



Deliverable 3.6: Policy recommendations

Accelerating Innovative practices for Spraying Equipment, Training and Advising in European agriculture.



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Author(s): Emilio Gil (UPC)

Reviewer (s): Paolo Balsari, Fabrizio Gioelli (UNITO). Sebastien Codis (IFV) and Vanja Bisevac (CEMA)

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Abstract

document includes a resume of policy recommendations derived after the three and a half years of activities carried out under the Innoseta project. It is directly linked with deliverable 3.7 – Policy briefs



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1 Introduction

INNOSETA is a Thematic Network funded by the European Commission in the frame of the Horizon 2020 program for Research and Innovation. The main objective of INNOSETA is to set up an Innovative self-sustainable Thematic Network on Spraying Equipment, Training and Advising to contribute in closing the gap between the available innovative crop protection solutions -either commercial or from applicable research results- with the everyday European agricultural practices.

Among other actions, a large list of activities has been organized in collaboration with all the stakeholders around the territory covered by the project. Farmers, advisors, manufacturers, academics, researchers and local authorities attended different activities as Regional Workshops, Transnational Workshops, conducted surveys, conferences and/or field demonstrations. In all the cases, both in presence or as on-line mode due to COVID-19, practical experiences, opinions, suggestions and demands have been collected.

This has allowed us to pool together a wealth of information and insights, leading to a number of recommendations for increasing the adoption and uptake of SETAs. This document matches with the deliverable 3.7 Policy briefs where a detailed description of policy briefs and other interesting topics can be found.

The following sections present a short and practical guide on how to proceed from the policy point of view to solve the main problems encountered by stakeholders in their crop protection activities.

2 Main aspects to be addressed

The large list of activities conducted during the execution period of the INNOSETA project allowed identification of some important topics which, depending on the stakeholder group, have different r effects with respect to the activity of the involved actors. The main topics r selected by actors is:

- Difficulties regarding the adoption of new technologies
- Training and sharing knowledge
- Lack of information about the European legal framework
- Lack of harmonization among EU member states

Improving the adoption rate of new technologies is one of the challenges already initiated by the European Commission, a very useful but at the same time difficult objective, especially considering the important differences among farmers, production activities/practices and countries. This fact was also considered inside the Innoseta project and at the beginning a complete survey was conducted in order to identify the degree of adoption and implementation of the already available new technologies and to list and quantify the reasons for the non-adoption if this was the case. A detailed report with results and conclusions can be found at deliverable 2.1. Important conclusions were



obtained as the most important reasons for non-adoption of technologies, as it is shown in figure 1, where the adoption of new technologies seems far away for a large group of farmers, especially those on smaller farms.



Figure 1. Results after the survey concerning the adoption of new technologies

Training is aN important key factor in the whole process. Great differences in educational skills have been seen among farmers and/or MS; degree of adoption of new technologies has been shown to be linked to the educational level of farmers.

In general, some aspects have been addressed from the different stakeholders based on the main principle to enlarge the educational skills of all the involved actors, as:

- Improve harmonisation of requirements regarding PPP application overall and and new application techniques/technologies in particular between all European countries;
- Harmonize drift reduction classification schemes at European level;
- Promote the exchange of information about the training of agricultural technicians throughout Europe in order to compare and, above all, to improve and harmonize the training courses provided;

Innoseta project carried out a large number of activities, at local, national and international basis, in collaboration with representative of all the stakeholders. A main identified point was the lack of and need for knowledge in order to deliver on the targets set in the new initiatives the Green Deal and for agriculture the more specific Farm to Fork strategy.



The lack of a harmonized approach among Member States has been another relevant point addressed by the stakeholders. Some key examples among many discussed, were the lack of a recognized and uniform risk, particularly spray Drift Reduction Technology (DRT) classification, resulting in major difficulties for end-users (farmers) in their daily work, great differences in the implementation of mandatory requirements such as inspection of sprayers in use, unclear criteria and differences on the implementation of buffer zones and their level of efficiency, differences in dose recommendations/expression for the same active ingredient, the same pest/disease and the same crop.

