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Article

Poverty alleviation of destitute women and poor farmers in Barisal district of Bangladesh through beef fattening

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Abstract: The cattle fattening programme was represents an important component of the agribusiness sector with great economic, income, poverty alleviation and social implications. The present study was performed at Barisal district in Bangladesh. Data were collected from 220 women and farmers on their household during the period June, 2013. Among them, 54 destitute women and poor farmers were identified and making groups of them for beef fattening. 54 cattle of each destitute women and poor farmers were randomly divided into nine groups (A, B, C, D, E, F, G, H and I), each consisting of six (6) cattle. Endex®, Aldazole® and Tetranid® were administered orally to the cattle of group A, B and C, respectively. Cattle of group D received subcutaneously Oxynil®. Cattle of group E received orally Peraclear® and Urea Molasses Straw (UMS). Cattle of group F received orally Endex® and lugols iodine intravenously. Cattle of group G were treated orally with Endex® and Metaphos® intramuscularly. Cattle of group H were treated orally with Endex® and A-Sol® intramuscularly. Cattle of group I was kept as control without giving any treatment. Body weight was examined before trials (day 0) and on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day. Out of the 220 women and farmers 56.36% were involved in agriculture, 10.45% in own business, 3.64% in shared business, 6.36% in govt. service and 23.18% in non-govt. service. 18.18% women and farmers had the knowledge of animals characteristics used for beef fattening. The knowledge of feed, animal diseases, veterinary drugs, animal vaccine, and drugs used for beef fattening was 18.64%, 47.73%, 25.45%, 25.45%, and 19.55%, respectively. About 7.73% respondents have training on cattle fattening. The body weight was increased significantly ($p<0.01$ and $p<0.05$) after Endex®, Aldazole®, Tetranid®, Oxynil®, Peraclear®+UMS, Endex®+loguls iodine, Endex®+Metaphos® and Endex®+A-Sol® treatment in group A, B, C, D, E, F, G and H, respectively. Highest percentages of body weight gain in Endex® + Metaphos® (19.79%) treated cattle followed by Endex®+A-Sol® (10.06%), Peraclear® +UMS (9.97%) and Endex®+loguls iodine (8.68%) treated cattle. The results of the present study will be helpful for farmers and researchers for beef fattening in Bangladesh.

Keywords: beef fattening; Endex®; Metaphos®; A-Sol®; UMS; loguls iodine

1. Introduction

Bangladesh is a low-lying densely populated country of more than 150 million people, 75% of who live in rural areas; rural poverty rate is 63%, of which 36% are extreme poor (Hodson, 2006). Livestock are an integral component of agriculture and make multifaceted contributions to the growth and development in the agricultural sectors. Agriculture should be the economic backbone of Bangladesh with approximately 80% people who

depends on it directly or indirectly for their subsistence. The livestock an important sub-sector considered as the backbone of agriculture (Anonymous, 1985). Livestock sub-sector contributed to solve the economical problems of small and marginal farmers and played important role in poverty alleviation. Livestock provides milk, meat, skin, fuel, organic fertilizer and draft power. The total contributions of livestock to the Gross Domestic Product (GDP) are approximately 6.5% (DLS, 1998). Cattle farming are an important subsidiary to agriculture and playing a significant role in rural economy in Bangladesh (Hashem *et al*., 1999). Bangladesh has the world's third largest Muslim-majority population. Muslims always go sacrificing slaughtered livestock (cows, goats, camels and sheep) for Kurbani to celebrate the holy Eid-ul-Azha festival. About 1.8 million cattle sacrificed at this time each year (Sujan *et al*., 2011).

