

## Helping soils to breathe more easily - impacts on CH<sub>4</sub> exchange

**Dr Sally Price<sup>1</sup>**

<sup>1</sup>*Lincoln University*

Global climate change is now generally recognised as a phenomenon that has arisen due to increasing anthropogenic concentrations of greenhouse gases including methane (CH<sub>4</sub>). As a large amount of New Zealand's exports are generated from land based industries, emissions urgently need to be reduced. Methane oxidation is one part of the CH<sub>4</sub> cycle which has the potential to be employed for its capacity to naturally remove CH<sub>4</sub> from soil systems. Methane oxidising bacteria in 'natural' soils are sensitive to disturbance, (physical and chemical) yet seem to be persistent regardless of soil management practices - CH<sub>4</sub> oxidation rates have shown signs of recovery as early as 10 years later in regenerating ecosystems. Maintenance of soil structure is a good management practice, but soil physical properties can get compromised with the presence of animals and vehicles/equipment. This in turn can impact soil CH<sub>4</sub> exchange and productivity. Lessons can also be learned from how undisturbed systems operate in terms of maximising soil CH<sub>4</sub> uptake. This paper will provide an understanding of how predominantly soil physical conditions can be used to promote better soil health and hence encourage greater CH<sub>4</sub> removal rates by CH<sub>4</sub> oxidisers in the soil.