Risk Mitigation Measures (RMM)

Background

- Environmental risk mitigation measures are a key component in defining the conditions of use of pesticides in crop protection;
- The recommended measures are specific of the **type of risk** they intend to mitigate (drift, runoff…);

Regulatory framework for setting Risk Mitigation Measures under Reg (EC) No 1107/2009

According to Article 4(3) of the Regulation, a PPP shall only be authorized if, among other requirements, it is expected that, consequent to realistic conditions of use, there will be:

- no immediate or delayed harmful effects on human health or animal health or on groundwater;
- no unacceptable effects on plants
- no unacceptable effect on the environment, under particular consideration of its fate and distribution as well as its impact on non-target species, biodiversity and the ecosystem.

RMM for Surface Water

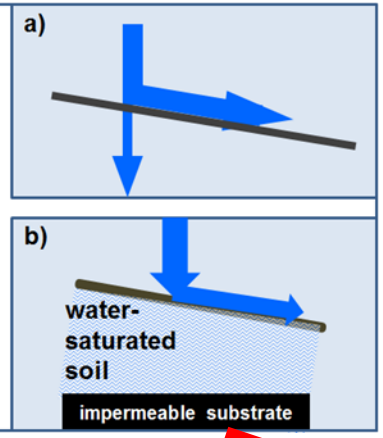
- Surface water bodies (e.g. rivers, streams, lakes, ponds) need to be protected from unacceptable impacts of crop protection products.
- Three major potential pollution pathways exist: **spray drift, surface runoff, and (subsurface/artificial) drainage.**
- Consequently, suitable and accepted mitigation measures for each of the three pollution pathways may be needed in EU Member States in order to achieve successful risk mitigation to protect surface waters.

Surface Runoff

- **Runoff of a plant protection product is its transfer into the water (run-off) from treated field into a water body.**
- **It occurs when the water intake intensity (rain or irrigation) is greater than the infiltration rate into the soil.**
- **two types of runoff**

Surface runoff

- **a) Infiltration restriction:** volume of rain > than soil infiltration
- **b) Saturation excess (mainly winter)** water holding capacity is full



is due to a low permeability at the soil surface (infiltration restriction), due to its natural properties (heavy soil texture, capping) or soil compaction.

is due to water flow restrictions below the soil surface, because the subsoil is less permeable than the topsoil.

Surface Runoff

The main factors that can affect the transfer of plant protection products through runoff are:

- The characteristics of the products used, in particular the persistence and solubility in water;
- The distance from the treated surface and water bodies;
- The presence of organic matter and soil cover;
- The intensity and distribution of rainfall;
- The slope and shape of the field.
- Soil characteristics.

Step 1: Identification of basic runoff risk mitigation need (in % of base case)

- The risk assessment outcome (EU FOCUS) identifies the necessary runoff reduction effectiveness (e.g. a required reduction of the PEC from 10 µg/L to 1 µg/L equals a mitigation need of 90%), which needs to be achieved in practice by implementing appropriate risk mitigation measures.

Step 2: Define appropriate risk mitigation measures (with defined effectiveness) as toolbox

