

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

Soil organic matter is one of basic indicators of soil productivity and quality, sustains soil physical, chemical and biological properties at desired level. Soils rich in organic matter are able to meet demand of crops for nutrients, improving effectiveness of crop production in agriculture. Common opinions on soil organic carbon trends in Poland and other European countries indicate decline of soil carbon contents. However, potential for precise assessing of soil carbon drivers and its long-term dynamics is very limited due to nonsufficient spatial and time resolution of soil and agricultural data.

The project research will cover 1960-2016 period when Polish agriculture experienced drastic changes in various aspects - from property structure and farm size, through technological progress and production increase to progressive specialization of agricultural production. The specialization resulted in lack of manure in some regions and its excess in other areas. Current spatial structure of the agriculture reflects observed socio-economic changes in rural areas that affected the agriculture more than natural biophysical conditions.

The scientific project objective is to explain impact of agriculture on long-term changes in soil carbon level within 1960 – 2016 period. The evaluation will cover 5 provinces representing diverse habitats, climate and type of agriculture. The starting point for the evaluation will be database of 3000 soil profiles characterized in 1960-1984 period for purposes of soil map production. The project will be realized based on repeated soil carbon analysis in the same locations after approx. 50 years using identical laboratory methods. The data describing changes in agriculture will be derived from the Central Statistical Office and will represent agricultural surveys done within 1960-2010 period for collection of such data as farm structure, livestock density, crop structure, yield and fertilization.