

The Ownership of Livestock in Relation to Land Holding at Semi Arid Area of Bangladesh

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Abstract: With 297 farm family at Semi Arid Area of Bangladesh an experiment was conducted, through a pretested questionnaire to know the ownership of livestock in relation to land holding and investigate production system, source of income about livestock by different category of farmers. Significant difference was observed between total land size and number of livestock ownership. Land less farmers has more duck & goat, but large farmers have more number of cattle & chicken compared to other farmer groups. A positive correlation among total land size, number of cattle, sheep & chicken but negative correlation among total land size, number of goat and duck was found. The relationship between total land size and rate of yield (Milk and egg) was positively correlated. Land less group found more profit from duck & secondly earn from goat but large farmer more benefited from sheep & secondly cattle.

Key words: Livestock, land holding, semi arid area, Bangladesh

Introduction

Under the prevailing condition of farming in Bangladesh, agriculture does not keep the farmer busy all the year round. During off-season, Animal husbandry as a part of mixed farming provides a steady income and can keep a farmer busy throughout the year. Livestock is an important sub-sectors of agriculture which have 9% contribution in Gross Domestic product. It generates 13 % of the total foreign exchange earnings. In 1996-97, the contribution of this sub sector to agricultural growth rate was 9 % which highest among other three component of agriculture i.e. crop, fisheries and forestry (Das, 1999). The relationship among these components with in the country often results in some development imbalance. The inter-relationship between crop sector and livestock sector are essential for increasing economic and social efficiency of mixed farming agriculture in Bangladesh (Jabbar, 1985). Total livestock ownership increases with the increase in size of the farm holdings, but the ownership in the types of animals do not follow similar trend for all animals.

In Bangladesh the relationship between land size and livestock ownership pattern of farmers were investigated and described by many authors (Lassen, 1981; Sarker *et al.*, 1992; Rahman 1993, and Baset, 1996). Begum *et al.* (1996) observed from their study in Dinajpur and Jamalpur that draft power ownership is positively correlated with the cultivated lands in both the study areas irrespective of cultivated holdings. In Barind area present farming system land size crop yield and livestock ownership are highly interact (Rahman *et al.*, 1999). But there is lack of information on the relationship between land size & live-stock ownership. This study is intended to reveal the land size and livestock ownership, also investigate production, source of income for rearing of livestock by different category of farmer.

Materials and Methods

A field survey was done to know the ownership of livestock in relation to land holding and investigate production system, source of income about livestock by different category of farmers. The three upazilla namely, Godagari, Nachol and Niamotpur were selected from Rajshahi, Chapai Nawabgong and Naogoan District in Semi- Arid Area of Bangladesh. The data were collected during June 1997 to July 1999 and all are in the same agro ecological zone.

A list of 297 sample farmer was prepared and stratified random technique from five farm categories viz. landless marginal, small, medium and large (Table 1). Questioning the selected farmers directly using an interview schedule from On Farm Research Division (OFRD), Barind station, Bangladesh Agricultural Research Institute (BARI), Rajshahi, collected data. The parameters, number of different livestock species, own cultivable land, rate of milk and egg production and yearly income from different species were studied. After completion the field survey, data from all interview schedules were set for its tabulation, coding and reduction. For statistically significance, chi-square test and correlation co-efficient was used for describing findings. The relationship between landholding and livestock ownership was estimated the following linear regression model of the form $Y = a + bx$. In fact, it was widely used by many researcher in their relationship studies (Begum *et al.*, 1996 and Baset *et al.*, 1997).

Results and Discussion

There is a significant ($P < 0.01$) difference between land size and number of animals owned by farmers (Table 2). Similar results was found by Baset *et al.* (1997), who observed significant difference (0.01) between land size and draught cattle owned by the farmers. All categories of farm families having more number of chickens compared to other species but land less farmers have more number of duck (6/farm family) & goat (3.25/farm family) compared to marginal, small, medium & large farmer (Table 2). Large farmers have more number of chicken (11.95/farm family) & cattle (4.5/farm family) than others. For all farm categories in the surveyed area the average number of cattle, goat, sheep & poultry per household were 2.61, 1.43, 0.82, 8.59 & 3.11 respectively. A similar distribution of livestock had been reported by Reza (1999) who showed that each number of farm family contained 2.6 cattle/ buffalo, 1 goat - sheep and 7.5 duck-chicken respectively. Poultry keeping was the common practice and cattle raising came second in order (Fig. 1). The finding corroborates with the works of Akter *et al.* (1984) and Razzaque *et al.* (1995). The farmers usually kept animal because of multipurpose use such as milk, meat manure and draft power. In study area each family contains this above number of average livestock species. Fig. 1 maintained that

Table 1: Sample number with respect to farm category

Farm category	Land (acre)	Sample Size	Average area per farm in acre
Landless	0.00-0.50	33	0.02
Marginal	0.51-1.20	57	0.80
Small	1.21-2.47	48	1.96
Medium	2.48-4.90	87	3.4
Large	4.91-above	72	10.35
Number of the farmers			297

