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Beef Cattle Feeding Systems and Measuring Sustainable Agriculture in Bac Kan Province, the Northern Mountainous Region, Viet Nam

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Abstract

Indigenous cattle in northern Mountainous Region of Viet Nam (NMR) are often kept in free ranging, part-time grazing and Cut & carry systems. Local Yellow beef cattle breeds are predominantly raised by small farmers in free ranging or part-time grazing systems. H'Mong cattle are often kept in cut & carry feeding system. In Bac Kan, cattle production is accounted for an important proportion in the total output of livestock sub-sector (29 %), while it is accounted for small part in the country. To help local people in uplands to escape from poverty, many organisations have initiated projects to develop beef cattle. Modalities for a sustainable cattle production have been promoted as a perspective solution to enhance economic growth and livelihoods for farmers, especially poor farmers. However, cattle sub-sector still remains under-developed, hence generally high poverty faced by farmers. The study is carried out to determine the impact of selected beef cattle feeding systems on economic, environmental and social dimensions of sustainable agriculture.

A formal survey using structured questionnaire is conducted in 97 households in three systems. To measure sustainable cattle feeding systems, social (employment opportunity, proportion of time used in cattle production, role of women), environmental (stoking rate, manure utility, manure storage, farmers' awareness in manure issues) and economic indicators (gross margin) are selected.

Keeping cattle in cut & carry system creates better employment opportunities, higher economic efficiency, but larger risk on environment from manure emissions due to manure utility from cattle is evaluated less important in H'Mong households due to having less fertility land and low production intensity. Ranking second in efficiency of economics and employment opportunities is part-time grazing system. This system indicates a highly stable in manure preservation and used, and less manure leaching out. The lowest employment opportunities and rather poor economic efficiency are presented in Free ranging system, while medium impact of manure source is analyzed. High proportions of manure running out to environment is recorded among systems, which are indicated by lack of favourable preservation methods in households and low level of cattle manure using resulting in high pollution for households living in study sites.

Keywords: Cattle feeding systems, economic efficiency, environmental stability, mountainous region, social solidarity, sustainable agriculture, sustainable indicators

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