- A … al EU Me… is the es… eated fie… ediment pri…
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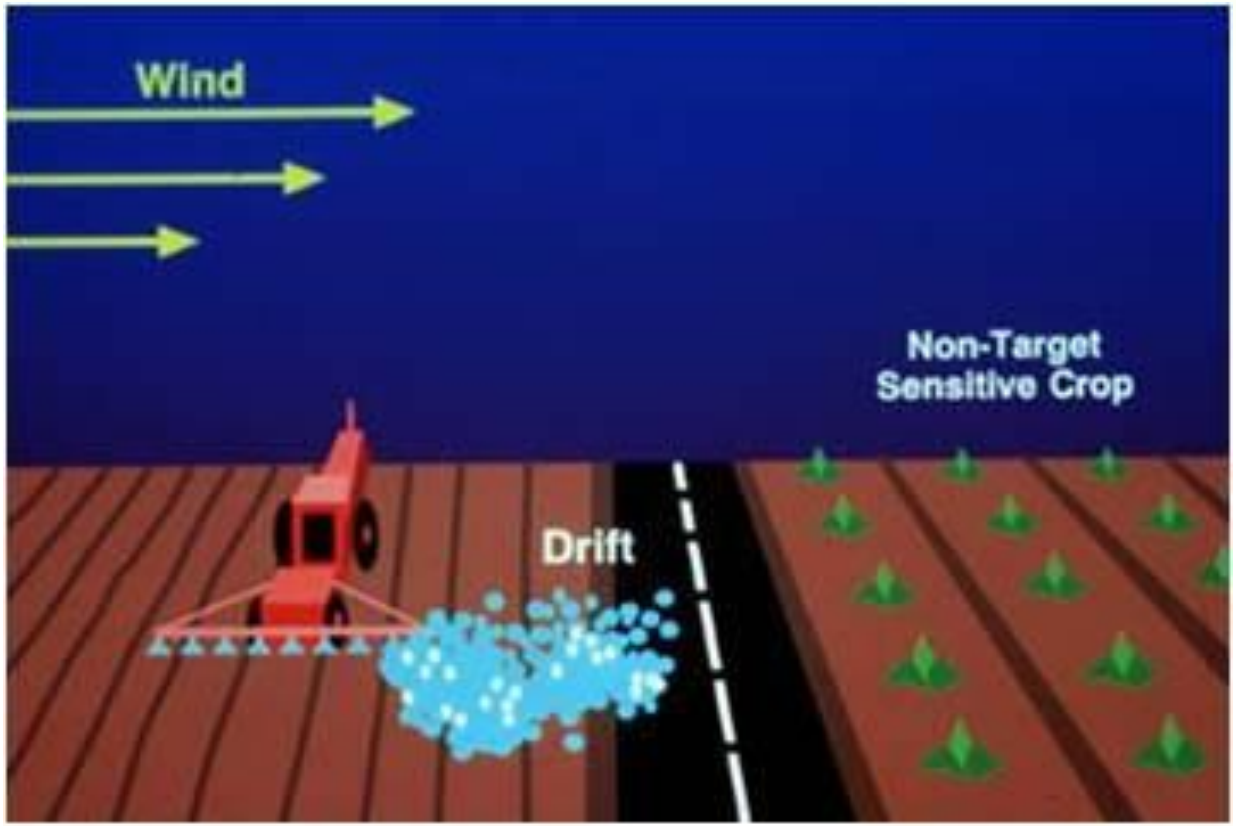
Table 7. 90th percentile worst-case values for reduction efficiencies for different widths of vegetated buffers and different phases of surface runoff

Buffer width (m)	10-12	18-20
Reduction in volume of runoff water (%)	60	80
Reduction in mass of pesticide transported in aqueous phase (%)	60	80
n (for aqueous phase)	*36*	*30*
Reduction in mass of eroded sediment (%)	85	95
Reduction in mass of pesticide transported in sediment phase (%)	85	95
n (for sediment phase)	*19*	*11*

- **Reduction of dose of application**;
- **Restriction in the application window**, normally to avoid application during or immediately before periods when the risk of runoff is greatest;
- **Furrow** between field and water body.

