Evaluation of beef fattening by different treatment at Raozan Upazila, Chattogram.

A Production Report Submitted

By-

Argha Paul Shuvo

Intern ID: 36

Roll No: 15/38

Registration No: 01453

The report submitted in the partial fulfillment of the requirements for the Degree of

Doctor of Veterinary Medicine (DVM)

Chattogram Veterinary and Animal Sciences University

Khulshi, Chittagong-4225, Bangladesh

September,2020

Evaluation of beef fattening by different treatment at Raozan Upazila, Chattogram.

Approved as to style and content by

.....

Signature of Author

Argha Paul Shuvo
Intern Doctor
Roll No: 15/38
Reg. No: 01453
Intern ID: 36

.....

Signature of supervisor

Tasneem Imam
Assistant Professor,
Dept. of Agricultural Economics & Social Science
Faculty of Veterinary Medicine
CVASU

Chattogram Veterinary and Animal Sciences University

Khulshi, Chittagong-4225, Bangladesh

Acknowledgement

The author wishes to acknowledge the immeasurable grace and profound kindness of Almighty "**ALLAH**" the supreme authority and supreme ruler of universe, who empowers the author to handle the case and to complete the case report successfully.

Completion of any work or responsibility gives nice feelings. But the accomplishment of this work, as the partial fulfillment of the requirements for the degree of Doctor of Veterinary Medicine (DVM) in (CVASU), not only has given me the pleasure, but also have given me the confidence to move ahead and showed me a new opening to knowledge. Standing at this opening, it is an honor to revoke the names of the person and the Organization I am grateful to.

The author wishes to express his deep sense of gratitude and thanks to **Tasneem Imam**, assistant Professor, Department of Agricultural Economics and Social Science, Faculty of Veterinary Medicine of Chattogram Veterinary and Animal Sciences University for his skillful supervision and guidance to make this report.

The author would like to express my deep sense of gratitude and thanks to **Prof. Dr. Gautam Buddha Das**, honorable vice chancellor and **Prof. Dr. Md. Abdul Ahad**, Dean, Faculty of Veterinary Medicine, CVASU.

The autor would like to thank to the Director of External affairs, **Prof. Dr. A.K.M. Saifuddin**, Dept. of Physiology, Biochemistry and Pharmacology, Chattogram Veterinary and Animal Sciences University

The author also grateful to **DR. Mizanur Rahman,** Upazila Veterinary Officer (ULO), Raozan Upazila, for his cordial information and help at the time of handling the case.

Finally the author expresses thanks and warmest sense of gratitude to his parents and all well-wishers.

Argha Paul Shuvo
(The author)
September, 2020

Table of Contents

Abstract 2

Introduction 3

Methods & Materials 5

2.1. Placement + Duration of the study 5

2.2. Selection of animal for beef fattening 5

2.3 Anthelmintics: 6

2.4: Experimental design and different treatment 6

2.5: Methods of feeding 7

2.6: Body weight measurement 8

2.7 Statistical analysis 9

Results 10

3.1: Dry matter intake 10

3.2: Weight gain: 11

3.3: FCR analysis 12

Discussions 14

Problem & Recommendation 15

Limitation of the study 16

Conclusion 17

References: 18

Biography 22

My goal 23

Evaluation of beef fattening by different treatment at Raozan Upazila, Chattogram.