Parasitism is an important limiting factor that responsible for deteriorating the health and productivity of livestock. The agro-ecological and geo-climatic conditions of Bangladesh are highly favorable for the growth and multiplication of parasites. Economically important parasitic diseases of livestock characterized by lower outputs of animal products (meat, milk, hides and skins), manure and traction, which all impact on the livelihood of small holder farmers (Perry and Randolph, 1999). The greatest losses associated with nematodal infections shows financial costs of internal parasitism are enormous (McLeod, 1995). Anthelmintics used as only effective way of controlling parasites in Bangladesh. However, as these are expensive and unavailable to farmers in rural areas. A large number of farmers involved in bull fattening just before 2-3 months of Eid-ul-Azha (muslim festival), when they sell the animals. Lugols iodine, the cheap way of increasing body weight can easily be disseminated to the rural farmers. The same effects can be illustrated for the toldimphos or butaphospen preparations. The technologies cited above, are cheap, easily transferable and would be well accepted by the rural farmers and destitute women and act as a potential means for alleviate poverty in their life. It is an easy and profitable system of beef fattening to alleviate poverty, unemployment and generate income for the rural people. Considering the above situations, the present study has improved the primary knowledge about beef fattening of cattle. Therefore, the study was designed to investigate the effect of different drugs used for beef fattening at Barisal district in Bangladesh.

2. Materials and Methods

2.1. Socio-economic survey

A local level socio-economic survey of destitute women and poor farmers who rear cattle were selected in Barisal district of Bangladesh. Data were collected using a semi-structured questionnaire on their household from each 220 women and farmers. This information will helps to improve destitute women and poor farmers in Barisal district by transferring modern technologies in Bangladesh.

2.2. Study area and time

The socio-economic survey was carried out in Barisal district during the period June, 2013. Drugs were applied during the period from September, 2013 to November, 2013.

2.3. Selection of cattle

54 cattle were selected for this study and were marked at the ears by the numbered tag. All these cattle were maintained at the same altitude and under nearly identical conditions. They were kept in door at night and part of the day. All the cattle were fed with balanced rations which were composed of roughages and concentrates.

2.4. The test drugs

Endex® (levamisole+triclabendazole), Aldazole® (albendazole), Oxynil® (nitroxynil), Tetranid® (tetramisole+oxyclozanide), Peraclear® (fenbendazole), Metaphos® (toldimphos) and A-Sol® (butaphospen) selected for the experiment were purchased from local market, Barisal.

2.5. Experimental design

Among 220 destitute women and poor farmers, 54 were identified and making groups of them for beef fattening. 54 cattle of each destitute women and poor farmers were randomly divided into nine groups (A, B, C, D, E, F, G, H and I), each consisting of six (6) cattle. Parasitism was a major hindrance to livestock development in Bangladesh. As a result about 50% apparently healthy cattle population demonstrated to be affected with different species of parasites. For this reason, anthelmintics were used for controlling the helminths infestation that inhabit in different systems of cattle. A wide variety of broad spectrum anthelmintics (Endex®, Aldazole®, Peraclear®, Oxynil® and Tetranid®) were applied. A-Sol®, lugols iodine, urea molasses straw (UMS) and Metaphos® were applied as medicaments for beef fattening. Endex®, Aldazole® and Tetranid®

were administered orally to the cattle of group A, B and C, respectively. Cattle of group D received subcutaneously Oxynil®. Cattle of group E received orally Peraclear® and Urea Molasses Straw (UMS). Cattle of group F received orally Endex® and lugols iodine intravenously. Cattle of group G were treated orally with Endex® and Metaphos® intramuscularly. Cattle of group H were treated orally with Endex® and A-Sol® intramuscularly. Cattle of group I was kept as control without giving any treatment.

2.6. Measurement of body weight

Before trials (pre-treatment/day 0) initial body weight were examined and recorded. During the experimental period, body weight was examined on day 10, 20, 30, 40, 50, 60 and 70. The weight of each cattle was taken and recorded. The result was expressed in Kg. The body weight of all experimental cattle was taken as per method cited by Samad (2001).

2.7. Statistical analysis

Data were collected and the mean ± standard deviation or percentages were determined wherever applicable. Collected data were statistically analyzed between pre-treatment and post-treatment values by Student's t-test by using the computer statistical package programme of Microsoft Excel.

