

## The official procedure for mandatory inspection of sprayers in use in Spain. How to deal with regional autonomous authorities.

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### Summary

After the official publishing of 2009/128/CE Directive, the Spanish Ministry of Agriculture, Food and Environment started to develop the national law (Real Decreto) to implement the EU mandate, specifically for those aspects concerning Article 8. This work has been developed in collaboration with some experts from different Spanish local governments (CCAA) and universities. In order to have accurate information about the total sprayers to be inspected in the established time, a new Spanish law (RD 1013/2009) was published with the mandate to register all the sprayers in use. Farmers have had the responsibility to arrange this administrative process in their local government (Official Register of Agricultural Machinery). Once the law will be published the MARM will coordinate the inspection procedure arranged individually for every one of the 17 local authorities (CCAA) through the nominated National Reference Laboratory (NRL). This laboratory will be in charge to harmonize and check the inspection method, validate documents and act as a referee, if needed, of the activities developed by the inspection units. Those inspection units (ITEAF) will be officially recognized by the CCAA and will accomplish the established requirements in the new national law including the particular aspects included by CCAA. Technical requirements of ITEAF must be in accordance with those reflected in the national law. Regarding the capability of inspectors, a complete 40 hours training course has been established as a mandatory previous requirement. Those courses (theoretical and practical) will be delivered by Universities and Research Centers directly related with the subject. For this purpose a detailed Inspection manual has been edited to be published together with the national law. This paper presents the actual situation and the encountered problems during the process of development of the law, and how the inspection procedure has been arranged in all around the country.

### Introduction

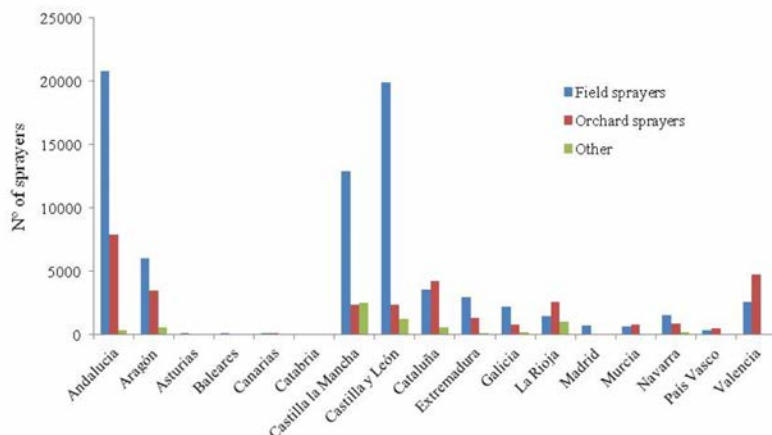
After publication of 2009/128/CE Directive for a Sustainable Use of Pesticides on October 2009, and according the perceptive procedure, all the MS started their administrative process in order to achieve the mandatory transposition of such as that EU mandate. Different purposes have been arranged on every single MS. In case of Spain, the Ministry of Agriculture started the process by arranging two different Spanish Laws: one specifically related with the procedure for the inspection of sprayers in use, and other for the complete management of all the other chapters included in the EU Directive. The first one (RD 1702/2011) has been recently officially approved and published (December 9<sup>th</sup> 2011) and lies with all aspects, procedures, deadlines and specifications to be followed by the different local authorities in Spain, with the objective to accomplish with the mandatory due to inspect all the sprayers in use by December 2016. The second one, including all the other aspects relative to the ED Directive, is at this time in the last process of official review and is expected to be published before the end 2012. This described scheme represents the structure and way of action of the Spanish National Action Plan to be followed during the next four years.

### How many sprayers must be inspected in Spain?

This is the first question to be solved, prior to arrange the inspection procedure itself. At different international platforms, and based on experience, a general data of about 300.000 sprayers has been managed. But unfortunately this is a not official data. For this reason, on July 2009 the Spanish government published a mandatory law (RD 1103/2009) with the purpose to create an official register of all sprayers in use in Spain. This requirement has been established as a mandatory prior to attend the inspection procedure. This information becomes a key point for the local governments in order to arrange the inspection procedure, establishing the adequate number of inspection workshops (ITEAF) as well as the number, placement and inspector's training units.