Finally, the networking activities carried out within Innoseta project have reinforced the wide and profitable personal relationship among different actors. As a consequence, good and useful collaborations have been already established with other projects (Figure 2), important exchange of ideas, problems and solutions have been already implemented, and useful contacts with different policy makers/regulators, not only at EU level but also at national and regional scale, have been established.



Figure 2. Announcement of Innoseta networking activity in collaboration with a representative list of other EU projects involved on the same or similar topic

An important aspect concerning the large list of existing EU-funded projects has been revealed during the Innoseta project in particular their overlap but also the lack of integration. Innoseta has demonstrated that with a clear and intense networking activity the overlapping within projects could



be reduced. Also, it is important to improve the degree of knowledge that general society and stakeholders, other than those directly involved, have about the large list of EU projects.

3 Policy recommendations

Considering the detailed report provided in deliverable 3.7 – Policy briefs, the whole Innoseta consortium, as agreed, provides a resumed list of main policy recommendations. Its main aim is to provide policy makers a basis for the improvement of the future European Legal Framework, and national action plans, linked to crop protection and crop care.

3.1 DEMONSRATE AND SHARE THE KNOWLEDGE

- Develop harmonized R&D and cost/benefit methodologies that provide representative findings on the performance of SETAs, thus helping farmers to take their decision on using application equipment, particularly concerning effects on yield performance and the use/costs of inputs;
- Promote demonstration activities at the farm level aimed at showing the farmers in their own region/country how new smart technology or machinery performs; Demonstration farms are key examples of support strategies facilitating the adoption and uptake of Innovative spraying equipment;
- Promote tools that allow farmer to share experiences, and that promotes the exchange of information about training courses and materials used throughout Europe in order to compare and, above all, to improve and harmonize the training courses provided;
- Develop the content of training courses in relation to spraying implemented on regional, national and EU level; Integrate the thematic of diffuse and point source pollution and health of operators into training curricula;
- Strengthen training and information for farmers, but also for all the actors involved in plant
 protection (regulators, advisers, farmers (including farmer associations and cooperatives),
 contractors, and sprayer and PPP dealers). In the mandatory training courses to get PPP
 licenses for farmers and advisers (Article 5 from the Directive SUD 2009/128/EC), it should
 be mandatory to include a practical part of such training dedicated to "correct sprayer use
 and adjustment" to understand the practical issues involved (and there should also be
 appropriate mandatory practical training for sprayer operators in the case when this is not
 the farmer).

3.2 LACK OF COMMON RISK MITIGATION MEASURES

• Harmonize EU risk measurements/methodology, particularly drift measurement requirements and Drift Reduction Technology (DRT) classification to facilitate the adoption of Drift Reducing Technologies by farmers;



- Set common measures for buffer zones at EU level (definitions of buffer zones are set by national authorities considering their specific situations);
- There is a need for harmonized measures and practically achievable buffer zone widths that could potentially be reduced through the use of DRTs (giving a direct economic incentive to farmers to adopt DRTs);
- Importance of clear communication about the risks arising from use of PPPs, particularly drift and Drift Reduction Technologies, not only to farmers but to all stakeholders and the general public;
- Promotion of innovative risk reducing application techniques and equipment through harmonized requirements supported by subsidization;
- Good quality control of Inspection in Use schemes should be ensured. A complete register of sprayers is only available in few countries. Inspection in use should also be extended to "minor" use equipment (e.g., seed treatment, micro granulators, dusters, foggers, low volume sprayers, etc.). See SPISE Advise material (<u>https://spise.julius-kuehn.de/index.php?menuid=34</u>).
- Reconsider current requirements set by EN ISO Standards used for crop protection equipment to minimize risks of point source pollution (e.g., induction hoppers, sprayer cleaning systems, etc.).
- There is a need for better understanding of the allowed systems/practices to manage PPP contaminated water after PPP application (washings of sprayer and of PPP containers and any residual spray mix) at farm level. Incentives to equip farms with adequate sprayer filling/cleaning areas enabling collection of contaminated water would help in improving adoption/uptake as would a list of 'formally accepted' bio remediation systems for residues at farm level, including biofilter, bilobed and other specific devices for residue's management.
- There is a general call for more control on the correct implementation of the legislation: This potentially rewards those who are acting correctly and hopefully prevents further punishing legislation that is put in place due to the few farmers/contractors who are not following requirements.

