

Climate relevance of foodstuffs – what can the organic farmer do?

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Over the past year the Research Institute for Organic Agriculture (FiBL) Austria has been carrying out a comprehensive study regarding the climate relevance of foodstuffs (client: “Zurück zum Ursprung”/Hofer KG and the Ministry of Agriculture). This study calculated the CO₂-Emissions along the entire supply chain of 95-100 organic foodstuffs as compared to conventional foodstuffs, from the agricultural production to the supermarket branches.

The results of the 85 foodstuffs investigated so far, have shown that in many cases the proportion of the total CO₂-Emissions¹ caused by agriculture is very high.

Proportion of agriculture of the total CO_{2-eq}-Emissions:

- Wheat bread: 30-50 %
- Important (field-)vegetable types: 30-50 %
- Potatoes: 50-60 %
- Animal foodstuffs: 60-90 % (incl. imported feed and its production)

Products not considered are convenience-products (e.g. frozen ready-meals) and other highly processed foodstuffs, where the processing (and the frozen storage) cause the largest proportion of the CO_{2-eq}-Emissions.

Figure 1, using the **example of wheat bread** displays that, as with all bread types, alongside the proportion caused by agriculture, the processing (baking) also accounts for a considerable part of the total CO_{2-eq}-Emissions.

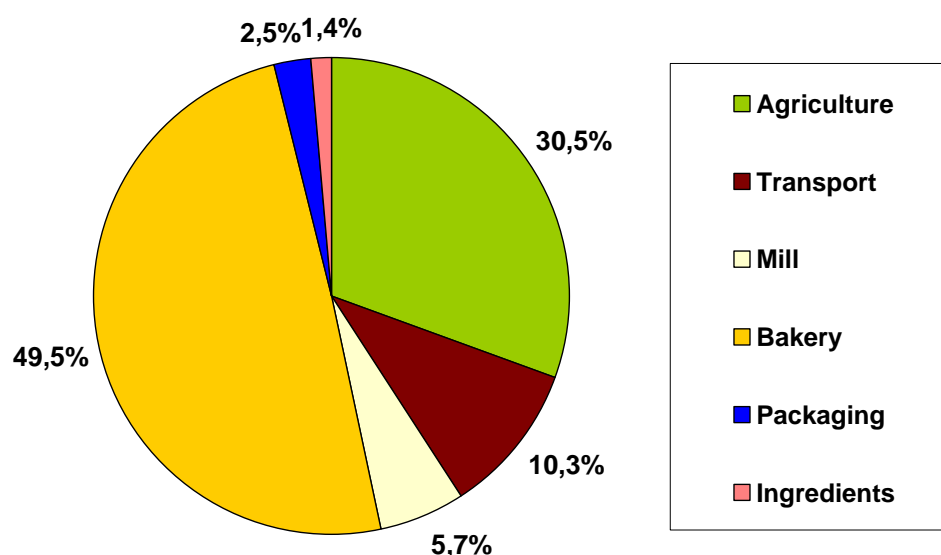


Figure1: CO_{2-eq}-Emissions of **Wheat bread**: Proportion of agriculture, baking, transport and other categories

¹ Alongside CO₂, the climatic effect of methane (CH₄) and laughing-gas (N₂O) emissions are also considered, and the sum of the emissions of these three gases are calculated as „CO₂-Equivalents“ (CO_{2-eq})

In the public discussion, the influence of transport on CO₂-Balances is often highly over estimated. It only accounts for 8-15% of the total CO_{2-eq}-Emissions of most foodstuffs (exceptions, e.g. field vegetables: 20-45%). The reason why the effect of transport carries comparatively little weight, is that the CO_{2-eq}-Emissions of agriculture and processing dominate in the case of many foodstuffs. Furthermore, trucks and ships are comparatively efficient means of transport, which cause relatively low per kg product emissions (however, high emissions result from the transportation of foodstuffs via airplane, which occurs relatively seldomly).

What can the farmer do to improve the climate balance?

Land cultivation:

- Humus accumulation through feed legumes, intertillage, catch crops as well as compost fertilizing and consistent recycling of harvest remains. This leads to much CO₂ being sequestered in the ground and also utilizes the numerous advantages of humus (e.g. water and nutrient storage, erosion protection, supporting soil biology, improvement of the soil's air regime)
- Avoiding the use of vinasse and other easily soluble organic fertilizer (Processing by-products, such as fertilisers made from pure horn, hair, bonemeal and feather or permitted components of sugar beets-processing): as a result laughing gas (N₂O) emissions are reduced considerably. (laughing gas is also an important greenhouse gas)
- Avoiding (in part) use of the plow
- Avoiding energy intensive or unprofitable processing measures / worksteps
- Using lighter machines (saves energy and indirectly supports humus accumulation)
- Using fuels from renewable resources

Vegetable cultivation:

- Reducing/avoiding the use of vinasse and other easily soluble organic fertilizer (permitted Processing by-products, see above)
- Humus accumulation: see above
- Using renewable energy sources particularly in polythene tunnels and green houses (e.g. woodchips)
- Irrigation: Using energy and water saving technologies (e.g. drip irrigation)
- Decreasing land work intensity

Through the use of photovoltaics for electricity production, solar collectors for heat/hot water production as well as (corporate)biogas facilities, farms can produce large quantities of energy and thus help dramatically improve their climate balance.

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