## low do we cut on-fari missions?

options for reducing on-farm greenhouse gas emissions. It's a daunting challenge but every small step counts. In the third article of four about climate change and agriculture in New Zealand **Dr Harry Clark** of the Agricultural Greenhouse Gas Research Centre explores

ANY farmers ask what more they can do to reduce

but, unfortunately, there isn't. Reducing emissions without compromising the viability of individual farms and the national reducing profitability and thereby 'd love to be able to tell them

economy is extremely challenging. In recognition of that,

government and industry, reported in 2018 New Zealand agriculture might be able to reduce emissions by 4%-24% cost-effective options.
The Biological Emissions
Reference Group (BERG),
a collaboration between

relative to 2005 levels by 2030.

It reckoned up to 10% should be achievable without adversely affecting many farm businesses – but it acknowledged success hinges on the specific operations and skills available on individual

A good place to start is to calculate the emissions produced

A recent Ministry for Primary Industries survey found only 2% of

Once you have a benchmark it's possible to quantify how changes to your operation might affect

in your farm environment plans, which are required by an increasing number of regional Eventually, it's likely these numbers will need to be included

A number of online tools is available to help.

Dairy farmers using Overseer already have emissions calculated

Footprint Calculator, that need minimal data to produce a quick There's a range of other simple calculators, such as Lincoln University's Farm Carbon

And every small step is a step in the right direction. examination of every aspect of your operation might reveal where small improvements can be made. all solution or silver bullets, an While there's no one-size-fits-

Here are some options you might like to consider.
Is it possible to get more

production from grass and reduce the use of imported feeds? Are alternative forage crops an

Fodder beet has high energy and low protein, which can result in improved animal performance and lower nitrogen excretion, offering greenhouse gas and water quality benefits.

Plantain shows promise for reducing nitrous oxide emissions and nitrogen leaching.

Is it possible to reduce animal

On dairy farms it might be possible to reduce emissions by

numbers but increase productivity per animal? That can maintain output while reducing emissions.

improving effluent management.
Will the installation of dairy
sheds, shelters and/or stand-off
pads reduce emissions to both air

Try using high-genetic merit animals, which have higher

Can you achieve greater longevity in the breeding herd or

That might let you maintain overall output and profitability while reducing stocking rates.

BERG estimates on some dairy

farms once-a-day milking could reduce production and emissions environment specialists, extension staff and other rural professionals are gearing up to help through an MPI-funded programme.

way on several fronts: Some animals emit less

reduced labour costs need to balance the reduction in total milk production and milk income.

However, for that to work,

% while maintaining

Applying nitrogen fertiliser only when required, using precision technologies, reduces nitrous oxide emissions. methane per unit of feed eaten than others thanks to a smaller

rumen with a distinctive population of micro-organisms.
Breeding for this trait could result in a potential emissions reduction nationally of 3%-8%

over 20 years.

That research is well advanced in sheep and it's likely the trait will be included in the selection process in the next few years. Work in cattle is just starting.

Methanogen vaccines and

Not all farms have the same potential to reduce emissions. Some farmers have already

Others are limited by their unique climate, topography, markets and infrastructure.

Rest assured, you're not alone in development.

Vaccines are being tested in the laboratory with the goal of reducing methane emissions by

An inhibitor has already been developed in the Netherlands that demonstrably reduces emissions by at least 30%.

formulation it must be included in every mouthful of feed – less than ideal for NZ's grazing

formulations or alternative products could be on the market in the next five to 10 years.

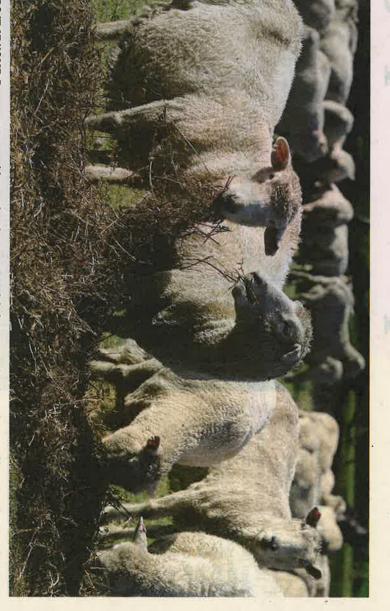
Products that inhibit Work continues and new

nitrous oxide emissions from urine patches are also under development.

In the next issue, I'll wrap up this series of articles with a look at

emissions of greenhouse gases can be consistently measured and assessed. how our efforts to reduce on-farm

MORE: www.farm www.farmingmatters.nz/farmingmatters/what-can-i-do-on-my-farm-to
reduce-greenhouse-gas-emissions/



DO IT AT HOME: Farmers can consider getting the most out of their grass and reduce the use of imported feeds as a means of cutting greenhouse gases.