3.3 APPLIED RESEARCH

 Fund research and long-term field studies for innovative risk and/or dose reducing application techniques and equipment, to demonstrate cost/benefits, in addition to risk and/or use reduction, in specific application situations to justify the investment required by farmers; Horizon scanning through continual discussions between all stakeholders, including regulators (as called for by OECD), to ensure that new and forthcoming application techniques and technologies to reduce risks and/or use are recognized so that R&D can be planned;



- Harmonization of advice on PPP labels, particularly for bush and tree crops (and greenhouses) where this information is still often deficient in adapting PPP doses and spray volumes appropriately to the crop canopy being sprayed;
- Carry out cost-benefit analysis of new techniques and technologies available and that may come to the market soon;
- Fund or incentivize research projects aimed at solving practical issues raised by farmers through the adoption of innovations and new technologies, including those that can be applied to existing sprayers;
- Encourage communication and collaboration between industry, researchers, academics and farmers in the EU aimed at developing innovative solutions enabling to match the objectives of SUD Directive and Farm to Fork strategy;
- Incentive demonstration and training programs that provide end users with tangible proofof the effectiveness and economic benefits from the use of risk and/or reducing application equipment;
- Establish economic incentives for farmers who take part in practical field trials as part of research projects aimed at optimizing spray application and PPP use;
- Promote the development of easy to transport (trailer) demonstration equipment for application trainings.
- Incentivize research on solutions enabling applications to be adaptable to the canopy structure being sprayed, including spray transport, drift and deposition models to assist risk and use reduction;
- Fund Industry and university/institutes to further research and develop test methods (including models) for spray drift prediction and measurement, to give agreed and rapid determination of spray drift reduction potential, especially for bush and tree crop sprayers. (e.g., consider to enlarge number of research facilities/laboratories, including wind tunnels, or the capacity of current facilities.);
- Consider the future funding of the INNOSETA Platform beyond the end of INNOSETA Project.

3.4 DISCONNECTION OF PUBLIC FROM FARMING REALITIES

- Agricultural topics should be included in general school curricula;
- Effective communication on modern agricultural practices with the public is needed. To be
 effective, this communication needs to involve regulators, industry, researchers and
 academics and farmers. Such a multi-stakeholder approach should concentrate on
 developing clear messages directed at the public and specifically at consumers, to ensure
 they understand that their food is amongst the safest in the world;
- Food companies and retailers are also important stakeholders and should be involved in communicating food safety and production;
- Food certification schemes may help to provide more insight into food production processes to enable consumers to make informed decisions.



