



Tropentag 2009
University of Hamburg, October 6-8, 2009
Conference on International Research on Food Security, Natural
Resource Management and Rural Development

Constraints to Cattle Production of Small-scale Farmers in Kampong Cham Province, Cambodia

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Abstract

Almost all cattle raised in Cambodia are produced by small-scale farmers in rural areas. Small-scale farmers commonly use native grasses and crop residues as feed for their animals. Feed resources for cattle have become a constraint as the cattle population and area cultivated with crops have increased; this has resulted in low animal productivity. Suggested alternative: nutrition has been identified as the single most important constraint to cattle production in Cambodia. Increasing demand for red meat has meant that cattle production represents an important opportunity for Cambodian farmers. This study reports a survey which was conducted to identify constraints to cattle production of small-scale farmers in Cambodia. 60 randomly selected households raising cattle in Kang Meas and Tbong Khmum districts in Kampong Cham province were interviewed in late 2008.

Most (80 to 90%) household income was derived from the farm (only 10 to 20% of income was from off-farm sources). Cattle production represented 20% of farm income, on average. The mean number of cattle per household was 5. Overall cattle production was assessed as very low, with average inter-calving interval estimated at 18.6 months and mean growth rates of non-lactating animals at less than 100 g/d. Farmers reported that cattle were mainly used for draught, breeding and selling. This is a significant shift from the traditional approach of using cattle for draught and breeding only, indicating that farmers were responding to market demands.

Farmers rated feed availability as the most important constraint to cattle production, followed by diseases. In the survey villages cattle production was severely constrained by the lack of feed resources which caused low animal productivity. Providing locally available feed (natural grasses and crop residues) for cattle is a major challenge for farmers, requiring high labour inputs. Planting alternative feeds such as forage grasses is an attractive opportunity for small-scale farmers to improve their cattle production.

Introduction

In Cambodia, livestock plays an important role in poverty reduction in rural areas as approximately 90% of all livestock is produced by small-scale farmers. Cattle are the most important sources of draft and transport in the fields as well as the manure for the low input

farming system and income to the household when selling mature offspring. Nearly all cattle are produced by smallholder farmers in rural areas using native grass and crop residue as the common feed for their animal. This habit is becoming a constraint for them when the number of animals and cultivated area is increased as this result in a shortage of feed resources (Stür and Horne, 1999 and 2001). Nutrition has been identified the most single problem to reduce the productivity of cattle in smallholder system.

Kampong Cham province accounts for 13% of cattle population of Cambodia and has the great potential for cattle development with small-scale farmers. In 2003, the use of forage fodder banks was introduced by CIAT through the Livelihood and Livestock Systems Project in this province. Research to increase cattle productivity of small-holder farmers in Cambodia, is carried out by the project “Improved Feeding Systems for More Efficient Beef Cattle Production in Cambodia” (Forage for Beef project) which is funded by the Australian Center for International Agriculture Research from 2008 to 2011 (ACIAR, 2008).

This study is a part of the current project with the aim to identify the constraints to cattle production of small-scale farmers in Kampong Cham province. The results of this study will be used to provide a comparison for later impact assessment.

Material and Methods

Two districts of Kampong Cham province were selected as the research sites for this study: Kang Meas and Tbong Khmum. Thmey Kor village located in Roka Koy commune in Kang Meas district was chosen as research site 1 and Chroy Ko village located in Chiro Pi commune in Tbong Khmum district as research site 2. A list of all households in each survey site has been assembled with the help of the chief of village, showing which households raise cattle and which households have already planted forages. 60 farmers were randomly selected from the list (30 from each village) to be interviewed using semi-structured questionnaires in late 2008.

Results and Discussion

The findings show that more land was available for the farmers in Tbong Khmum district to be owned than the farmers in Kang Meas district. As shown in Table 1, the farmers in Tbong Khmum had on average 2.9 ha of land per household while the farmers in Kang Meas owned only 1.06 ha ($P = 0.001$). The land is an important resource of the farmers to invest the agriculture in their household. The annual income of the farmers was 1912 and 3296 USD in Kang Meas and Chroy Ko respectively (significantly different at $P = 0.008$). Most of the household income (more than 80%) of farmers was derived from farm activities. Cattle production represented almost 20% of the household income.

Table 1: Household information of farmers

Variables	Kang Meas	Tbong Khmum	Total	P-value
Average land area (ha)	1.06	2.90	1.98	0.001
Average income (USD)	1912	3296	2604	0.008
% of income from farm activities	80	87	83	0.295
% of income from off-farm activities	20	13	17	0.281
% of income from cattle	17	19	18	0.603

The cattle production of small-holder farmers was not found to be different in these two districts (Table 2). The mean number of cattle per household was 4.3 and 5.3 heads in Kang Meas and Tbong Khmum respectively. Many farmers kept not only male cattle, but also 1-3 heads of

female cattle per household. Most of cattle were kept as breeding animal, especially female cattle, to produce the calf for selling (Figure 1). Besides this purpose, cattle were also used for draft power and being sold to market. More farmers in Kang Meas used their cattle for draft power while more farmers in Tbong Khmum kept their cattle for sale.

