

## Periodical Inspections and Controls of Agricultural Sprayers Already in Use in Italy Looking at the Directive CE 128/09

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**Abstract:** The objective of the paper is to show some aspects of the enforcement of the recent European Directive CE 128/09 in Italy and discussing some weakness and strength points of Italian organization of inspections. The framework Directive on the sustainable use of pesticides (CE 128/09) completed the European legislative background aimed at satisfy the "life-cycle" concept to address all major aspects related to the pesticides. For the first time, it is established (article 8) that member states shall ensure that pesticide application equipments in professional use shall be subject to inspections at regular intervals. Italian Regions have started programs aimed at periodical inspection during around the last 15 years, but so far there is not a general and complete organization of controls. Difficulty in implementing an universal mandatory system in Italy can be noticed, considering, for example, that many sprayers are obsolete (especially in small farms) so they cannot pass any inspection, giving a political problem to reject a large number of machinery. In the paper different technical possibilities to overcome the main problems are discussed.

**Keywords:** pesticide application, plant protection, legislation

### Introduction

The European legislation on plant protection products (PPP) adopts the "life-cycle" concept to address all major aspects related to the development, regulation, production, management, packaging, labelling, distribution, handling, application, use and control, including post registration activities and disposal of all types of pesticides, including used pesticide containers.

Following this general approach, a new EU legislation on the sustainable use of pesticides recently entered into force. The overall objective of the European Directive CE 128/09 is to establish "... a framework to achieve a sustainable use of pesticides by reducing the risks and impacts of pesticide use on human health and the environment and promoting the use of Integrated Pest Management and of alternative approaches or techniques such as non-chemical alternatives to pesticides".

The measures include a special attention to the application phase.

As well known, this aspect has consequences in: direct risk for the operator (especially during handling and distributing pesticides); diffuse pollution for the drift; point source pollution (especially during mixture preparation, sprayer's cleaning, in case of leakage and other damages); residues of chemicals on food.

The Directive was published in the Official Journal of the European Union on 24 November 2009 (OJ L309) and came into force the following day. The Directive will need to be transposed and implemented by Member States by 25 November 2011 after the adoption of National Action Plans to set up quantitative objectives, targets, measures and timetables to reduce risks and impacts of pesticide use and to encourage the development and introduction

of integrated pest management (IPM) and of alternative approaches or techniques in order to reduce dependency on the use of pesticides. Member States have until 14 December 2012 to communicate their National Action Plans to the European Commission. Other provisions include training and certification of all professional users, distributors and advisors; a ban (subject to derogations) on aerial spraying; special measures (i.e. efficient application techniques and mitigation measures such as buffer zones between fields and surface waters) to protect the aquatic environment, public spaces and conservation areas; minimizing the risks to human health and the environment through handling, storage and disposal; adoption of harmonised risk indicators.

### *The role of equipments*

The new European legislation calls attention to the role and importance of application by means of agricultural sprayers and other equipments.

Firstly, the design, construction and maintenance of machinery for pesticide application might be taken in account in reducing the adverse effects of pesticides on human health and the environment. The Directive 127/09 amending Directive 2006/42/EC (the so-called “Machinery Directive”) with regard to machinery for pesticide application introduces the concept of environmental safety and some requirements for the inspection and maintenance of machinery for pesticide application. Member States must implement it by 15 June 2011 and apply it from 15 December 2011.

Then, for the first time, it is established (Directive 128/09, article 8) that member states shall ensure that pesticide application equipments in professional use shall be subject to inspections at regular intervals. In fact, in the chain of pesticide usage, the equipment plays a decisive role. In Italy, the total amount of employed PPP reached  $149.9 \times 10^6$  kg (year 2008) (ISTAT, 2009). The quantity distributed per hectare of potentially treated area (i.e. arable land - excluded set aside land - and permanent crops – excluded permanent meadows and pastures) was 10.2 kg. This remarkable amount is mainly distributed by means of sprayers (in Italy 620’715 – ISTAT, 2002). A rough analysis of the previous data shows that in Italy each sprayer distributes about 240 kg of PPP per year. The role of regular control in average pesticide use-reduction potential is estimated to range from 5% to 10% (Gil, 2007), resulting in a potential 12-24 kg product saving per equipment per year.