3. Results and Discussion

3.1. Socio-economic characteristics of cattle fattening farmers

The socio-economic characteristics of the respondents were shown in Table 1. 62.27% of the respondents were females while 37.73% were males involved in cattle farm production in the study area. Similar observation was also found by Sarma and Ahmed (2011). It is revealed that the majority (90.91%) of the respondents were in the married, 6.36%, 1.82% and 0.91% of the respondents were in the unmarried, widowed and divorced, respectively. A cattle farming was less laborious than other root and tuber crops and did not require a lot of physical strength. 17.27% of the farmers had no formal education, while only 40.55% attended primary school. This findings supported by the earlier works of Hashem *et al*. (1999). Out of the 220 respondents 56.36% were involved in agriculture, 10.45% in own business, 3.64% in shared business, 6.36% in govt. service and 23.18% in non-govt. service. The present finding was in agreement with the works of Ahmed *et al*. (2010).

Table 1. Distribution of destitute women and poor farmers rearing cattle according to their sex, marital status, educational qualification and occupation.

Variable	Frequency	Percentage (%)
Sex		
Male	83	37.73
Female	137	62.27
Marital status		
Single/unmarried	14	6.36
Married	200	90.91
Divorced	2	0.91
Widowed	4	1.82
Educational qualification		
Illiterate	38	17.27
Able to sign	36	16.36
Primary	89	40.45
Secondary	36	16.36
Higher Secondary	14	6.36
Graduate	7	3.18
Occupation		
Farmer	124	56.36
Own business	23	10.45
Shared business	8	3.64
Govt. Service	14	6.36
Non-Govt. Service	51	23.18

3.2. Factors associated with fattening of cattle

The factors associated with fattening of cattle were shown in Table 2. Most of the farmers had not proper knowledge which implies that was not costless but requires investment. Lack of knowledge might be regarded

as a factor causing inefficiency. From this study, 18.18% respondents had the knowledge of characteristics of animals used for beef fattening. The knowledge of feed, animal diseases, veterinary drugs, animal vaccine, and drugs used for beef fattening was 18.64%, 47.73%, 25.45%, 25.45%, and 19.55%, respectively. About 7.73% respondents have training on cattle fattening. The present finding was in agreement with the observation of Ahmed *et al.* (2010). Respondents listened radio programme on livestock (10.00%) and n beef fattening (7.73%). Respondents showed television programme on livestock (28.18%) and beef fattening (9.55%). Farmers kept their animals in a separate house. Similar observations also reported by Hossain *et al.* (1996). Both extensive and semi-intensive feeding systems were practiced reported by the respondents for cattle fattening. Animal received feed from own fodder areas for supply and allow grazing (34.09%), purchase concentrate (7.73%) and both (45.91%). Respondents used tube-well (43.64%), river (14.55%), canal (14.09%) and ponds (27.73%) as the source of water for their cattle.

Table 2. Factors associated with fattening of cattle.

Parameters	Numbers of respondents (n = 220)	Percent of respondents (n = 220)
Knowledge		
Characteristics of animals for beef fattening	40	18.18
Feed used on beef fattening	41	18.64
Animal diseases	105	47.73
Veterinary drugs	56	25.45
Animal vaccine	56	25.45
Drugs used for beef fattening	43	19.55
Training on beef fattening	17	7.73
Mass Media		
Radio programme on livestock	22	10.00
Radio programme on beef fattening	17	7.73
Television programme on livestock	62	28.18
Television programme on beef fattening	21	9.55
Animal housing		
Natural Roof/Kacha (Bamboo/Chon/Wood)	122	55.45
Rudimentary Roof/Tin	82	37.27
Finished Roof (Pukka/Cement/Concrete)	5	2.27
Other	11	5.00
Source of drinking water		
Tube well	96	43.64
River	32	14.55
Canal	31	14.09
Pond	61	27.73
Source of feed		
Own fodder areas for supply and allow grazing	75	34.09
Purchase concentrate	17	7.73
Both	101	45.91

Table 3. Effects of different drugs on body weight (kg) in cattle.