Abstract

Cattle fattening for beef production have become an important business in Bangladesh. Breed, age, characteristics of animals and the source of animals are important for beef fattening. In few areas of Bangladesh a small scale commercial beef fattening program has already been started. Straw is the important crop residue;contribute the major portion of the fibrous part of the diet of the beef cattle.Rice straw is the basal feed for ruminants with low nutritive value and low digestibility.Farmers use rice straw of traditional verities, green grass, sugarcane tops, wheat and rice bran, molasses, pulses bran and locally available resources such as pumpkin, carrot, bananas, vegetables by products, rice gruel, boiled rice bran, oil cakes etc for beef fattening. The chemical treatment of straw is the most effective and economic method to improving the quality. Straw is mainly treated with urea and molasses and in some cases chemical treatment also done by the former. Urea molasses straw treatment in beef cattle resulted higher body weight, dressing percentage and also in better carcass quality than untreated straw. The acute shortage of feeds and fodder has long been identified as a serious constraint to optimum livestock production in Bangladesh. The nutritional factor is considered a major constraint to livestock productivity. Traditional grazing field is a scarce except in some pockets in Pabna and Sylph districts. Farmers used three years old cattle for beef fattening and maximum growth rate between 1.1 year to 1.4 years of age. Cattle fattening period is 4.5 months in rural areas of Bangladesh. For fattening, habitat and feeding are important. Feeding of urea treated rice straw with to the cattle shows better utilization of roughages as well as rapid live weight gain. Anthelmintics were supplied during this period for better metabolism of drugs. The experiment proved that treatment of rice straw with urea-molasses increase the protein, energy as well as palatability and tenderness of rice straw which subsequently increase the intake as well as growth of the animals. Butaphosphan and cyanocobalamine (Catophos-inj.) can be an important adjunct in hastening recovery and minimizing the effects of nutrient deficiencies related to poor feed intake.

Keywords: Beef fattening, Anthelmentics, Catophos

Chapter 1

Introduction

Beef fattening is the intensified feeding of cattle to obtain the greatest quantity of high quality meat **(shmakov *et al.*, 1969)**. It can increase the income of the farmer. It can also compensate the deficiency of protein of the cattle which promote weight gain. In cattle raising several types of fattening are used to obtain dietetic veal, regular veal, baby beef, and beef **(shmakov *et al.*, 1969).** Like other agro-based developing countries Bangladesh also has to depend mainly on agriculture. About 80% people dependent on agriculture. Livestock play a great role in this agriculture dependent country **(FAO, 1998).** The livestock sector contributes 3 percent to the Gross Domestic Product (GDP) **(BBS, 1989).** Feeds and strategy of feeding are the important factors for livestock development. The feeding practice of livestock of Bangladesh is very much traditional and conventional **(Tareque, 1991).**

The cattle population Bangladesh very commonly suffers in malnutrition as well as beef fattening we need energetic diet. Cattle need minimum of 16% CP (crude protein) in their ration for their optimum growth, production and reproduction (**NRC, 1990**). But through the conventional feeds and feeding systems they get a very lower amount of CP (Khalek *et al.,* 2004). The true protein (TP) feeds are very much expensive and so farmers can't offer their livestock the high protein source feeds. On the other hand urea is a NPN (non-protein nitrogen) substance which provides 16% CP to the ruminant animals. So incorporation of urea into the ruminant diet along with a higher carbohydrate (CHO) source can provide adequate protein as well as energy requirement of the ruminants which subsequently positively affect the growth, production, and reproduction of the ruminants **(Mathur and Sharma, 1985)** such type of material can be used as beef fattening.

Green grass from arable and non-arable land and some concentrates are also available at a sub-normal amount. Due to inadequate production of green grasses, rice straw has become the major feed resource for the livestock production of Bangladesh (**Molla *et al.*, 2009**). To overcome this shortage of feed and to provide

adequate nutrition to the existing animals the conventional rice straw can be fed to the animal by somewhat modern feeding system. Modifying or treating this rice straw by

other feed supplements like is an effective program for local cattle development. One of these processes is urea treatment of the straw. It is very much effective in cattle growth and also fattening. Cattle fattening for beef production has become an important business of the small farmers in Bangladesh (**DLS, 2000**). The Department of Livestock Services (DLS) has taken beef fattening as an action program to generate income for the rural poor farmers. There is little information available on cattle fattening by the rural farmers (Hossain, 1986). However worked on management system of cattle regarding feeding, housing, disease prevention and marketing in the Comilla district. (Hossain *et al.*, 1996) conducted a study on beef fattening in the Manikganj district. They all trialed on beef fattening by urea feeding.

