Case Study on climate change & sustainability including adoption of climate-change resilient practices & diversifications

Introduction:

The impact of livestock rearing on global warming has been found to be significantly high. One of the key factors causing is the methane emission from the enteric fermentation of ruminant livestock, which is a main source of greenhouse gas (GHG) emission. Methane emission is also associated with dietary energy loss; hence, reduce feed efficiency. To address the issue of methane emission from ruminants, changing fermentation pattern through dietary alteration has been proved one of the most effective ways of methane abatement. Desirable dietary changes provide two fold benefits i.e. improve production and reduce GHG emissions. Overall dietary manipulation by selecting more starch and less fibre in the animal feed is found to be producing less methane per kg feed DM but also form a basis for higher feed intake and higher production per animal. In New Zealand, on-farm emissions intensity of livestock production across the New Zealand dairy, sheep and beef sectors has reduced by approximately 1% per annum between 1990 and 2013.

Intervention:

In New Zealand, on-farm emissions intensity of livestock production across the New Zealand dairy, sheep and beef sectors has reduced by approximately 1% per annum between 1990 and 2013. New Zealand has a high dependence on its agricultural activities and the emissions from agriculture sector has one of the highest contribution to New Zealand's greenhouse gas emissions (48% in 2012). Measures were taken up to impact the efficiency of animal rearing including supplementary feeding practices which increase resilience against climate variability, in particular droughts, irrigation measures and reduced use of chemical fertilizers for grazing land. The effects of actions on emissions intensity of livestock production resulted in increasing per animal production and increased efficiency of fertilizer use per animal. The steady reduction of greenhouse gas emissions per unit of product by about 1% per year (across the dairy, sheep and beef sectors) for at least the last 20 years is thus attributed to the feed consumed by animals is used for production than for animal maintenance as well as the fertilizer use per cow. This was ensured through close interaction between farmers, government and research programmes focusing on productivity and on GHG emissions monitoring and mitigation. The solutions, which led to the successful reduction in emission, thus focused on feed and nutrition, genetics and breeding, rumen modification, manure and fertilizer management, animal health and increasing the carbon content of soils.

Learnings for India:

India owns around 11.8% of the total cattle and hence poses serious threat in terms of GHG emissions. The strategy of addressing the existing issue of cattle feed and fodder shortage in the country needs to include the learnings from the New Zealand model. Currently, the feed and fodder for ruminants is already facing a severe shortage issue which is predicted to increase in the upcoming years. With green fodder facing the most severe shortage, focus can be drawn on preparation and use of starch rich concentration feed. The innovative hydroponic technology being piloted to produce fodder can also ensure controlled use of nitrogen based fertilizers content reducing the GHG emissions from the enteric fermentation of ruminant livestock.

Source: Global Research Alliance. 2017. Reducing The Emissions Intensity Of Livestock Production. Retrieved from https://globalresearchalliance.org/wp-content/uploads/2017/04/New-Zealand-Sheep-Beef-Dairy_LRG-case-study.pdf