Factsheet
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Soil and climate

Climate impact of organic soil management

Agriculture plays a major role in climate change. As one of the main producers of greenhouse gases, agriculture contributes to global warming but also has great potential for mitigating climate change. At the same time, agricultural production and the environment is burdened by the adverse consequences of climate change.
Organic farming is one way of adapting agriculture to climate change. Organically farmed soils emit less climate-damaging nitrous oxide than their conventional counterparts. A more active and diverse microbial community present in organic soils can also improve the capacity of crops to adapt to climate-related stress situations. Reduced tillage is a soil organic matter management technique that can help organic farms maintain and increase the amount of organic carbon stored in the top soil.

Agriculture – a key player in climate change

Increase in atmospheric carbon concentration

Carbon dioxide (CO_2), among other greenhouse gases (GHG), is responsible for the average global annual temperature on earth to remain at +15 °C and consequently for life on earth as we know it. The more GHG there are, the warmer the earth's surface and atmosphere become. Over the last 250 years, human emissions of GHG have led to an increase in the atmospheric concentration of CO_2 from 280 ppm to currently 405 ppm. This increase is accompanied by an increase in the average global annual temperature by 1 °C (until 2017). In Switzerland e.g., we have recorded a temperature rise of 2 °C in the same period!

High emissions from agriculture

Agriculture directly causes 11.2 % of the global GHG emissions[1]. However, if indirect emissions are included, like the provision of agricultural inputs such as chemical fertilisers and pesticides, and emissions from deforestation for the production of animal feed, the sector contributes between 21–37 % of global GHG emissions[2]. In Switzerland, agriculture accounted for 12.8 % of total GHG emissions in 2018[3]. Figure 2 shows the distribution of emissions from Swiss agriculture in 2015[4]. While only the green parts of the figure represent emissions officially assigned to the agriculture sector, the figure also shows indirect agricultural emissions caused by land-use changes, fuels and combustibles, as well as emissions from the production of fertilisers, etc.