3.5 SET THE STAGE FOR THE FARM ADVISORY SERVICES OF THE FUTURE

- Continuous R&D and extensive demonstration is required for innovative technologies and techniques on PPP application, particularly to highlight cost-benefit advantages demonstrated by R&D and practical use to showcase the technical characteristics (advantages and practical limitations) and the economic result of applying these innovative application technology solutions;
- Farm advisory services are all the organizations or activities that use AKIS and assist farmers to produce knowledge and enhance skills by creating service connexons with advisors in order to finally co-produce farm-level solutions.
- Farm advisory services should be reinforced with additional human capital and resources/infrastructure to function in a regular and consistent manner for the benefit of farmers;
- Farm advisory services should develop a common scheme between state authorities, research centers and universities, as well as private consultants and advisors after accreditation and continuous training;
- Research centers and universities, since they have high geographical distribution in the EU, could act as points of interest for all policy makers/regulators, FAS, and farmers with a flow of information preferably by integrating them in the national FAS;
- Regarding spraying techniques and technologies, such a system could provide information about risks of point and diffuse sources of pollution, personal protection measures, risk of inappropriate PPP use for the environment and about the innovative technologies that can make farmers' lives easier and their work more efficient;
- Training is needed, so that farmers/operators can consider how to integrate innovative application techniques/technologies in their daily agricultural practices and applications. Furthermore, training assists in staying updated regarding forthcoming innovative new technologies, learning about the use (and practical limitations) of new techniques and technologies;
- Establish a reference framework at EU level in terms of training about good spraying practices that could be adapted to each member state and then adopted by their FAS in order to try and ensure a good and common knowledge base for all EU farmers;
- Provide training support to all stakeholder types: regulators, advisors, farmers (including farmers associations and cooperatives), contractors, and sprayer and PPP dealers;
- Use the material developed during INNOSETA, including the INNOSETA Platform, to help inform regulators, trainers and advisors, including FAS, throughout the EU and seek opportunities to enhance this material beyond the end of the INNOSETA project.



3.6 INVESTMENT SUPPORT

- Evolution of the sprayer fleet: National plans and European Rural Development Plans should include economic incentives to facilitate and encourage the purchase of efficient SETAs. Initiate financial support for the renewal of Crop Protection Equipment in order to achieve the more sustainable use of Plant Protection Products (PPP). Such subsidies should aim to take into account the potential efficiencies of the SETAs as assessed at EU level preferably in CEN as mandated under the Machinery Product Regulation;
- Invest in training and advice (theory + practice) on application techniques and equipment;
- Member States (MS) should invest in training courses with practical content on sprayer use and adjustment in practice, for all actors, including policy makers/regulators, advisers, farmers and sprayer operators (sprayer operators, who actually perform the application, should be trained principally be on the practical aspects of the equipment they are using)and should be continually updated so that all actors are aware of the latest R&I on innovative application equipment and techniques that can reduce risks and/or use programs of 'train the trainers' should be set up.

3.7 HARMONIZATION OF REQUIREMENTS IN ORDER TO SUPPORT TECHNOLOGY UPTAKE

For novel techniques/technologies on crop protection equipment:

- Any action must be compatible with the overall political goal of ensuring that farmers/contractors have access to the necessary tools to achieve risk and/or dose reduction in support of the goals of SUD and F2F without trade barriers and at the lowest cost, taking into account the limited resources/capabilities of the small volume crop protection equipment industry which primarily comprises SMEs (sometimes micro-enterprises in the case of specialized equipment);
- Development of harmonized Standards has been accepted as the key method of implementing the 'New Legislative Framework' and offers a transparent and democratic method for all stakeholders to reach consensus on the requirements, with the past 20 years having resulted in a huge number of harmonized Standards covering crop protection equipment to be placed on the European market – with many of these Standards to be revised, and new ones required, due to the development of new innovative equipment for risk and/or dose reduction and the forthcoming revision of SUD (and Machinery Product Regulation);
- Promote and support the development of harmonized test methodologies that provide reproducible findings on the risk and/or dose reducing performance potential of SETAs, thus helping farmers to take their decision on using spraying equipment, and providing proof by data for Member States to incentivize new technologies without further national restrictions. Mandating CEN to start this work would be a clear signal, particularly as many Standards will need to be revised following the revision of the SUD (and MPR);



• Investigate whether such standards could become harmonized standards under the Machinery Product Regulation to support risk and/or use reduction potential classification.

