

The role of poultry and goats in poverty alleviation in Bangladesh¹

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Abstract

This project, starting in 2001, has been examining the role livestock play in the livelihoods of resource-poor landless households in Bangladesh. Bangladesh is one of the poorest countries in the world and livestock provide a potential route out of poverty for very poor households. Many non-governmental organisations (NGOs) provide micro-finance for livestock enterprises. Action research examined the impact on livelihoods of livestock provided by the project to farmers who had not previously benefited from micro-credit for livestock or other enterprises (hard-core poor or extreme poor). Farmers (33 women) were provided with hens, ducks or goats. The average daily income of participating households before the distribution of livestock was US\$ 0.94. Preliminary conclusions suggest that goats may be a better option than poultry due to their inherent disease resistance. Some households have been very successful with poultry but overall ducks and chickens have not performed as well as goats as mortality has been relatively high. Identification of potential beneficiaries, who are likely to succeed, may be crucial to success in the longer term. Very poor households are able to manage livestock enterprises within their family budgets, using locally available, usually free resources and labour availability is not a problem for the majority of them. Consumption of livestock products has increased. Marketing is not difficult as egg buyers visit most villages and marketing problems for goats are not anticipated. Provision of veterinary training and services is essential for the success of poor households' livestock enterprises.

Introduction

The project entitled 'Using livestock to improve the livelihoods of landless livestock keepers in Bangladesh and Nepal' (LPP Project R8109) started in 2001 and has been examining the role livestock play in the livelihoods of poor landless households in Bangladesh. This paper provides some interim conclusions from action research undertaken in partnership with poor landless households over the past nine months. The paper by Banstola *et al.* (these proceedings) relates to the Nepal component of this project.

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Background

Bangladesh remains one of the poorest and most disaster-prone countries in the world. The United Nations Human Development Index places it at 144th, while World Bank GNP per capita statistics suggest a rank of 175th out of 210 countries (World Bank, 1999). Approximately 50 per cent of its 130 million population may be categorised as poor, and of these 23 per cent (or about 29 million) are labeled extremely poor (those with 40 per cent or less of the income of those classified as poor). A further 20 per cent are tomorrow's poor; people who given current trends will soon fall into poverty (Rahman, 1998). Women are disproportionately affected with 95 per cent of female-headed households living in poverty (Lawson-McDowall, 2001). Despite the significant gains in the last decade (Rahman, 1998), social indicators paint a grim picture, with mortality in children under-five at 10 per cent, a life expectancy of 58 years and the adult literacy rate at 27 and 50 per cent for women and men, respectively (World Bank, 1998). The depth and severity of poverty is worse in rural areas with 80 per cent of the poor living there.

Many rural people are both poor and landless. In Bangladesh, land pressure is increasing with population growth and, therefore, landlessness has been a permanent feature of the rural landscape over the past three to four decades. Traditional inheritance laws divide land among the male children of a family, so that land holdings become smaller over generations. The population is large and land extremely scarce so the opportunities for buying more are very limited. Regular flooding means that families can be temporarily deprived of their land, perhaps for a cropping season, and it can be eroded by floodwater.

Poverty trends

There has been a decline in poverty in recent years, with rural poverty declining from 61 per cent in 1991/2 to 53 per cent in 2000, a fall of 1.6 per cent per year. However, poverty reduction was slower in the second half of the 1990s, which can be attributed to slower agricultural growth, and deterioration in income distribution. This is despite a relatively high rate of economic growth in the late 1990s, with GDP increasing by 5.6 per cent per year between 1998 and 2000, compared with only 3.2 per cent in the 1991-97 period. Annual GDP growth rates of the order of 5 per cent are below the level of 7 per cent needed to significantly reduce poverty.