In the same time, the periodical inspections of sprayers can achieve several results: reduction of the risk to the environment; providing optimum plant protection using a minimum amount of pesticides; ensuring the safety of personnel; assuring best sprayer maintenance (Biocca, 2007).

The most part of European countries have started programs aimed at periodical inspection but so far there is not a general and complete organization of controls.

In some countries, the totality of sprayers have been inspected. For example, in Germany the average number of inspected sprayers in the year 2006-2008 was 91’485 (Wehmann, 2010) equal to more 100% of the total number sprayers to inspect each year (in Germany the inspection must be repeated each second year). On the other hand, some important agricultural countries show a different situation. According to the same author, in Italy in the year 2006-2008 only 1.3% of the sprayers were inspected and in Spain 1.1%.

### *Discussion points.*

The large number of piece of machinery to be inspected – 2’340’627 equipments (Wehmann, 2007) in Europe (25 countries) including only field and orchard sprayers – needs to a great deal in terms of inspection management organization. Actually, there is lack of information about the number and geo-distribution of the sprayers. The true number of all

type of equipments is still unknown, since in many countries (including Italy) the most part of statistics are sample statistics and they do not include portable or special equipments .

In Europe, Italy has the biggest number of pieces of machinery for pesticide application (around 620'000). A notable part of them, about 17% (ISTAT, 2002) is more than 10 year old. Many sprayers are obsolete (especially in small farms) so they cannot pass any inspection, giving a political problem to reject a large number of machinery.

The old sprayers present an additional difficulty in adapting the measuring equipment to the non standard devices. Moreover, most of the sprayers were not designed in accordance with UN-EN-907, lacking basic safety features (Biocca and Gallo, 2008).

In Italy a large variety of technical solutions occurs, due both to diversity of regional agricultures across the country and to the high number of manufacturers. This aspect requires a specific preparation and organizations of the inspection personnel, that can deal with many different sprayers and equipment models.

On other specific effort shall be directed to control and inspect the portable (handheld or knapsack) sprayers. For this typology of machineries member states may either apply different timetables and inspection intervals or exempt from inspection handheld or knapsack sprayers. In this case the member states shall ensure that operators have been informed of the need to change regularly the accessories, of the specific risks linked to that equipment and that operators are trained for the proper use.

At European and national level, the monitoring of recognised inspection workshops have been seen as essential and harmonisation is considered necessary. In Italy is now available a software to manage correctly the tests, to store the data and to analyze the results (Biocca, 2010).

## **Conclusions**

The described situation leads to a general difficulty in implementing a universal mandatory system of inspection. The Directive 128/09 recommend the member states to achieve the inspection of sprayers in professional use.

The inspection services of sprayers in use in Italy appear characterized by a large variety of regional situations, depending on both basic differences in terms of condition and average age of sprayers and from different development of sprayer testing service.

In our opinion, new programmed activities both at regional and national level will be indispensable in the next future in order to receive more general standards, including all type of equipments, of which goal it is to create an inspection of sprayers in Europe of equal quality. Moreover it will be useful to support administration in the design of testing networks on the basis of sound economic criteria. A proposed planning method can be useful for this scope (Severini e Biocca, 2004; Biocca e Severini, 2004).

Furthermore it is crucial to collect actual information about the number, the geo-distribution of the sprayers, the state of maintenance and the type of equipments employed. On other important task will be the training and formation of the operators. Actually, the mechanical aspect of pesticide application are neglected during operator training (as in the case of the formation for the authorisation for pesticide purchasing and employ); for this reason, it is indispensable to introduce at different levels of formation and education the information related to the pesticide application equipments. The training of operating personnel shall be particularly decisive in conjunction with the inspection of handheld plant protection equipment and knapsack sprayers and for the regular calibrations and technical

checks that shall be obligatory provided by the operators (in accordance with article 8 point 5).

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