# Inventory of Local Forages in Indonesia That Potentially Reduce Methane (CH4) Emissions and Increase Productivity in Ruminants

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**Abstract :** Many native forage plant species have been used in Indonesia as feed for ruminants. However, less information is available about how these plants affect productivity, let alone methane emissions. In the province of Aceh, where the traditional practice is to feed local forages to small ruminants, the farmers are not satisfied with the productivity of their livestock, and they attribute this problem to poor availability and too few options for good quality forages. Forage quality is reduced by high environmental temperatures which increase the amount of lignification. In addition to reducing productivity, these factors also increase enteric methane production. A preliminary survey about potential forage species was completed in three different districts, two of low elevation and one of high elevation: Syiah Kuala (05°30'5.08" N to 095°24'7.35" E), elevation 29 m MSL; Kajhu (05°32'34.6" N to 095°21'17.7" E), elevation 30 m MSL; Lembah Seulawah (05°28'06.4" N to 095°43' 14.2" E), elevation 254 m MSL. Information about local plants was collected in a semi-structured interview with scientists, government field officers and local farmers, in the city of Banda Aceh and in those three districts. The outcome was a list 40 species that could be useful, of which 21 were selected for further study. The selection process was based on several criteria: high availability, high protein content, low toxicity, and evidence of secondary metabolites (eg, history of medicinal plants for both human and animals). For some of the selected medicinal plants, there is experimental evidence of effects on methane production during rumen fermentation. Subsequently, the selected forages were tested for their effects on rumen fermentation in vitro, using batch culture. The data produced will be used to identify forages with the potential to reduce CH4 emissions. These candidates will then be assessed for their benefits (fermentability and productivity) and potential deleterious side-effects.