Women are more affected by poverty than men, although support from non-governmental organisations (NGOs) and access to micro-credit have improved their position. However, fewer women have formal sector jobs, with 75 per cent of employed women over 15 years of age being unpaid family workers, compared with 13 per cent of men. Women are significantly disadvantaged in a patriarchal society with their roles and rights being defined in terms of gender. Between 10 and 30 per cent of households are female headed, and the number is growing due to the erosion of family support. Over 90 per cent of such households are below the poverty line, and 37 per cent fall within the category of extremely poor, compared with 22 per cent of households headed by men.

The destitute, ultra-hardcore poor and hardcore poor (see Table 1) are the groups in most need in Bangladesh and some of these are beneficiaries of a government scheme (supported by donors) known as Vulnerable Group Development (VGD). Local government departments (Union Parishads) are provided with wheat which is distributed to these households in return for labour (food for work). Part of the rationale for this

project was to investigate whether livestock could provide benefits to this group as means of poverty alleviation and the accumulation of assets and income, thereby providing a degree of self-reliance.

Table 1 *Categories of the Poor (from SLDP, 2002)*

| Classification | Poverty level, indicators and causes | Coping actions |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Destitute</i> 3% - 5% of rural population | Desperate Disabled, chronically sick, elderly Abandoned children | Begging Informal social safety nets Charitable relief |
| <i>Ultra-hardcore poor</i> 10% of rural population | Extreme – under 1600 kcals/head/day no assets, no homestead or land, floating population, disaster victims, long-term illness, few able-bodied household members | Informal social safety nets Scavenging, domestic service, Sell possessions to buy food. Share harvesting Little access to credit, even moneylenders. |
| <i>Hardcore poor</i> 10% of rural households | Severe: under 1805 kcals/head/day Land ownership: less than 0.1 acre, or live on other's land. Poultry and goats Debt burden | Casual wage labour, seasonal migration VGD* programme support Sharecropping and share harvesting Shared livestock Some able to join NGO** micro-credit groups |
| <i>Moderate poor</i> 28% of rural households | Moderate: under 2,112 kcals/head/day Land ownership: less than 0.5 acre Livestock | Wage labour, migrate to cities Limited agriculture and sharecropping Self-employment supported by NGO credit |
| <i>Neo-poor</i> 20% of rural households | Just above poverty line Land ownership: 0.5 to 1.5 acre Vulnerable to falling into poverty | May not qualify for NGO micro-credit (or not wish to join) Access to moneylenders |

*VGD = Vulnerable Group Development

**NGO = non-governmental organisation

Opportunities for Livestock Development

A livestock revolution is occurring in much of South East Asia, including Bangladesh, because a combination of population growth, urbanisation and income growth is increasing demand for products of animal origin, principally milk, meat and eggs, (Delgado *et al.*, 1999). Further population growth is forecast along with increased urbanisation during the next two decades, all of which will lead to further demand for animal products. There is a positive relationship between national per capita income and consumption of livestock products. Food prices have been in decline for a number of years as output expands and livestock products have become cheaper which in turn fuels more consumption.

Capital intensive, industrial production systems (particularly for poultry) based on European technology and breeds have been introduced to Bangladesh in response to growing demand. However, the growth in demand is such that poor farmers or landless households may also benefit by investing in livestock enterprises. Livestock are,

therefore, viewed by some (Delgado *et al.*, 1999) as a potential means of lifting the poor from deprivation to self-sufficiency.

Poor landless households in Bangladesh commonly keep livestock, although the contribution to livelihoods of this activity is not clear. Unanswered questions include:

- How do livestock help these households to achieve their livelihood aspirations?
- How do poor landless households benefit from livestock production and projects designed to assist them develop these enterprises?
- Do they contribute to the well-being of poor households and lead to accumulation of assets?
- What is the role of micro-finance in livestock development?
- What proportion of income is generated by livestock?
- Can the extremely poor benefit from livestock production?
- To what extent does livestock production lead to more consumption (within the producing household) of livestock products?
- Is marketing a constraint for poor producers?
- Is it possible to identify good practice in the design of livestock projects for poor landless households?

