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## Economic Contribution of Draft Power and Manure to Crop Farming System in Bhutan

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### Abstract

The integration of livestock is an important part in the crop farming system in Bhutan. The livestock provides draft and manure to the crops and they in turn utilise the crop residues and unwanted biomass to convert to important food protein for human consumption. About 80 % of the population in Bhutan is concentrated in the rural areas and the majority of them practice crop livestock farming as a means to sustain their livelihood system. The farmers practice dry land agriculture with two cropping seasons per year. The farmers practice subsistence agriculture due to the absence of markets for their products. Marketing the products to distant markets involve high transaction costs.

The primary data was collected from 292 households in 2009 from the three regions viz. Western, Central and Eastern regions of Bhutan within the altitude range of above 500 — 2800 meters above sea level. The households were segregated into three categories depending upon their land ownership. The production elasticity of the major summer and winter crops of the three regions of Bhutan was estimated by a Cobb Douglas type yield function. The econometric regression analysis was run to explain the effect of explanatory variables like draft, Manure, Labor, fertilisers on the yield function of each crop. Both T-test and F-test was carried out to determine the level of significance of the elasticity.

The study suggests that the contribution of draft power and manure is crucial in the small holder mixed farming system in Bhutan. The use of such inputs at the household level helps to reduce the production costs and increase yield. The results of the study helped in understanding the importance of draft and manure to the crop productivity and the necessary interventions to improve upon it.

**Keywords:** Crop-livestock farming system, draft, manure, subsistence agriculture