GREENHOUSE GASES EMISSIONS FROM OAT PRODUCTION WITHIN CONVENTIONAL AND ORGANIC FARMING

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Abstract

Climate changes and the anthropogenic impact have been a frequently discussed issue in recent years. The GHG production is significantly influenced by industry, transport, as well as by agriculture which ranks among the five largest producers. Agriculture produces 9,2 % of the total GHG and therefore it is the fourth largest producer of anthropogenic greenhouse gas emissions in the EU. Agriculture is considered one of the sectors where it is possible to look for mitigation possibilities. Oat grown in organic and conventional farming systems is evaluated within this study. The oat life cycle was assessed in the SIMAPro software (the ReCiPe Midpoint (H) Europe method). The functional unit was 1 kg of grain. This method includes a farming stage (field emission, seeds and seedlings, fertilizers, pesticides, agrotechnical operations). Basic data from the farms was supplemented from the Ecoinvent database. The conversion of GHG emissions to CO_2e is based on the formula $CO_2e = 1x\ CO_2 + 23x\ CH_4 + 298x\ N_2O$. The total emissions in the agricultural phase within the conventional farming system are 0,650 kg CO_2e / kg of oat grains, within the organic one, they are 0,303 kg CO_2e / kg of oat grains. Therefore, we can achieve a significant reduction in the emission load per the production unit if the farming system is changed.

Key words: greenhouse gases, organic farming, conventional farming, oat, LCA