How to reduce the impact of pesticides

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REDUCE PESTICIDES

INCREASE SUSTAINABILITY

BETTER USE OF SPRAYERS

INNOVATION

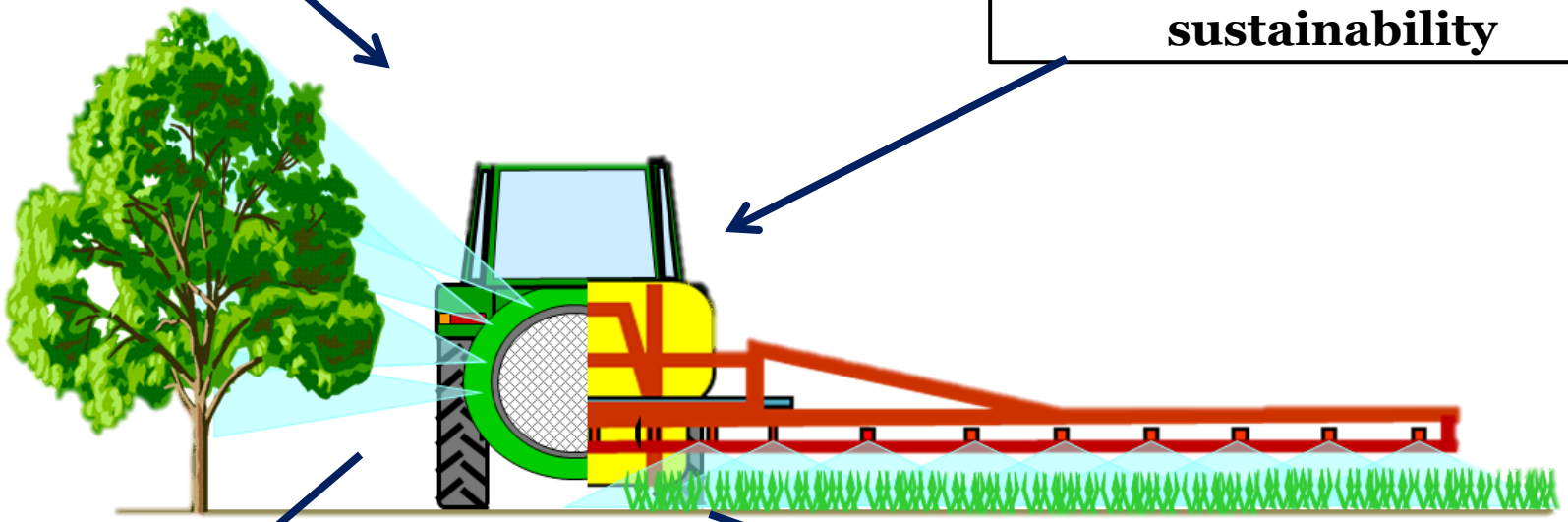
BETTER USE OF SPRAYERS

Operator training is essential to use the Sprayer optimally and **distribute the chemical only where it is needed**, avoiding dispersions and consequently costs and pollution ...

Sprayers are a key to gain more sustainability as set by the global climate strategies