The role of micro-finance in poverty alleviation and livestock development

Bangladesh's micro-finance programmes which began in the 1970s (Grameen Bank) have been internationally acclaimed for their success in providing poor people with access to credit and the development of sustainable enterprises. Around half of all rural poor households now use the services of micro-finance institutions (MFI). Of an estimated 10 million micro-finance clients worldwide, 8.6 million are in Bangladesh. Studies have shown that borrowing a series of four or five micro-credit loans can lift a household out of poverty and, with over 90 per cent of loans being to women, leads to considerable empowerment and an improvement in the strategic position of women at the household level (GoB, 2001).

However this success is bringing new challenges, including:

- The need to link financial services with other support to alleviate poverty
- The need to develop new financial services and products, including open access savings and loans to small and medium enterprises
- The need to widen coverage to include more of the poorest households, most of who do not now participate.

Of the rural poor households, less than half are receiving micro-credit. Many of those who do not participate are the poorest households (*the hard core poor*, see Table 1) who find it difficult to make savings and keep up with loan repayments. This group tend to get excluded, of their own choice or through being rejected by existing groups and NGO staff as bad credit risks. A growing proportion (around one third) of NGO-MFI members are just above the poverty line.

Project activities

The project has three major activities:

- A Participatory Learning and Action (PLA) exercise
- An Impact Assessment study, and
- An Action Research phase.

Participatory Learning and Action

The PLA exercises were conducted in three locations in Mymensingh, Tangail and Netrokona Districts. The objective was to establish the role that livestock play in poor landless household livelihoods and to assess the aspiration of livestock keepers (i.e. what were their objectives regarding livestock production and to what extent were these aspirations met by different species and enterprises). Briefly the PLA phase concluded that:

- Many poor households keep some livestock and the poorest keep mostly poultry and the less poor keep goats
- Very poor households do not have sufficient resources to purchase or maintain cattle
- Poultry provide some regular income (eggs) but also can be sold when the family needs money
- Few livestock products are consumed on a regular basis but are important for entertaining relatives and other visitors
- Women prefer livestock production as it does not interfere with religious and social norms such as purdah, which prevent many women from leaving the homestead (livestock can be cared for either in or close to the homestead).

Impact assessment

The second phase of the project examined the impact (Table 2) of the use of micro-credit for livestock production by 60 poor landless households in the same three locations. The objective was to assess these enterprises in both male and female headed households, asking the following questions:

- Did micro-credit help them fulfill their livelihoods expectations?
- Could poor households access further loans for livestock or other enterprises?
- Did livestock contribute to the well-being of the household?
- Were the capital assets of the household improved?

Table 2 *Benefits generated by livestock enterprises (total no. of farmers)*

| Benefits | No. reporting (%) |
|-----------------------------------------------|--------------------------|
| Increased income | 41 (68.3%) |
| More food | 32 (53.3%) |
| Improved social status | 31 (51.7%) |
| More savings (in form of livestock) | 28 (46.7%) |
| Afford medicine | 22 (36.7%) |
| Manure for fuel and fertiliser | 20 (33.3%) |
| More clothes | 19 (31.7%) |
| More livestock products (to consume) | 16 (26.6%) |
| Afford education | 14 (23.3%) |
| Better furniture | 14 (23.3%) |
| Improvements to house funded | 13 (21.7%) |
| Better access to land (ownership and tenancy) | 10 (16.7%) |
| More cash savings | 9 (15.0%) |
| Provided female employment | 9 (15.0%) |
| Other goods (savings) | 7 (11.7%) |
| New tube-well | 2 (3.3%) |
| Improved knowledge | 1 (1.7%) |

The impact assessment concluded that:

- Livestock can assist poor households (75 per cent of the sample generated benefits)
- Loans are often repaid from other income (not livestock income) (the exception may be cows that are already giving milk and laying hens)
- Most households need regular income (employment) to be able to access loans
- Few NGOs (micro-credit providers) offer training in livestock health or management
- Some households received training for poultry but these enterprises still failed (high mortality)
- Some NGOs provide insurance for livestock (only 4 reported in sample)
- Most households don't understand saving schemes (loan beneficiaries are required to make regular weekly savings with the provider)
- NGO credit is much cheaper than using moneylenders
- The success rate for livestock enterprises could be improved if more NGOs offered extension advice, insurance and veterinary services.