Group	Treatment	Pre-treatment	Post-treatment						Percentages of weight gain (%)
		'0' day	10th day	20th day	30th day	40th day	50th day	60th day	70th day	
A	Endex®	192.89 ± 65.67	197.13** ± 66.72	198.13** ± 66.95	199.07** ± 66.08	199.96** ± 66.81	201.73** ± 67.53	203.22** ± 67.40	204.83** ± 67.50	5.83
B	Aldazole®	281.39 ± 111.06	282.25 ± 110.17	283.58** ± 110.51	283.58** ± 110.51	284.45** ± 110.28	285.21** ± 110.29	286.91** ± 109.81	288.62** ± 109.45	2.51
C	Tetranid®	194.31 ± 20.27	194.31 ± 20.27	197.25* ± 20.63	197.63* ± 21.20	199.36* ± 22.79	200.15** ± 22.34	201.75** ± 22.05	202.10** ± 22.04	3.85
D	Oxynil®	204.95 ± 76.34	209.69** ± 77.22	210.99** ± 76.98	212.23** ± 76.95	213.61** ± 77.91	213.95** ± 77.77	215.39** ± 77.65	217.36** ± 77.18	5.71
E	Peraclear® + UMS	146.89 ± 24.21	147.66 ± 24.41	150.70** ± 24.58	153.22** ± 22.48	155.16** ± 26.45	157.50** ± 25.02	160.14** ± 25.71	163.16** ± 25.01	9.97
F	Endex® + loguls iodine	182.44 ± 33.62	183.60 ± 33.51	191.97** ± 30.90	192.92** ± 30.58	195.33** ± 29.49	198.58** ± 29.43	199.78** ± 29.44	199.78** ± 31.31	8.68
G	Endex® + Metaphos®	126.93 ± 21.28	132.68** ± 42.99	134.38** ± 42.29	137.16** ± 43.55	141.48** ± 46.36	146.34** ± 45.96	150.06** ± 47.67	158.25** ± 50.80	19.79
H	Endex® + A-Sol®	139.50 ± 33.40	141.33* ± 31.82	144.23** ± 33.21	144.23** ± 33.21	148.11** ± 32.90	150.49** ± 32.99	154.26** ± 36.90	155.10** ± 35.91	10.06
I	No drug	193.12 ± 11.81	193.12 ± 11.81	193.12 ± 11.81	196.13 ± 15.88	196.73 ± 15.99	197.32 ± 15.63	197.92 ± 15.80	197.92 ± 15.80	2.43

The above values represent the mean ± standard deviation (SD) of 6 cattle
** = Significant at 1 per cent level ($p<0.01$)
* = Significant at 5 per cent level ($p<0.05$)