In Raozan upozila, green grasses are very much available. So people using green grass very much. By using Concentrate they can enhance growth very much. This study promotes them to use sufficient concentrate in feed.

Stress causes cortisol to be released into the bloodstream, which can impair the immune response, cause loss of appetite, increase susceptibility to disease and reduce growth rate. Butaphosphan can be an important adjunct in hastening recovery and minimizing the effects of nutrient deficiencies related to poor feed intake.

As indicated earlier the information related to cattle fattening in Bangladesh is very sporadic. Detailed study is needed covering different districts of Bangladesh to recommend cattle fattening programs for the rural poor farmers as an income generating activity. Therefore, the present study was undertaken to investigate the following objectives of beef fattening at Raozan upazilla.

OBJECTIVES:

The objectives of the study are:

- To evalute the effect of feed and metabolic drugs on beef fattening.
- To evaluate the cost effective methods of beef fattening.

Chapter 2

Methods & Materials

2.1. Placement + Duration of the study

The study was carried out at Raozan upazila, Chittogram district for a period of 8 weeks from October 2019 to December 2019.

2.2. Selection of animal for beef fattening

Nine healthy indigenous young calves of almost 1.5 to 2.5 years of age (average body weight of 64 kg) were selected from the backyard system inhibiting under of Bangladesh. The character of selected animal are presented in table-1

Table-1: Age, Body weight and Id. number of group of animal

Group of animal	Id number	Age(years)	Body weight(kg)
A	A_1	1.9	61.2
	A_2	1.8	54
	A_3	1.8	57
B	B_1	1.5	58
	B_2	2.2	69
	B_3	1.8	63
C	C_1	2.6	74
	C_2	2	64
	C_3	1.9	68

2.3 Anthelmintics: Prior to fattening in each animal with Endex (novertis) 1bolas@41-70kg body wt. sufficient amount of water was supplied during this period for better metabolism of drugs.

2.4: Experimental design and different treatment

In the present study following three types of diets and injection are offered to three different groups.

Group	Feed items
G-A	Urea, rice straw, green grass, concentrate mixture
G-B	Urea molasses straw with kitchen by products, green grass, rice polish with metabolic injection
G-C	Rice straw , green grass, concentrate mixture , metabolic injection

Animals of group-A were supplied with urea, rice straw, green grass, concentrate mixture. Animals of group-B were supplied with urea molasses straw with kitchen by product, green grass, 250 gm rice polish with metabolic injection. Animals of group-C were supplied with rice straw, green grass, concentrate mixture and metabolic drug

The ingredients composition and nutritive value of the experimental diet-B are shown in the table-2

Table 2: Ingredient composition and nutritive values of the experimental diets and injection

Particulars	**Dietary group A (gm/ day)**	**Dietary group B (gm/day)**	**Dietary group C (gm/ day)**
Rice straw	3550 gm	2000 gm	3550 gm
Green grass	Adlibitum	Adlibitum	Adlibitum
Kitchen waste	0 gm	1000 gm	0 gm
Rice polish	0 gm	250gm	0 gm
Urea	20gm	20gm	0 gm
Molasses	0 gm	300gm	0 gm
Salt	3 gm	3 gm	3 gm
Catophos (inj.)	0 gm	.57 gm	.57 gm
Total	3573gm	3573gm	3553gm
Nutritive value (calculated)			
DM%	71.7%	71.7%	69%
CP%	7%	7%	4.6%
DCP%	2.3%	2.3%	2.3%
TDN%	45.5%	45.5%	45.5%

2.5: Methods of feeding

Firstly, all the ingredients were measured using manual balance and then the 20 gm urea was mixed with 4 liter of water and finally the molasses mixed homogenously. Then the urea-molasses solution was sprinkled over the rice straw. During sprinkling the rice straw was stirred for several times. The prepared treated straw stored with polythene and fed to the animals to a special bamboo made feeder. The prepared treated straw was fed to the animals at first week @ 1 kg treated straw + 1 kg untreated straw and then the

following weeks @ 2 kg treated straw to each animal. The rice polish and salt measured every day and fed to each animals by mixing with water twice a day (at morning and afternoon). The residue of treated rice straw of previous day was mixed with the treated rice straw of the next day. Green grass offered adlibitum. Urea treated straw supplied to the group A and group B.

