ASSAP improving water quality

The recently published Agricultural Sustainability Support and Advisory Programme (ASSAP) Interim Report #1 identifies collaboration with farmers and industry, and provision of farm-specific plans, as key to improving water quality in Ireland.

The EU Water Framework Directive (WFD) requires Ireland to have all waters at "good status" by 2027, with the recently published Environmental Protection Agency (EPA) water quality report for 2013-2018 showing that Ireland has 53 % of our surface waters at the required EU status. There has been a declining trend in water quality during that period.

The WFD also requires Ireland to prepare and implement a national River Basin Management Plan (RBMP). The current RBMP, published in 2018, adopted a more collaborative and engagement-based approach with stakeholders. It also implemented a more focused approach to improving water quality by identifying 190 Priority Areas for Action (PAAs), with the emphasis on establishing an evidence-based approach to pressure identification provided by Local Authorities Waters Programme (LAWPRO) scientists. Farmer-focused advice and farm-specific plans designed to help implement the 'right measure in the right place' are provided by Teagasc (20 advisors) and the dairy processing co-ops (10 advisors).

ASSAP industry-wide collaboration

The principle of collaboration in the RBMP is fundamental to the establishment and implementation of the Agricultural Sustainability Support and Advisory Programme (ASSAP). Funding is provided by the Department of Housing, Planning and Local Government, the Department of Agriculture, Food and the Marine (DAFM) and the dairy processing co-ops. The LAWPRO provides the catchment science teams, and Teagasc and the dairy processing co-ops provide the advisory services for the programme.

However, a key element to ensuring farmer participation with the programme involved engagement with the farming organisations and their participation in the ASSAP co-ordination structures, resulting in strong support for the ASSAP at national and local level. This industry-wide collaboration is crucial for the ASSAP to aid in achieving the collective goal of "good status" for Ireland's waters, and will help to strengthen agriculture by reinforcing our green image as food producers and underpinning the future development of sustainable Irish agriculture.

Farm assessments – issues identified, mitigation actions and farm plans

The ASSAP provides farmers in PAAs with a free and confidential advisory service. The purpose of the farm visit is to identify any potential practices or behaviours that may be having an impact on water quality. The advisors assess the farms under three categories: farmyard management; nutrient management; and, land management. Farmer engagement with the programme has been very positive, with 96 % of farmers availing of an advisor visit.

At the end of the farm visit the advisor and farmer will agree on how best to focus improvements or mitigation actions, if any are required, on the farm. The practical advice will be designed to put the right measure in the right place and prevent nutrients, sediment and pesticides from entering water. A written farm-specific plan detailing advice and actions will be provided to the farmer and a timeframe for completion agreed. Advisors will revisit farms where necessary to aid with the implementation of mitigation actions.

To date, diffuse phosphorus (P; 32 %), diffuse nitrogen (N; 16 %) and sediment (27 %) losses account for 75 % of the pressures

Table 1: Recommended mitigation actions for the five most frequent issues arising on farms.

1: Phosphorus loss through overland flow	%	2: Preparation and implementation of nutrient management plan	%
Management of critical source areas (CSAs)	35	Application of nutrients at correct rate	51
Riparian buffers	28	Informing and educating farmers	39
In-field grass buffers	15	Avoiding application at high-risk times and locations	6
Other	22	Other	4
3: Drinking points and stream fencing	**%**	**4: Buffers**	**%**
Preventing livestock access to waters	75	Adhering to buffer zones	76
Informing and educating farmers	20	Riparian buffers	8
Other	5	Avoiding application at high-risk times and locations	6
		Other	10
5: Organic manure timing, location and method	**%**		
Avoiding application at high-risk times and locations	67		
Informing and educating farmers	16		
Adopting latest application techniques	9		
Other	8		

identified in PAAs by the LAWPRO as affecting watercourses/streams, with point sources, toxicity/pesticides and ammonium making up the remainder.

The issues identified at farm level as contributing to the nutrient or sediment losses to waters correspond with the pressures identified, with diffuse P and sediment losses and nutrient management practices being identified by advisors as potential risks to water quality from farming activity.

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Diffuse P and sediment losses occur most frequently on 'heavy' soils that get saturated easily; this leads to water flowing overland, bringing with it plant-available P and sediment. This can get washed into drains and streams, especially where these are not protected by riparian/buffer margins, which help to reduce these diffuse losses. Cattle access to streams also contributes to the levels of P and sediment in streams. Mitigation actions for reducing P and sediment losses are detailed in **Table 1**.

Diffuse N losses tend to occur on sandy, free-draining soils, with N not taken up by the growing crop potentially being leached into groundwater in times of heavy rainfall. Using a nutrient management plan (NMP) for N (and P) applications, and applying the correct nutrient rates during appropriate weather conditions and times of the year in suitable locations on the farm, can improve nutrient use efficiency and minimise losses to waters. Mitigation actions for reducing N losses are also detailed in **Table 1**.

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