Table 2: Number of livestock owned by farmers having different land size

Farm category	Species				
	Cattle	Goat	Sheep	Chicken	Duck
Landless	1.5	3.25	0.75	6.75	6.0
Marginal	1.11	0.64	0.52	5.75	2.0
Small	1.0	1.15	0.69	9.15	2.84
Medium	3.07	0.65	0.61	9.38	2.19
Large	4.5	1.5	1.15	11.95	2.55
Average	2.61	1.43	0.82	8.59	3.11

Chi-square 25.58 with 4 x 4 = 16df (P < 0.01)

Table 3: Regression equations of total land size (area), number of livestock holding and rate of yield (Milk & Egg).

Relation between	Regression equations Y=a+bx	Correlation coefficient (r)
Total land and cattle	Y=1.12+0.334X	r=0.915
Total land and goat	Y=1.58-0.04X	r=-0.174
Total land and sheep	Y=0.521+0.091X	r=0.924
Total land and chicken	Y=6.851+0.527X	r=0.897
Total land duck	Y=3.616+0.151X	r=0.381
Total land and milk production	Y=34.86+15.87X	r=0.876
Total land and egg production	Y=230+0.521X	r=0.053

Table 4: Rate of yield per farm by farm category

Farm category	Milk	Egg
	liter/farm/year/family	(Number/farm/year/family)
Landless	-	205
Marginal	75.58	200.47
Small	38	250
Medium	136.42	291.69
Large	186.78	215.9
Average	87.35	232.61

Table 5: Yearly income (per cent taka/farm/year) from livestock by the farmers having different land size

Species	Landless	Marginal	Small	Medium	Large
Cattle	-	9.22	11.18	35.79	43.80
Goat	24.65	11.33	23.13	10.81	30.08
Sheep	11.95	18.97	9.19	9.65	50.24
Chicken	16.23	16.43	20.48	19.08	27.78
Duck	46.28	21.21	14.38	6.31	11.83
Total	100	100	100	100	100

1 US\$ = 58 Taka

cattle, goat, sheep, chicken & duck per household were 16, 9, 5, 51, & 19 % respectively of total livestock owned. The relationship between total land and number of livestock holding shown in Table 3. It appears that number of cattle, sheep and chicken increased linearly by 0.334, 0.091 and 0.527, respectively for increase of each area of land and they were positively correlated (r = 0.915, 0.924 & 0.897). On the other hand the number of goat and duck decreased linearly by - 0.04 and -0.151 respectively for increase of

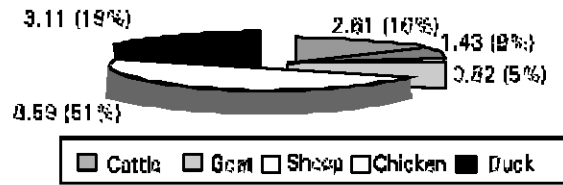


Fig. 1: Average livestock ownership

each area of land and they were negatively correlated (r = -0.174 & - 0.381). Baset *et al.* (1997) found that number of bullock increased linearly by 0.062 for increase of each area of land & it was positively correlated (r = 0.814) which was agreed with finding. Similar work was conducted by Begum *et al.* (1996) who found correlation co-efficient (r) of 0.13, 0.05, 0.13 in case of small (0.50 – 1.00), medium (1.00 – 2.00) and large farmer (2.00-above) respectively at Jamalpur area. They also found correlation coefficient (r) of 0.18, 0.19 and 0.54 in case of small, medium and large farmer respectively at Dinajpur area. Sarker *et al.* (1992) also found that the extent of cropped area and the number of cows are positively correlated with the degree of animal ownership for both plain (r=0.5096) and hillfoot (r=0.380) areas. Number of goat and duck decreased linearly by -0.174 and -0.381 respectively for increased each area of land and they were negatively correlated (r = -0.174, r = -0.381). The relationship between total land and rate of yield was positively correlated (r = 0.876, r = 0.053) which shown in Table 3. Milk production & egg production increase linearly by 15.87 & 0.521 for increase of each area of land respectively. Milk production was highly correlated (Table 3) but egg production poor correlated each acre of land increase. In study area highest milk production in large farmer group but zero in landless farmer group. It indicated that landless group had not dairy cattle. Landless farmer had satisfactory egg production where average egg production per family per year had 232.61 (Table 4). In Barind area landless group found more profit from duck (46.28 % take /farm/ year) then other livestock species and secondly earn from goat (24.65% taka/year) but large farmer benefited from sheep (50.24% taka/farm/year) than cattle (43.80% taka/farm/year) (Table 5).

From the above discussion it can be concluded that there was a positive relationship among land size, number of cattle, sheep and chicken. But negative relationship with number of goat and duck. Milk yield is highly correlated than egg production.

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