Two years after the publication of the mandatory registration law, Fig. 5 on number of sprayers indicate that only about 38% of the expected sprayers (116053 were registered). Regarding the distribution according the type of sprayers, 65.7% has been classified as orchard sprayers, 27.9% field sprayers and 6.4% as others (including hand held sprayers, pneumatic sprayers...). Also important is how the sprayers in use in Spain are distributed among the 17 regions, with big differences both in terms on number and type (Fig. 1).

Fig. 1. Number of sprayers in use and distribution among the 17 regions (official data March 2012)



One of the first consequences of this uneven distribution is the poor relation between number of sprayers and use of plant protection products (PPP). As is very well known, the most intense use of PPP on Mediterranean area is related with vegetable and fruit production, either outside or in greenhouses. In case of Spain, those productions are mainly based all along the Mediterranean coast, which include from vineyard and fruit production in the north (Cataluña) to the intense vegetable productive area in greenhouses in the south (Andalucía), placing citrus production in the middle part (Valencia). So, a comparative analysis between use of pesticides (Gil, 2006) and sprayer's distribution is shown in Fig. 2. Only 39% of sprayers in use are based on 25% of productive area, where more than 75% of Spanish PPP use is registered. On the other side, 61% of sprayers in use are disseminated in a great area with low pesticide pressure. This fact should be considered for the local authorities at the time to arrange the whole procedure of official inspections. Seems logic that the most intense sprayers' use, the most interesting the inspection procedure.

Fig. 2 More than 75% of PPP use in Spain is concentrated in less than 25% of productive area in Mediterranean coast (left), where only 38% of sprayers have been registered (centre), while the great part



of sprayers in use (nearly 7%) are disseminated in the three biggest regions in centre Spain (Castilla y León, Castilla La Mancha and Andalucía).

### Inspector's training courses and number of inspection workshops

Due to the characteristics of the Spanish legislation, a Member State with 17 autonomous regions, the responsibility of the arrangement of the inspection procedure below to the local authorities. Since the Spanish Government has published on the official journal the Spanish law concerning the inspection of sprayers in use, the 17 regional governments (CCAA) must implement the procedure in order to accomplish the mandate established by the EU Directive. The official procedure has been established according to the flow chart shown in Fig. 3. Once the Spanish Ministry of Agriculture has delivered the official law, every single local authority must design the responsible institution in charge of the inspections. This institution must be arrange, among other minor aspects, the number and placement of inspection workshops, the inspector's training scheme and the official recovery of data concerning their area of responsibility. This structure based on autonomous territories presents, in some cases, certain difficulties in order to guarantee a homogeneous and harmonized.

One of the first problems to be solved is related with the total number of workshops needed to achieve the EU mandate before the end 2016. For this purpose, and based on the official registration data and expecting the achievement of around 300.000 sprayers in use in the whole country, a prospective exercise has been developed. Assuming an intense period of 6 months of sprayer's inspection on every individual workshop (it is not realistic to predict activities during the critical agricultural periods as spraying time, seeding or harvesting, i.e.) and based on a maximum number of inspections per day (around 6), table 1 shows the prediction of total number of inspections workshops distributed among the regions. Prospection has been made also with the premise of at least one inspection every third year, following the mandatory procedure included on the Spanish law. This fact means that, at least 25% of the sprayers should attend 2 inspections during the period from 2012 (October) and 2016 (December).

