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PRESENT STATUS ON THE USE OF ANABOLIC STEROIDS AND FEED ADDITIVES IN SMALL SCALE CATTLE FATTENING IN BANGLADESH

M. H. Islam, M. A. Hashem*, M. M. Hossain, M. S. Islam, M. S. Rana and M. Habibullah
Department of Animal Science, Bangladesh Agricultural University
Mymensigh-2202, Bangladesh

ABSTRACT

This study was conducted to find out the relationship among different aspects of cattle fattening and use of anabolic steroids and feed additives. The data were collected through an interview schedule from 150 respondents of 6 upazila of 3 districts who were involved in small scale cattle fattening. Parameters were studied in relation to socio-economic conditions of farmers and use of anabolic steroids and feed additives and their effects on animals and environment. In this study 72% farmers' were involved in agriculture, followed by 23.3% in livestock business. About 46% farmers had primary education, 10.7% had higher secondary school certificates, 5% obtained above higher secondary education and the rest of them were illiterate. Irrespective of literacy only 9.3% of the farmer had training. About 89.3% respondents used their own labors, 7.3% dependent on hired labor and the rest 3.3% get labour from both sources. Results showed that about 58% respondents used anabolic steroids for the duration of 3 to 6 months long cattle fattening ($P<0.001$) program. The chi-square (14.09) value of annual income indicates that with increase of annual income, use of anabolic steroids have decreased. The significant ($P<0.01$) association was observed in case of anabolic steroids and source of money, annual income, number of cattle fattening, breeds, fattening period, starting and finishing age. The r_s value of annual income, source of money, starting and finishing age were positively correlated with feed additives. About 78% respondents used feed additives for cattle fattening from own resources ($P<0.001$) and most of cattle fattened for 3 to 6 months ($P<0.01$). The result demonstrated that respondents of low annual income used more anabolic steroid and feed additives as a growth promoter for cattle fattening and they prefer in powder form.

Key Words: Cattle fattening, Anabolic steroid, Feed additives, Farmers

INTRODUCTION

Cattle of Bangladesh are an inseparable and integral part of the agricultural farming and agribusiness system. About 24.5 million cattle heads are distributed throughout the

*Corresponding author:- E-mail: hashem_mdabul@yahoo.com, Mobile: 01721-310621

country which ranks 12th in the world and 3rd in Asian countries (FAO, 2010). Although the growth of livestock production is the highest among all other sub-sectors of agriculture in Bangladesh (Bangladesh Economic Reviews, 2007), the production and consumption of livestock products is still much lower in comparison with other countries. Among meat consumption of 180 countries in the world, Bangladesh stands in 18 position which is about only 7.13 kg/capita/year (DLS, 2009) compared to the USA of 124 kg and the global average of 38 kg (Smith *et al*., 2007). The quantitative production of meat in Bangladesh in 2005 is 1.06 million tons against the total requirement of 6.30 million tons (BBS, 2009). The projected production of meat is 2.87 million tons in 2015, but its total requirement would be 6.86 million tons. It indicates a huge gap exit between production and the total requirement both in 2005 (82.4%) and 2015 (58.2%). Now a days cattle fattening has become an important business of the small farmers in Bangladesh. Cattle are bought by the farmers usually 3-6 months before Eid-ul-Azha (Muslim festival). According to Skunmun *et al.* (2002), the increasing trends of beef demand have already been evident in several Southeast Asian countries such as Indonesia, Malaysia, Philippines and Thailand. Good nutrition and management plays a key role behind cattle fattening (Hossain, 1986, Hossain *et al*., 1996 and Hashem *et al*., 1999). Growth stimulating substances like hormones, steroids, feed additives etc., are using in Bangladesh for cattle fattening. Hoffman *et al.* (2008) reported that antibiotics in sub-therapeutic dose are the safest and most effective with regard to human and animal health and associated bacterial resistance problems. They also reported that the antimicrobial agents that are used as feed additives develop their activity in the digestive tract.

In many countries, growth promoting steroids have been successfully used to increase the growth rate of animals, particularly in cattle. A scientific agreement was also adopted to prohibit the use of stilbenes owing to their potential tumor-inducing effects in human. However, most of these compounds have not gained widespread consumer acceptability and growth-promoting hormones were banned by the EU. The consequence of this EU position has been the development in numerous countries of a black market of hormone cocktails including potentially dangerous synthetic steroids and corticoids. The weight gain increase in steroid-treated animals was associated with net protein accretion and N retention without any changes in the digestibility of N intake (Scarth *et al*., 2009).