In case of diet-C, the rice straw was offered untreated and concentrated mixture was offered excluding urea. Everyday 3.5 kg rice straw was measured and offered to each animal. The residue of the rice straw of the previous day was offered by mixing with the next day diet. Green grass offered adlibitum. The 3 gm salt with straw which offered twice daily at morning and at afternoon. Catophos (ing.) is given intramuscularly. The chemical composition of the supplied ingredients is given in the following table.

Table-3: Chemical composition of the ingredients supplied

Ingredients	DM %	CP %	DCP%	TDN%
Rice straw	88	2.4	0	41.62
Green grass	30	9.36	5.13	58.43
Rice polish	91.8	12.2	6.76	64.4
Urea				
Molasses	73.6	3		

Source: (Banerjee, 1998)

2.6: Body weight measurement

At the beginning of the experiment the animals were weighted at morning before offering any types of feed by using Shaeffer's formula and the measurement was continued throughout the experiment at morning once weekly.

Body weight = $(L\times G^2)/300$ = Weight (lb)

Here,

L= Length of the body starting from point of the shoulder to the point of buttock in inch.

G=Heart girth in inch

By dividing with 2.2 to get the reading in kg. (G.C. Banerjee, 1998).

2.7 Statistical analysis

The obtained information was imported, stored and coded accordingly using Microsoft Excell-2007 to STATA/IC-11.0 (Stata corporation college station) for analysis. The results were expressed in body weight gain with P-value for Chi-square test. Significances was determined when $P<0.05$.

Chapter 3

Results

3.1: Dry matter intake

Dry matter intakes of the experimental animals are shown in **Figure-1.** It can be seen from the tables that total dry matter intake in dietary group-A and dietary group-B animals were similar and slightly higher than that of the dietary group-C animals. However the difference, is not significant ($p>0.05$). The DM intake of the experimental animals group A and B are similar and it may due to affinity of the animals towards the urea-molasses treated straw and urea-molasses supplemented concentrations. Green grass intake was also similar in the animals of each group. Since the animals were given fixed quantity of rice straw the response on straw intake was not noticed. Rice straw was deficient in nitrogen, energy, and minerals and cannot support maintenance or production unless supplemented with deficient nutrients required for microbial growth in the rumen as well as by the animal (Preston and Leng, 1984).

(Campling *et al*., 1962) have reported that when urea infused continuously in the rumen of cattle (150gm/day), straw consumption. It appears that such supplementation speed up the rate of fermentation of straw due to increased microbial activity in the rumen through microbial proliferation but this did not alter the extent of fermentation on terms of unit amount of ingested straw (M Shahjalal et al,2009).

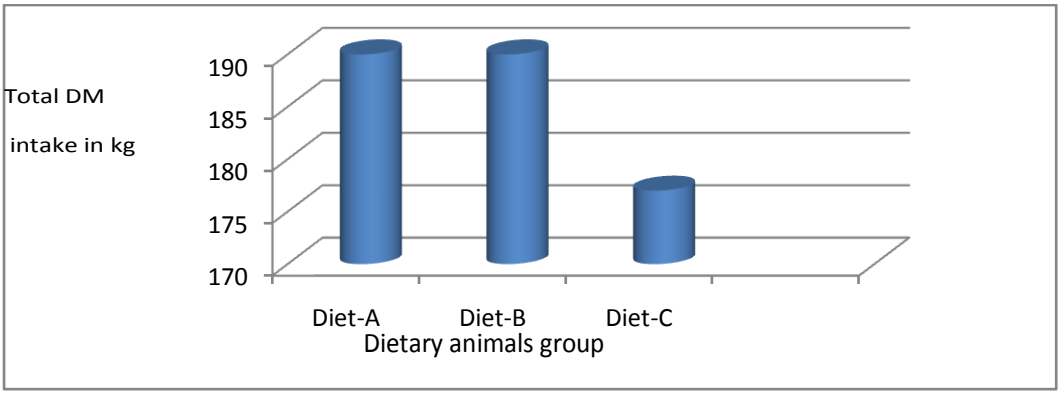

Fig. 1: Total DM intake of experimental animals

The effect on live weight gain and feed efficiency of different experimental diets are shown in Table 4