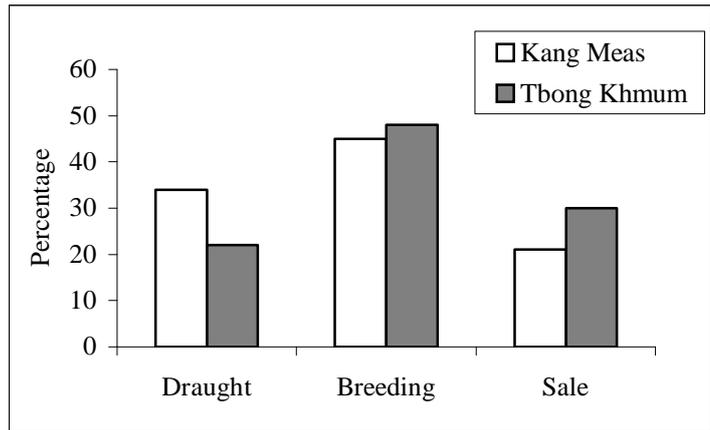


Figure 1: Cattle production purpose of farmers

Overall, the reproductive performance of cattle was very low in terms of age at first pregnancy and calving interval (Table 2). The heifers of small-holder farmers in the studied villages started the first calving at 3 years of age. Then the average calving interval of the cows was approximately 18.6 months. The reproductive performance is an important trait in cattle production. The cow should have their first calf at early age and have minimum calving interval. According to Roy et al. (1975), the normal heifers reach the first puberty at age between 320 and 600 days. The best calving interval of cows is 12 month which is required to rebreed the cattle at 80 days after calving, but most cows do not reach this point (Kunkle et al., 1998). The poor nutritional status is the main factor to prolong the anoestrus of cow (Perry et al., 1991; Lalman et al., 1997).

Table 2: Number of cattle and their reproductive performance

Variables	Kang Meas	Tbong Khmum	Total	P-value
Number of cattle (heads)	4.3	5.3	4.8	0.23
Number of cow (heads)	1.6	2.3	1.9	0.037
Age at first calving (years)	2.8	3.1	2.9	0.155
Calving interval (months)	17.2	19.6	18.6	0.055

The farmers in the studied sites rated the lack of feed and disease as the most constraints to cattle production. The lack of feeds occurred almost all year long as the grasses stopped growing in dry season and the land was become cultivated area in rainy season. Moreover, in some area as the case of Kang Meas, most of area was flooded during flooding season which limited the grazing land for animal. As a result, feeding cattle required high labor input, more than 6 hours per day per household on average. As shown in Table 3, member of household including children spent on average 4.5 hours per day far from home for grazing their cattle which was almost available in dry season. During the time which native grasses were available, especially in rainy season, farmers spent on average 2.5 hours per day to collect those native from the field. For farmers who planted forage around or near their house, they spent less than 0.5 hours to cut and carry those forage for their cattle. Besides these activities, farmers also spent almost 1 hour to clean, give water to animal and manage the manure. The lack of feed and diseases were also the main constraints for cattle production of farmers in others provinces of Cambodia (Windsor, 2008). During the scarcity of feeds, cattle feeding are mainly based on the

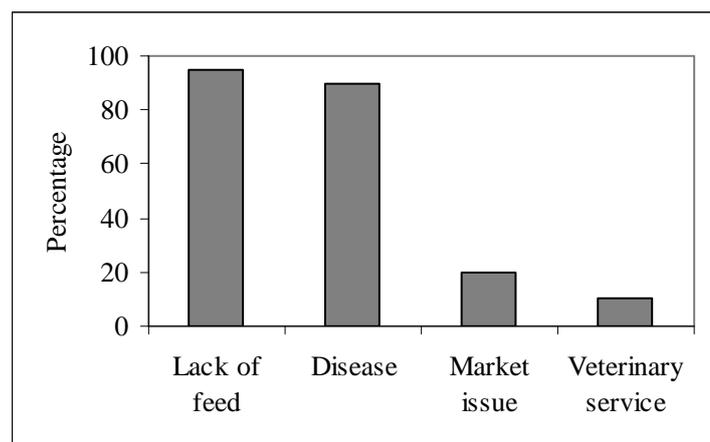


Figure 2: Main problems for cattle production of farmers

crop residue such as rice straw which has very low quality. Poor nutrition results in low growth rate (less than 100 g/d) and low reproductive performance.

Table 3: Average time spent for cattle feeding and management

Activities (h/day)	Kang Meas	Tbong Khmum	Total	P-value
Grazing	4.6	4.4	4.5	0.756
Collecting native grass	2.4	2.6	2.5	0.661
Cutting planted forage	0.25	0.4	0.3	0.169
Cleaning and watering	0.6	0.4	0.5	0.155
Manure management	0.4	1	0.7	0.345

Conclusions

The cattle production shared almost 20% to the household income of small-scale farmers in rural areas. However, it was severely constrained by the lack of feeds resource. This problem may have a prolonged impact on the reproductive performance of cattle. Providing locally available feeds (natural grasses and crop residues) to cattle is a major challenge for farmers in rural areas, requiring high labor inputs. As a result, farmers had to spend more than 6 hours per day to feed and manage their cattle. Planting alternative feeds such as forage grasses is an attractive opportunity for small-scale farmers to improve their cattle production. The technical departments should provide technical assistance and forage planting materials to farmers to grow the forage on their farm. The researches to improve cattle feeding system should be done to provide recommendations to farmers.

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