Livestock Development Foundation® (LDF)

Regd. No.VSWA/ICT/455-2004

REGISTERED PUBLICATIONS OF
Dr. Muhammad Hafeez
ISBN Code. 978-969-9219

Sr.#	Title	Year	Cost (Rs.)	LDF Publication No.
01	Animal Health Production Workers (Urdu) (AHPWs) Training Manual 80 Pages ISBN. 978-969-9219-09 Registered with Copyright IPO Karachi	2006	180/-	LDF-0017-2006
02	Livestock Industry – Code 782 (English) Course Book for M.Sc (Hons) Livestock Management AIOU Book Series.	2006-07	AIOU Books	LDF-0018-2007
03	Livestock Industry 1st Edition (English) ISBN. 978-969-9219-01-06 (230 pages) Registered with Copyright IPO Karachi	2007	460/-	LDF-0019-2007
04	Livestock Economics and Business Management (English), 225 pages ISBN. 978-969-9219-02-3	2008	600/-	LDF-0020-2008
05	Animal health Production Workers (Sindhi) (AHPWs) Training Manual 80 pages ISBN. 978-969-9219-03-0 Registered with Copyright IPO Karachi	2010	250/-	LDF-021-2010
06	Economic Losses due to Major Livestock (English) Disease in Pakistan. 150 pages ISBN: ISBN. 978-969-9219-04-7	2010	600/-	LDF-0022-2010
07	Investment in Livestock Sector: a Sustainable (English) Business in Pakistan 220 pages ISBN. 978-969-9219-03-0	2010	700/-	LDF-023-2010
08	Livestock Industry: Livestock and Poultry Production of Pakistan (English) HEC Publications Series 215 pages	2011	HEC Publication	LDF-0024-2011
	NEW ARRIVAL/UNDER FINAL STAGES OF PRINTING			
09	Training Manual of Artificial Insemination for Veterinary Assistants and A.I. Technicians (Urdu) ISBN. 978-969-9219-	2012	460/-	LDF-0025-2012
10	Basic Livestock Management Course for Farmers, Veterinary Assistants and A.I. Technicians (Urdu) ISBN. 978-969-9219-	2012	350/-	LDF-0026-2012
11	Participatory Training Manual for Rural Development Workers (Urdu) ISBN. 978-969-9219-	2012	460/-	LDF-0027-2012
12	Livestock Production for Farmers, Veterinary Assistants and A.I. Technicians (Urdu) ISBN. 978-969-9219-	2012	350/-	LDF-0028-2012
13	Pak. Journal of Livestock Sciences (PJLSc)	2010, 2011, 2012 & 2013	250/- each	LDF-2008/09-J ISSN-2077-933X

Conditions:

- Minimum Order is two books
- Mailing Cost is Rs.80/- per two books Regd. Mail (intend)
- We need 10-15 days for Dispatch of Books.
- Payment can be made by Cash/by Cheque in the name.
- We are NTN Regd-NGO.

Dr. Muhammad Hafeez
Chief Author & President
LDF, Islamabad

PUBLISHERS:
LIVESTOCK DEVELOPMENT FOUNDATION® (LDF) (Regd)
H. No.17. St.No.06. Muslim Town, Simly Dam Road, Bhara Kahu, Islamabad
Cell: 0345-9727722. Ph:92-051-2232271, E-mail: drmhafeez1949@gmail.com

VOLUME-V DECEMBER-2013 No.5

ISSN-2077-933X

PAK: JOURNAL OF LIVESTOCK SCIENCES

Established
2008

First Published
2009

FIFTH PUBLISHED
2013

ISLAMABAD – PAKISTAN

Dr. Muhammad Hafeez
B.V. Sc, B.Sc AH, M.Sc (Hons) AH, M.Sc. Vety: Sciences U.S.A
CHIEF EDITOR

PUBLISHERS:
LIVESTOCK DEVELOPMENT FOUNDATION® (LDF) (Regd)
H. No.17, St.No.06, Muslim Town, Simly Dam Road, Bhara Kahu, Islamabad
Cell: 0345-9727722, Ph:92-051-2232271, E-mail: drmhafeez1949@gmail.com

Title:	Pak: Journal of Livestock Sciences (Pak.J.L.Sc) Established-2008, First Published-2009
ISSN (Regd) No.	2077-933X
HEC Recognition	Case under Final stage of Recognition
Abstracting & Indexing	Case taken-up with USA, the Netherlands & UK Through National Library of Pakistan
Present Publication No:	Vol(V), No.05, December-2013
LDF approved document No.	No.LDF-PJLSc-05/13-2013
Patron in Chief:	**Mashook Ali Bhutto** B.Sc. (Hons), Agriculture, M.Sc. Agriculture, U.K. Patron in Chief Livestock Development Foundation ® Islamabad.
Chief Editor:	**Dr. Muhammad Hafeez** B.V. Sc,B.Sc AH, M.Sc **(Hons)** AH, M.Sc. Vety: Sciences U.S.A - President Livestock Development Foundation® (LDF), Islamabad – VSMA – ICT - 455 – 2004.
Co-Editor	**Uzma Kanwal** M.Sc. Sociology, B.Ed.
No. of Papers	
Pages (PP)	
No. of copies Published	200

Composing, Compilation And Computer Formatting/ Graphic Work	Mr. Sharafat Mahmood, For M/S Ghulam Mustafa & Sons, Bhara Kahu, ICT, Islamabad. Ph: 0332-5218353

KEY NOTE

In the name of Allah, The Beneficent, The Merciful.

