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Crop-livestock-environmental interaction in the rural areas of Mymensingh

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Abstract: The studt was conducted at two unions namely: Boyra and Fakirakanda of Mymensingh district of Bangladesh. Data were collected from 30 farmers in each village through an interview schedule. The study explored the interaction among the crop, Livestock and environment. The interaction was considered for livestock population, farmer's education, draught power, and livestock feeding practices, farmer's awareness. There were some differences in education level at different farm sizes. About 19% landless and 25% large farmers had no formal education. Milk production and draught power were the main purpose of cattle rearing. About 50% large and 36% medium farmers reared cattle for milk production and 45% medium farmers used cattle for draught power. About 20% small, 18% medium and 25 % large farmers reared cattle for dual benefit i.e. milk production and draught power. About 35% of the total farmers fulfill their alternative power requirements for cultivation by hiring power tiller. The average annual income per respondent per year was received mainly from three different sources i.e. income from crop, business and service. About 83% and 63% of the total farmers used own money for crop production and livestock production respectively. Most of the farmers i.e. 47% of the total farmers utilized their resources on crop, livestock, poultry and other purposes. The crop-livestock interaction was established mainly for the investment from crop to livestock and livestock to crop. About 13% and 53% of the total farmers used grazing and restricted grazing, respectively. About 63% of the total farmers practiced triple crop/ season, while only 27% of the total farmers practiced double crop/ season.
Key words: Live-stock, environment, Interaction

Introduction

Bangladesh is a country of mixed agricultural farms of which crop; livestock, fisheries and homestead forestry are the major components, only crop production accounts for most land use i.e. 14.2 million hectare in Bangladesh (BBS, 2001) and as such is probably the single most powerful influence on environmental quality. Including crop production livestock is an integral part of farming systems in Bangladesh. Cattle of Bangladesh is an inseparable and integrated part of the farming system and it ranks 12th in the cattle population in the world and in the Asian countries, its position is third (Alam *et al.,* 1994). Livestock feeding management system in the world is changing in response to population pressure. Feeding is the most expensive item of livestock production and also the main factor in livestock environment interaction. The overall cropping pattern must be governed by the needs of the country. Within this overall pattern there are specific features to the integrated farming system. This component provides food, firewood, timber besides the animal feed from by products and residues. Therefore, emphasis should be devoted to crops, shrubs and trees and to management practices, which fix atmospheric nitrogen; provides residues, by-products of high nutritional value for animal feeding; help to control erosion and maintain soil fertility (Sadullah, 1995).

Materials and Methods

The study on crop- livestock- environment interaction and related matters were conducted at Boyra and Fakirakanda unions of Sadar Thana in Mymensingh district. In order to collect the required information on various aspects of the study, an interview schedule was prepared to satisfy the objectives of the research. The researcher collected information through personal interview from the individual respondents at their home. The information supplied by the respondents was record directly on the interview schedule. The information was cheeked carefully before leaving the study area in order to minimize errors. Data were collected in local unit. These were subsequently converted into appropriate standard units. The data were collected from the 60 respondents through randomly selection by 74 days from 1st January to 15th March. After completion of field survey all the interview schedule were set for its data tabulation for coding and reduction. All the individual variables of the interview schedule were transferred to master sheet to facilitate tabulation. The data were coded, compiled, tabulated and analyzed to accomplish the objectives of the study. Qualitative data were converted into quantitative by means of suitable scoring techniques where ever applicable. Data were presented mostly in the tabular form for widely used and easy to understand. Various statistical measures like numbers, average, percentages distribution etc.; were done in describing the variables.

Result and Discussion

In the study area the farmers usually kept animals for power, meat, milk, manure, draught power etc. The farmers had more number of cows (41) compared to calf (30) and bullock (17). Farm size had a greater

influence on education of the farmers. Among the landless and small farmers total 40% had no formal education while only about 25% large farmers had no formal education, but there was an increased tendency of taking only primary education i.e.75% landless, 59% small, 54% medium and 75% large farmers had only primary education. This was because of economic insolvency and in order to increase family income, most of the farmers engaged their children to several income generating activities, instead of sending them to school.