Reduction of residues

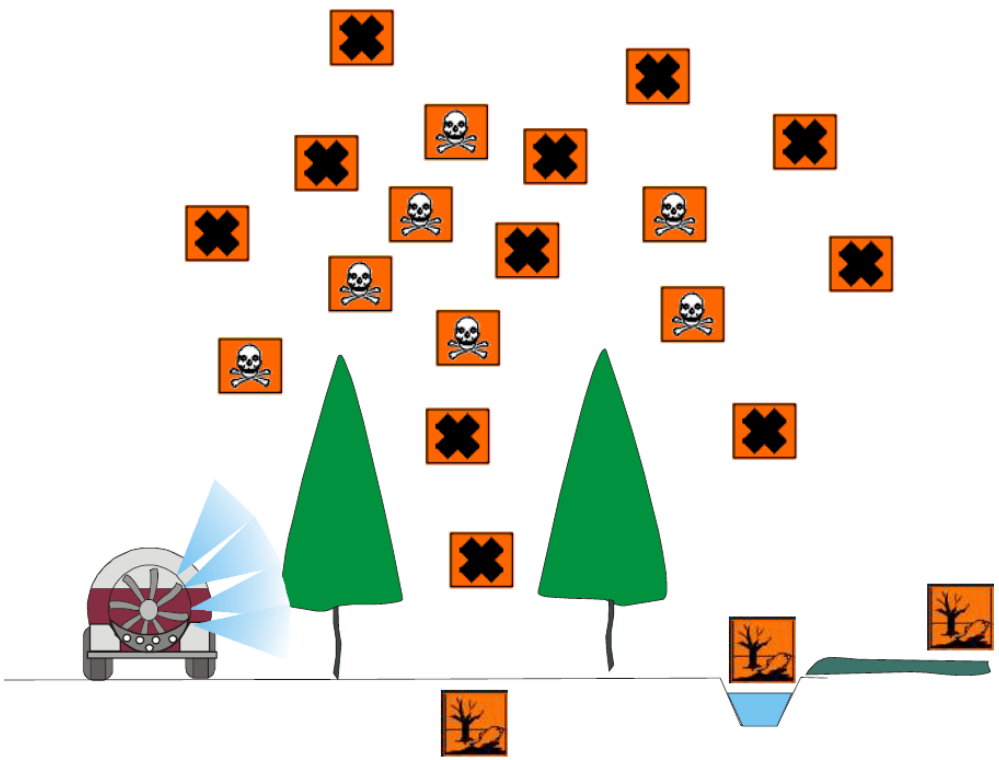
Reduction of losses = more environmental sustainability



Less water pollution

Reduction of chemicals

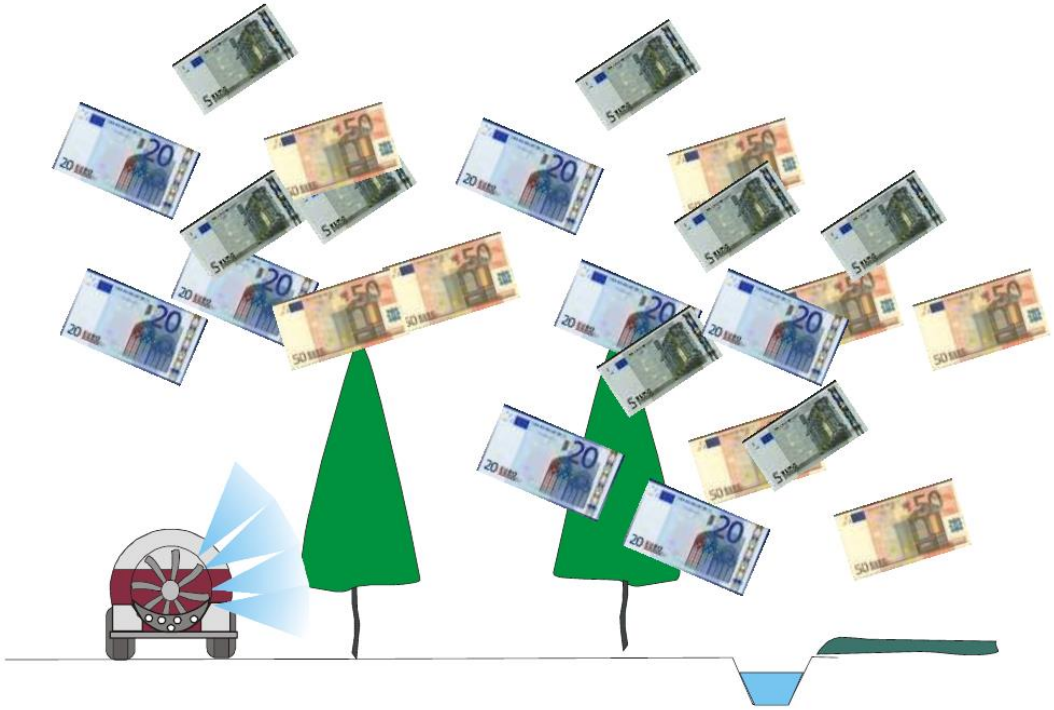
BETTER USE OF SPRAYERS



Loss of chemical in atmosphere or on the soil (**drift**).

