



Goat production system at Mymensingh district in Bangladesh

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Abstract

The experiment was conducted to investigate the present status and potentialities of organic goat production in Mymensingh district of Bangladesh through field survey. The data were collected through an interview schedule personally from 45 respondents in 3 villages of Bhaluka upazila who were involved in goat production. Parameters studied were check list for organic goat production likes origin, feeds and fodder, breeding, health care, living conditions and record keeping of livestock and factors related to organic goat production. In this study, about 100% goats were indigenous in origin. Among the farmers, 96% farmers used roadside grass and tree leaves whereas, only 4% farmers used cultivated fodder which was cultivated in their own land. 85% farmers used mixed feed which prepared by themselves. However, only 11% farmers used vitamin mineral supplementation. 100% farmers used natural breeding method for goat breeding. About 91, 80 and 100% farmers practiced vaccination, deworming and castration method, respectively. About 84% farmers did not use hormone, antibiotic and growth promoter and 67% farmers removed sick or injured animals from healthy stock. About 100% farmers allowed access to outdoor and fallow land throughout the year. Only 31% farmers reared male and female goat separately and 60% farmers kept livestock record. In Bangladesh goat are reared in the conventional method where different inorganic substances are used by the farmers There are great potentialities for organic goat production in Bangladesh both for satisfying animal protein requirements and production of quality goat meat. For this, it is a prime importance to find out the present status and explore the potentialities of organic goat production in Bangladesh.

Key words: goat production, organic, feed additives, antibiotic, growth promoter

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Introduction

Livestock is an integral component of agriculture and make multifaceted contributions to the growth and development of the agricultural sectors of Bangladesh. The livestock resources of Bangladesh are mainly based on cattle, goat, sheep, buffalo, and poultry. About 21.6 million (FAO, 2010; BER, 2012) and 25.7 million (BBS, May 2016) goat heads are distributed throughout the country. Although the growth of livestock production is the second highest among all other sub-sector of agriculture in Bangladesh (BER, 2012), the production and consumption of livestock products are still much lower in consumption with other countries. The increasing trends of meat consumption have already been evident in several Southeast Asian countries such as Indonesia, Malaysia, Philippines and Thailand (Skunmun *et al.*, 2002).

According to the report, the requirement of animal protein per head per day is 120 gm. However, the availability is only 22.0 gm. (DLS, 2011) and the deficit of meat are more than 80% in 2010. To satisfy the animal protein requirement, goat farming can play an important role without religious obstacles to consume goat meat. Organic goat production is a means of goat production with a large number of rules directed towards a high status of animal welfare, care for the environment, restricted use of medical drugs and the production of a healthy product without residues (pesticides or medical drugs). Organic livestock production is productive and sustainable (Reganold *et al.*, 1993; Letourneau and Goldstein, 2001; Mader *et al.*, 2002). The organic standards generally prohibit products of genetic engineering and animal cloning, synthetic pesticides, synthetic fertilizers, sewage sludge, synthetic drugs, synthetic food processing aids and ingredients, and ionizing radiation. Prohibited products and

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practices must not be used on certified organic farms for at least three years prior to harvest of the certified organic products (Gerold *et al.*, 2007). Livestock must be raised organically and fed 100% organic feed ingredients.

In Mymensingh district large numbers of goat are found. Most of the goat farmers are women and they are very poor. Many of them used inorganic substances; growth promoting steroids and feed additives for goat production, but in organic goat production use of these substances is prohibited. The information related to organic goat production by the farmers in Bangladesh is very limited. Detailed study is needed in a different district of Bangladesh to know the present status and recommended organic goat production program for the farmers as an income generating activities and women empowerment. There is a great potentiality of organic goat production in Bangladesh both for satisfying animal protein requirements and production of quality goat meat. Therefore, the present study was undertaken to investigate the present status and explore the potentialities of organic goat production.

Materials and Methods

The study was conducted in three villages namely Gangatia, Borochala and Pachpai-paragao under Habirbari union at Bhaluka upazila in Mymensingh district. Farmers were randomly chosen from each village under Habirbari union. The data were collected through interview schedule by selecting 45 respondents from three villages (15 farmers from each village) involved in goat production. A structured interview schedule was carefully prepared keeping the objectives of the study in mind. The questions and statement contained in the schedule were simple, direct and easily understandable by the respondents. Data were collected from respondents in one-to-one interview method. To collect the necessary information from the respondents in both interviewing and observation was applied. The interview schedule contained the following informations; A) Checklist for organic goat production: Origin of livestock, Livestock feed, Livestock breeding, Health care, Living conditions, Record keeping (Chander *et al.*, 2011). B) Socio-economic factors related to organic goat production: Gender, Age of the farmers, Education level, Household size, Occupation, Land size, Training, Source of capital, Number of goats, Description of the

goat like breed, age, sex, weight, Purchase time, Goat rearing until marketing/ slaughter. C) Problems and suggestions to improve organic goat production. At the end of data collection, the collected data were coded, compiled, tabulated and analyzed. The local units were converted into standard units. The qualitative data were transferred into quantitative data by appropriate scoring technique. Tabular technique was applied for the analysis of data using simple statistical tools like frequency, average and percentages through SPSS software.