Usually in the rural area most of the farmers reared cattle for milk production and also for dual benefit i. e. milk production and draught power. About 34% small, 36% medium and 50 % large farmers reared cattle only for milk production. On the other hand 20% small, 18% medium and 25% large farmers reread cattle for dual benefit. The farmers, who were suffering from shortage of draught power, usually fulfill their requirements from other sources i.e. 35% of the total farmers by hiring power tiller and 27% farmers by hiring power tiller and cattle. The exchange of sharing tendency was more towards small and medium farm category.

Table 1Linkage among different resources

Parameters	Linkage	No. of respondent	% of Total respondent
Investment	Crop to Livestock		
	• Treatment of animal	24	40
	• Purchase of feed	18	30
	• Purchase of animal	16	27
	Livestock to crop		
	• Cultivation expenditure	45	75
	• Purchase of Fertilizer	17	28
	• Purchase of paddy and other crop	16	27
Food	Crop to human		
	• Livelihood	41	68
	• Treatment of human	38	63
	• Education	40	67
	• Clothing	31	52
	• Food purchase	15	25
	• Transport	11	18
	Livestock to human		
	• Education	24	40
	• Livelihood	19	32
	• Transport	17	28
Environment	Livestock to Environment		
	• Animal grazing system	36	60
	Environmental effect on crop		
	• Detrimental to crop production	24	40
	• Decreases production	20	33
	• Damage food	29	48
	• Flood	16	27
	Environmental effect on Livestock		
	• Decreases production	22	37
	• Died	20	33
	• Disease	15	25
Exchange	Exchanges of goods, services, business etc.		
	• Clothing	32	53
	• Education	30	50
	• Treatment	30	50
	• Livelihood	24	40
	• Cultivation expenditure	21	35
	• Transport	9	15

