

EA - QUALITY WATER QUALITY BOX 11



## Agriculture and the Water Framework Directive

The Water Framework Directive (WFD) will have significant implications for the agricultural sector in England and Wales. This Brief gives the Environment Agency's current understanding and position with regard to some of the key issues.

### Key issues

- Diffuse pollution from agricultural sources.
- Agricultural water consumption.
- The economics of changes in agricultural practice and the European Union's Common Agricultural Policy (CAP) reforms.
- 'Programmes of measures' and regulatory, voluntary and incentive schemes to meet the objectives of the WFD.

### Background

Achieving the objectives of the WFD is as much about changes to land management practices as addressing water management issues. About 75 per cent of the land area in the UK is used for agriculture (June 2000), so the implications of the WFD for farming are significant. Because of the current economic backdrop and pressures on farmers, practical approaches and solutions to meeting the WFD requirements have to be found in partnership with the industry. Changes in land use practice take time to deliver environmental benefits, so action on improving farm management through regulatory, voluntary and incentive schemes has to begin now in order to meet the objectives of the WFD by 2015.

### Diffuse pollution

Diffuse pollution from agriculture arises from a range of land uses and land management practices. Widespread use of organic and inorganic fertilisers can lead to pollution by nutrients that affects the ecology of surface waters by encouraging excessive growth of aquatic plants and algae (eutrophication). These pollutants influence the chemical and biological characteristics of surface and coastal waters. Soil sediment, pesticides, microbes and organic wastes from farming also affect our surface and groundwaters.

**Nitrates** can be derived from direct deposition of livestock as well as from manure and slurries, fertilisers and various industrial wastes spread onto land. Nitrate concentrations in groundwater have been increasing steadily since the intensification of agriculture in the 1950s. Until recently, water companies have been able to cope with this increase by blending waters with varying nitrate concentrations.

Unfortunately, most of the cheap blending options have now been used; therefore in the future water companies will have to install expensive, sophisticated nitrate removal plants. Nitrate concentrations will need to be reduced in a significant number of catchments to meet the requirements of both the WFD and the Nitrates Directive. Action programmes have already been established in Nitrate Vulnerable Zones and these will be key in reducing concentrations in these areas. Reducing nitrate concentrations is one of the most significant challenges facing the WFD and crop and soil management will have an important role to play in the control of nitrate loss.

**Phosphates** are associated with agricultural diffuse pollution as well as point source discharges such as sewage treatment works. Phosphate is widely recognised as a cause of eutrophication in surface waters. It exists naturally in both soil and manures. When manure or phosphate fertilisers are applied to excess, phosphate levels build up in the soil. Subsequently, surface runoff of soil or applied organic matter after heavy rainfall results in phosphate loss and pollution. Both the WFD and other European legislation (e.g. the Habitats Directive) require phosphate pollution to be addressed.

**Pesticides** present a significant problem in terms of groundwater and surface water chemical quality. The amount of a single pesticide tolerated in drinking water is typically 0.1 parts per billion. Certain pesticides regularly exceed this limit. In surface water the problem is often short-term, with high concentrations coinciding with rainfall events. In groundwater, pesticides have a much longer residence time and once an aquifer becomes contaminated it is exceedingly difficult to clean up. Each year water companies have to spend millions of pounds removing pesticides from groundwater and surface water in order to meet drinking water standards.

**Soil** is a major contributor to diffuse pollution. Soil particles can cause significant damage to the gills of fish and can smother spawning areas. Build-up of sediment may contribute to localised flooding. Soil particles can also transport pesticides and phosphates into water and once there, these pesticides and phosphates are released every time the sediment is disturbed. A combination of soil compaction, erosion, slope and rainfall results in the loss of soil particles into water.

**Microbial pollution** from runoff or from direct deposition can cause problems at designated bathing water sites.

### *Water consumption*

In order to meet the requirements of the WFD, water bodies have to achieve quantitative status objectives. Water resources management is inextricably linked to agriculture as farmers have essential requirements ranging from stock watering, through dairy use and vegetable washing to irrigation. Agriculture is one of the largest users of water. Irrigation is needed at times of low rainfall when abstraction can exacerbate already low river flows. Therefore, careful management of water consumption within agriculture will be necessary to satisfy the requirements of the WFD, with attention most closely focused on high use activities such as spray irrigation.

### *Economics and the CAP reforms*

Following a relatively buoyant period in the 1980s and early 1990s, the agricultural sector in England and Wales has faced financial difficulties in the last few years. Despite a recent upturn, profit margins are small. In parallel, the current system of subsidies under the European Union's Common Agricultural Policy (CAP) has recently undergone further reform, and there will be a move away from production-based subsidies to a 'decoupled' single farm payment.

The new, simpler system will allow farmers the opportunity to reconsider their farming regimes and focus more clearly on meeting consumer and market demands. It is a step towards the realisation of the



Government's vision for sustainable agriculture. In principle, the new arrangements should be more flexible for farmers and better for the environment, reducing the need for intensive production.