Table 4: Effect on live weight gain and feed efficiency of different experimental diets

Particulars	Animal Group			Level of significance
	Dietary animals group A	Dietary animals group B	Dietary animals group C	
Initial body wt.(kg)	57.6 ± 7.68	63.5 ± 7.68	69 ± 7.68	NS
Final body wt(kg)	58.55 ± 7.8	64.6 ± 7.8	67.65 ± 7.8	NS
DM intake(kg)	191 ± 9.00	191 ± 9.00	178 ± 9.00	NS
Gain in body wt(kg)	2.6 ± 0.13	4.15 ± 0.13	3.05 ± 0.13	*
Feed convertion Efficiency(kg Feed/live wt. Gain)	102.9 ± 1.44	64.15 ± 1.44	87.65 ± 1.44	*

3.2: Weight gain:

The author had measured the body weight of animals by Shaeffer's formula. From the table-4, it is seen that the body weight gain of the experimental group-B is the with urea and butaphosphan has positive effect on the live weight gain of the animals. Statistical analysis showed that gains in animals receiving diet-A and C were significantly lower than those receiving diet-B. The reason for lower live weight gain in group-A and C animals is might be due to the type of the experimental diets (without urea in diet-C and without butaphosphan(ing) by urea in diet-A) which has been reported by (Sadullah and Haque, 1981) and might due to higher digestible energy intake by group-B animals, (Jayasuriya, 1981.)

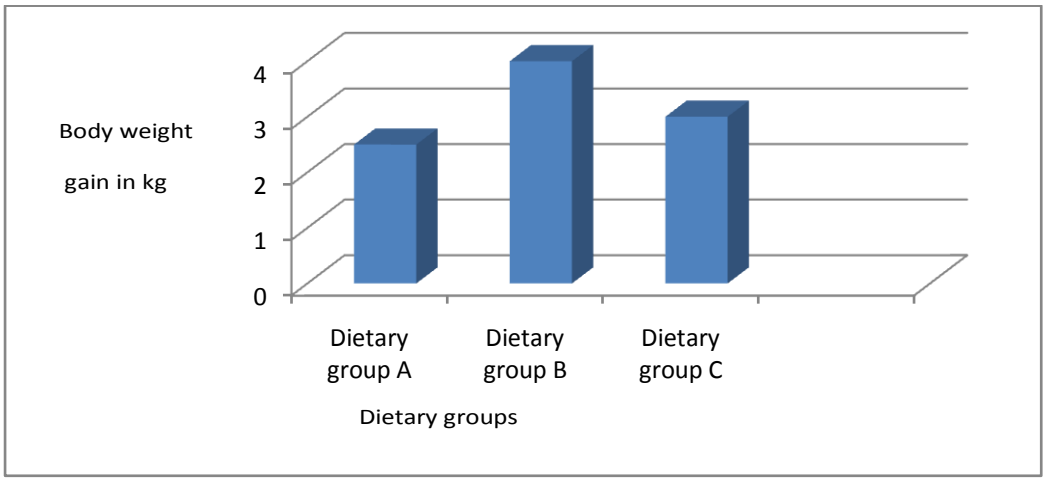

Fig. 2: Comparison of body weight gain (kg) of the different experimental animals.

3.3: FCR analysis

The FCR of the experimental animals group was determined by dividing the kg body weight gained to the kg feed intake and it was found that the FCR is significantly lower in experimental animal's group-B than the group-A and C. So it can say that urea-molasses treated straw is more suitable, preferable and economic than the urea-molasses supplementation or the untreated rice straw diets which is also reported by (Khandaker and Reza., 1993).