A further important conclusion was that those households that are not considered credit-worthy by NGO micro-credit providers, or are unwilling to access loans because of the

risks involved are excluded from this type of development. The action research phase (see below) worked with households that fell into this category.

Action Research (AR)

Selection of farmers

The criteria for farmer selection for the action research phase included those households:

- Who had not been beneficiaries of micro-credit for livestock or other enterprises (hard-core poor or ultra poor)
- Were able to provide the labour required (i.e. were not disabled or unable to work) and had or were able to construct some rudimentary housing for livestock
- Had some knowledge of livestock production (or previous experience) but limited livestock resources
- A general interest in livestock keeping and a willingness to participate.

Several meetings with potential participants were held prior to selecting 9-13 female farmers from each of the three locations: Thakurakona (Netrakona District); Chariswardia (Mymensingh District); and Charbogra (Mymensingh District). Poultry (ducks and hens) and goats were considered to be the most appropriate species of livestock because of the scale (small size) of the enterprises and the limited amount of investment required in housing and inputs.

Some baseline socio-economic information was collected from participating households. Their average monthly income was Taka 1,700 and average household size was 3.56 persons. Thus daily income per household was in the region of US\$0.94 and daily income per capita was US\$ 0.26.

Training of farmers and distribution of livestock

Two-day training programmes and workshops were organised in each location. Participating farmers were given training in feeding, health care and housing of goats, ducks and chickens. A brochure in Bengali on raising goats, ducks and chicken was also prepared and distributed among the AR farmers.

Pullets of the Fayomi and Sonali breeds, aged 1.5 months, were purchased and distributed to the AR participants (14 hens and one cock to nine participants). Cross-bred ducks and drakes, aged three months, were collected from private farms and distributed to ten farmers (ten ducks and one drake) (see Table 3).

Goats were procured from local livestock markets. Healthy does, preferably with two kids, 1-2 months old, were purchased if available, but if not pregnant does were purchased. Does were distributed to 13 participants.

Livestock were distributed to farmers within one to two days of being procured, towards the middle of January 2004. The health status of the animals could only be determined by a visual examination and one goat died 12 days after distribution and was replaced. Some poultry also died before monitoring could begin and these were also replaced (Table 3).

Table 3 *Numbers of farmers and number of livestock in the Action Research locations*

| Area | Goats | | Chickens | | Ducks | | Total farmers |
|--------------|--------|-------------|----------|-------------|-------|-------------|---------------|
| | Nos. | Farmer nos. | Nos. | Farmer nos. | Nos. | Farmer nos. | |
| Chariswardia | 13 | 5 | 45(+15) | 3(3) | 11 | 1 | 9 |
| Charbogra | 22(+1) | 8 | 30(+5) | 2(1) | - | - | 10 |
| Thakurakona | - | - | 60 | 4 | 99 | 9 | 13 |
| All areas | 25(+1) | 13 | 135(+20) | 9(4) | 110 | 10 | 32 |

Note: Figures in parentheses indicate the number of chickens (*Nera Brown*) and goats replaced due to mortality in the early stages of the action research.

Vaccination of livestock

All poultry and goats supplied to participants were vaccinated. Chickens and ducks were vaccinated for Baby Chick Ranikhet Disease (BCRD), also known as Newcastle disease, and Fowl Cholera. Booster vaccinations against Duck Virus Enteritis, also known as Duck Plague (DP), were undertaken either by the Directorate of Livestock Services (DLS) or, if DLS was not available, project personnel. Booster doses for Fowl Cholera in chicken and ducks were given in all locations. Vitamins, antibiotics and other drugs were supplied on the advice of veterinarians. If considered necessary, goats were given veterinary treatment.

