.

In November 2005, a EU Life Project named “TOPPS” (acronym of Training the Operators to Prevent Pollution from Point Sources) started. This project is aimed at disseminating best management practice guidelines in order to reduce PPP point sources when manipulating pesticides in the farms. This three-year project is funded by the European Union and by the European Crop Protection Association (ECPA) and involves 15 European countries structured in 4 Clusters (North, Midwest, South and East). DEIAFA - University of Turin is the Italian Partner in the project and co-ordinates the work within the South Cluster that includes Italy, Southern France, Spain and Portugal.

## PROJECT DEVELOPMENT

### Best Management Practices

The first task of the project was to collect all existing materials (brochures, booklets, videos, articles, etc.) in the different European countries about the subject of PPP water contamination and about its prevention. These materials have been uploaded in a database available also on the project website ([www.topps-life.org](http://www.topps-life.org)), and have constituted a basis for the development of Best Management Practices (BMP) guidelines. In a first phase, in each country BMP have been proposed and discussed with local stakeholders (representing farmers associations, environmental agencies, agricultural boards, sprayers manufacturers, crop protection industry), then the national proposals have been discussed at European level between Partners in order to find a “European BMP core” agreed. On February 7, 2007 the official presentation of TOPPS BMP guidelines agreed at European level took place in Brussels, in front of the main stakeholders delegated by each European country.

TOPPS BMP guidelines are structured on the basis of defined processes, which represent a sequence of steps in the use of plant protection products.

There are 6 main processes defined:

- Transport
- Storage
- Before spraying
- During spraying
- After spraying
- Remnant management

In the ambit of each main process, further sub-processes are then taken into account in order to better explain the different phases of PPP management in the farm: for instance, the main process of PPP transport is divided in four sub-processes: planning, loading/unloading, during and emergencies.

Based on these definitions the BMP guidelines have been developed in a two step approach (Table 1):

Statements = What to do

Specifications = How to do

Table 1: Example of the structure of a TOPPS BMP guideline

Process	Sub-process	Statement	Specification
Transport	Planning	DO transport PPPs in their original containers with intact, readable label	Type approved [UN] packaging used by most manufacturers. Note: Individual containers taken from 'packs' (split-offs) may not conform; original approved containers and original label instructions.

The European TOPPS BMP guidelines are a selection of about 100 out of more than 400 statements which, during the development process, achieved a good level of consensus in the various discussions.

The specifications given in the TOPPS BMPs are to be considered as a proposal for the operators / advisors when no local regulations exist.

The official list of TOPPS BMP guidelines will be translated in the different languages and will be available also in the TOPPS website.

### **Training activity**

Based on these BMP guidelines, a training activity for stakeholders at national level will be carried out by all Partners of the project in order to create the conditions for disseminating these concepts among farmers.

The objective is to teach at least 360 stakeholders across Europe, providing them with knowledge and tools to further disseminate procedures, technical solutions and equipment enabling to prevent PPP point sources. The dissemination process should first involve advisors and technicians, who should then transfer these information to farmers.

In order to make these training courses as far as possible directly related to the reality in the farms, in most of the European country involved in the project, equipped demo farms have been established, in order to show practically the technical solutions and the equipment. Ten demo farms have been realised: one in Spain, one in Italy, two in France, two in Germany, one in Belgium, one in Denmark, one in the United Kingdom and one in Poland.

In Italy, TOPPS demo farm has been set up in Fontanafredda vine farm, that is located in Piemonte region and is featured by a surface of 60 hectares vine cultivated.

The farm is equipped with a PPP storage room fitted with a closed drain collection systems for eventual spills and rinse water, with a dedicated paved area for loading and cleaning of the sprayer, also provided with a draining system to collect waste water in a storage tank (Fig. 1). This waste water can be then disposed either through a specialised company or using a biofilter (Biobac®, Fig. 2)) mounted close to the storage tank.

