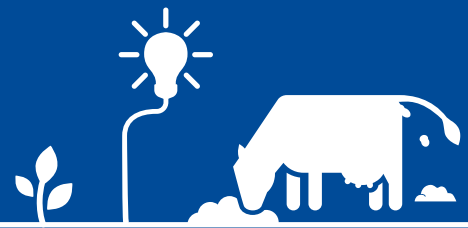


# Greenhouse gasses



The production of greenhouse gasses by industrial sectors, transport, households and agriculture causes global warming. This will have impacts on climate, sea level rise, nature and human health. In many cases this will be a negative impact. This is why actors in the global dairy sector make plans to decrease the emissions of these gasses.

## Best practices

On this worksheet you can find so-called 'best practices' that will contribute to the reduction of greenhouse gas emissions on dairy farms. Only best practices with a positive or neutral impact on the profitability of the farm have been included in the suggestions below.

## How to apply best practices

All best practices on this worksheet are used in different parts of the world. But it is not always easy to apply them in an effective and profitable way. In many cases this will require training,

demonstrations on regional farms, experience on individual farms and perhaps incentives from the dairy processor and/or government authorities.

### Feeding



Feeding is a very important contributor to greenhouse gas emissions on the dairy farm. About 40% of the greenhouse gas emissions on a dairy farm come from methane produced by the rumen and the intestines of the cows. And about 30% of the emissions are connected to the production and transport of feed acquired by the farmer from feed manufacturers or crop farmers.

Best Practice	Impact on	
	GHG	€
Optimise rations (match with requirements)	++	++
Reduce losses during storage	++	+
Optimise feed quality and composition	++	+
Avoid excess protein feeding	++	+
Direct feeding of compound ingredients	+	+
Offer unlimited access to drinking water	+	+

### Feed production on farm



Many farms use fertilizers for feed production. Producing these fertilizers requires a lot of energy. This means that reducing fertilizer use and being more efficient contributes to emission reduction. A higher production of feed crops per hectare will also reduce the need to buy feed externally, thus reducing emissions caused by transport. Grazing cows instead of feeding silage also saves on costs for transport and harvest.

Best Practice	Impact on	
	GHG	€
Increase feed value of crops	+++	+
Improve grazing management	+++	+
Optimise fertilization	++	+

## Greenhouse gasses - Best practices

### Herd management



Healthy cows and young stock produce more efficiently and live longer. Increasing the share of productive animals also contributes to emission reduction and higher profitability

Best Practice	Impact on	
	GHG	€
Reduce replacement rate by increased longevity	+++	++
Reduce idle cows	+++	++
Decrease age of first calving	+++	+
Improve health management	++	+
Optimise transition period	++	+
Optimise young stock management	++	+

### Breeding



Genetics can contribute to improved efficiency in the long run.

Best Practice	Impact on	
	GHG	€
Improve genetics to increase feed efficiency	+	+
Improve genetics to increase production	+	+

### Energy management



All farm practices that save energy help to reduce emissions. In many cases it is a matter of smarter use of machines and installations. In some cases new energy-saving techniques for milking, cooling or cultivation may be necessary.

Best Practice	Impact on	
	GHG	€
Production of green energy (wind, solar and manure digestion)	++	+
Apply energy-saving technologies	+	+
Optimise use of energy	+	+
Optimise use of machinery	+	+
Select crops with low need of machinery use	+	++
Apply more grazing	+	+

### Carbon sequestration in soil



Increasing the organic matter content of the soil improves soil fertility and water storage capacity. At the same time, a higher organic matter content in the soil captures carbon from the air. To achieve this, less cultivation and good management of the soil and permanent grassland is required.

Best Practice	Impact on	
	GHG	€
Avoid soil compaction	+	○
Apply permanent soil cover by crops or mulching	+	○
Apply no-tillage on permanent grassland	+	○
Apply reduced tillage on crops	+	○
Reduce renewal rate of grassland	+	○

### Innovative ways to reduce emissions

All best practices presented here, are ready-to-use on dairy farms. More innovation is under way as researchers from all over the world are developing new practices. Examples are: avoiding the use of soy to diminish transport distances, introducing new crops that will produce more protein per hectare, the use of fertilisers that cause less emissions during produc-

tion and after application in the field, making feed additives that reduce methane production from enteric fermentation, devising methods to capture methane and to increase the sequestration of carbon in the soil. In all these experiments it is important that new practices are both effective at reducing emissions as well as cost-effective for farmers.