Table 4 shows livestock mortality that has occurred up to mid-October 2004. There were high losses (as expected) of chickens and ducks, but very few losses of goats (the data in the table includes kids, one of which was taken by a predator). All poultry farmers have experienced some stock mortality (exacerbated by conflicts with neighbours in Netrakona). Only two mature female goats died.

Data collection

Data was collected from farmers on a bi-weekly basis and included:

- Animal performance (live weight) and feed inputs
- Other inputs including veterinary drugs and labour
- Consumption and sale of livestock products
- General household consumption and income
- Reproduction of goats and poultry (hatching)

Table 4 *Mortality rates of all species (mid-October 2004)*

| Area | Lost/sold | Killed by predator or neighbour | Disease | Total | No. farmer affected |
|-----------------|-----------|---------------------------------|---------|---------|---------------------|
| Goats | | | | | |
| Charbogra | | 1(2) | 4(9) | 5(11) | 5 (11) |
| Chariswardia | | | 1(2) | | 1(2) |
| Thakurakona | | | | | |
| All areas | | 1(2) | 5(11) | 6(13) | 6(13) |
| Ducks | | | | | |
| Charbogra | | | | | |
| Chariswardia | 2(2) | 3(3) | 3(3) | 8(7) | 1(100) |
| Thakurakona | 11(10) | 6(5) | 32(29) | 49(45) | 9(100) |
| All areas | 13(12) | 9(8) | 35(32) | 57(52) | 10(100) |
| Chickens | | | | | |
| Charbogra | | 4(3) | 23(15) | 27(17) | 2(100) |
| Chariswardia | | | 42(27) | 42(27) | 3(100) |
| Thakurakona | 4(3) | 28(18) | 9(6) | 41(26) | 4(100) |
| All areas | 4(3) | 32(21) | 74(48) | 110(71) | 9(100) |

Note: Figures in the parentheses indicate the percentage of total.

Preliminary results

Data for 31 weeks are currently available and some preliminary results are presented below. Data collection will continue for another year.

It was not anticipated at the beginning of the AR phase that all households would succeed with livestock production as management skills differ, labour may not be always available and there was always the possibility of conflict with neighbours. Landless households have very limited areas on which to keep livestock (homestead only) and, therefore, need to allow them to graze/scavenge beyond the boundaries of the homestead.

