EOS – a quick guide

ENVIRONMENTALLY

OPTIMIZED

SPRAYER

CONTENT

I. Objective

The EOS tool intends to provide information to sprayer operators, advisers and stakeholders to create awareness for technical solutions able to reduce the risk of losses of Plant Protection Products (PPP) to the environment.

Key factor to avoid environmental pollution is the correct behavior of the operator of sprayers. Sprayer technology is very important in reducing potential risks through respective constructions and can avoid mistakes by technical support.
Losses of PPP to water may occur by point and diffuse sources. Point sources are related to the handling of PPP and sprayers mainly on farm (filling, cleaning of sprayers, remnant management) and are considered to contribute more than 50% to water pollutions.
Surveys conducted during the TOPPS – Project (supported by LIFE and ECPA) showed that the awareness of operators concerning technologies able to reduce environmental risks of sprayers needs improvement.

The EOS - project supported by ECPA* developed in an expert group with participants from various European countries (Universities, Farm advice, Sprayer manufacturers, Crop Protection Industry) the EOS- tool which enables advisers and operators to evaluate different technical solution on their capability to reduce environmental risks.

In a first approach the risks were analyzed and weighted and the mitigation potential of sprayer technology and infrastructure identified.

Risk areas PPP – Waterprotection	Risk evaluation	Sprayer potential mitigation	Infrastructure potential mitigation
POINT SOURCES			
CLEANING	+++	+++	+(++)
FILLING	++	++	++(+)
REMNANT MANAGEMENT	++	++	+++
STORAGE	+	-	+++
TRANSPORT	+	+++	-
DIFFUSE SOURCE			
RUN OFF	+++	-	+++
DRAINAGE	+(+)	-	+++
DRIFT	+ (+)	++(+)	-

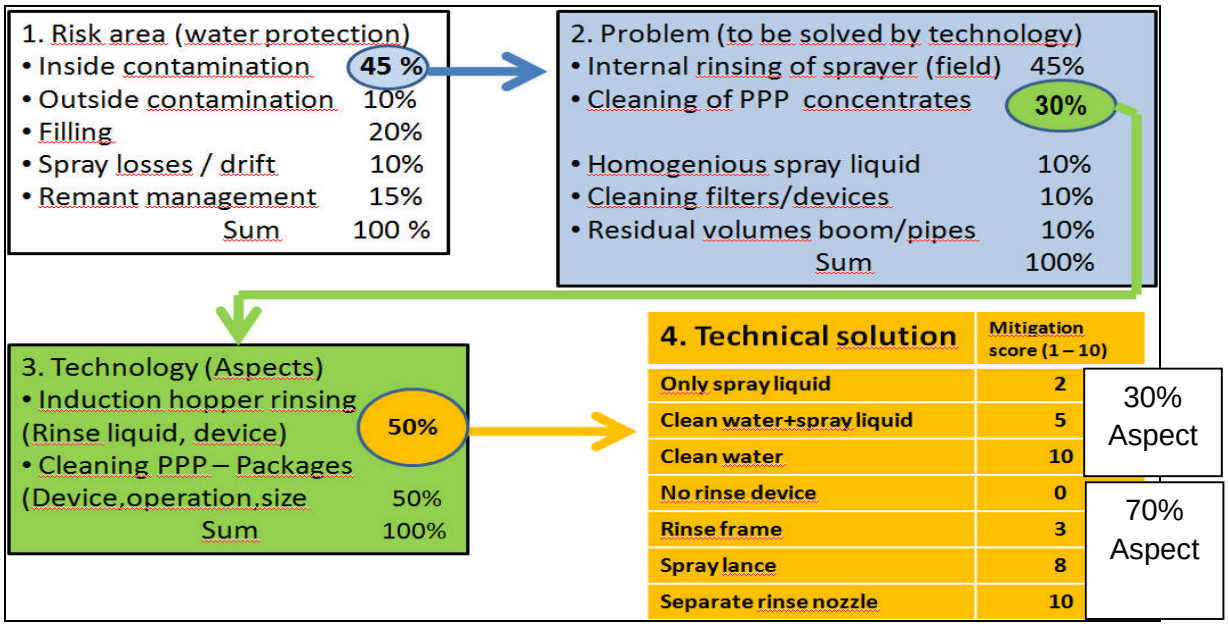
+++ high, + low potential,

**ECPA - European Crop Protection Association, Brussels, Belgium*

II. EOS evaluation

The evaluation process follows a four steps approach (see picture for field sprayers)

1. Step
Significance of risk areas for field- and orchard sprayers (weighted in %)
2. Step
Problems which need to be solved by technology (weighted in %)
3. Step
Definition of different technologies and aspects (weighted in %)
4.Step
List of available technical solutions evaluated on their capabilities to reduce risks by an mitigation score (not available 0, weak mitigation 1, currently best mitigation 10)



III. EOS – Index

The EOS index measures the technical features of to evaluated sprayer by comparing them with the best technical solutions currently available. About 87 technical features out of 287 need to be selected. A specific formula calculates the EOS index based on the weights and scores given in the evaluation process.
The maximum value of the EOS index is 100 and reflects the benchmark of the currently best environmentally optimized technique. In the evaluation result not only the total EOS index is shown but also the EOS values for the identified risk areas by clicking on the button:
EVALUATION RESULTS on the website
Inside contamination
Outside contamination
Filling
Spray losses and drift
Remnant management
The EOS Index indicates the specific areas where improvements would most contribute to

reduce environmental risks. A star rating summarizes the evaluations and tries to focus on improvements.

