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

HOANG THI HUONG TRA¹, PHILIPPE LEBAILLY¹, VU CHI CUONG², BRIGITTE DUQUESNE¹

¹University of Liege, Department of Economics and Rural Development, Belgium

²National Institute of Animal Husbandry, Animal Feed, Nutrition and Pasture Research, Viet Nam

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 was 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) were selected.

Keeping cattle in Cut & carry system creates better employment opportunities, higher economic efficiency, but larger risk on environment from manure. Ranking second in efficiency of economics and employment opportunities is part-time grazing system. The lowest employment opportunities and rather poor economic efficiency are presented in Free ranging system. 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 sustainability, northern mountainous region, social solidarity, Sustainable agriculture, Viet Nam