Italian national courses for stakeholders will take place in Fontanafredda demo farm in July and in October 2007.

Figure 1: Dedicated paved area for loading and cleaning of sprayers in Fontanafredda demo farm



Figure 2: Biofilter installed in Fontanafredda demo farm



### **Pilot catchment areas**

In each cluster of the TOPPS project, at least one pilot catchment area has been individuated in order to carry out an intensive dissemination of methods to prevent point sources among farmers and to measure the impact of the TOPPS project on water quality, monitoring the contamination of surface water in the catchment area, and/or on the behaviour of farmers with respect to PPP point sources prevention. Concerning this latter aspect, ad hoc TOPPS questionnaires have been submitted to the farmers in the pilot areas at the beginning of the project and will be submitted again at the end of the project, in order to assess the level of success of the dissemination and training activities carried out.

Six pilot catchment areas have been selected: one in France, one in Germany, one in Denmark, one in Poland, one in Italy and one in Belgium.

In France and in Belgium, the pilot areas have been selected within the Yser river basin which is located in the border region between France and Belgium, and where a monitoring of water contamination from pesticides is active since 2003. The whole basin has a surface of about 400 km<sup>2</sup>, it includes 47 communities with a total population of 50000 people and an agricultural surface of 45000 hectares: 37% of this surface is cultivated with cereals, 20% with potatoes, 12% with vegetables; 12% of the surface is herb, while the rest is divided between feed, sugar beet and other crops.

In Poland, the pilot area has been selected in the Utrata catchment, located west of Warsaw. The catchment has a total surface of about 800 km<sup>2</sup>, with a total population of 300000 people and about 7200 farms. The agricultural surface is mainly cultivated with arable crops (76%), then with meadows (10%) and orchards (7%). Within this catchment water analysis are made monthly in 7 locations along the Utrata river and 120 farms have been selected to submit TOPPS questionnaires for the evaluation of farmers behaviour with respect to PPP point sources prevention.

In Italy, the zone of Alba, in Piemonte region, has been selected as pilot area. It includes nine different communities with about 1000 farms, 3500 hectares of vineyards, that is the main cultivation, some hundreds of hectares cultivated with nuts and a few hectares cultivated with cereals. As the monitoring of water quality was not possible in the pilot area selected in Italy, TOPPS project impact will only be assessed on the behaviour of farmers through the TOPPS questionnaires submitted to 100 farmers at the beginning and at the end of the project. About 10 advisors belonging to the local farmer associations (Coldiretti, Confagricoltura) have been specifically trained in order to make an intensive dissemination, among the farmers of the pilot area, of TOPPS BMP guidelines and to suggest them how to improve their infrastructures and

equipment (Fig. 3). Also, demonstrations addressed to farmers of the pilot area have been organised at Fontanafredda demo farm, so to make them familiar with the equipment and tools useful to prevent point sources.

Moreover, thanks to an equipped demotrailer, a TOPPS help desk will be set up every fourth Saturday of the month in the Alba market, starting from May 2007 up to October 2008.

Figure 3: Training of advisors at Fontanafredda demo farm



### **Communication**

TOPPS is mainly a dissemination project, therefore the communication on a large scale of its objectives and developments is fundamental. Each Partner is involved in the publication of articles on local and national magazines, newsletters on websites, brochures etc. to spread the activities carried out in the ambit of TOPPS in each country.

Moreover, the TOPPS website ([www.topps-life.org](http://www.topps-life.org)) represents a tool to exchange information and experiences between experts, with a list of downloadable documents related to point source prevention.

Three TOPPS demotrailers have been realised to present TOPPS project at exhibitions and fairs across Europe. Actually, in Italy a TOPPS stand was presented in EIMA fair at Bologna in November 2006 (Fig. 4), at Vegetalia fair in Cremona in February 2007 and at MACFRUT fair in Cesena in April 2007.

Figure 4: TOPPS stand at EIMA exhibition in Bologna, Italy.



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