In Bangladesh, feed additives and growth promoters imported by pharmaceutical industries and overseas marketing agencies and attract farmers to use them in fattening animals. Some of them may have deleterious residual effects on human health or some may not respond cost effectively. Most of the cattle brought for sale as sacrificial animals in the northern districts ahead of Eid-ul-Azha are fattened allegedly by unscrupulous cattle traders ignoring the scientific formula prescribed by Livestock Department. As harmful processes to fatten cattle start several months before Eid-ul-Azha, the animals are affected with serious diseases, posing serious health hazard for consumers (Personal communication).

However, almost no attention has been paid in Bangladesh in respect of using anabolic steroid and feed additives in small scale cattle fattening. Problems, prospects and health

hazards on the use of these substances are not well documented in Bangladesh. Keeping all these matters in view, the present study was conducted with the following objectives:

i) To investigate use of anabolic steroids and feed additives for cattle fattening in selected districts of Bangladesh;
ii) To find out the relationship among different aspects of cattle fattening and use of anabolic steroids and feed additives.

METHODOLOGY

The data were collected using a pretested interview schedule involving 150 respondents of 6 upazila (Mymensingh Sadar and Haluaghat of Mymensingh district, Pabna Sadar and Atgharia of Pabna district and Comilla Sadar and Barura of Comilla districts) in 3 districts of Bangladesh. The respondents were mainly involved in cattle fattening by using anabolic steroid and feed additives before Eid-ul-Azha (October-November, 2011).

Table 1. Distribution of the respondents

District	Upazila	No. of farmers
Mymensingh	Haluaghat	35
	Mymensingh Sadar	15
Pabna	Atgharia	12
	Pabna Sadar	38
Comilla	Barura	30
	Comilla Sadar	20

The structured interview scheduled was designed to collect information from the farmers on the uses of anabolic steroid and feed additives. The schedule was developed in a simple manner to avoid misunderstanding and to get accurate answer. Data were collected following the direct interviews and making personal visits. Before making actual interview, the objectives of the study were explained clearly to the respondents. Then the questions were asked in a very simple manner with explanation wherever necessary. Interviews were normally conducted in the market or in respondent's house during their leisure time. Excellent co operation and co-ordination was obtained from all the respondents, field extensions staffs of DLS and different companies' personnel during data collection. Data collection was started on October, 2011 and completed on November, 2011. Secondary data were collected at different times from drug pharmacy, veterinary doctor, Upazila livestock officer, BBS, journals, reports and various published articles. The interview schedule contained information related to socioeconomic status of the respondents, livestock population, management of the fattening cattle, feeds and feeding cattle, indigenous knowledge on rearing and marketing of cattle, and application of anabolic steroid and feed additives etc. It also contained the sources of information to use anabolic steroid and feed additives and also the impact of anabolic steroids and feed additives on growth rate of fattened cattle. All interview schedules were compiled, coded,

tabulated and analyzed according to the objectives of the study. The collected data were first transferred to MS- Excel spread sheets and compiled to facilitate the needed tabulation. Tabular technique was applied for the analysis of data using simple statistical tools like average and percentages as well as Chi-square(x^2) value, spearman correlation coefficient (r_s), and level of significance through SPSS Statistics 17.0 software for quantitative and qualitative data.

RESULTS AND DISCUSSION

Socio-economic status of the respondents

Table 2 shows that the majority (72.0%) of the respondents involved in agriculture, followed by 23.3% and the rest were involved in livestock business and service, respectively. The education level of respondents were 40.0% illiterate, followed by 46.0%, 10.7% and 3.3 % primary level, higher secondary and graduation level of education, respectively. Majority (78.7%) of the farmers start their cattle fattening business using own money, followed by 11.3%, 2.7%, 4% and 3.3% from NGO loan, bank loan, mohajon loan and loan from microcredit at high interest rate, respectively. Only 9.3% respondents had cattle fattening training and 90.7% had not received any training. Hashem *et al.*. (1999) conducted a survey work on cattle fattening in different districts of Bangladesh and reported that about 51.2% farmers having primary education and 28% had no education. He also reported that about 22% farmers had training and 78% had no training on cattle fattening program. Ahmed *et al.*. (2010) found that 20.5% farmers were trained and 79.5% were not trained. Ali *et al.* (2011) reported that 56% had primary education, 20% had secondary and 6% had higher secondary education and rest of them graduate and post-graduates16% and 2%, respectively and 52% farmers received training and rest of them were not trained.

