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Climate change – Agricultural land use – Food security

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In Hungary, plougland decreased to 52% of its area by the time of political restructuring (1989) in comparison with the 1950s. Forested areas increased significantly (18%) and lands withdrawn from agricultural production doubled (11%). For today, these proportions further changed. Ploughlands reduced to 46% and forested areas further increased (21%) in 2013. The most significat changes were observed in the proportion of lands withdrawn from agricultural production which increased to 21%.
Temperature in Hungary increased by 1°C during the last century and predictions show a further 2.6 °C increase by 2050. The yearly amount of precipitation significantly decreased from 640 mm to 560 mm with a more uneven temporal distribution.
The following aspects can be considered in the correlation between climate change and agriculture: a) impact of agriculture on climate, b) future impact of climate change on agriculture and food supply, c) impact of climate change on food security.
The reason for the significant change of climate is the accumulation of greenhouse gases (GHG) which results from anthropological activities. Between 2008 and 2012, Hungary had to reduce its GHG emission by 6% compared to the base period between 1985-1987. At the end of 2011, Hungarian GHG emission was 43.1% lower than that of the base period. The total gross emission was 66.2 million CO_2 equivalent, while the net emission which also includes land use, land use change and forestry was 62.8 million tons. The emission of agriculture was 8.8 million tons (OMSZ, 2013).
The greatest opportunity to reduce agricultural GHG emission is dinitrogen oxides which can be significantly mitigated by the smaller extent and more efficient use of nitrogen-based fertilisers (precision farming) and by using biomanures produced from utilised waste materials. Plant and animal species which better adapt to extreme weather circumstances should be bred and maintained, thereby making an investment in food security.
Climate change contributes to the proliferation of the pests of agricultural produces, the spreading of diseases and the development of new pathogens, while it could also increase the food risk caused by bacterial infection during the food chain phase between the producer and the consumer. Climate change has an impact on the world's food prices, especially that of cereals.
The food production of the world needs to be doubled in order to cover the need of the population by 2050, especially if it rises above nine billion. As a result of the increase of population, there is an increased demand for agricultural products and it also necessitates the more efficient use of agricultural lands.
As a consequence of increasing food prices, there is a risk of increased starvation and food consumption may decrease (especially in developing countries), while the health care inequality is expected to grow.
Food security is one of the most important elements of adapting to global climate change. For this reason, it is extremely important to breed new biological resources, as well as to introduce production systems which facilitate the adaptation to changed circumstances.