

Fertilisers and the environment

Environmental concerns

There seems no danger of us running out of arable land. However, there are environmental concerns and steps need to be taken to improve the productivity of land while reducing the use of:

- water;
- fertiliser;
- potentially harmful agrochemicals.

It has been suggested, for example, that the number of water-stressed countries will increase from 28 in the year 2000 to 52 by 2030-2040.

Taking measures to improve productivity while protecting the environment is often referred to as **precision farming**.



Figure 1 Spraying crops with fertilisers and agrochemicals is common agricultural practice.

Fertiliser use

The Department for Environment, Food and Rural Affairs (Defra) says that nutrient use in agriculture contributes:¹

- 50-60% of nitrate and 32% of phosphate in surface waters. These nutrient losses contribute to eutrophication of rivers, lakes and coastal waters.
- To the loss of 248000 tonnes each year of ammonia which is 88% of UK ammonia emissions. These emissions can affect respiratory health in humans and impact on the quality of terrestrial and aquatic ecosystems.
- Around 8% of UK greenhouse gas emissions, 40% of which is from soil nutrient management. 76% of UK nitrous oxide emissions come from farming.

Defra advises farmers and growers² that:

- excessive soil acidity can cause large yield losses and reduce the effectiveness of other fertilisers; unnecessarily high pH (due to over liming) can increase trace element deficiencies;
- soil should be analysed regularly, ideally every 3 to 5 years, to set and maintain a correct fertiliser policy;
- it may need to analyse grass and other crops, in addition to soil, to identify any mineral imbalance which may be affecting growth.

Finding out

How do fertilisers get into rivers and lakes?

How are nitrate and phosphate levels in rivers and lakes measured?

What is eutrophication and why may the use of fertilisers increase the problem?

¹ <http://www.defra.gov.uk/food-farm/land-manage/nutrients/>

² <http://archive.defra.gov.uk/foodfarm/landmanage/cogap/documents/cogap090202.pdf> (defra, 2009)