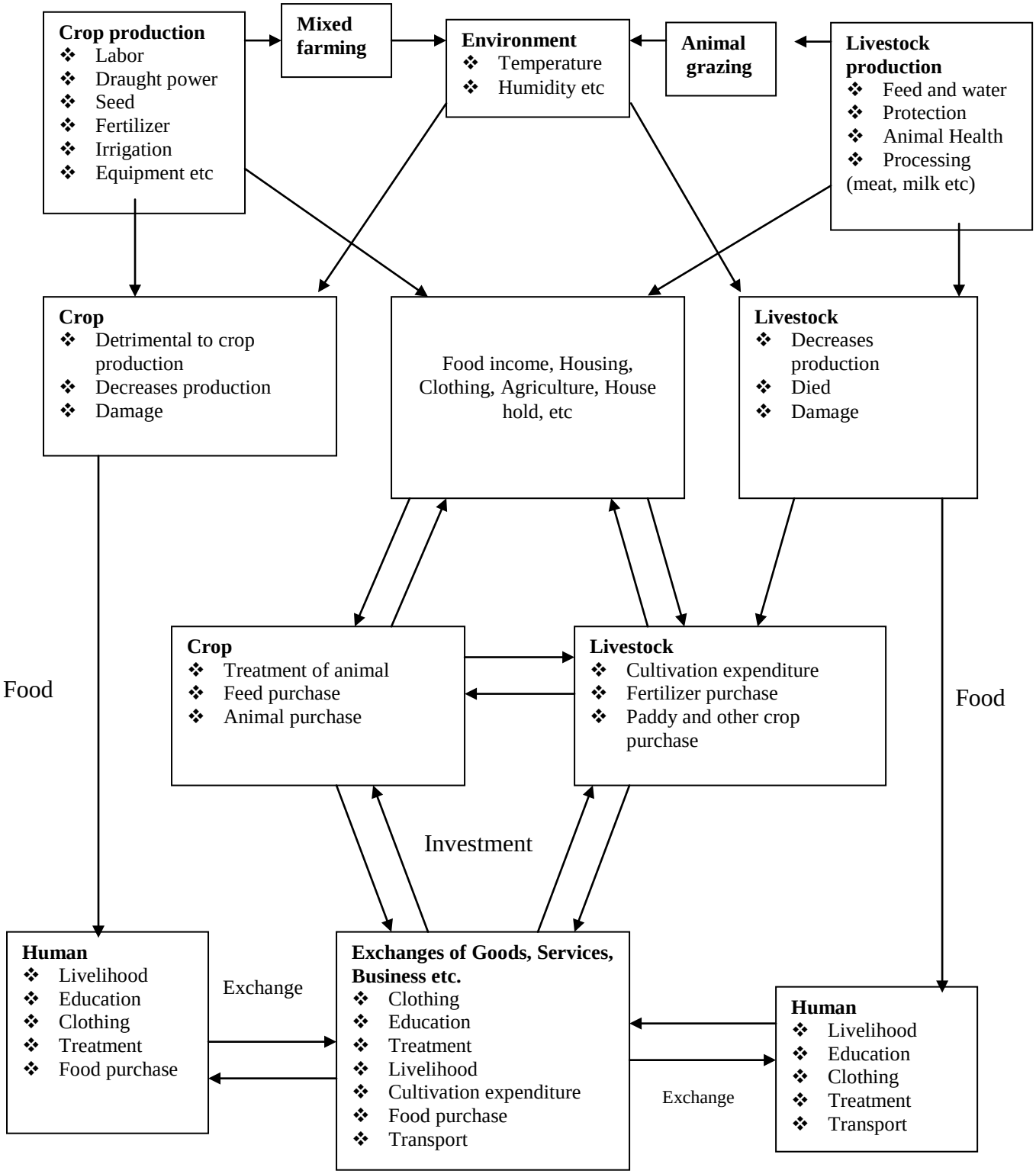

Fig. 1 Crop-Livestock-Environment linkage pattern in the experimental area.

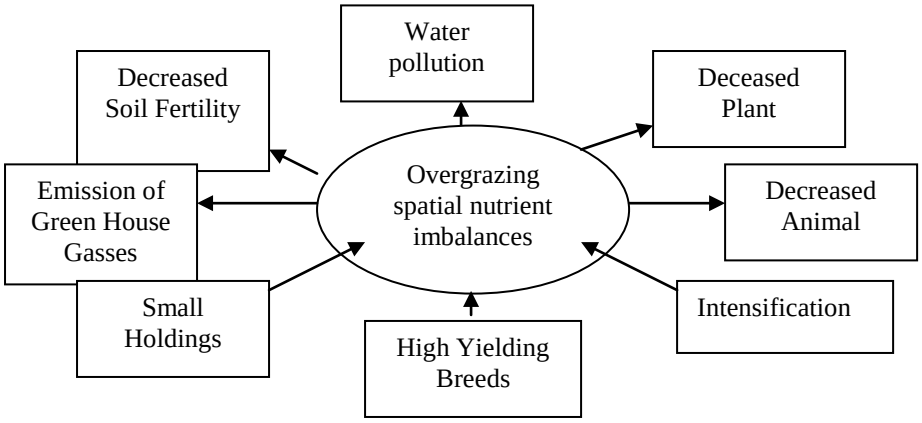

Fig. 2 Crop-Livestock-Environment linkage in the mixed system.

In the study area most of the farmers were depended on straw for livestock feeding. Only about 32% of the total farmers used purchased straw. Besides straw, the farmers were used different types of fodder for their livestock. About 41% and 20% of the total farmers were used tree leaves and roadside grass respectively with straw when they practiced livestock feeding. Among the farmers 21%, 78% and 20% farmers stored their straw in the home by staking on the ground and by making macha i. e. stack above the ground.

In the Boyra and Fakirakanda unions, the average annual income per respondent per year was received mainly from three different source i. e. income from crop production (Tk. 9360 & 10420); business (Tk. 21500 & 18500) and service (Tk. 15200 & 15000) respectively. Among the farmers about 83% of the total farmers used own money for crop production while only 5% of the total farmers used bank loan. On the other hand 63% of the total farmers used own money for livestock production while only 3% of the total farmers used bank loan. About 47% of the total farmers utilized their resources for crop, Livestock, poultry and other purposes.

Crop-livestock- environment interaction takes place with the confines of production system and the main causes of interaction was grazing and mixed farming. Most of the farmers used restricted grazing and free grazing respectively. Grazing and mixed farming was the main cause of soil compaction, land degradation and loss of soil organic matter and the other effects i.e. green house gas emission, global warming etc. to environment from crop and livestock production.

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