Results and Discussion

A) Checklist for organic goat production

Origin of goat

Table 1 showed that all of the farmers used indigenous (100%) goat mainly Black Bengal goat (BBG) breed and few of them used Jamunapari breed for goat production in the study area. Most of the farmers (64%) used own source of goat for goat production. The parameter of origin of goat about 100% indigenous goats is considered to be organic. Hossain *et al.*, (2016) stated that only 12% indigenous cattle used for beef cattle production at Shahjadpur upazila in Sirajgong district whereas, Sarker (2014) stated that 100% indigenous sheep used for sheep production at Ramgoti upazila in Lakshmipur district.

Livestock breeding

Table 1 showed that 100% of the farmers used natural breeding for goat production. In organic goat production, reproduction technique should be natural. Artificial insemination is allowed only upon veterinary necessity. Hossain *et al.*, (2016) stated that 73, 13 and 14% used A.I., natural and both breeding techniques for cattle fattening respectively. Sarker (2014) stated that 100% of the farmers used natural breeding for sheep production.

Livestock feeds and fodder

Table 2 showed that most of the farmers (49%) used both roadside grass and tree leaves, whereas 29, 18 and 4% farmers used roadside grass, tree leaves and cultivated fodder respectively. Different concentrates feed like wheat bran, rice polish/bran, kheshari bran, till oil cake, mustard oil cake, broken rice, salt etc. used for goat production. Feed additives, hormones, and growth promoter are not mixed with these concentrate ingredients which are prohibited in organic goat production.

Table 1. Origin, source and breeding techniques of goat

Parameter	Categories	Number of respondents	Percent of total respondents
Origin of goat	Indigenous	45	100
	Crossbred	0	0
Source of goat	Own source	29	64
	Purchase	16	36
Breeding method	Natural	45	100
	A.I.	0	0
	Natural and A.I.	0	0

Table 2. Goat feeds and fodders (Total respondents, 45)

Parameter	Categories	Number of respondents	Percent of total respondents
Roughage	Roadside grass	13	29
	Cultivated fodder	2	4
	Tree leaves	8	18
	Tree leaves & Roadside grass	22	49
Concentrate	Compound feed/pellet	00	00
	Mixed feed	35	78
	No	10	22
Vitamin, mineral supplement	Yes	05	11
	No	40	89
Feed additives & growth promoter	Yes	00	00
	No	45	100
Source of concentrate feed	Produce themselves	39	85
	Buy locally	06	15
Fertilizer use	Yes	02	04
	No	43	96

About 89% farmers did not use vitamin mineral supplement in feed for goat production. In organic goat farming producers are required to feed livestock, agricultural feed products that are 100% organic. About 78% farmers used own prepared mixed feed where feed additive, hormones and growth promoter are not mixed with feed ingredients which meet the organic standard of goat production and the rest of 22% farmers may not use concentrate feed.

Livestock health care

Table 3 showed that about 91% farmers vaccinate their goat regularly. Most of the farmers (84%) did not use hormones, antibiotic

and growth promoter for higher meat production. About 67% farmers removed their sick animals from healthy stock and 80% practiced deworming. About 100% farmers practiced castration in case of buck for goat production. Organically raised animals should not be given hormones to promote growth, or antibiotics for any reason. Animals treated with a prohibited medication would be removed from an organic operation (IFOAM, 2008; FIBL-IFOAM-Survey, 2014). The results of this study are similar to (Begum et al., 2007) where they reported that 83.3% farmers used vaccination, 80% farmers practiced deworming and 45% farmers removed sick animals from healthy animals. According to organic livestock production guidelines Chander et al., (2011)

reported that 91%, 84% and 67% goats are considered to be organic on the basis of vaccination, antibiotic use and medication.

