

## F-2: Fertilizer consumption

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## 1) General description

### 1.1) *Brief definition*

This indicator shows the amount of mineral and organic fertilizers used in total and per unit of agricultural area and share of area treated by mineral and organic fertilizers in the total agricultural area. It also shows the consumption of fertilizers for particular types of crops.

### 1.2) *Units of measurement*

Thousands of tons for the consumption of fertilizers; kilogram per hectare for the consumption of fertilizers per unit of agricultural area; percentage for shares in the total agricultural area.

### 1.3) *Context*

Relation to other indicators from the Guidelines - This indicator relates to indicators "C-11: Nutrients in freshwater" and "C-12: Nutrients in coastal seawaters".

## 2) Relevance for environmental policy

### 2.1) *Purpose*

The indicator makes it possible to assess the pressure on the environment arising through the use of fertilizers: the accumulation of nutrients in the soil, the resulting pollution of surface and groundwater, and the movement of nutrients through trophic chains and other parts of the environment.

### 2.2) *Issue*

The use of mineral and organic fertilizers in agriculture to increase the efficiency of cropping increases environmental hazards, such as water and soil pollution, and has negative effects on other environmental components, interfering with the natural balance of soil microflora. High levels of nitrate and nitrite in drinking water are a hazard to human health. The actual environmental effects depend on pollution abatement methods, soil and plant types, and

meteorological conditions. Time-series analysis of fertilizer consumption enables monitoring of its effect on the environment and preparation of strategies to mitigate the negative impacts of fertilizers on the environment.

### **2.3) International agreements and targets**

#### *a) Subregional level:*

The European Union (EU) Directive 91/676/EEC on water pollution by nitrates establishes requirements covering the use of nitrogen in fertilizers; the placing on the market of fertilizers is regulated by regulation (EC) 2003/2003.

## **3) Methodology and guidelines**

### **3.1) Data collection and calculations**

To produce this indicator it is necessary to collect data on mineral fertilizer use or, if such are not available, on fertilizer sales as well as fertilizers' basic characteristics. The indicator is assessed annually. Data on the quantities of fertilizers used or sold to the final consumer are converted into the three basic nutrient components Nitrogen (N), phosphate ( $P_2O_5$ ), and potash ( $K_2O$ ) and aggregated. Basic data on fertilizer nutrient content can be obtained directly from producers or through chemical analysis. The content of the fertilizer must be indicated clearly on labels and in all commercial documents. Agricultural area is the sum of areas under (a) arable land; (b) permanent crops; and (c) permanent meadows and pastures. Detailed definitions can be found in the glossary to this indicator. Data on the agricultural area should be provided according to cadastre information.

### **3.2) Internationally agreed methodologies and standards**

The Food and Agriculture Organization of the United Nations (FAO), the Organization for Economic Co-operation and Development (OECD) and the European Union Statistical Office (Eurostat) collect data on the use of mineral fertilizers (see references). The European Environment Agency (EEA) has developed the indicator "Fertilizer consumption".

## 4) Data sources and reporting

In countries of South-Eastern and Eastern Europe, Caucasus and Central Asia, data on the use of mineral and organic fertilizers are collected by the ministries dealing with agriculture and the environment, and by statistical agencies. In several countries, national statistical agencies and their subnational departments have long-term databases on the use of fertilizers at the national and subnational levels. Data on national consumption of mineral and organic fertilizers are published in annual statistical yearbooks in several countries. FAO Member States report data to the FAOSTAT database. Collection of data on organic fertilizers such as compost, manure and bone meal is not being carried out in all countries of South-Eastern and Eastern Europe, Caucasus and Central Asia. Information on the consumption of fertilizers outside the agricultural sector is usually not collected.

## 5) References at the international level

- Environmental Indicators for Agriculture. Vol. 3: Methods and Results. (OECD, 2001);
- Wascher, D.W. (ed.). Agri-Environmental Indicators for Sustainable Agriculture in Europe. ECNC Technical Reports series. (European Centre for Nature Conservation, 2000);
- Towards Sustainable Agriculture – A Pilot Set of Indicators. Research Report. (MAFF, 2000);
- Forecast of food, farming and fertilizer use in the European Union, 2002 -2012 , EFMA2012,
- Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources;
- Regulation (EC) No. 2003/2003 of the European Parliament and of the Council of 13 October 2003 relating to fertilizers;
- FAOSTAT database, annual updates: <http://faostat3.fao.org/home/index.html#DOWNLOAD>;
- EUROSTAT (Fertilizer consumption): [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Fertiliser\\_consumption\\_and\\_nutrient\\_balance\\_statistics](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Fertiliser_consumption_and_nutrient_balance_statistics)
- OECD – statistics: <http://www.oecd.org/statistics/>;
- International Fertilizer Industry Association: <http://www.fertilizer.org/>;

- EEA – Indicator “Total fertilizer consumption”: <http://www.eea.europa.eu/data-and-maps/indicators/fertilizer-consumption-outlook-from-eea/fertilizer-consumption-outlook-from-eea>;
- Fertilizers Europe: <http://www.fertilizerseurope.com/site/index.php?id=348>.