3.3 Observation of the animal

Table 5: Comparison of body weight gain in different animal

Animal ID NO	Initial Body weight	Animals body weight (Kg)							
		1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week
A1	61.2	61	61.2	61.2	61.4	61.6	61.5	61.5	61.8
A2	54	54	54.1	54.2	54.4	54.5	54.5	54.6	54.9
A3	57	57	57.1	57.2	57.4	57.5	57.5	57.6	57.9
B1	58	58	58.2	58.5	58.8	58.8	58.9	59	60
B2	69	68	68.3	68.4	68.5	68.4	68.5	68.7	69
B3	63	63	63.3	63.4	63.5	63.4	63.5	63.7	64
C1	74	74	74	73	73.2	73.1	73.1	73	73
C2	64	63	63	62	62.1	62	62	62.1	62
C3	68	67	67	66	66.1	66	66	66.1	66

Chapter 4

Discussions

Cattle shows better utilization of roughages as well as rapid live weight gain rather than urea supplemented or urea untreated rice straw diet. As ours is a poor country and we cannot offer good quality roughage to our cattle most of them are malnourished and emaciated. Again the rice straw is harder than other dry roughages and requires more energy to digest it. So in comparison to other forages rice straw shows minimum growth of animals. The experiment proved that treatment of rice straw with urea-molasses increase the protein, energy as well as palatability and tenderness of rice straw which subsequently increase the intake as well as growth of the animals. Butaphosphan and cyanocobalamine (Catophos-inj.) can be an important adjunct in hastening recovery and minimizing the effects of nutrient deficiencies related to poor feed intake. The other method having urea supplementation with concentrate mixture not shows a marked positive effect on the feed intake as well as the growth of the animals. So in Bangladesh the farmers both at backyard and farm level can fed the urea treated rice straw and can inject metabolic injection to the cattle. As it requires least cost, labour and time provides with better result.Therefore it might be applicable throughout the country.

Chapter 5

Problem & Recommendation

Problems:

1. High Cost of Concentrate feed.
2. Lack of Knowledge among the farmers
3. Lack of modern farming facility
4. 2 month time is not enough to get all necessary information
5. Low price of cattle due to illegal Indian Cattle introduced in the market

Recommendations

1. Government can provide subsidy to the farmers who are interested in those types of beef fattening process.
2. Law should be enforced.
3. Feed price should be reduced
4. Field veterinary service must be available to the farmers.
5. As green grass is an important element of beef fattening and it is available in Hilly area like Bandarban; so government can take initiatives to improve the economical condition of hilly area through beef fattening.

Chapter 6

Limitation of the study

There were some limitations in my study. The study period was limited and study area was restricted to a particular district. The sample size was small. Treatment variation was limited.

Conclusion

The farmers of our country yet unaware of it and who know about it they also afraid of applying this feeding method (due to sometimes change of urea toxicity).If the feeding method can be followed scientifically it will improve the health of the animals as well as the farmers condition. The farmers of our country should feed their animals urea treated straw with butaphosphan intramuscularly instead of untreated rice straw.

References:

Akbar MA, Islam MSU, Bhuiya MS, Islam and Hossain MA, (2000). Integration of fodder legumes into rice-based cropping systems in Bangladesh: Production of Lathyrus sativus and its use as a supplement to straw-based rations of dairy cows. Asian-Aust. J. Anim. Sci., 13: 526-528.

Astutik M, Arifin and Dilaga W, (2002). Formula of urea molasses block. Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner, Ciawi-Bogor. Pusat Penelitian dan Pengembangan Peternakan, : 82-86.

Banerjee GC, (1998). Non-Protein nitrogen (NPN) feed stuffs, Factors affecting urea utilization, Methods of feeding urea, In: A Text Book of Animal Husbandry, 8th edition. Oxford & IBH publishing Co. PVT. LTD, New Delhi, Kolkata, pp: 405-409.