Livestock living condition

Table 3 showed that about 100% farmers allowed animal’s access to outdoor and pasture land. Most of the farmers clean housing pens, equipment and utensils regularly. About 78% farmers use existing traditional goat shed and 22% farmers use shed for keeping a flock. Only 31% farmers separated male and female animals and 69% farmers kept male and female animals together. All organically raised animals must have access to the outdoors, including access to pasture. They may be temporarily confined only for reasons of health safety, the animal’s stage of production, or to protect soil or water quality (Chander *et al.*, 2011). In the study area, most of the farmers reared their goat in the existing traditional goat shed and most of the farmers allowed animal access to outdoor and pasture. It is revealed that, it completely fulfilled the organic criteria of animal access to outdoor and pasture.

Record keeping

Organic production generally requires more record keeping than conventional production. Table 3 showed that most of the farmers (60%) kept their livestock record and 40% farmers do not keep their records. However, farmers mostly kept birth record, breeding record, feed record, health record etc. for goat production whereas, Sarker (2014) and Hossain *et al.*, (2016), reported that only 3% farmers kept their animal records regularly.

B) Socio-economic factors related to organic goat production

Table 4 shows the socio-economic factors related to organic goat production Data were collected from 45 respondents about their socio-economic condition related to goat production which, including age of the farmers, family size, education, occupation, land size, training and source of capital, purchase time of goat and the duration of the program. Table 4 indicates that the highest proportion (49%) of the farmers in the study were in the middle aged category whereas, 31% belonging to young aged and 20% to old aged category. The results of this study are similar with Rahman *et al.*, (2012), where they reported that 45.3% farmers were in the middle aged category, 16 and 38.7% farmers were in young and old age category, respectively.

Table 3. Goat health care, living conditions and record keeping by farmers (Total respondents, 45)

Parameter	Percent of respondents practiced
Vaccination	91
Hormone, antibiotic and growth promoter	16
Removal of sick animals	67
Deworming	80
Surgical practice (castration)	100
Access to outdoor	100
Access to pasture	100
Separate male and female cattle	31
Types of housing (Traditional goat shed)	78
Record keeping	60

Almost similar findings were found in Sharmin (2005), Begum *et al.*, (2007), Ahamed *et al.*, (2010), Sarker (2014), Hossain *et al.*, (2016) The results of this study were similar with Rahman *et al.*, (2012), where they reported that 44% farmers had small sized, 38% medium sized and 18 farmers large sized family. The average family size 5.60 of the respondents in the study area was higher than that of the national average of 4.9 (BBS, 2008). Table 4 shows that, the major category (53%) of the farmers belongs to a marginal class which was also a representative of the typical land size of Bangladesh. About 29% farmers small, 13% medium and 5% farmers had large size land and the mean was 1.26 acres. Among the total respondents, 11% illiterate (only signature), 58% had primary, 22% had secondary and 09% had higher secondary level of education (Table 4). The results of this study are similar with (Begum *et al.*, 2007), where they reported that 20.0% farmer’s illiterate, 40.0%, 30.0% and 10.0% farmers in primary, secondary and above the secondary level of education, respectively. In Table 4, Out of 45 respondents, 51% are involved in agriculture, 18% in business and 2% of government job and 27% in other jobs, respectively. The results of this study are similar with Sarker (2014), where they reported that 50% farmers involved in agriculture and 23% in business and 23% in another job. Almost similar findings were found by Ahamed *et al.*, (2010).

Table 4. Socio-economic factors related to organic goat production (Total respondents = 45)

Parameter	Categories	Number of respondents	Percent of total respondents
Age	Young age (up to 30 years)	14	31
	Middle age (31-50 years)	22	49
	Old age (above 50 years)	09	20
Household size	Small family (up to 5 members)	20	44
	Medium family (6-8 members)	17	38
	Large family (above 8 members)	08	18
Land size	Marginal (up to 1 acre)	24	53
	Small (1-3 acre)	13	29
	Medium (above 3-8 acre)	06	13
Level of education	Large (above 9 acres)	02	05
	Illiterate	05	11
	Primary	26	58
	SSC	10	22
	HSC	04	09
Occupation	Graduate	00	00
	Agriculture	23	51
	Business	08	18
	Govt. job	02	04
	Other job	12	27
Source of capital	Own capital	28	62
	Bank loan	01	02
	NGO loan	13	29
	Lending	03	07
Training	Have	30	67
	Have not	15	33
Breed type	Black Bengal Goat (Deshi)	45	100
	Crossbred	00	00
Purchase time	Around the year	11	25
	Occasionally	05	11
	Not purchase	29	64
Goat rearing until marketing	Less than 2 years	16	36
	2-3 years	11	24
	More than 3 years	18	40

Table 5. Present status of organic and conventional goat production (Total respondents = 45)

