

## PRACTICE ABSTRACT 8

### Animal breeding as effective methane mitigation strategy

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**WP3:**  
**Re-Breeding livestock for resilience**

#### Breeding for Methane Reduction in Ruminants

Ruminants emit methane (CH<sub>4</sub>), which is one of the strongest greenhouse gases responsible for climate change. Strategies to reduce the amount of CH<sub>4</sub> from ruminants are currently heavily searched. **Animal breeding** is one of the most **promising climate change mitigation strategies**. To identify animals with a genetic predisposition for lower CH<sub>4</sub> emission, breeding values for CH<sub>4</sub> emission as selection tools for farmers and breeding organisations need to be estimated. To achieve accurate and most reliable breeding values large number of individual animals need to be measured. Methane emission is a novel trait in animal breeding, routine recording schemes are just currently being developed and implemented in some countries.

#### International data pool for CH<sub>4</sub>

To increase the accuracy of breeding values for CH<sub>4</sub>, an **international effort** is undertaken by **collating CH<sub>4</sub> recordings** of individual cattle in Australia, Poland, Spain and The Netherlands. Altogether, this will build an initial **data pool of around 12,500 cattle** recorded for **CH<sub>4</sub> emission**.

This is one of the largest CH<sub>4</sub> data pools available as to date. Methane emission can be measured with different techniques. In Australia, the GreenFeed system is used to record CH<sub>4</sub> emission on pasture (Figure 1). In Spain and the Netherlands, a so-called sniffer system is used, where a gas sensor is installed in the automated milking system and CH<sub>4</sub> is measured during milking of the cow (Figure 2). The work in Re-Livestock will combine all CH<sub>4</sub> recordings with different devices with state-of-the-art methods to estimate breeding values (genomic selection) to **provide farmers** with the most reliable breeding values for methane emission as selection tools on farm.



**Figure 1.** The GreenFeed system (C-Lock Inc.) is used to measure individual methane emission on pasture in Australia. The methane emission is collected while the animal is eating concentrate. (Credit: Sam Clark)



**Figure 2.** The sniffer methane sensor (Carltech B.V.) connected to the automated milking system on commercial farms in The Netherlands. In The Netherlands 100 commercial farms are equipped with sniffers for routine methane recording (Credit: Anouk van Breukelen)