BETTER USE OF SPRAYER MACHINES

Loss of money !



BETTER USE OF SPRAYER MACHINES

In the EU we have regular "Inspections of Pesticide Application Equipment" (*some examples*)

Safety aspects
Power transmission

The power take-off driveshaft guard and the guard of the power input connection shall be fitted and in good condition and the protective devices and any moving or rotating power transmission parts shall not be affected in their function so as to ensure protection of the operator.

Correct protection of the cardan shaft and presence of safety chain

Lack of the safety chain

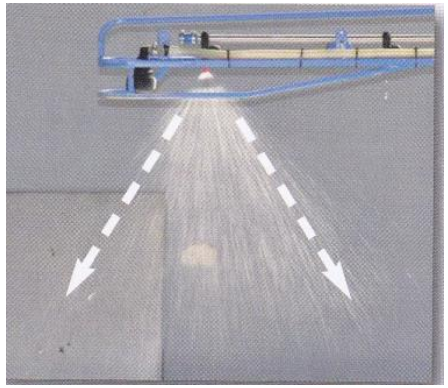
Lack of protection

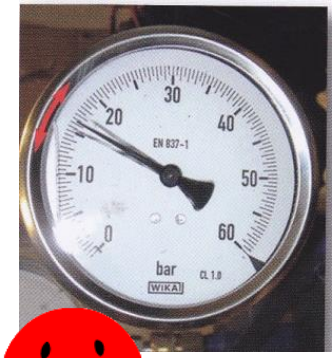
BETTER USE OF SPRAYERS

Inspection of Pesticide Application Equipment
(*some examples*)

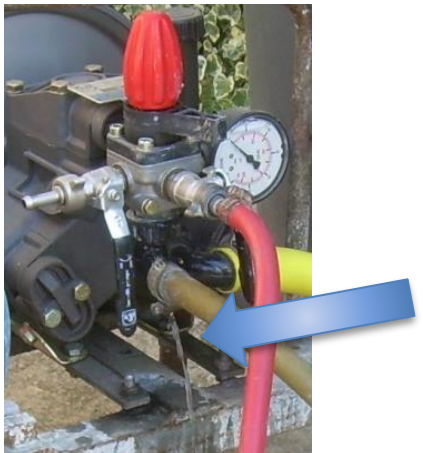
Pump

The pump capacity shall be suited to the needs of the equipment and the pump must function properly in order to ensure a stable and reliable application rate. There shall be no leakages from the pump.





Visual observation of presence of pulses due to the bad pump's work



Visual observation of leakages from the pump

BETTER USE OF SPRAYER MACHINES

Inspection of Pesticide Application Equipment (*some examples*)

Agitation

Agitation devices must ensure a proper recirculation in order to achieve an even concentration of the whole volume of the liquid spray mixture in the tank.

A clearly visible recirculation of the liquid inside the tank shall be obtained with the active distribution at nominal PTO rotation speed and with the tank filled to half its nominal capacity

