Fertilizer use by crop in Poland
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Abstract

The agricultural area of Poland amounts to 18.4 million ha of which 14.1 million ha are arable and 4.1 million ha grassland. The arable area includes 8.8 million ha of cereals, 1.2 of potato and 0.3 of sugar beet. The cereal area includes 2.6 million ha of wheat, 2.1 of rye and 1.1 of barley.

In Poland there are over three million agricultural holdings. During the centrally planned period most farms remained in private hands but their average size, excluding plots of below one ha, is seven hectares. Today there are only 2000 farms in the public sector but with an average size of 600 ha.

Most of the arable land is cropped with cereals. Yields tend to be lower than in western Europe. This is due partly to the natural conditions since unfertile and acid soils account for between 50 percent and 65 percent of the arable land in Poland. Also the climatic conditions are not optimum for agricultural production. The conditions in the eastern region are particularly difficult, with its large number of very small farms.

Poland has a long established fertilizer industry. When the domestic demand for fertilizers fell during the early 1990s some producers had to turn to exports to sell their products. The former distribution system of the centrally planned era collapsed and manufacturers had to become involved in organizing the distribution of their products.

The study provides information on the natural resource base for agriculture and the characteristics of each region, particularly as regards its agricultural suitability. The cropping in the different regions is examined. The production of mineral fertilizers and their consumption by region and by crop are described. The supply of nutrients through organic manures is considered. The prices of fertilizers and crops are given and the profitability of mineral fertilizer use is calculated. The results indicate that the profitability of fertilizer use is fairly good under present circumstances.

Calculations of the nutrient balances, i.e. inputs versus removal, are provided for each nutrient and by province. Despite the relatively low rates of use of fertilizers, the nutrient balances show surpluses or comparatively low deficiencies. This is explained by the generally low crop yields. The main deficiencies are in potash.

To ensure food self-sufficiency for the country, fertilizer nutrient application should be increased from the present level of 85 kg NPK per hectare to at least 130 kg/ha.
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FAO, IFA and the International Fertilizer Development Center (IFDC) issue country-wise statistics on "fertilizer use by crop". The aim of the present series is to examine the agro-ecological conditions, the structure of farming, cropping patterns, the availability and use of mineral and organic plant nutrients, the economics of fertilizers, research and advisory requirements and other factors that have led to present fertilizer usage.

The "fertilizer use by crop" statistics have been related to FAO’s forecasts of worldwide crop yield and areas. The results were published in the year 2000 FAO publication "Fertilizer requirements in 2015 and 2030". The reports in the present series examine, country by country, the factors that will or should determine the future development of plant nutrition.

During the past two decades, increasing attention has been paid to the adverse environmental impact of both the underuse and the overuse of plant nutrients. The efficient use of plant nutrients, whether from mineral fertilizers or from other sources, involves the shared responsibility of many segments of society, including international organizations, governments, the fertilizer industry, agricultural research and advisory bodies, traders and farmers. The publications in the series are addressed to all these parties.

Fertilizer use is not an end in itself. Rather it is a means of achieving increased food and fibre production. Increased agricultural production and food availability can, in turn, be seen as an objective for the agricultural sector in the context of contributing to the broader macroeconomic objectives of society. A review of the options available to policy makers is given in the FAO/IFA 1999 publication entitled "Fertilizer strategies".

The contents of the studies differ considerably from country to country, in view of their different structures, histories and food situation. But in each case the aim of the study is to arrive at a better understanding of the nutrition of crops in the country concerned.
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Abbreviations and symbols

EFMA  European Fertilizer Manufacturers Association
FAO  Food and Agriculture Organization of the United Nations
IFA  International Fertilizer Industry Association
IFDC  International Fertilizer Development Center
OECD  Organisation for Economic Co-operation and Development
PLN  Polish Currency

Fertilizers

N  Nitrogen
Amm.  Ammonium
AS  Ammonium sulphate
AN  Ammonium nitrate
CAN  Calcium ammonium nitrate
UAN  Urea ammonium nitrate
P₂O₅ or P  Phosphate*
SSP  Single superphosphate
TSP  Triple superphosphate
K₂O or K  Potash*
NPK, NP or PK fertilizers  compound fertilizers containing the nutrient indicated
NPK per ha  (for example)  N+P₂O₅+K₂O per ha

* Phosphate and potash may be expressed as their elemental forms P and K or as their oxide forms P₂O₅ and K₂O. Nitrogen is expressed as N. In this study phosphate and potash are expressed in their oxide forms.