Campling RCM, Freer and Balch CC, (1962). Factors affecting the voluntary intake of feed by cows, the effect of urea on the volantery intake of oat straw. Brit. J. Nutr., 16: 115.

Cheva Isarakul Boonserm and Jaerachai Kanjanaphruthipong (1987). A comparison of urea treated rice straw with urea molasses sprayed rice straw as basal diet for growing cattle. In: Ruminant Feeding System Utilising Fibrous Agricultural Residues-1986. R.M. Dixon (Ed.). pp. 191-198. IDP, Canberra. JITV Vol. 8. No.1. Th. 2003

Chowdhary SA and Huque KS,(1996). Study on the development of a technique for preserving straw under wet condition in Bangladesh. Asian- Aust. J. of Ani. Sci., 9: 91-99.

Davis CH, Saadullah M, Dolberg F and Haque M, (1983). Ammonia treatment of straw for cattle production in intensive agrarian agriculture. Paper presented at the 4th seminar on maximam Livestock production from minimum Land, held at Bangladesh Agriculture University,Mymensing,during May 2nd to 4th.

Dolberg F, Saadhullah M, Haque M, Ahmed R and Haque R, (1980). Different ways of keeping straw during treatment with urea and urine sources of ammonia using indigenous material for storage including some observations on temperature and treatment time. Paper presented at the 1st Asian Australian Science congress, held at Seralang, Selongor, Malaysia during September 2nd to 6th.

Doyle PT, Devendra and Pearce GR, (1986). Rice Straw As Feed For Ruminants. IDP. Canberra.

Goering H and P van soest (1970). Forage Fiber Analysis. U.S. Dept. Agric. Hand book No. 379, Washington, D.C.

Gupta BN and Mathur ML, (1972). Utilization of non –protein nitrogen by ruminants. Review India J. Dairy Sci., 25: 121.

Helmer LG and Bartley EC, (1971). Progress in the utilization of urea as a protein replacer for ruminants. A Review. J. Dairy Sci., 54: 25.

Homar B. Sewell (2005). Urea supplements for beet cattle. Dept. of Animal Science, pp: http:// extention.missouri.edu/agguides/ansci/g02071 htm

Jayasuria MCN, (1981). Effect of urea ensiling of rice straw on digestibility, voiuntary intake and VFA production in growing buffalo calves. In proceeding of co-ordination meeting of the Regional co-operative agreement of the use of nuclear techniques to improve domestic buffalo production in Asia, March, 26.45-46, Bangkok, Thailand.

Khandakar ZH and Reza A, (1993). Effect of urea feeding on the fattening of local emaciated cattle of Bangladesh, Bang. J. of Ani. Sci., 22(1-2): 101-106.

Loosely LK and I.W. Mc. Donald (1968). Noon- protein nitrogen in the nutrition of ruminants, F.A.O., Rome.

Rahman M. Atiqur, A.M.N Nural Alam & M Shahjalal (2009). Suplimentation of urea molasses straw based diet with different levels of concentrates for fattening of emaciated bulk. Pak. J. of Bio. Sci., 12: 970-975.

Mamun A and Rahman MM, (1986). Fooder Production in the Existing Cropping System in Bangladesh. J. of Ani. Sci., 15 (1-2): 69-79.

Mathur MC and Sharma VV, (1985). Feed intake, digestibility and nitrogen retention in crossbred heifer fed water soaked straw rations. Indian J. Arim.sci., 55(3): 218.

Muklammeluddin A, Tareque AMM, Bhuiya MRH and Gheyasuddin S, (1989). Effects of urea supplemented, urea treated and urine treated rice straw on the growth and serum transaminase activities of calves, The Bang. Vet., 6(2): 18-22.

Preston TR and Leng RA, (1984). Supplementation of diet based on fibrous residues and by-products, In: Straw and other fibrous by- products as feed (F. sundstol and E.C. Owen, Eds).Elsevier press Amsterdam. pp : 373.