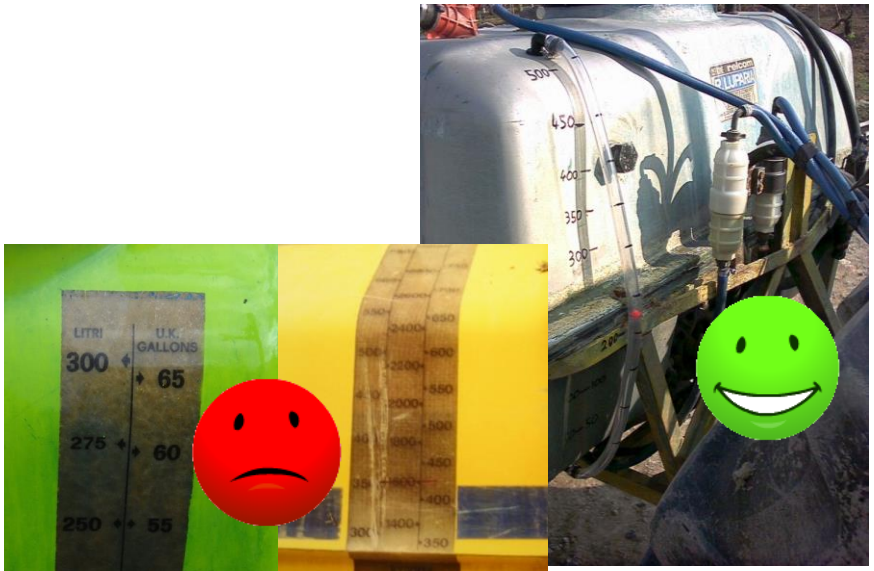
BETTER USE OF SPRAYER MACHINES

Inspection of Pesticide Application Equipment (*some examples*)

Spray liquid tank

Spray tanks including indicator of tank content, filling devices, strainers and filters, emptying and rinsing systems, and mixing devices shall operate in such a way as to minimise accidental spillage, uneven concentration distribution, operator exposure and residual content.

At least one level indicator clearly readable and visible shall be present both from the driver's seat and from the filling station



Visual check

BETTER USE OF SPRAYER MACHINES

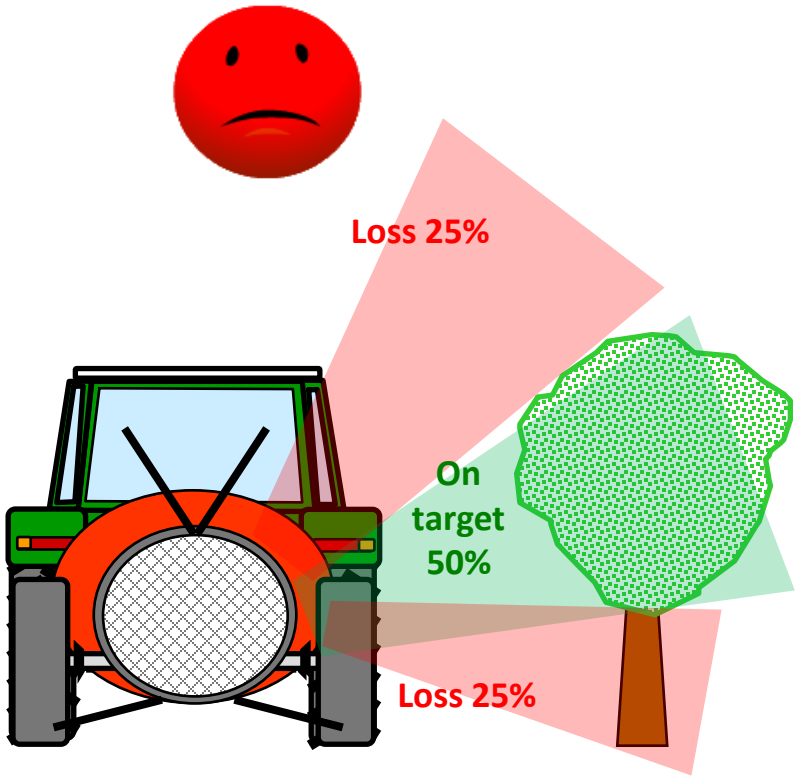
Adjustment of Pesticide Application Equipment