The CAP reform package also includes further provisions that will help promote sustainable agricultural practices. Receipt of the Single Farm Payment from 2005 will be dependent on 'cross-compliance', that is farmers' compliance with the Nitrates, Groundwater and Sewage Sludge Directives, as well as a requirement to maintain land in 'good agricultural and environmental condition' (GAEC). The latter will help to increase understanding of the benefits of soil management and the importance of protecting resources.

### *'Programmes of measures'*

The agricultural sector faces a number of challenges in order to address pressures and impacts which might contribute to water bodies failing to meet their objectives under the WFD. If a water body is considered to be at risk of not achieving the ecological and chemical status objectives set by the WFD by 2015 then a 'programme of measures' (PoM) must be established to bring that water body up to the required status. The PoM forms part of a River Basin Management Plan.

The PoMs for agricultural management will involve regulatory, voluntary and incentive schemes. There are a number of schemes and tools available at present that can be used and developed to meet the needs of the WFD. There will also be a requirement to create new measures to address problems where no control currently exists.

The mix of agri-environment options and the need for cross-compliance with relevant directives will be central to ensuring water bodies meet the objectives of the WFD by 2015. Voluntary measures will be important to encourage best practice in the farming industry and regulation will reinforce voluntary measures that may be needed to reduce diffuse pollution.

### *Regulatory schemes*

Of the current regulatory tools available to control farming activities, the most significant in terms of meeting the requirements of the WFD are Nitrate Vulnerable Zones, and the Groundwater, Sewage Sludge, and Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations. These can be enforced to a greater or lesser extent through a risk-based regulatory approach concentrating on those areas where at a catchment level there is the largest risk of not meeting the objectives of the WFD.

Future regulatory tools will include the changes brought about by the Water Act 2003, which has implications for agriculture in terms of deregulation, irrigation, time limiting of abstraction licences, internal drainage board augmentation transfers and impounding. Use of trickle irrigation rather than high use spray irrigation will also be encouraged where appropriate.

There is also the option of creating new regulations under the remit of the WFD to address activities where controls do not currently exist.

### *Voluntary schemes*

The Codes of Good Agricultural Practice are mainly used to increase understanding of and encourage 'best practice'. Making the Codes of Practice mandatory through regulations is one option for securing environmental improvements, but they would need to be extensively revised if they are to be used in this way.

The real opportunities for securing environmental improvements associated with agriculture are voluntary schemes. These can provide direct benefits for farmers and the environment alike. An example



is the 'Voluntary Initiative' led by the Crop Protection Association. This Initiative is a five-year campaign to educate farmers and spray operators on the sources, pathways, receptors and impacts of chemicals on the environment, to reduce the environmental impact of pesticide use.

Another way of raising awareness of environmental impacts is through a 'crop protection management plan' that examines every aspect of the pesticide application process. The 'crop protection management plan' will eventually become one module in Environmental Management Systems for Farms (EMSF). EMSF is being developed by the Agency, NFU, NFU Wales, Farmers' Union of Wales and others for the benefit of the agricultural industry, the environment and the Agency as regulators. EMSF is a tool that will educate and inform farmers, promote a better understanding of their environmental performance and promote sustainable agricultural practices of benefit to both the terrestrial and water environments. It is hoped that the EMSF will allow farmers to re-evaluate their farming practices and reap both the economic and environmental benefits of sustainable agriculture. EMSF will be part of Defra's "Whole Farm Appraisal".

Other voluntary schemes, projects and initiatives such as the Linking Environment and Farming (LEAF) scheme and the Agency's Landcare project will provide the agricultural sector with opportunities to improve environmental performance through integrated farm management. This will provide efficiency savings for farmers and improved marketability of produce as well as contributing to meeting the objectives of the WFD.

Specific tools will also be developed to help with various aspects of farm management. An example being developed by Defra and the Agency is 'PLANET', a nutrient management decision support system. This will be based on a CD-ROM and will help farmers balance nutrients from both fertilisers and organic manure to the needs of a particular crop. It could also provide a way for farmers to carry out farm-scale nutrient audits as part of future planned regulatory schemes.

### ***Incentive and grant schemes***

Farm businesses within Nitrate Vulnerable Zones are eligible for grants to help improve slurry management infrastructure.

Incentive schemes are also in operation as part of Rural Development Regulation agri-environment schemes in England and Wales. In England these include the Countryside Stewardship, Small Woodland Grant and Environmentally Sensitive Areas schemes, while in Wales, Tir Gofal, the all Wales agri-environmental scheme, has been successful in attracting farmers to sustainable agriculture. All of these schemes are under revision, and new proposals include soil and water protection measures that will help farmers prepare for the WFD. In both England and Wales, there are provisions for a new 'entry level scheme' that will be open to the majority of farmers.

**For further information, please contact:**

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