



ACTION FACT SHEET for ADVISORS

Protection of water bodies

Goal

Protecting water bodies from agricultural runoff

Target group

All crops

Description of the measure

Many of human activities affecting water ecosystems are directly related to agricultural management. Pollutants can enter surface water bodies through different routes. Most important are the losses from punctual sources (originating from the farmyard) and diffuse sources (originating from treated fields, e.g. surface runoff/soil erosion, drainage and spray drift)

Diffuse pollution account for 40-90% of total pollution (pollution coming from many small and widespread sources such as fertilizer run-off from agricultural land). These pollutants include sediment, nutrients, pathogens, pesticides, metals, and salts. Impacts from agricultural activities on surface water and ground water can be minimized by using management practices that are adapted to local conditions.

Sedimentation: Soil that is washed off agricultural plots. Rain water carries soil particles (sediment) and dumps them into nearby lakes or streams. In addition, other pollutants like fertilizers, pesticides, and heavy metals are often attached to the soil particles and wash into the water bodies, causing algal blooms and depleted oxygen, which is lethal to most aquatic life. Farmers and ranchers can reduce erosion and sedimentation by 20 to 90 %t by applying management practices that control the volume and flow rate of runoff water, keep the soil in place, and reduce soil transport which includes measures that avoid bare soil such as green covers.

Nutrients. Farmers apply nutrients such as phosphorus, nitrogen, and potassium in the form of chemical fertilizers, manure, and sludge. They may also grow legumes and leave crop residues to enhance soil fertility. When these sources exceed plant needs, or are applied just before it rains, nutrients can wash into aquatic ecosystems. To combat nutrient losses, farmers can implement nutrient management plans that help maintain high yields and save money on fertilizers.

Animal Feeding Operations. By confining animals in small areas or lots, farmers and ranchers can efficiently feed and maintain livestock. But these confined areas become major sources of animal waste. Farmers and ranchers can limit discharges by storing and managing facility wastewater and runoff with appropriate waste management systems.

Livestock Grazing. To reduce the impacts of grazing on water quality, farmers and ranchers can adjust grazing intensity, keep livestock out of sensitive areas, provide alternative sources of water and shade, and promote revegetation of ranges, pastures, and riparian zones.

	<p>Pesticides. Insecticides, herbicides, and fungicides are used to kill agricultural pests. These chemicals can enter and contaminate water through direct application, runoff, and atmospheric deposition.</p> <p>To reduce contamination from pesticides, farmers should use Integrated Pest Management (IPM) techniques based on the specific soils, climate, pest history, and crop conditions for a particular field. IPM encourages natural barriers and limits pesticide use and manages necessary applications to minimize pesticide movement from the field.</p> <p>So-called 'precision farming', where farmers vary their use of fertilizer on a field-by-field basis to account for variations in the land has great potential in this respect, as do organic practices that combine crop rotation and non-chemical crop protection. Apart from concrete measures on management practices, sustainable agriculture needs scrutiny of the food system through complementary measures to promote environmentally friendly consumption and to reduce waste along the food-chain.</p>
Suitable sites	<ul style="list-style-type: none"> ▪ Avoid bare soil in all the field ▪ Riparian strips along water bodies. (See AFS 24)
How a good implementation looks like	<ul style="list-style-type: none"> ▪ Avoid bare soil ▪ Integrated Pest Management applied ▪ Nutrient management plans implemented ▪ Riparian strips along water bodies
Effects on bio-diversity (ecosystems, species, soil bio-diversity)	 <p>Too much sediment can cloud the water, reducing the amount of sunlight that reaches aquatic plants. It can also clog the gills of fish or smother fish larvae.</p>
	 <p>Pollutants like fertilizers, pesticides, and heavy metals are often attached to the soil particles of sediments and wash into the water bodies, causing algal blooms and depleted oxygen, which is deadly to most aquatic life.</p> <p>Pesticides can poison fish and wildlife, contaminate food sources, and destroy the habitat that animals use for protective cover.</p>
	 <p>Runoff from poorly managed livestock facilities can carry pathogens such as bacteria and viruses, nutrients, and oxygen-demanding organics and solids that contaminate shell-fishing areas and cause other water quality problems. Ground water can also be contaminated by waste seepage.</p>
	 <p>Overgrazing exposes soils, increases erosion, encourages invasion by undesirable plants, destroys fish habitat, and may destroy streambanks and floodplain vegetation necessary for habitat and water quality filtration.</p>

Other positive effects/benefit for the farmer	Many practices designed to reduce pollution also increase productivity and save farmers money in the long term.
Indicator/key data	<ul style="list-style-type: none"> ▪ No bare soil / ha ▪ Riparian strips along water bodies (at least a width of 10 m) ▪ Integrated nutrient and pest management applied / ha
Risk and further recommendations	Nutrients can wash into aquatic ecosystems where they can cause algae blooms, which can ruin swimming and boating opportunities, create foul taste and odor in drinking water, High concentrations of nitrate in drinking water can cause methemoglobinemia, a potentially fatal disease in infants, also known as blue baby syndrome.
Timeframe (When to start a measure and anticipated time for implementation)	All over the year.
Additional special resources/equipment/skills needed	The EU's Water Framework Directive (WFD) has contributed to this achievement through an encouragement of changes to agricultural practices that can improve both water quantity and quality in Europe, but further development of the CAP and national water pricing structures are still needed to ensure they also support the WFD objectives.
Reference	<ul style="list-style-type: none"> ▪ Protecting Water Quality from Agricultural Runoff. EPA ▪ European waters – current status and future challenges. EEA Report.

Further information: [Knowledge Pool](#)

This Action Fact Sheet belongs to the training package for advisors of standard organisations and companies and was developed within the project LIFE Food & Biodiversity (Biodiversity in Standards and Labels of for the Food Industry). The main objective of the project is to improve the biodiversity performance of standards and sourcing requirements in the food industry by helping standard organisations to integrate efficient biodiversity criteria into their schemes and motivating food processing companies and retailers to include comprehensive biodiversity criteria into their sourcing guidelines.

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