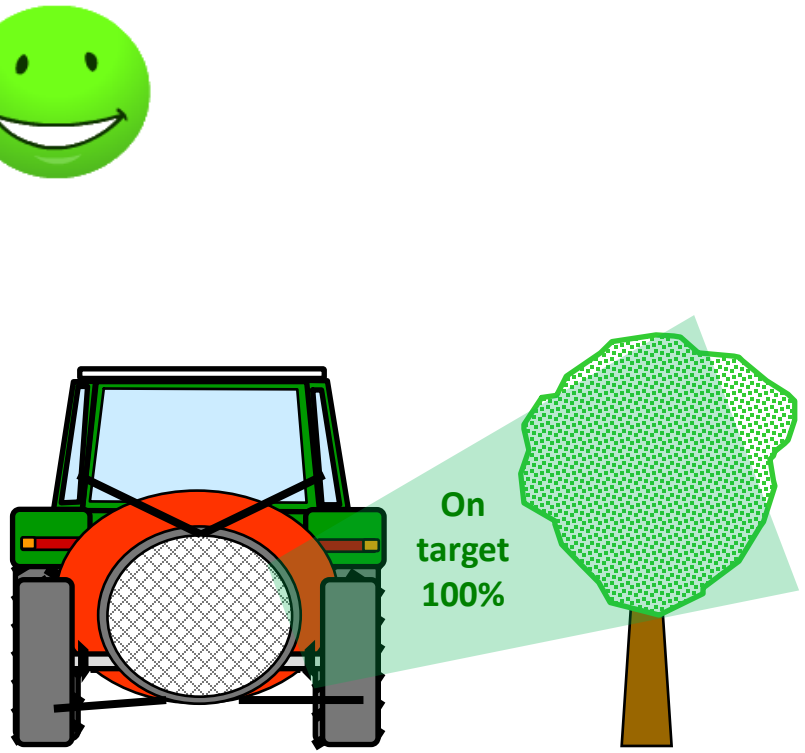
The effect of a not adequate adjustment

BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

Result of a good adjustment of the sprayer: the direction of the air produced by the fan

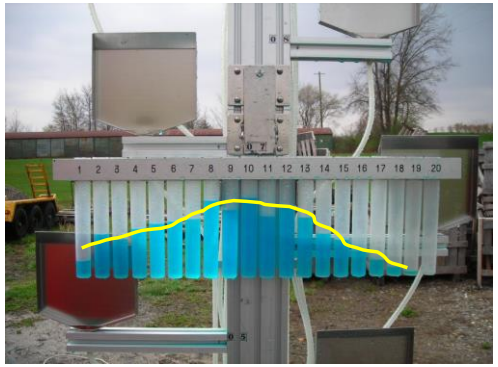


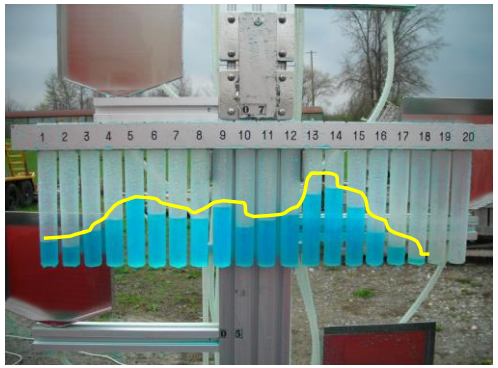


BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

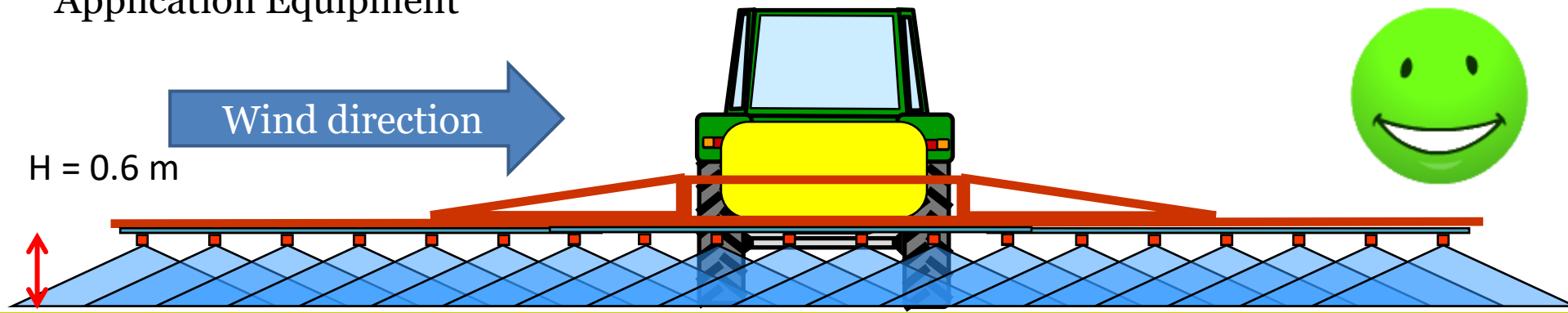
Use of a specific test bench to verify the correct adjustment of an air-assisted sprayer