Factors associated with cattle fattening

Table 3 shows that majority (92.0%) of farmers selected beef type cattle for fattening purpose. 79.3% respondents had 2-5 number of cattle for fattening while 17.3% and 3.3% had 6-9 number and more than 10 number cattle. Among the farmers, 42.7% selected indigenous while 57.3% selected cross breed for fattening purpose. Majority (53.3%) of the respondents start fattening before Eid-ul-Azha and the rest practiced round the year. Majority (58.7%) of the farmers fattened cattle for 3 to 6 months, followed by 16.7% and 24.7% for 3 months or less and 6 months to 1 year, respectively. Majority (80.7%) of them selected uncastrated male and rest of them fattened castrated male. About 66.0% cattle used for fattening age was 2 years or below and 34.0% was above 2 years. Among the respondents 70.6% used anabolic steroid as a growth hormone and rest of them did not use any kinds of growth hormone. Most (95.3%) of the farmers used feed additives for cattle fattening while only 4.7% did not use feed additives. Hossain (1986) and Hossain *et al.* (1996) reported that most farmers fattened their cattle for the duration of 4-5 months and 5-7 months, respectively.

Table 2. Distribution of respondents according to their socio-economic status (n = 150)

Parameters	Categories	No. of farmers	% of farmers
Main Occupation	Agriculture	108	72
	Livestock Business	35	23
	Others	7	4
Level of Education	Illiterate	60	40
	Primary	69	46
	Higher secondary	16	10
	Above higher secondary	5	3
Family Members	2-4	55	36
	5-7	76	50
	8-10	19	12
Annual Income (BDT)	20000-30000	71	47
	30001-40000	39	26
	40001-50000	31	20
	More than 50000	9	6
Sources of money	Own	118	78
	Bank loan	4	2
	NGO loan	17	11
	Mohajon	6	4
	Own + NGO loan	5	3
Training on cattle fattening	Have	14	9
	Have not	136	90

Use of feed additives and anabolic steroids

Table 4 revealed that most of the farmers used anabolic steroid and feed additives as a growth promoter for cattle fattening and they prefer in powder form. About 33.33% respondents used Avit-G, 27.54% Amovit-G and the rest used Radivit-DB, Hyvit-DB, Megavit-DB, Vitamin-DB, Curenal and Complete-DB. About 20.37% respondents also prefer Catasol, 18.51% Tocol, 16.66% Asol and rest of them used Catafos, Hematophen, Buphos-Vet, Phosvet, Hematopen, Dexadet, Tredexanol, Oradexon and Decason as fattening agent in the form of injection. About 44.44%, 25.92% and the rest of the farmers used Anora, Roxivet, and Anorexon, Pednivet, and Biolect Bolus, respectively in the form of tablet as fattening agent. This result differed from the findings of Ali *et al.*.(2011) who reported that 8% farmers used Pednivet and 78% used vitamin mineral premix as a feed additives. This inconsistent might be due to cultural and / or geographical variation. Feed conversion efficiency was improved in bull calves by using Metafos (Minerals derivatives) and Biomix-DB (Vitamin-mineral premix) reported by.

Table 3. Distribution of the factors associated with cattle fattening (n = 150)

Parameters	Categories	No. of farmers	% of farmers
Farm type	Beef type	138	92
	Dairy type	4	2
	Beef + Dairy	8	5
No. of cattle fattening	2-5	119	79
	6-9	26	17
	>10	5	3
Breed of cattle	Indigenous	64	42
	Cross	86	57
Pattern of the program	Just before eid-ul-azha	80	53
	Round the year	70	46
Fattening period	3 months or less	25	16
	3 to 6 months	88	58
	6 months to 1 year	37	24
Sex of animal	Castrated male	29	19
	Uncastrated male	121	80
Starting age	2 yrs or below	99	66
	Above 2 yrs	51	34
Finishing age	3 yrs or below	119	79
	Above 3 yrs	31	20
Anabolic steroid	Practiced	106	70
	Non-practiced	44	29
Feed additives	Practiced	143	95
	Non-practiced	7	4