Checklist of organic goat production	Criteria	Organic (%) (n = 45)	Conventional (%) (n =45)
Breed	Indigenous/Crossbred	100	00
	Roughage	96	04
Feed	Concentrate	Not known	Not known
	Vitamin and mineral	89	11
Breeding	Natural	100	00
	Vaccination	91	09
Health care	Antibiotic & growth promoter	84	16
	Removal of sick animal	67	33
Living conditions	Access to outdoor	100	00
	Access to pasture	100	00
Record keeping	Kept/Not kept	60	40

Table 4 showed that at 62% of respondents used own capital for goat production, 2% respondents taking bank loan and 29% from other sources such as NGO loan and 7% lending for goat production. The results of this study are similar with (Sarker, 2014) where he reported that 57% used own capital, 10% used bank loan and 33% from other sources such as NGO loan and lending for goat production.

Table 4 shows that, majority of the respondents had short training on goat production. About 100% farmers reared native breed (Deshi) and mostly (64%) farmers rearing goat from their own source whereas, 36% farmers purchased goat occasionally or around the year for goat production. While working with farmers in rural areas of Bangladesh, almost similar results were found by Rahman *et al.*, (2012) and Hossain *et al.*, (2016). The results of this study differed from Rahman *et al.*, (2012) because most of the farmers at Bhaluka upazila in Mymensingh district used own source of goat for goat production. Table 4 shows that, 36% farmers reared goats of less than 2 years, 24% reared goats of 2-3 years and 40 reared goats of more than 3 years. Most of the farmers reared male goat 2 to 3 years,

but in case of female goat they reared 4 to 6 years is depending on production performances, health and family condition of the farmers.

Present status of organic goat production

In the parameter of breed 100% goats are considered organic. In case of roughage 96% of the roughage are organic because most of the farmers use roadside grass and tree leaves were no use of inorganic fertilizer. About 89% goats are organic criteria of providing vitamin mineral supplement. In the parameter of livestock breeding about 100% goats are considered to be organic. In the criteria of vaccination about 91% and removal of sick animal about 67% goats are organic.

In organic goat production hormone, antibiotic and growth promoter is prohibited, but 16% farmers use a growth promoter for goat production so, 84% goats are considered organic. In the parameter of livestock living condition and record keeping about 100 and 60% goats are organic respectively (Table 5).

Table 6. Problems and suggestions to improve organic goat production (Total respondents, 45)

Problems and suggestions of organic goat production		
Problems	Number of respondents	Percent of total respondents
Diseases of goat & dog biting	37	82
Unavailability of goat feed	35	78
High feed cost	30	67
Lack of land for forage cultivation	26	58
Lack of pasture land	26	58
Lack of motivation & awareness of the farmers	25	56
Complexity of NGO & bank loan	25	56
Lack of training facilities	15	33
Marketing & transportation problem	10	22
Suggestions		
Goat feed should be available & reduce feed cost	30	67
Pasture land should be available	26	58
Motivation & create awareness of the farmers	25	56
Vaccine & medicine should be available	25	56
Easy NGO & bank loan	25	56
Providing training facilities	15	33
Organic fertilizer should be available	10	22
Improve marketing & transportation system	10	22

C) Problems faced by the farmers and their expectations

Table 6 showed problems and suggestions to improve organic goat production. About 78% farmers reported unavailability of goat feed, 67% reported high cost of feed and vitamin mineral supplementation, 82% reported diseases of goat and dog biting, 56% reported lack of motivation and awareness of the farmers, 51 and 33% reported lack of technical knowledge and training facilities, 58% farmers reported lack of pasture land and land for fodder cultivation, 22% reported marketing and transportation problem, 56% farmers reported complexity of bank and NGO loan are the major problems in organic goat production. The farmers should be required more motivation, adequate training facilities, goat feed should be available and reduced feed cost, pasture land should be available, easier bank and NGO loan where the most important suggestions by 56, 33, 67, 58 and 56% of the respondents respectively.

Ali and Anwar (1987) and Hossain *et al.*, (2016), found that high feed cost and shortage of animal feed were the greatest problems of the farmers for rearing cattle. Sarker (2014), reported that unavailability and high cost of feed, lack of training facilities, disorganized marketing system and motivation of the farmers were the problems for goat rearing.

Conclusion

It can be concluded that the present status of organic goat production in Bangladesh is not satisfactory. Feeds and fodder, health care, record keeping and the extent of knowledge of the respondents of organic goat production was not satisfactory. For wider dissemination of organic goat production technology to the farmers, it is recommended that the concerned authority should take awareness campaign and capacity building of the farmers towards practicing organic goat farming to produce safe food for consumers, for animal welfare while minimizing environmental decay, improving socio-economic conditions of rural masses and also for enhancing women empowerment.

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