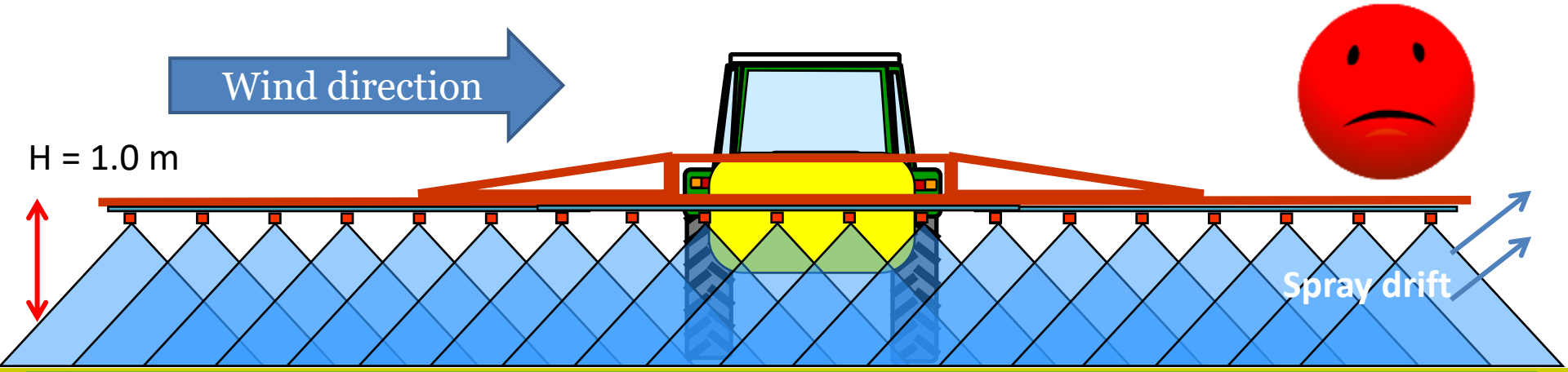




BETTER USE OF SPRAYER MACHINES

Adjustment of Pesticide Application Equipment

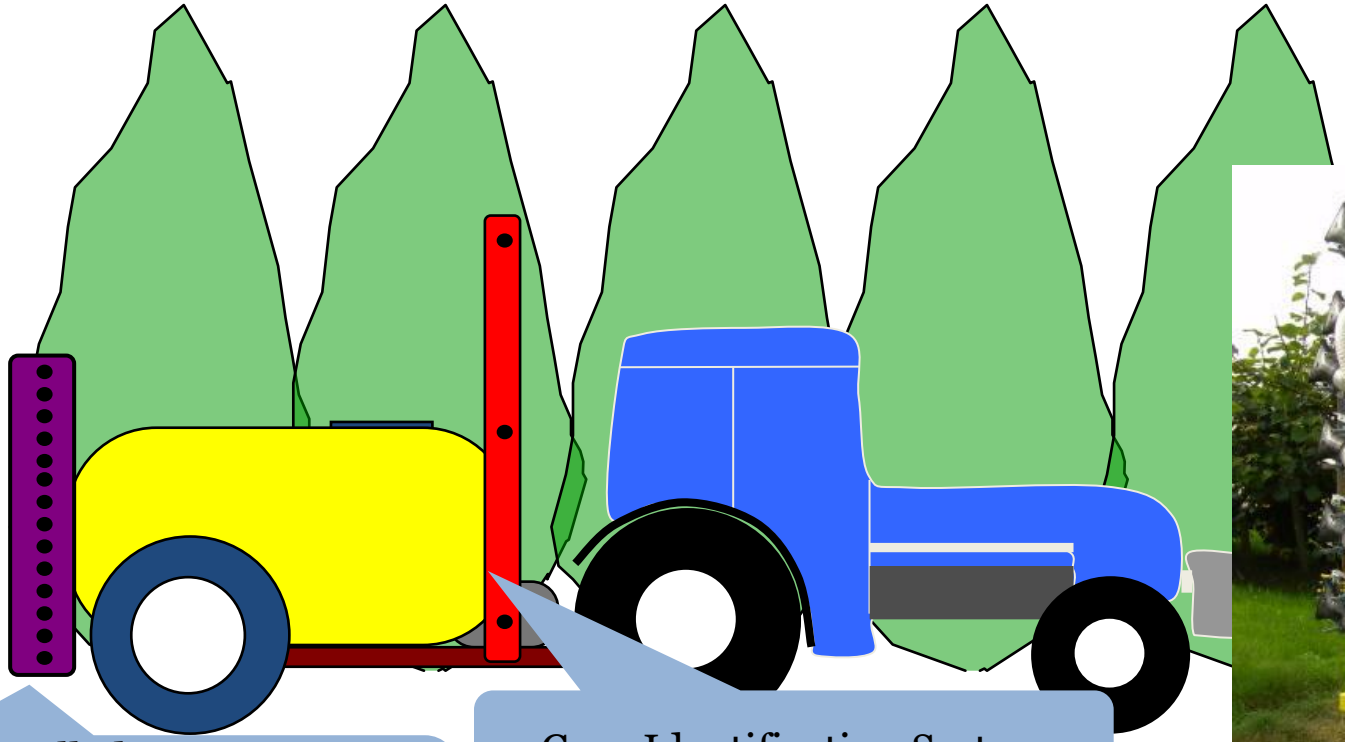




Effect of the wind on the distribution: the importance of