3.3. Effects of drugs on body weight (kg) in cattle

The body weight was increased significantly ($p<0.01$ and $p<0.05$) after Endex®, Aldazole®, Tetranid®, Oxynil®, Peraclear®+UMS, Endex® + loguls iodine, Endex® +Metaphos®, Endex®+A-Sol®, treatment in group A, B, C, D, E, F, G, H, and I, respectively. The results of the effect on body weight in cattle were shown in the Table 3. Mean body weight before treatment was 192.89 ± 65.67 and after treatment with Endex® mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 197.13 ± 66.72, 198.13 ± 66.95, 199.07 ± 66.08, 199.96 ± 66.81, 201.73 ± 67.53, 203.22 ± 67.40 and 204.83 ± 67.50, respectively in group A. Body weight increased 5.83% in Endex® treated cattle. Mean body weight before treatment was 281.39 ± 111.06 and after treatment with Aldazole® mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 282.25 ± 110.17, 283.58 ± 110.51, 283.58 ± 110.51, 284.45 ± 110.28, 285.21± 110.29, 286.91 ± 109.81 and 288.62 ± 109.45, respectively in group B. Body weight increased 2.51% in Aldazole® treated cattle. Mean body weight before treatment was 194.31 ± 20.27 and after treatment with Tetranid® mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 194.31 ± 20.27, 197.25 ± 20.63, 197.63 ± 21.20, 199.36 ± 22.79, 200.15 ± 22.34, 201.75 ± 22.05 and 202.10 ± 22.04, respectively in group C. Body weight increased 3.85% in Tetranid® treated cattle. Mean body weight before treatment was 204.95 ± 76.34 and after treatment with Oxynil® mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 209.69 ± 77.22, 210.99 ± 76.98, 212.23 ± 76.95, 213.61 ± 77.91, 213.95 ± 77.77, 215.39 ± 77.65 and 217.36 ± 77.18, respectively in group D. Body weight increased 5.71% in Oxynil® treated cattle. Mean body weight before treatment was 146.89 ± 24.21 and after treatment with Peraclear®+UMS mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 147.66 ± 24.41, 150.70 ± 24.58, 153.22 ± 22.48, 155.16 ± 26.45, 157.50 ± 25.02, 160.14 ± 25.71 and 163.16 ± 25.01, respectively in group E. Body weight increased 9.97% in Peraclear®+UMS treated cattle. Mean body weight before treatment was 182.44 ± 33.62 and after treatment with Endex®+loguls iodine mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 183.60 ± 33.51, 191.97 ± 30.90, 192.92 ± 30.58, 195.33 ± 29.49, 198.58 ± 29.43, 199.78 ± 29.44 and 199.78 ± 31.31, respectively in group F. Body weight increased 8.68% in Endex®+loguls iodine treated cattle. Mean body weight before treatment was 126.93 ± 21.28 and after treatment with Endex®+Metaphos® mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 132.68 ± 42.99, 134.38 ± 42.29, 137.16 ± 43.55, 141.48 ± 46.36, 146.34 ± 45.96, 150.06 ± 47.67 and 158.25 ± 50.80, respectively in group G. Body weight increased 19.79% in Endex®+Metaphos® treated cattle. Mean body weight before treatment was 139.50 ± 33.40 and after treatment

with Endex®+A-Sol® mean body weight on 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 141.33 ± 31.82, 144.23 ± 33.21, 144.23 ± 33.21, 148.11 ± 32.90, 150.49 ± 32.99, 154.26 ± 36.90 and 155.10 ± 35.91, respectively in group H. Body weight increased 10.06% in Endex®+A-Sol® treated cattle. Mean body weight of control group on pre-treatment (day 0) was 193.12 ± 11.81. Mean body weight on the 10th day, 20th day, 30th day, 40th day, 50th day, 60th day and 70th day were 193.12 ± 11.81, 193.12 ± 11.81, 196.13, ± 15.88, 196.73 ± 15.99, 197.32 ± 15.63, 197.92 ± 15.80 and 197.92 ± 15.80, respectively in group I. Amin *et al*. (2008) observed that body weight was increased significantly in albendazole treated cattle. Khan *et al.* (2003) also reported that body weight was increased significantly due to levamisole and albendazole in cattle. Similar effects reported by Redl (1991) due to levamisole in cattle. Hossain *et al.* (2004) reported that tetramisole significantly increased body weight in sheep. Amin *et al*. (2005) observed that body weight was increased significantly in albendazole and fenbendazole treated sheep. Ahmed *et al.* (2010) reported that UMS increased body weight in cattle. Likewise, Sultana *et al.* (2006) stated that lugol's iodine to increase body weight in beef cattle.

4. Conclusions

Cattle fattening was a potential and effective option for poor farmer and gained prominence as an important agribusiness sector of agriculture in Bangladesh. It gives the farmer year round work and provides extra income. Cattle fattening could play a vital role in poverty elevation. No competition between the cattle fattening activity and major crop production in using family labour and land resources. As a muslim country, cattle fattening has a great prospect in Bangladesh. Not only Eid-ul-Azha but also it has a good demand throughout the country in any time.

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Conflict of interest

None to declare.

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