Purnomoadi and Edy Rianto (2002). Feeding behavior of Buffalo Heifers fed rice straw supplemented with urea-mollases. Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner. Ciawi-Bogor, 30 September- 1 Oktober 2002. Pusat Penelitian dan Pengembangan Peternakan, pp:79-81.

Richard, W Brown, G Ruegsegger and D Bates (1994). Replacement value of tree legumes for concentrates in forage based diets 1: Replacement value gliricidia sepium for growing goats. Anim. Feed Sci. Technol., 46: 37 – 51.

Ristianto utomo; S Reksodiprodo; B Widyobroto; Z Bachrudin and B Suhartanto (1998). Determination of nutrients digestibility, rumen fermentation parameters, and microbial protein concentration on Ongole Crossbred cattle fed rice straw. Bull. of Anim. Sci. Supplement edition. Faculty of Animal Science, Gadjah Mada University. pp. 82 – 88.

Saadullah M, Haque M and Dolberg F, (1980). Treating rice straw with animal urine. Trop. Ani. Prod., 5: 273-277.

Saadullah M, Haque M and Dolberg F, (1981). Effectiveness of ammonifation through urea in improving feeding value of rice straw in ruminants. Trop. Ani. Prod., 6: 30-32.

Sharma D,T.K. Walli and Saha R.C. (1995). Feeding of non-protein nitrogen and crop residues. In: "Handbook for Straw Feeding System" Principles and application with emphasis on Indian Livestock production. Kiran singh and J.B. Schiere (Eds.),Indo-Dutch Project on Bioconversion of Crop Residues, pp. 215-224.

Shmakov *et al*., 1989. The Great Soviet Encyclopedia, 3rd Edition (1970-1979)

Sundstol F, Corworth E and Mowat DN, (1978). Improving the nutritive value of straw and other low quality roughages by treatment with ammonia. World Ani. Rev., 26: 13-21.

Traque AMM, (1991). Feeds and fodder resources in Bangladesh and pattern of Utilization, ADB, Second Livestock Project, TA No.. 668-BAN.

Wongsrikeao M and Wanapat M, (1985). The effects of urea treatment of rice straw on feed intake and live weight gain of buffaloes. In: The Utilization of Fibrous Agricultural Residues as Animal Feeds. Doyle. P.T. (Ed.), IDP Canberra, pp:81-84.

Khalek, M. A., Mahmud, G. M. and Mozammel. M.A. 2004. Conventional feeds and feeding systems of indigenous cattle. *Trop. Ani. Prod*., 6: 272-277.

Molla, S. M., Beolb, S.G. and Motin, S.S. 2009. Intensive dairy cattle production. *Indian Vet Journal,* 2: 12-15.

Biography

Intern Doctor of Veterinary Medicine

Chattogram Veterinary and Animal Sciences University

E-mail:steynlee1000@gmail.com

Mobile: +8801866692325

Personal Profile:

Name: Argha Paul Shuvo

Father's Name: Arindam Paul

Mother's Name: Shelly Paul

Permanent Address: West Dabua,Upozila;Raozan

District; Chattogram

Birth Date: 19th August,1996

Nationality: Bangladeshi

Religion: Hindu

Blood group: A +ve

Academic Qualification:

Name of the examination/course	**Name of the institions**	**Board**	**Passing Year**	**Grade**
SSC	Halishahar Meher Afzal High School	Chattogram	**2013**	**5**
HSC	Chattogram Biggan College	Chattogram	**2014**	**5**
DVM	Chattogram Veterinary and animal Scienences University	CVASU	-------	------

My Goal

As a human being, I have a long cherished dream to serve my nation through my knowledge, creativity and profession. As a veterinarian, I think I have a great opportunity to fulfill my dream by developing my career in the field as a veterinary practitioner. By dealing as a veterinary surgeon, I would be able to expand and spread my knowledge also.

I have also a high interest in Medical Research, Wildlife Conservation and Eco health approach.