the distance of the boom from the crop or the ground

INNOVATION

Sprayer with vegetation sensors



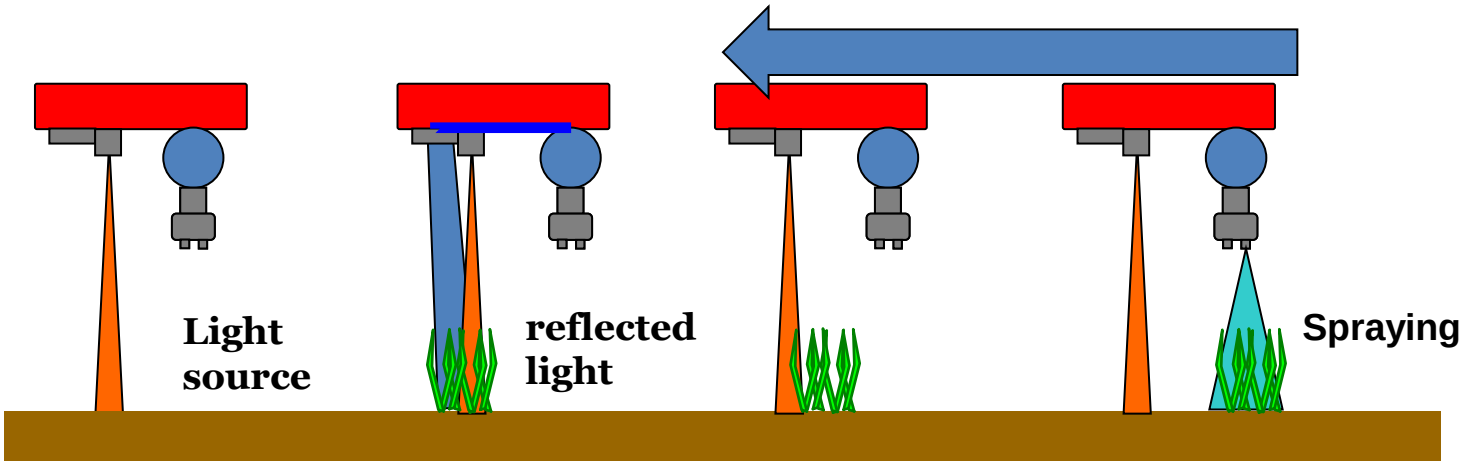
Controlled parameters:
- number of open nozzles and operating pressure
- air flow

