

Efektywność wykorzystania składników pokarmowych w Polsce i w Europie oraz środowiskowe aspekty nawożenia roślin

The efficiency of nutrients in Poland and Europe and environmental aspects of nutrient application in crop production

> Janusz Igras Instytut Nawozów Sztucznych, Puławy





Consumption of nitrogen in Poland and EU

Utilization of nitrogen in crop production

Changes of land utilization

Environmental impact of nitrogen







Nitrogen cycle in agroecosystems; the blue arrows show the natural elements of the nitrogen cycle; the red arrows represent nitrogen entering the cycle through human activities

http://landscapeforlife.org/give_ back/3c.php

Consumption of nitrogen fertilizers in Poland in the years 1938-2009

(source: Pastuszak, 2012)

Dynamics of fertilizer consumption in EU countries (million tons) (source: EFMA, 2009)

Relation between nitrogen rates and the yield of cereals in UE countries in the years 2008–2010

(source: EFMA, 2011)

Clusters of EU countries according to the yield of cereals and N input per 100 kg of grain in the years 2008-2010

(source: EFMA, 2011)

Relation between nitrogen rates and the yield of cereals in voivodeships in Poland in the years 2008-2010 (source: GUS, 2011)

The use of land for agricultural purposes in the years 1700-2000

http://www.ediblegeography.com/sixty-six-percent-natural/

Soil degradation

Currently, soil degradation is estimated at 9 million hectares per year (an area equivalent to the size of Ireland)

http://www.landfood.ubc.ca/ soil200/soil_mgmt/soil_degr adation.htm

http://eusoils.jrc.ec.europa.eu/projects/soil_atlas/index.html zmodyfikowane

pH and lime application needs

(source: Jadczyszyn, 2011)

Nitrate concentration in ground water

(source: Jadczyszyn, 2010)

SPRING

AUTUMN

Nitrate concentration in ground water vs. N_{min} losses from soil in spring

(source: Jadczyszyn, 2010)

- Is it possible to further increase plant yields by fertilizer application?
- How to nutrients manage without harming the environment?
- What can we do to increase the intensive agricultural production and do not to degrade the environment?

Thank you very much

janusz.igras@ins.pulawy.pl