Table 5 revealed that Most (86%) of the respondents used anabolic steroid in Pabna districts and has a significant difference ($P<0.01$) from other two districts. The result demonstrated that respondents of low income used more anabolic steroid. About 30 to 60% of the farmers' income came from cattle fattening business. About 58% respondents used anabolic steroid for the period of 3 to 6 months cattle fattening ($P<0.001$). Significant ($P<0.01$) association was observed on the use of anabolic steroids with different districts, annual income, source of money, number of cattle fattened, breeds of cattle, fattening period, starting and finishing age. The x^2-value of annual income was 14.97 indicating that increase of annual income was associated with decrease of anabolic steroids and 2-5 heads of cattle are highly fattened using growth promoters ($P<0.05$). Most of the farmers used their own capital for using anabolic steroid and feed additives ($P<0.001$). The r_s value of annual income, source of money, number of cattle fattening starting and finishing age was positively correlated with practice of anabolic steroid. The r_s value of fattening periods is -

0.85 which indicates that the use of anabolic steroids was increased with the decreased fattening period (P<0.01). While working with the farmers in rural areas of Bangladesh, Hossain (1986) and Hossain *et al.* (1996) reported cattle fattening periods of 4-5 months and 5.7 months, respectively.

Table 4. Distribution of feed additives and anabolic steroids (n = 150)

Feed additives			Anabolic steroids	
Powder	Injection	Tablet	Injection	Tablet
Avit-G (Vitamin, Mineral premix)	Catasol (Butaphosphan,Vit B_{12})	Anora (Iron, Vitamin)	Oradexon (Glucocorticoid steroid)	Pednivet (Steroids)
Amovit-G (Vitamin, Mineral premix)	Tocol (Vitamin E, Vit B_{12})	Roxivet (Vit B_{12}, iron)	Decason (Glucocorticoid steroid)	
Hyvit-DB (VitaminB, D)	Asol (Vit B_{12})	Anorexon (Iron, Vit B_1,Vit B_{12})	Dexadet (Synthetic Steroid)	
Radivit-DB (Vitamin B, D)	Catafos (Butaphosphan,Vit B_{12})	Biolect Bolus (Enzyme)	Tredexanol (Synthetic Steroid)	
DB-Vitamin (Vitamin A, D)	Buphos-Vet (Butaphosphan,Vit B_{12})			
Megavit-DB (Methionine, Lysine)	Phosvet (Toldimphos, Vit B_{12})			
Complete-DB (Vitamin, Minerals)	Hematopen (Vit B_{12})			
Curenal (Ferus Sulphate, Vit B_1)				

Table 6 revealed that feed additives was used by all of respondents in Pabna districts and has a significant (P<0.01) difference from those of other two districts. The result demonstrated that respondents of low annual income used more feed additives and in that case 30 to 60% of their income came from cattle fattening business. About 78% respondents used feed additives which was significantly (P<0.01) associated with own sources of money and they used mainly for 3 to 6 months (P<0.01) period for fattening. On the basis of x^2-value, significant (P<0.01) association was observed on the use of feed additives with different districts, source of money and fattening period.

Table 7 shows that the r_s value of source of money is -0.265 indicates that with the increase of annual income decreases the uses of feed additives. Impact on growth also negatively correlated with feed additives (r_s = -0.299). Beeson (1959) stated that there is no doubt that feed additives have made a great contribution to improve the performance and general health of livestock.

Table 5. Use of anabolic steroids (n = 150)

Parameter	Categories	Practiced	Not-practiced	Total	X^2-value	Level of sig.
District	Mymensingh	29	21	50	11.143	**
	Comilla	36	14	50		(P<0.01)
	Pabna	43	7	50		
Main Occupation	Agriculture	101	7	108	0.710	NS
	Liv. Business	32	3	35		
	Others	7	0	7		
Annual Income (BDT	20000-30000	69	2	71	14.970	**
	31000-40000	38	1	39		(P<0.01)
	41000-50000	27	4	31		
	Above 50000	6	3	9		
Source of money	Own	115	3	118	36.835	**
	Bank Loan	4	0	4		(P<0.01)
	NGO Loan	10	7	17		
	Loan Mohajn	6	0	6		
	Own+NGO	5	0	5		
% of income from fattening business	<30%	46	1	47	2.862	NS
	30 to 60%	81	7	88		
	>60%	13	2	15		
Farm type	Beef	129	9	138	2.737	NS
	Dairy	3	1	4		
	Beef & Dairy	8	0	8		
No. of cattle fattening	2-5	114	5	119	5.766	*
	6-9	22	4	26		(P<0.05)
	>10	4	1	5		
Breeds of cattle	Indigenous	57	7	64	3.272	*
	Cross	83	3	86		(P<0.05)
Pattern of fattening	Eid-ul-Azha	77	3	80	2.344	NS
	Round the year	63	7	70		
Fattening Period	3m or less	19	6	25	15.351	**
	3 to 6 m	84	4	88		(P<0.01)
	6m to 1 yrs	37	0	37		
Starting age	2 yrs or below	96	3	99	6.188	*
	> 2 yrs	44	7	51		(P<0.05)
Finishing age	3yrs or below	117	2	119	23.006	***
	> 3yrs	23	8	31		(P<0.01)
Name of anabolic steroid	Powder	56	6	62	4.238	NS
	Injection	60	1	61		
	Tablet	24	3	27		
Source of anabolic steroid	Pharmacy	115	8	123	0.29	NS
	NGO worker	25	2	27		