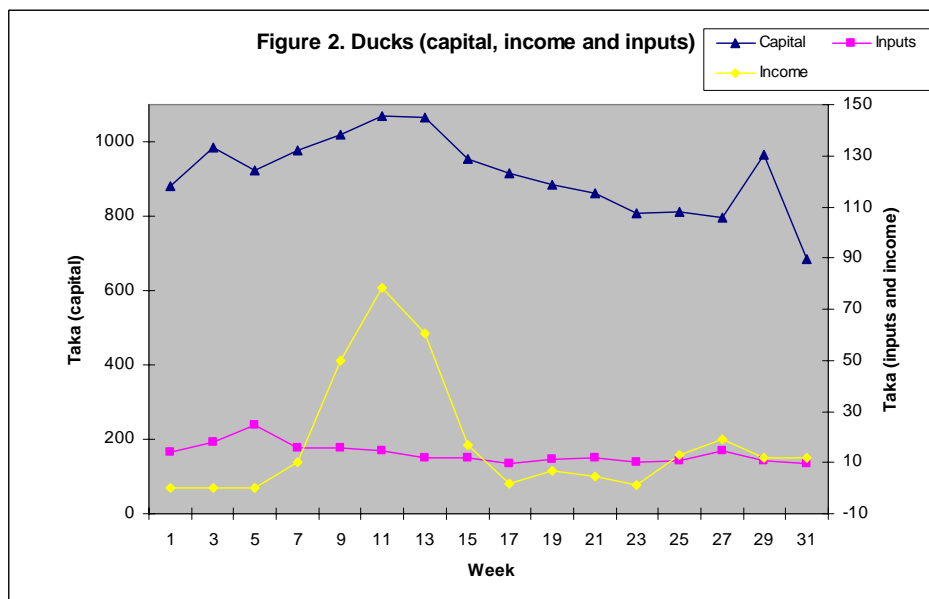
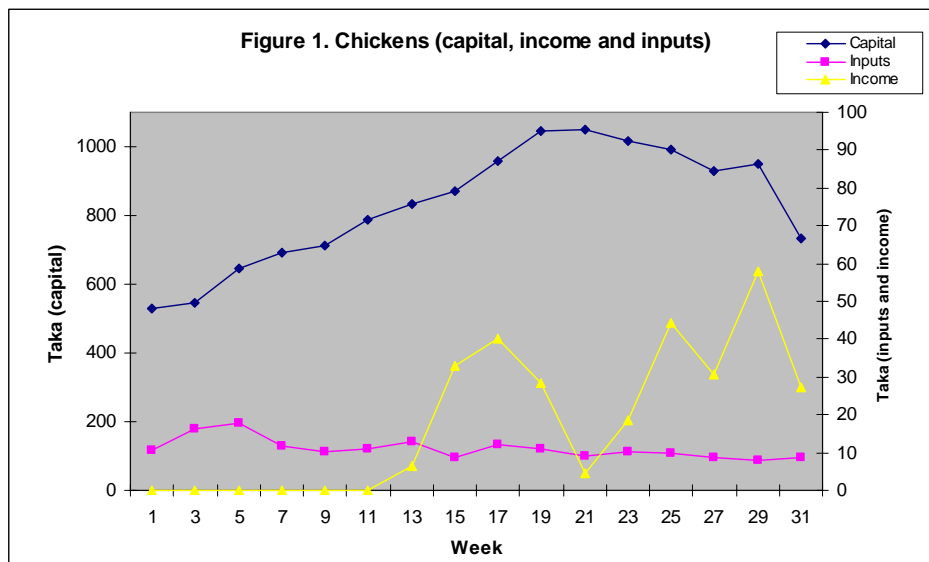
Data on the capital value of the livestock, the input costs (including labour) and income generated are presented in Figures 1-3. While both hens and ducks increased in value initially, mortality and the onset of laying (reduced body weight) resulting in a decrease in total value. Some farmers have performed better than others but average data is presented in this paper.

Although it is too early to draw firm conclusions about the appropriateness of poultry for very poor landless households, their susceptibility to disease and predators may be insurmountable challenges. At least half the mortality in chickens has been caused by predators. Social conflict between households has led to some vindictive activities (slaughter of ducks) by neighbours in one location (Netrakona).

Little hatching of chicks and ducklings has taken place to date as farmers have been waiting for the end of the monsoon (mid-October) to undertake this activity. This is likely to have a major impact on the capital value of livestock holdings and income.

Although goats do not provide a regular income (like sales of eggs) they seem to be much less susceptible to disease and predators and their capital value has increased steadily since the beginning of the AR phase.

Inputs costs are low for all species. Although output and capital growth could be improved with the provision of more feed this is beyond the means of most households. The advantage of poultry and goats is that much of their daily needs can be found without major expenditure on inputs. Labour costs are included in the calculation of input costs. Again labour use is minimal (a maximum of one hour per day) and its opportunity cost is low, particularly for women, who in a Muslim society are expected to remain in or near the homestead.



