The case for low methane-emitting cattle

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You may think that climate change is being caused by burning oil, coal and gas. But not so fast! The emission of methane from cattle is a surprisingly important factor. Methane from cows—a greenhouse gas 25 times more powerful than carbon dioxide—makes up 20% of greenhouse emissions from agriculture, or about 1% of all anthropogenic greenhouse gases. That's according to Phil Garnsworthy, professor of dairy science at the University of Nottingham in the UK. He is also one of the project scientists of an EU-funded research project, called Ruminomics, which is using cutting-edge science to reduce greenhouse gas emissions from cattle.

The key to the project, Garnsworthy says, is that cattle vary by a factor of two or three in the amount of methane their stomachs produce. It is therefore possible to imagine a dairy herd producing the same volume of milk for lower greenhouse gas emissions. In addition, different diets mean that cows can produce the same amount of milk with lower emissions. "It is possible to imagine cutting emissions from cattle by a fifth, using a combination approach in which you would breed from lower-emitting cattle as well as changing their diets," Garnsworthy tells youris.com.

Different genetic strains of cow emit different amounts of methane. "There are three issues: diet, genetics, and the microbiology of the cow's rumen. We think that animal genetics may well influence their gut microbiology. However, this link has not been proved and we are still in the data collection phase," explains Lorenzo Morelli, director of the faculty of agriculture at the Catholic University of Sacred Heart in Piacenza, Italy, who is a microbiologist and a project scientist.

Until now, the European cattle industry was mainly interested in improving aspects of livestock such as their fertility and their overall shape. But Morelli thinks that the market will soon add lower methane production to the list of desired cattle characteristics. Indeed, a herd that emits less methane is likely to be more productive. "The methane is lost energy that could go into producing milk. So if we can find the right genetic mix, we can find cattle that are less polluting, more productive, and more profitable for the famer," Morelli tells youris.com

Independent experts agree that methane emissions could indeed be decreased, mainly through selection. "The problem they are looking at is a [significant] one, but I believe that methane production [from this source] may be reduced by 10% in 10-15 years," comments Yvette de Haas is a senior scientist at the animal sciences group at Wageningen University and Research Centre in the Netherlands. She tells youris.com:

"changed diets will affect methane production directly, but better genotypes alongside better diets will create a positive synergy [for lower emissions]." Over the longer term, better genotypes will mean lower cost if special diets are not needed.

But Garnsworthy warns that the project, which has two years to run, is not a simple one. "Cows have a rumen as well a stomach," he adds. As a result, "their digestive system is far more complex and hard to understand than ours," he notes. De Haas describes the project approach of gathering rumen samples and looking at the interaction with methane production is a novel one. Over time, it could improve practice with beef as well as milk herds, and with other ruminants such as sheep, deer and goats.

Other experts welcome the project too. What makes it new is its approach to linking genetics and microbiology, according to John McEwan, a senior scientist at AgResearch New Zealand, based at Invernay near Dunedin. He thinks that commercial applications of its findings could begin in 3-5 years if it is scaled up fast enough.

Provided by Youris.com

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