In relation to farmers needs on harmonized information flows and practices:

- Harmonization of the way to indicate the PPP dosage in the label for bush and tree (and greenhouse) crops. In these crops, dose expression/recommendations on the PPP labels is currently quite different in different countries (single dose in Kg or L/ha in France, percent concentration in Spain or Italy, dose modified according to growth stage in Germany and Switzerland). Those differences in terms of dose expression/recommendation complicate both the registration process of products when analyzing the trials carried out in different countries and of course result in very different application recommendations to farmers in the different countries. A new dose expression (kg or L/10000m2 LWA for Leaf Wall Area) where the dose is expressed according to the height and length of vegetation to protect has been chosen to the new parameter for efficacy/approval around Europe but this new rate expression, agreed a decade ago (after 40 years of discussion) is not yet planned to appear on national labels although it would definitely give real opportunities for dose rate optimization and the reduction of PPP use by better sprayer set up and calibration;
- Legislation concerning the treatment of post application spray mix residues differs greatly from country to country. For example, France has legislated (some time ago) to regulate the treatment of pesticide effluents (2006), while this is not yet the case in Italy, Spain or Greece. In France, 18 systems based on different principles (filtration, evaporation, biological degradation, etc.) are officially authorized for the treatment of residues. Working Groups bringing together stakeholders, authorities, industry and technical experts, should be set up to facilitate recognition of these processes/systems from one country to another;
- The standardization of PPP containers would facilitate the adoption of CTS (Closed Transfer System) given the recent development of an International Standard for CTS (with involvement of both agrochemical companies and equipment manufacturers) that gives the basis for such standardization (for spray liquids only);
- Harmonization of the measures used to calculate the width of buffer zones to be applied in the vicinity of sensitive areas (water and neighborhoods) at European level: until now, risks can be perceived to differ from one country to another, depending on the sensitivity of public opinion and other factors, which can lead to differences that result in unfair competition between countries.

3.8 PROMOTE NETWORKING AND CROSS-COLLABORATION

• One of the most debated points during the day was the difficulty of communicating research and industry advances to the farmer due to the lack of confidence farmers have that research



is practically relevant to their particular application needs/situation, and also in part, to issues with different languages

- It has been shown that farmers have more confidence in technical advisors and other farmers than in researchers to provide practical solutions that offer real economic benefits to their operation. Therefore, working on the connection of European projects with such operational advice groups is the principal opportunity to reach farmers. It has been suggested that a possible solution to current low participation of farmers in research projects could be a small financial reward i.e. if use of the knowledge of technical advisors or farmers to carry out a public project, they should be rewarded for it, and there should be official recognition of the importance of participation in such projects.
- It is very important that all information is made available in all EC languages due to the lack
 of knowledge (or very basic knowledge) of English (in which much research is currently
 reported) by farmers and technical advisors. Therefore, in order to bring the research closer
 to these actors, it is necessary to deliver information in a multilingual mode, for example
 through an application that performs a simultaneously translation instead of a platform in
 which the translation is done in a more manual mode for each language.
- Regarding the "overlapping" of projects, which was one of the main concerns of the managers in the previous survey, it was concluded that overlapping is not always bad, since not all European projects have a similar purpose (some are technical projects, others are demonstration projects, others have a platform) and the same countries as target, so the audience changes. Therefore, it is not necessary to avoid duplication of European projects, but since they are complementary audiences, it would probably be beneficial to create a platform where all this information is coordinated and connected with all the operating groups.

4 Conclusions

Innoseta project has been completely developed according to the expected program. It has been widely and negatively affected by COVID-19, as everything all around the world. Despite this the Innoseta project has been able to achieve the expected objectives that have been clearly reported in the large list of technical reports, practice abstracts, multimedia material and other useful products successfully placed for public use.

The Innoseta platform (<u>https://platform.innoseta.eu</u>) became the most important and useful product of the Innoseta project (taking three and a half years of intense work). The Innoseta consortium has been able to provide this useful tool to help to all stakeholders in their work. The use of this platform, among other benefits, should help in a necessary improvement of educational skills of the various stakeholders/actors, serve as starting point to increase the level and pace of adoption of innovative application techniques and technologies; and will provide a good opportunity for stakeholders, including professional users, to disseminate their latest improvements/findings, new



developments and also provide basic but very useful tools linked to reductions in risks and/or use of PPPs with the aim of ensuring safe and secure crop protection, particularly food production, in all of Europe.