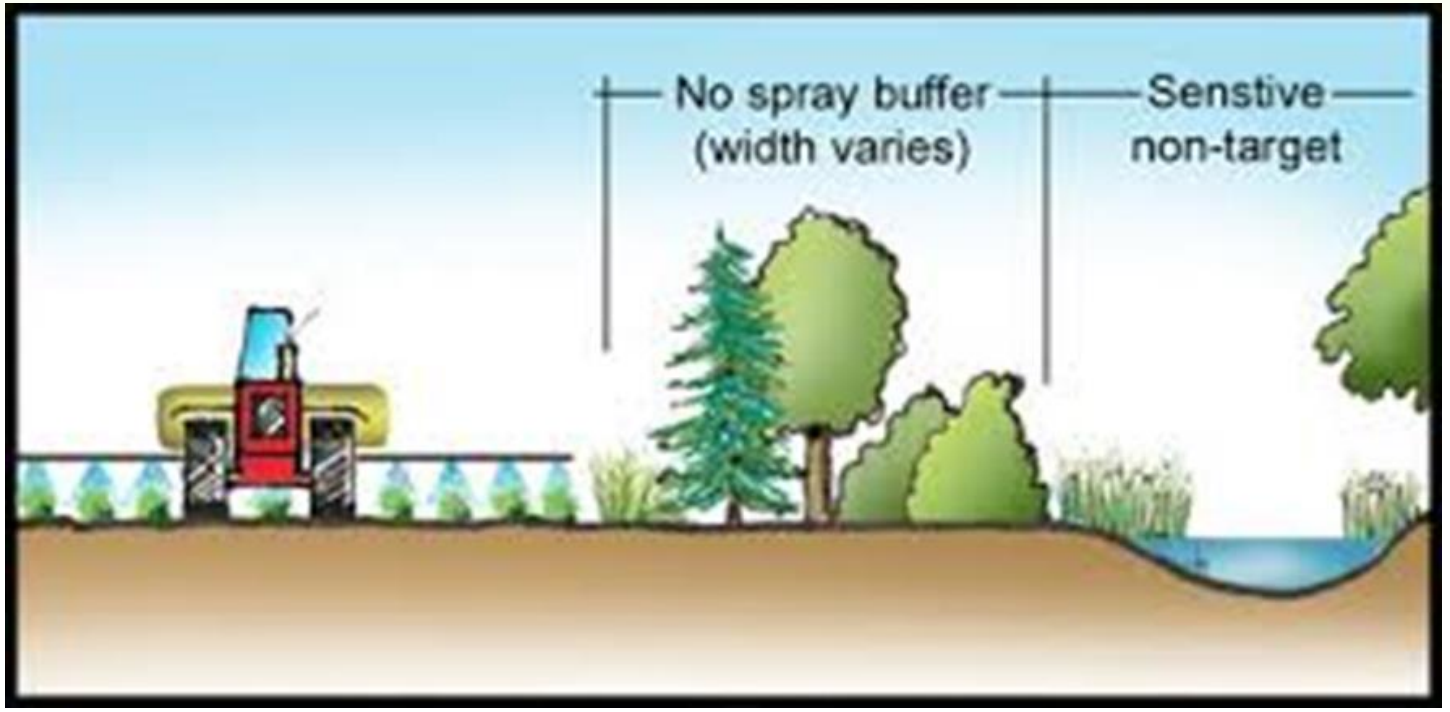
Drift

- **Drift is the transport outside of the treated field of a part of applied substance, moved as particles suspended in the moving air mass.**



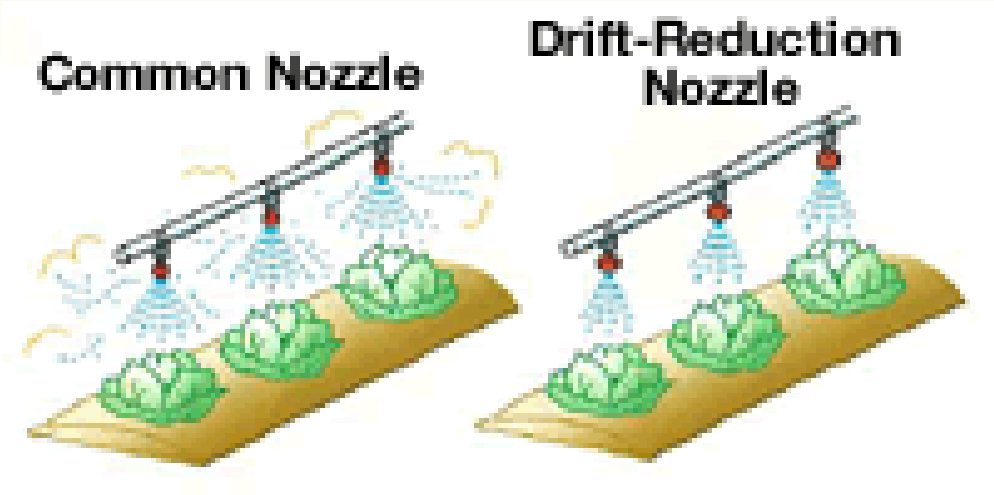
Drift reduction

- No spray buffer zones (5m, 10m, 15m …)



Drift reduction

- Drift reduction techonology (Anti-drift nozzles)



- Application on the boundary from outside to inside

Drainage reduction

- A reduction in the application rate;
- A restriction in the application window, normally to avoid application just before the onset of winter drainage.