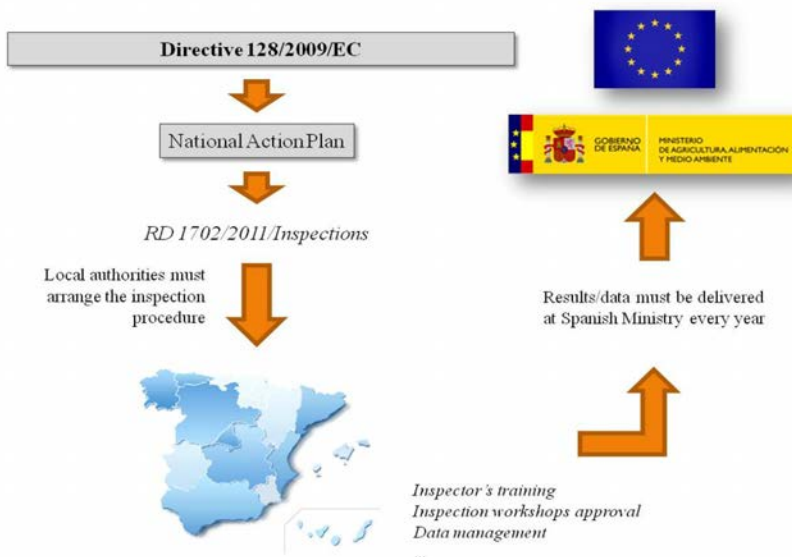


Fig. 3. Official procedure for the inspection of sprayers in use in Spain. The system involves directly all the local authorities.

Tab. 1. Prediction of number of inspection workshops and training facilities. Distribution among the regions

CCAA	Field sprayers	Orchard sprayers	Other	Total	Total expected	T+25%	Yearly	Monthly <sup>1</sup>	Daily	N° ITEAF <sup>2</sup>	N° ITEAF directors	N° Technicians	N° training courses <sup>3</sup>
Andalucía	20798	7928	396	29122	72805	91006	22752	3792	190	32	32	47	3.9
Aragón	6022	3459	600	10081	25202.5	31503	7876	1313	66	11	11	16	1.4
Asturias	137	44	37	218	545	681	170	28	1	0	0	0	0.0
Baleares	140	60	13	213	532.5	666	166	28	1	0	0	0	0.0
Canarias	172	114	65	351	877.5	1097	274	46	2	0	0	1	0.0
Cataluña	46	8	12	66	165	206	52	9	0	0	0	0	0.0
Castilla la Mancha	12914	2359	2536	17809	44522.5	55653	13913	2319	116	19	19	29	2.4
Castilla y León	19890	2396	1288	23574	58935	73669	18417	3070	153	26	26	38	3.2
Cataluña	3600	4259	605	8464	21160	26450	6613	1102	55	9	9	14	1.1
Extremadura	2957	1327	169	4453	11132.5	13916	3479	580	29	5	5	7	0.6
Galicia	2224	821	211	3256	8140	10175	2544	424	21	4	4	5	0.4
La Rioja	1450	2616	998	5064	12660	15825	3956	659	33	5	5	8	0.7
Madrid	722	67	38	827	2067.5	2584	646	108	5	1	1	1	0.1
Murcia	668	774	63	1505	3762.5	4703	1176	196	10	2	2	2	0.2
Navarra	1543	919	185	2647	6617.5	8272	2068	345	17	3	3	4	0.4
País Vasco	388	476	64	928	2320	2900	725	121	6	1	1	2	0.1
Valencia	2616	4765	94	7475	18687.5	23359	5840	973	49	8	8	12	1.0
<b>Spain</b>	<b>76287</b>	<b>32392</b>	<b>7374</b>	<b>116053</b>	<b>290132.5</b>	<b>362666</b>	<b>90666</b>	<b>15111</b>	<b>756</b>	<b>126</b>	<b>126</b>	<b>189</b>	<b>15.7</b>

A detailed analysis of the previous data indicates a heterogeneous and very different needs in terms of inspection workshops among the 17 regions. Values range from 32 inspection workshops in Andalucía to 0 in some other regions as Asturias, Canary Island or Baleares Island. This fact should be considered by the responsible in order to arrange the most adequate, productive and efficient inspection program in Spain. Based on the mandatory mutual recognition among the inspection workshops, may be in some areas should be considered the possibility for agreements between neighbor communities in order to save investment, increasing efficiency of the process, due to the fact of the very low number of sprayers.