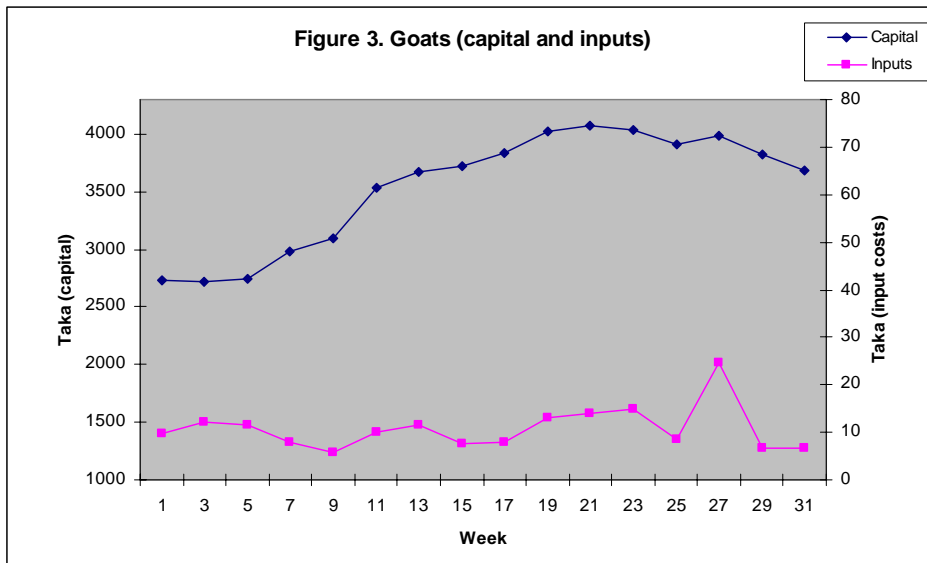


Photo 1 Maya with eggs from her ducks



Photo 2 Jamila with her 5 goats. Jamila of Chariswardia wants to get more kids from present stock (fortunately all are female goats) so that she can get more money to buy a milking cow in the future

Semi-structured interviews were conducted with participants in mid-October to explore the impact of livestock on livelihoods. Those household who have done better than average (approximately half the sample) described the following benefits from the sale of eggs (ducks and chickens), which produced sufficient income to allow the purchase of:

- A sari and books for children
- Two extra ducklings
- Extra rice for the household
- Two extra hens
- Tiffin (lunch) for children to take to school
- Extra vegetables and salt for the household
- Doctors' fees.

In addition eggs have been consumed by children and other members of the family. Previously eggs were rarely eaten in these households as there was little income available for their purchase. Capital (savings) has increased (particularly with goats). Some goat owning households intend to sell male goats at the festival of Eid-ul-Ahzar in January 2005 and hope to raise Taka 2,000 (US\$ 26.7). This income will be used to repair houses and to buy a new female goat for breeding.

Providing labour for livestock production is not a problem as most is provided by women. They are now busier than previously and men and children are also helping.

Feed is provided for both poultry and goats (rice bran, broken rice, leftover rice, and rice gruel). Finding forage is not normally a problem (except during flood): tree leaves (banana and jack fruit) are available in the homestead, grazing on bunds and roadsides is utilised, and small quantities of wheat bran are purchased if it is affordable.

Marketing is not a problem as buyers come to the homestead to purchase eggs. The current price is around Taka 16 for 4 eggs (US\$ 0.21) (October 2004). Being part of the group has helped participants develop confidence. There is some competition within the group to produce the most eggs etc. Income has increased and people involved in the project say "we are no longer beggars", thus social status has also increased. This is manifested in NGOs offering loans as the AR farmers now have some assets, whereas previously they had not been considered creditworthy.

Knowledge has also increased, particularly regarding the importance of vaccinations, management of internal parasites and an understanding of the nutritional needs of livestock. The majority of households intend to continue keeping livestock after the project finishes although they are already concerned about the availability of inputs such as vaccines (currently supplied by the project).

Some problems associated with livestock keeping were also expressed:

- At times it is difficult to manage five goats as tethering requires labour and time. Farmers would prefer one larger animal (bull calf for fattening) which would provide more profit if sold at the Eid-ul-Azhar festival. Straw can be purchased and roadside grasses cut and carried (goats cannot be managed in this way as they prefer to browse

and will not readily eat cut and carried grass, although they will eat cut and carried browse).

