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AGRICULTURE & INNOVATION

## Reducing livestock emissions

### Methods farmers can use to reduce cattle livestock emissions in a cost effective way

Livestock production contributes significantly to ammonia and greenhouse gas (GHG) emissions. The EIP-AGRI Focus Group on reducing livestock emissions looked for cost effective measures to reduce both methane ( $\text{CH}_4$ ) and ammonia ( $\text{NH}_3$ ).

The 20 experts in the group described the current and new mitigation measures, explored their cost-effectiveness, identified success and fail-factors for implementation of emission-reducing measures and found areas where research, development and the exchange of knowledge is required.

They focussed on what farmers can do by adapting their feeding strategy and improving stable and manure storage. What can cattle breeding bring? How can a farmer monitor and manage farm emissions?

The experts concluded that there are possible solutions for reducing emissions of ammonia and methane from cattle and cattle housing- the cost-effectiveness of these solutions are however a major challenge and some require further research and development.

*"Most solutions to decrease livestock emissions can effectively be transferred from one country to another, however most of these solutions require considerable investments and adapted management skills from the farmer"*

- Peter Demeyer (Belgium), expert from the EIP-AGRI Focus Group on reducing livestock emissions from cattle -

# Reducing livestock emissions

## Ideas for Operational Groups

- ▶ On-farm testing of robust, accurate and affordable sensor systems for NH<sub>3</sub>-concentrations
- ▶ On-farm testing and monitoring of feeding strategies aimed to mitigate methane emissions
- ▶ Development and testing of decision tools to improve N-use efficiency
- ▶ Testing new and existing emission tools or use of tools and data management
- ▶ Piloting innovative cattle housing construction, which includes new mitigation techniques

## Research needs from practice

- ▶ Identification and practical implementation of indicators for e.g. feed efficiency and methane production, which can facilitate quick and easy determination of emissions.
- ▶ Sensors to detect rumen environmental parameters (methane; H<sub>2</sub>, CO<sub>2</sub> and others).
- ▶ Integrate existing measured data in farms (e.g. through precision farming) to improve existing emission models with the ultimate aim to develop good decision support systems.
- ▶ New knowledge is needed about the synergies of combining different measures - e.g. precision feeding and housing or precision feeding and breeding.
- ▶ More knowledge is needed on how to measure emissions from naturally ventilated barns, and during grazing.
- ▶ There is a potential for breeding for lower overall methane emissions per cow. This calls for further research on estimating genomic breeding values for emissions.

## Other outcomes and recommendations

- ▶ Farm management, taking into account weather and soil conditions, is one of the main factors affecting farm livestock emissions.
- ▶ Further explore the methane emission reducing capacity of feed additives.
- ▶ The development of more accurate, more precise and cheaper measurement methods is needed for collection of emission data on animals and farms both for the farmer and for breeding purposes.
- ▶ Introduce available housing technologies including manure handling for ammonia reductions when building new barns as this will be most cost-effective. This should be combined with demonstration projects.



## More information

[Focus Group Page](#)

[Final report](#)

Inspirational ideas:

- [Increasing farm profitability while cutting carbon emissions, a toolkit developed by farmers for farmers](#)

- [Concrete solutions for sustainability and animal welfare](#)

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