### Inspector's training: key point to guarantee the success

According to the Spanish law to become director or technician of a inspection workshop an official certificate will be mandatory. This certificate (renewable every 5 years) will be acquired after the attendance to mandatory training courses delivered by official institutions. But, who will in charge of training and what should be the characteristics of the mandatory course? The first part of the question is widely answered also by the law, which stated that universities (agricultural engineering departments), official training centers, research and development institutes, and whatever other official institution will be considered as a candidate for training responsible. This official scenario allows to local authorities to design the training responsible, with a great variety of expertise, background and facilities.

In order to harmonize as much as possible the training procedure, several Spanish universities have arrange a coordinate activity with the purpose to present at local authorities an homogeneous and even training program, including similar contents distribution, facilities and expertise, trying to avoid unappreciated differences among the regions. Fig. 4 shows the map including the involved universities.



Fig. 4. Expected numbers of training courses and placement of involved universities with a harmonized training procedure.

Regarding the training course characteristics, the Spanish law publish (Annex IV) the mandatory requirements in terms of contents, length and distribution time between theory and practices activities. A forty hours course (one whole week) has been designed with a distribution of 60% theoretical activities and 40% practices. At the end of the course a mandatory exam has been established on which at least one whole inspection procedure has been included from the practical point of view. The attendance to the course is mandatory for all the intended inspectors and some requirements in terms of background (specific university degree or professional training degree) is required. Contents related with agriculture, machinery management and design are mandatory to become inspector.

### Training and education: basis for a success

Based on a wide previous experience on all over the regions, training and a good information and educational procedure for the users has become a key point to guarantee the success of the inspection procedure (Gil, 2001; Gil and Gracia, 2004; Gil, 2007). This fact can be guaranteed by following two main lines: a) an adequate and high level training scheme of the inspectors and b) implementing as a mandatory some informative/training activity during the inspection process itself, promoting the participation of the users and increasing their knowledge about what/why and how different measures, requirements or evaluations are done during the process.

For this purpose, some agreements were achieved among the local responsible of the official inspection procedure in order to improve the user's knowledge during the process:

- Results of visual inspection must be explained /commented with the owner during the procedure itself.
- Results of different measurements (nozzle flow rate, pressure gauge, horizontal distribution...) must be explained (time consuming estimated 5-10 min) immediately after the measurement process.

Another interesting action to remark as official action implemented in Spain in order to increase the knowledge and education level of the users has been the publication of the manual of inspection of sprayers in use.



Fig. 5. Manual for inspection of sprayers in use. Available at [www.uma.deab.upc.edu](http://www.uma.deab.upc.edu) and [www.magrama.es](http://www.magrama.es).

This tool is mainly focused and dedicated to facilitate the comprehension of the whole procedure for the future inspectors and inspection's workshop responsible. The manual (Fig. 5) has been developed by Polytechnic University of Catalonia, University of Lleida and Agricultural Machinery Center of Generalitat de Catalunya, and includes detailed explanation (with graphical and pictures support) of every single action to be developed during the inspection procedure. According the published on the Spanish law, the official manual of inspections is available on the official website of the Spanish Ministry of Agriculture.

## Conclusions and remarks

After the long period and difficulties observed in Spain during the official procedure for the establishment of the Spanish law, some aspects or remarks must be considered:

- The establishment of an official inspection procedure at 17 different regions at a time is an important challenge
- Accurate information about number and distribution of PAE results key for an adequate organization
- Inspector's training must be managed as a "capital point" for guarantee the success of the whole process
- Recent modification on official procedure of inspections (EN 13790 substituted by ISO 16122) will increase the need of training
- MS who are in the process to establish mandatory inspection procedure should take advantage of experience of other MS already experienced

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