- Mortality remains a problem with poultry despite vaccination programmes, because of predation and, to a lesser extent, disease
- There is some conflict with neighbours (ducks using their ponds and hens straying on to their land)
- Two group members dropped out, one sold all her ducks and the other lost all her hens to disease, although she admitted that she had not taken good care of them
- In one case intra-household conflicts arose (between beneficiary and mother-in-law) over control of the income from livestock.

Conclusions

Although it is too early to make firm conclusions about the potential role of livestock in poverty alleviation, early indications are that:

- Goats may be a better option than poultry due to their inherent disease resistance. Goats do not provide a regular daily or weekly income but they do provide capital growth (savings) which can be called upon when needed
- Some households have been very successful with poultry but overall ducks and chickens have not performed as well as goats
- Identification of potential beneficiaries, who are likely to succeed, may be crucial to success, although it is not yet clear how this can be done
- Further monitoring is essential if useful results are to be gained from the project; this is particularly the case for poultry. Many households are planning to increase their flocks during the dry winter season (November–March)
- On the whole very poor households are able to manage livestock enterprises within their family budgets, using locally available, usually free, resources. The only large outlays necessary are for veterinary drugs or assistance.
- Availability of labour is not a difficulty for the majority of households
- Marketing is not difficult as egg buyers visit most villages although slightly higher prices can be realised at local markets
- The Muslim festival of Eid-al-Ahzar provides an opportunity for goat keepers to realise a premium for their livestock (prices are about 30 per cent higher than normal).

Discussions were held with a local NGO (CYSA) in Mymensingh District to investigate the possibility of this organisation providing micro-credit to project beneficiaries, particularly those who have accumulated sufficient capital for them to be eligible for a loan (some farmers have expressed interest in selling goats to buy bull calves for fattening). Any loans will be made on the normal terms of CYSA (repayment in weekly installments) and will not be subsidised by the project. If this occurs in the next few months the results will be monitored by project staff.

References

DELGADO, C., ROSEGRANT, M., STENINFELD, H., EHUI, S. and CORBOIS, D.C. (1999) *Livestock to 2020: the next food revolution*. IFPRI, FAO and ILRI.

GoB (GOVERNMENT OF BANGLADESH). (2001). *Micro-finance and technical support project*. IFAD design document–formulation report. Government of Bangladesh.

LAWSON-MCDOWALL, J. (2001). *Gender Briefing for DFIDB, Volume 1: Key Gender Issues in Bangladesh*.

RAHMAN, H. Z. (1998). *Poverty issues in Bangladesh: a strategic review*. Dhaka DFIDB, 1998.

SLDP (SECOND SMALLHOLDER LIVESTOCK DEVELOPMENT PROJECT) (2002). *Inception Report, Annex B Livestock Development for Poverty Alleviation*. DANIDA.

WORLD BANK. (1998). *Bangladesh: from counting the poor to making the poor count*. Poverty reduction and Economic Management Network, South Asia Region.

WORLD BANK. (1999) *Entering the 21st Century*. World Development Report 1999/2000.

Discussions/suggestions and comments on presentation:

Comment: The lesson learned from this presentation is that resource-poor farmers keep small stock for income generation, not home consumption. This has been observed in similar studies in Uganda, although children are now given eggs to eat.

Question: *It is interesting to note that the small stock keepers use credit. Is the same credit available for crop enterprises? If so how do you compare the rate of return between livestock and crop enterprises?*

Answer: This comparison has still to be made. In Bangladesh a mixture of chicken and goats is the best combination of livestock enterprises.

Comment: From the results of the study, it is recommended that livestock should be housed according to species in Bangladesh.

Question: *What caused a drop in the income curve at 21 weeks?*

Answer: This was as a result of heavy flooding due to the monsoon.