NS, Non-significant (P>0.05); *, P<0.05 and **, P<0.01

Different feed additives and sources (n = 150)

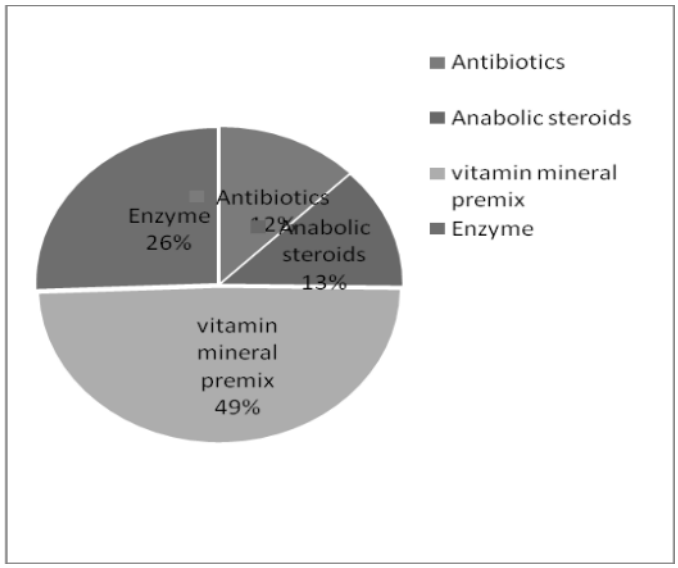

Fig. 1. Different feed additives

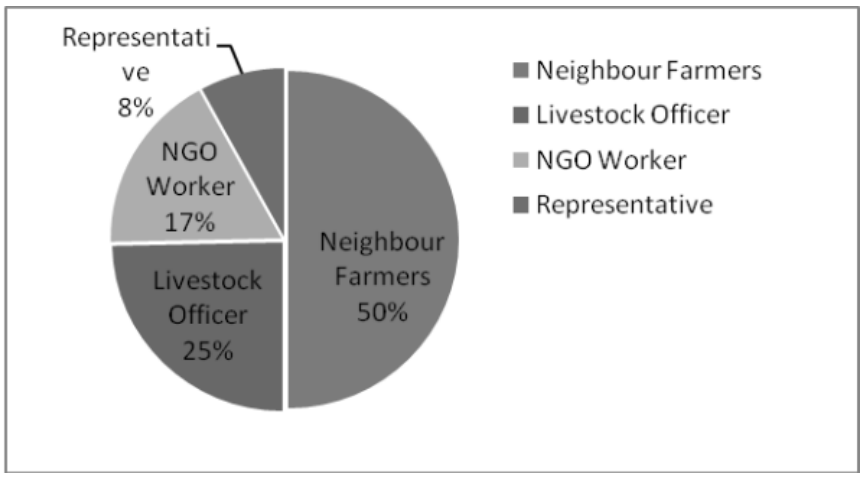

Fig. 2. Sources of different feed additives

Based on the sources of feed additives, the pie chart shows athat bout 49% respondents used vitamin mineral premix, 26% enzyme, 12% antibiotics and 13% anabolic steroids for cattle fattening. The sources of feed additives vary farmers to farmers. In pie chart 2 shows that most (50%) of the farmers knew about the use of feed additives from neighbour farmers, 25% from livestock officer, 17% from NGO workers and the rest 8% from veterinary representative. This result differed from the report of Ali *et al.* (2011) who found that 90% farmers used feed additives, 8% used vitamin-minerals premix and only 4% used anabolic steroids.