Example: Evaluation result (EOS-index) of a sprayer as shown by the EOS tool (website) Percent values behind the risk areas indicate their weight in the evaluation process)

One star = EOS index < 40
Two stars = EOS index 40 to < 55
Three stars = EOS index 55 to < 70
Four stars = EOS index 70 to < 85
Five stars = EOS index > 85

IV. How to use the EOS – tool

EOS is a web-based “questionnaire” which evaluates the results continuously as the selection of technical solutions are made by ticking respective boxes. The EOS index is shown for each risk area in the green buttons on the top. The evaluation tool also can be use as a “configurator” which shows changes in the EOS index depending on technical solutions selected.

Explaination of EOS tool (website…) functions (screen 1)

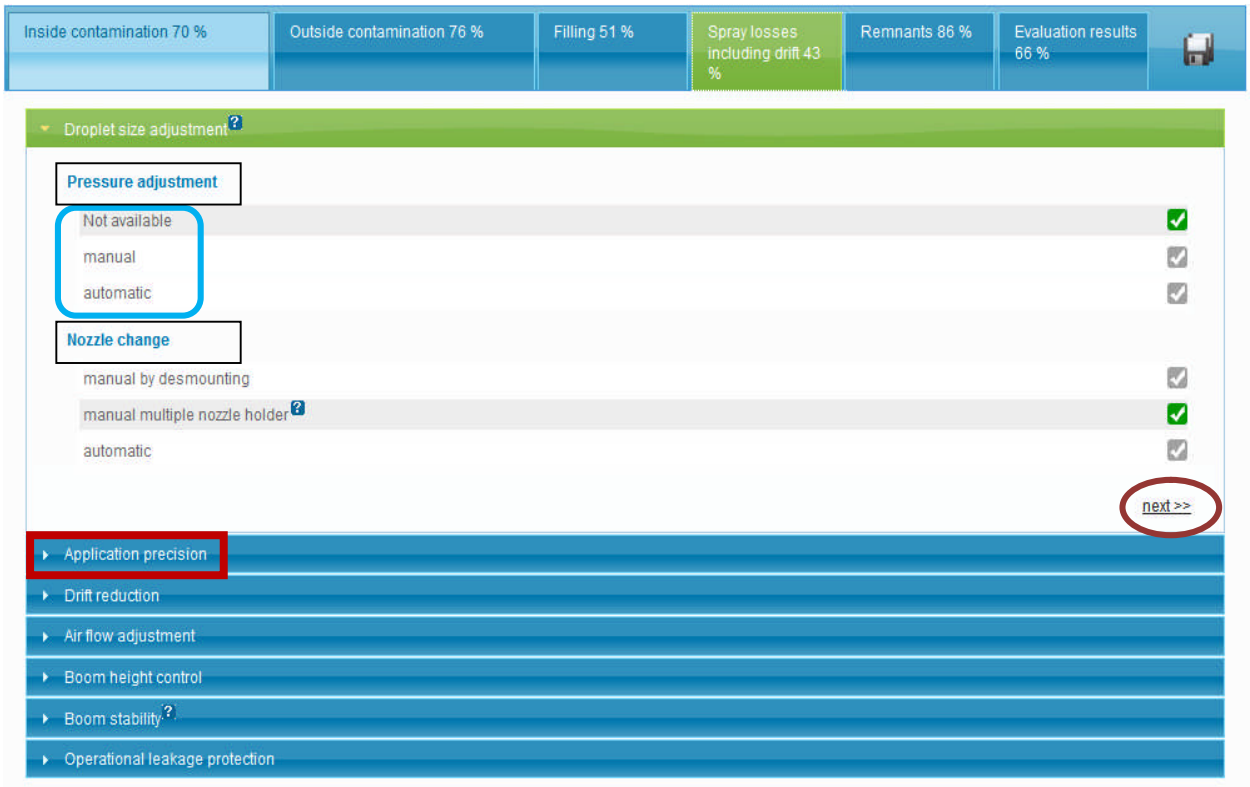
Selector for sprayer type: field /orchard/Vine sprayer and language
Open / download for quick user guide and handbook

Click button to open the risk areas (EOS index is continuously shown %)
Click button on right side to open the evaluation results

Click buttons to open questionnaire for problem areas

Save button: window opens and ask for a name and E.mail address.
Evaluation results will be mailed directly from the server

Explaination of EOS tool (website…) functions (screen 2)



	Blue headlines in questionaire refer to the technology
	Technical solutions are listed between the blue headlines. Only one solution should be selected. The selection is indicated by the green tick symbol
	Next button opens the next section of the questionnaire. It also can be opened by clicking directly on the next problem area button.

V. Who should use the EOS tool

Operators
get information and be aware of technical solutions to reduce environmental risks when upgrading or purchasing a new sprayer.

Advisers
get aware of risk areas and technical solutions to give good future proof advice.

Sprayer manufacturer / distributors
get aware on risk areas and technical solutions contributing most to environmental risk mitigation. Develop new sales arguments based on environmentally optimized sprayers.

Stakeholders (authorities, water managers)
get informed on risk areas and technical solutions when deciding on support or incentives given to achieve best return on investment.

VI. Acknowledgement

We would like to thank the EOS project members for their contributions and ECPA for their support.

Members of the following organizations were developing the EOS tool.

Project team

Public research / development and advisory services
University Turin (DEIAFA), Italy
University Politectnica Catalunya, Spain
Institut Français de la Vigne et du Vin, Davaye, France
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Sprayer maufacturers
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