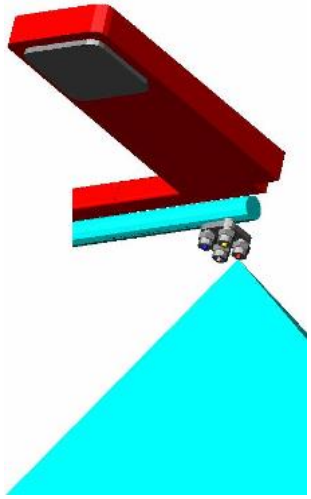
Crop Identification System

Dose reduction: 10 ÷ 40%

INNOVATION

Weed control - Targeted spraying with optical sensors





INNOVATION

Weed control - Targeted spraying with optical sensors

PPP dose reduction up to 40%

INNOVATION

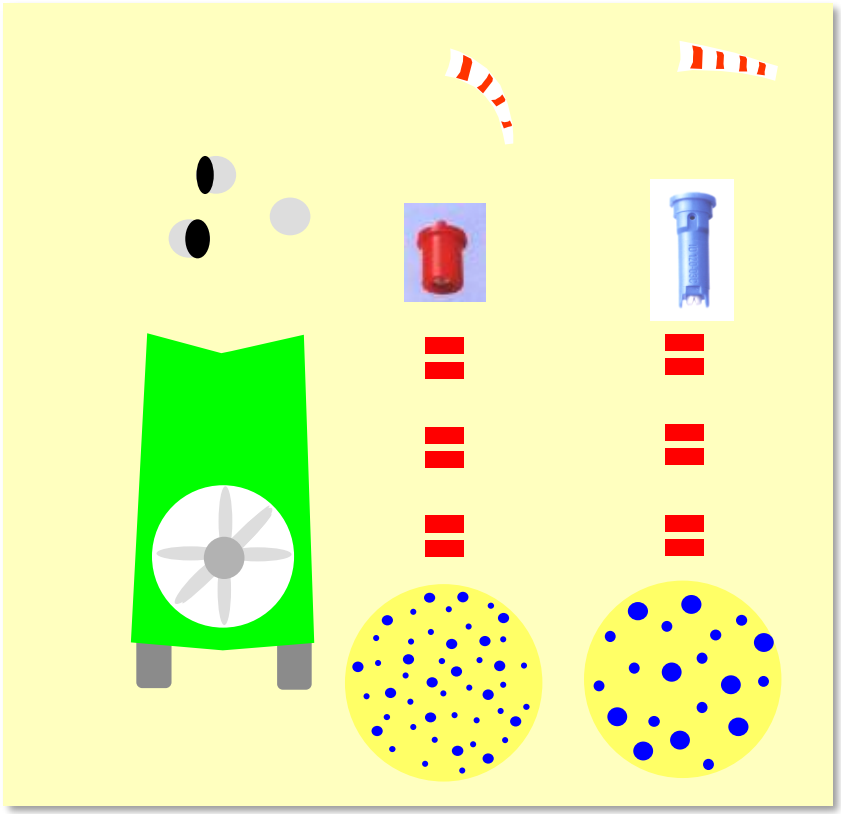
Sprayers with other sensors

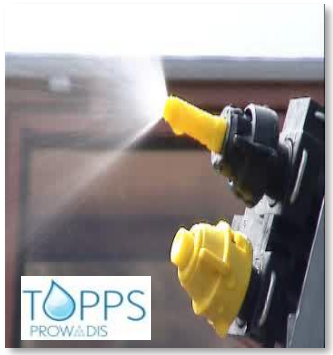
Automatic distribution interruption at the end of the field with a multi row sprayer

INNOVATION

VarioWindSelect system developed at INSAD (PL)

Automatic activation of the type of nozzle according to the wind speed





INNOVATION

Optima Smart Sprayer

ultrasonic sensors

multispectral camera

RTK GPS

OPTIMA

Redefining Pest Management - a Holistic Approach

OPTimised Integrated Pest MAnagement

per una diagnosi precisa ed un contenimento efficace delle malattie delle colture arboree e degli ortaggi di pieno campo

INNOVATION

Self-propelled autonomous sprayers

INNOVATION

A new technology: the UV germicide radiation for plant protection

Why this new approach:

- **replacing chemistry-based control methods of plant diseases with physics-based control methods**;
- **retrofit interventions on existing machines**;
- new information management solutions able to favour, forms of automated monitoring, with assisted remote management of all processes and information storage.

Thank you for your attention!!

ENAMA.it

Thanks also to:

Crop Protection Technology
DiSAFA
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