Table 6. Use of feed additives (n = 150)

Parameter	Categories	Practiced	Not-practiced	Total	X^2-value	Level of sig.
District	Mymensingh	45	5	50	0.000	* (P<0.05)
	Comilla	47	2	50		
	Pabna	50	0	50		
Main Occupation	Agriculture	106	2	108	0.286	NS
	Liv. Business	34	1	35		
	Others	7	0	7		
Annual Income(BDT)	20000-30000	70	1	71	4.241	NS
	31000-40000	39	0	39		
	41000-50000	29	2	31		
	above 50000	9	0	9		
Source of money	Own	117	1	118	16.07	** (P<0.01)
	Bank Loan	4	0	4		
	NGO Loan	17	0	17		
	Loan Mohajn	5	1	6		
	Own+NGO					
% of family income from fattening business	<30%	47	0	47	2.659	NS
	30 to 60%	86	2	88		
	>60%	14	1	15		
Farm type	Beef	135	3	138	0.266	NS
	Dairy	4	0	4		
	Beef &Dairy	8	0	8		
No. of cattle fattening	2-5	117	2	119	0.616	NS
	6-9	25	1	26		
	>10	5	0	5		
Breeds of cattle	Indigenous	63	1	64	0.109	NS
	Cross	84	2	86		
Pattern of fattening	Eid-ul-Azha	78	2	80	0.210	NS
	Round the year	69	1	70		
Fattening Period	3m or less	24	1	25	0.038	** (P<0.01)
	3 to 6 m	87	1	88		
	6m to 1 yrs	36	1	37		
Sex of animal	Castrated male	28	1	29	0.358	NS
	Uncastrated male	119	2	121		

NS, Non-significant (P>0.05); *, P<0.05 and **, P<0.01

Table 7. Estimated values of rs of feed additives (n = 150)

Parameter	Spearman correlation coefficient (r_s)	Level of significance
Education level	-0.042	NS
Annual income	-0.072	NS
Source of money	-0.265	**
Breeds of cattle	-0.027	NS
Fattening period	0.018	NS
Impact on growth	-0.299	*
Antibiotics	0.073	NS
Steroids	-0.154	NS
Vit-mineral premix	0.057	NS
Enzymes	-0.067	NS

rs, Spearman correlation coefficient; NS, Non-significant (P>0.05); *, P<0.05 and **, P<0.01

Problems and suggestions to improve cattle fattening

Table 8 shows that the most important problem faced by the respondents (34%) was the high price of concentrate feed. followed by lack of knowledge (27.33%) for the selection of appropriate breed, capital problem (20%) and lack of knowledge about feed additives and anabolic steroids (8.7%). This result differed from Ali M. A. *et al.* (2011) who reported that about 74% of the respondents had no problem in using the anabolic steroids and feed additives and the rest 26% did not give any answer to this question. This result was also in agreement with the findings of Rahman *et al.*, (2001) where 70% respondents reported high price of concentrate feeds. Hashem *et al.*, (1999) reported that lack of training, credit facilities, feed price hiking, disorganized marketing system were also problems related to cattle fattening in Bangladesh.

Table 8. Problems and possible suggestions to improve cattle fattening (n = 150)

Problems	No. of farmers	% of farmers
High price of concentrates	51	34
Lack of knowledge for selection of appropriate breed	41	27
Capital problem	30	20
Disease(s) problem	15	10
Lack of knowledge using feed additives and anabolic steroids	13	8
Suggestions		
Selection of animal on the basis of breed, color, age, skin, sex and eye	54	36
Good feeding and management	38	25
Deworming for regular basis	28	18
Reduced cost of concentrates	20	13
Availability of training facilities on cattle fattening	10	6

Table 8 also shows that 36.0% respondents suggested that selection of breed is the first key to cattle fattening, followed good feeding and management (25.3%), dewarming (18.7%), reduction of concentrate feed cost (13.3%) and availability of training facilities for cattle fattening (6.7%).

CONCLUSION

It can be concluded that majority of the respondents used feed additives in the form of powder as a fattening agent. The result also demonstrated that about most of low income group of respondents used anabolic steroids for fattening purpose. It also has been stated that decrease of anabolic steroid use is associated with increase of annual income of the respondents. Studies to explore more information related to socio-economic condition of the farmers who are involved in fattening business are necessary.

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