

## Cattle methane measurement facilities growing in SE Asia

Three brand-new livestock methane measurement facilities have been established in Laos, Cambodia and the Philippines as part of New Zealand's Climate Smart Agriculture Initiative in ASEAN (2020-2026). The initiative is improving the ability of ASEAN countries to measure and mitigate their agricultural greenhouse gases.

The new facilities have been built at:

- the University of the Philippines, Los Banõs;
- the National University of Laos, near Vientiane,
- and in Cambodia's Royal University of Agriculture, Phnom Penh.

These facilities are the first in each of the countries to permit measurement of animal



2. Local Yellow cattle being tested in Laos.

emissions over prolonged periods.

They feature a

breath capture cabinet built onto metabolism cages, which allow local researchers to measure the livestock's methane emissions, feed intake and feed digestibility. This technology allows them to answer important questions such as which species are the lowest emitters? Which local feeds produce the least methane when eaten? And are feeds from rainy or dry seasons therefore easier on the climate?

The data produced will be incorporated into the countries' improved national emissions reporting (Tier 2, IPCC compliant, livestock inventories) which are required under the Paris agreement. Soon each team will use the new facilities to evaluate the efficacy of a potential mitigation strategy that may have application in their livestock systems. It is hoped future work will allow further testing of mitigation options suitable for adoption within the ASEAN region.

The facilities have been locally built. All systems are designed for simplicity, often relying on a continuous subsampling of chamber gas and subsequent analysis of using a portable gas analyser. Some teams are cleverly also using the systems to quantify nitrous oxide emissions from local manure management systems.

The CSA Initiative has similar research, training and inventory improvement activities in six ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Viet Nam), as well as countries in Africa



1. Newly opened measurement facility at the University of Laos, Nabong campus.



and Latin America. A recent independent evaluation of the Initiative praised its ambition and its alignment with similar programs in the region. The benefits of the programme are already being seen by increased national ambition and targeting of livestock emissions mitigation in target countries in Africa and ASEAN.

### Cambodia Facility (Royal University of Agriculture)



Top: The team at the Royal University of Agriculture, Phnom Penh. Dr Sath Keo (centre) is leading the ruminant research aspects of the program, joined by the students funded by the project. The portable gas flow and analysis module is portable for security reasons. Bottom left: The emissions measurement facility during construction and testing, Graeme Bremner (NZAGRC, centre) can be seen providing technical oversight to the local construction team. Bottom middle: Carbon dioxide cylinder being set up for gravimetric check of gas recovery through the RUA headbox chambers.

For further information on the CSA Initiative please contact the NZ team at [matthew.johnson@mpi.govt.nz](mailto:matthew.johnson@mpi.govt.nz) or [william.aikenhead@mpi.govt.nz](mailto:william.aikenhead@mpi.govt.nz)



### Laos Facility (National University of Laos)



Livestock methane measurement facility established at the National University of Laos, Nabong campus research station with support from AgriServ (NZ). Research like this empowers the Laos government to measure and report their own livestock emissions. It also promotes the long-term development of agriculture, crucial for livelihoods in rural Laos.

### Philippines Facility (University of the Philippines, Los Banõs)



Left: Project scientists Gerard Guadayo in the analysis room where the Aquagas CEMS gas monitoring system for their methane measurement systems is installed. Top right: photo of the research team with NZ consultants finishing construction. Bottom right: Testing the UPLB headbox system with local cattle.

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