User concerns about sprayer inspections in the Comunidad Valenciana (Spain). Importance of adequate communication for the higher involvement of stakeholders.

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Directive 2009/128/EC for a Sustainable Use of Pesticides was transposed to the Spanish legislation in 2011 through the Royal Decree 1702/2011, which established the national core legislation for the inspection of sprayers. According to the Spanish regulatory system, Regions (Comunidades Autónomas) are in charge of the technical implementation of the inspections. The government of the Comunidad Valenciana published the executive regulations for this Region on July 29th 2014. Furthermore, as of March 2013, four training courses for inspectors have been organised jointly by the Conselleria de Agricultura (Regional Ministry of Agriculture) and the Universitat Politècnica de València. Special care has been taken to harmonise inspection procedures with the rest of the Spanish Regions, as well as Europe.

The Centro de Agroingeniería of IVIA belongs to the Conselleria de Agricultura and is in continuous contact with national sprayer manufacturers, farmers and end-users. Moreover, it organises courses for professionals and is involved in research projects and tests related to field sprayer machinery (Fig. 1).

Fig. 1. Training activities conducted by the Centro de Agroingeniería.

From the participants in these activities, the Centro de Agroingeniería has collected a series of feelings related to the condition of the sprayers and the farmers' perceptions regarding the compulsory sprayer inspection, not only in the Comunitat Valenciana, but also in other regions of Spain.

As positive feelings, it could be said that there is an increasing sensitivity of farmers towards food and environmental safety. A growing number of farmers are becoming increasingly aware that pesticide treatments are necessary but generate risks to people and the environment, as well as being a potential threat to themselves. On the other hand, the emergence of new technologies is promoting the renewal of the equipment currently in use, which improves the condition of the sprayers, although this change is still only occurring in a minority of cases. These positive changes may be largely due to the generational change and the professionalisation that is taking place in the agricultural sector.

Nevertheless, positive feelings are less common, since during these training activities end-users raised concerns above all related to the use of the sprayers. Firstly, one of the main problems observed is that there is a lack of knowledge of the legislation concerning not only the inspection of the sprayers, but also their use and ownership. Sometimes, farmers do not know anything at all about these issues. When they are aware, some of the first concerns are related to the official registration of sprayers (Official Register of Agricultural Machinery, ROMA), which is compulsory in Spain. Farmers have the responsibility to arrange this administrative process in their local government offices, but many of them are unaware of the procedure, or think that they would have difficulties to register their sprayers because of their age and lack of documentation, which has often been lost or damaged. Nowadays, this is no longer a problem, since the procedure has been changed in order to make registration possible in such cases, but the fact is that this information has not reached the users.

Other concerns are related to the inspection procedure. These concerns arose because there are certain devices that are part of sprayers currently in use which are inspected that usually show problems. These could be divided into two groups. On the one hand, there are problems that could be cheap and easy to solve. Among these, the most common are related to the absence of or ineffective PTO shields (Fig. 2), inadequate or useless tank level indicators (Fig. 3), the impossibility of emptying the tank without losses (Fig. 4), inadequate manometers (Fig. 5), ineffective or nonexistent isolation of the aspiration filter, and bad nozzle condition (impossible identification and/or off-range flow) (Fig. 6).

Fig. 2. Absence of PTO shields.

Fig. 3. Useless tank level indicator.

Fig. 4. Impossibility of emptying the tank without losses.

Fig. 5. Inadequate manometer (Excessive scale and insufficient resolution).

Fig. 6. Bad nozzle condition.

On the other hand, there is another group of common problems that would require technical assistance and may be far more expensive to solve. Among these, the most common could be those related with the pumps, which usually show irregular flow (pulsations) and/or losses (Fig. 7), the existence of high-pressure conduits in the tractor cabin (Fig. 8), inexistent or ineffective anti-drip devices (Fig. 9), or high pressure drops between the high pressure pump and nozzles.

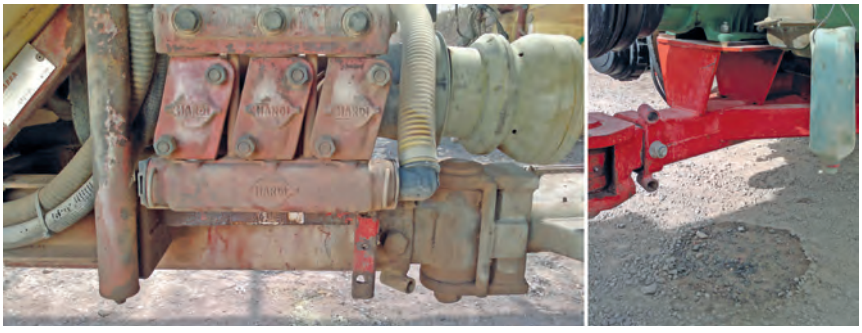

Fig. 7. Losses from the pump.

Fig. 8. High-pressure conduits in the tractor cabin.

Fig. 9. Ineffective anti-drip devices.

All these concerns make the farmers believe that the inspection is just a waste of money, and that the new legislation, together with the low incomes they have, may force them to leave the agricultural activity. Since many of them see the inspection as a threat, not as a social demand or an environmental and safety need, an important pedagogical effort is required to disseminate the advantages of the inspections to farmers. End-users need to be convinced about the economic advantages of the correct use of sprayers and the increase in safety and efficient use of resources that inspections may provide. Moreover, they should be trained in the regulation of their sprayers and the advances they would achieve through doing so, since all the problems mentioned above would be minimised.

Furthermore, communication between all the stakeholders, from lawmakers to farmers, and the commitment of all them are essential to successfully reach not only Directive 2009/128/EC requirements, but also a real sustainable use of pesticides.