

Business Brief: AQUACROSS Recommendations for agriculture in relation to aquatic ecosystems

WHY IS AQUATIC BIODIVERSITY IMPORTANT FOR FARMING?

Aquatic biodiversity is the range of wildlife, plants and other living organisms in seas, coasts, lakes, rivers and wetlands. Agricultural activities affect aquatic biodiversity through water pollution (especially from fertilisers), water withdrawals for irrigation and physical damage to habitats. Higher nutrient concentrations in rivers, lakes and wetlands contribute to development of algal blooms and establishment of invasive alien species, and are a key reason that these aquatic ecosystems fail to meet European and local environmental goals.

However, taking action to reduce these agricultural impacts on aquatic ecosystems has several benefits for farmers. Efficient use of fertilisers and pesticides not only reduces the amounts that reach water bodies but also reduces input costs. Similarly, efficient irrigation reduces water costs and maintains sufficient water in rivers and lakes for biodiversity and for other users.

Maintaining riparian vegetated buffer strips and wetlands reduces the extent to which agricultural inputs (fertilisers, pesticides) reach watercourses, protecting biodiversity and helping to maintain good quality source water for irrigation and other uses. Wetlands and other floodplain ecosystems also buffer droughts, contributing to more consistent supplies of irrigation water. Many other measures to reduce water pollution from agriculture also help to improve soil quality and provide other benefits including increased carbon sequestration.

Reducing agricultural impacts on aquatic biodiversity ensures compliance with EU environmental legislation, including the Water Framework Directive, the Birds and Habitats Directives, the Nitrates Directive and cross-compliance under the Common Agricultural Policy. Improved production practices accredited through voluntary programmes and certification schemes can reduce reputational risks and increase access to new 'green' markets.

AQUACROSS identified ecosystem-based management ([see Introducing Ecosystem-based Management \(EBM\)](#)) as a cost-effective way of protecting aquatic biodiversity while maintaining sustainable economic activity. Ecosystem-based management involves any management or policy options intended to restore, enhance and/or protect the resilience of the ecosystem.

AQUACROSS RECOMMENDATIONS FOR FARMERS

- **Agricultural producers should understand both how their business depends on functioning aquatic ecosystems and how their operations impact such ecosystems.**

The AQUACROSS project shows that agriculture receives numerous benefits from healthy aquatic ecosystems, including disease prevention, clean water for livestock and more. Agriculture also places pressures on healthy ecosystems. Understanding these is particularly useful for agricultural companies interested in reporting on sustainability impacts and practices for corporate social responsibility (CSR) purposes or to obtain sustainability certification. For example, the Sustainably Grown standard requires certified food producers to effects of their agricultural production on natural ecosystem flora and fauna.

- **Reducing agricultural impacts on aquatic species and habitats is necessary to meet regulatory requirements and to comply with certification schemes.**

By understanding their dependencies and impacts on aquatic biodiversity, farmers can target investment towards management practices that are effective in protecting aquatic biodiversity and that benefit agricultural operations. For example, in the AQUACROSS case study area of Lake Ringsjön, Sweden (see [Case Study: Lake Ringsjön, Sweden](#)), changes in use of agricultural land and more efficient nutrient use (implying lower input costs) have reduced nutrient leaching from agricultural land by 12% for nitrogen and 7% for phosphorus.

- **Best management practices that meet targets for aquatic biodiversity at the lowest cost to the farmer should be identified using cost-effectiveness analysis.**

This analysis also identifies measures that reduce costs for the farmer. For example, in the AQUACROSS case study in Lough Erne, Ireland (see [Case Study: Lough Erne, Ireland](#)), diffuse phosphorus inputs to the lake can be considerably reduced by sequentially implementing three best management practices that involve cost savings for the farmer: **1)** integrate fertiliser and manure nutrient supply, **2)** reduce fertiliser application rates, and **3)** refrain from applying phosphorus fertilisers to high phosphorus-index soils.

- **Other benefits of measures to reduce agricultural impact on aquatic biodiversity should be identified.**

Reducing agricultural pressures can have broad benefits for others, such as for recreation or carbon storage. Identifying these benefits mean alternative sources of funding can be used to implement the measures.

- **Farmers should collaborate with other farmers and sectors (e.g. forestry, utilities, industry) in their river catchment.**

Working with other farmers allows small-scale projects, (e.g. installing a buffer strip) to be aggregated, which opens up financing opportunities and ensures that they deliver the desired benefits. Collaborating with other farmers and sectors also helps to reduce risks, such as poor quality or insufficient irrigation water caused by upstream activities, and ensures agricultural interests are taking into account in decision making, such as water allocations. For example, in the AQUACROSS case study in Lake Ringsjön, Sweden (see [Case Study: Lake Ringsjön, Sweden](#)), nutrient inputs from agriculture have decreased considerably, but continue from other sources. Engaging with other sectors to reduce their inputs would improve water quality in the lake and its attractiveness to tourism, thereby supporting the local economy and potentially offering opportunities for income diversification.

- **Farmers can provide knowledge to support protection of aquatic biodiversity.**

Some relationships between human activities, aquatic ecosystems, and the benefits they provide to human society can only be understood with agricultural knowledge from the private sector. Providing this knowledge supports the identification of effective ecosystem management measures.

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Further information

This is one of 38 short briefs summarising the key results of the AQUACROSS Project. For more detailed information on the topics covered in this brief, see the following:

- [AQUACROSS Business Brief: The business benefits of engaging with the Sustainable Development Goals.](#)



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