I always feel honoured when I hear that the annual efforts of the Editorial Board of Pakistan Journal of Livestock Sciences is finally got printed and Now Vol-V-No.05 for the year 2013 is in our hands, by the grace and blessings of Allah (SWT).

This scientific effort is now being awaited by Graduate and graduating students of the country and the record of clientage is more-than 360 but I have been told that printing is two phased. One phase (200) while the second phase (200) when demanded.

Although we have not yet received any grant from any corner, this continuous dedication is based on donations, contribution from Authors and some advertisements, if reaching in time.

Despite the yearly publication based on actual research, surveys and some review articles, envisions are reaching the Chief Editor's Office. These include Livestock, Agriculture, Rural Development, Education and other Entities for which more referees are being requested to assist for timely bringing out at least one issue per year. The subject wise designating Editors, has highly been appreciated.

The case for Abstracting and Indexing through the National Library of Pakistan, Islamabad is yet a coordinating and supporting effort towards up-scaling the Pak.J.LSc in the days to come. The agencies in USA, UK and Netherlands are considering our case on merit.

My best wished and appreciation to all the team members, the Referees, the Editorial Board and the International Referees, for their dedication and continuous collaboration on honorary basis.

Mashook Ali Bhutto
Patron-in-Chief

EDITORIAL

بسم الله الرحمن الرحيم

We bow down our heads to Allah (SWT) and seek his showers of Blessing and Drood-o-Salam on his Prophet Muhammad (SAWS) and his companions.

The Members, Editorial Board of Pak.J.L.Sc feel immense satisfaction in timely processing, proof reading, getting redressal of reviewers/referees, corrections from the Authors and finally bringing out this Volume-V No.05 in December, 2013.

A total of Eight (08) various Research Papers (05 in Livestock Sector, 02 in Education and one Short Communication) and book reviews.

The Editorial Board, in our meeting in July, 2013 desired that Milk and Meat requirements (availability and consumption) be critically examined in the year 2014-15 and forecasting for the years 2020 as well as 2030 be worked out in the light of data available, projections and human population estimates. The Govt. intervention through PSDP in Livestock and Public Safety Nets simultaneously be looked into and future priorities with targets be recommended. Article No.07 of this Vol-V (No.05) gives the priorities and targets as is envisioned in Livestock to 2030, with recommendations of creation of Livestock Endowment Fund (LEF) as public private partnership, for investment in Livestock Sector.

Professor Dr. Khizar Hayat, a Foreign Post Graduate and Eminent Researcher has joined the Editorial Board with the designature of Editor Agriculture. The Board appreciates all authors for showing interest in selecting P.J.L.Sc for sending their recent efforts in the shape of research papers.

Dr. Muhammad Hafeez
Chief Editor

EFFECT OF COMMERCIAL AND TRADITIONAL FEEDS ON MILK YIELD IN KUNDI BUFFALOES

K.M. Memon*, G.M. Baloch, M.P. Wagan***, A.A Solangi**** and M.H. Baloch*****

*,**,***,****,*****Department of Animal Nutrition, Sindh Agriculture University, Tandojam

ABSTRACT

The experiment was conducted on 12 buffaloes between 6 ± 1 years in age, weighing between 500 ± 50 kg kept at a commercial dairy farm, Tandojam. Four Kundi buffaloes were randomly allocated to each group A, B and C. Buffaloes in growing a were fed on traditional ration, buffaloes in group B were fed on scientifically balanced ration prepared by researcher at department of Animal Nutrition, Sindh Agriculture University Tandojam and buffaloes in group C were given commercial dairy ration purchased from Hyderabad market. Milk yield of group-A, B and C was 4.93 ± 0.50, 6.73 ± 1.02 and 6.27 ± 1.198 liter per day, respectively. There was significant (P<0.01) decrease in the milk production of Group-A than B and C, whereas, group-B produced significantly more (P,0.01) milk per day than C. Milk yield of Group-A, B and C were 1794.30 ± 41.04 ± 2450.32 ± 64.95 and 2280.38 ± 61.57 liter per buffalo, respectively. There was significant difference (P<0.01) between the group-A and C, whereas, group-B produced significantly more (P<0.01) milk per buffalo than group-A and C. The total cost per day on feeding of traditional, scientific balanced and commercial ration was 124, 155 and 139 rupees and total profit per day was 48.38, 80.55 and 80.45 rupees respectively. On scientific balanced rations buffaloes produced high milk yield and it was comparatively more profitable than traditional and commercial dairy rations.

Keywords: Commercial, Traditional, Milk yield, Feeds, Net profit Buffaloes.

INTRODUCTION

Pakistan economy is based on agriculture which shares about 28 percent of the total Gross Domestic Production (GDP). Livestock plays a vital role in the agriculture economy and an important source of essential component of human diet. The share of livestock sub sector in agriculture output and GDP was about 52 percent and 11 percent respectively. In the livestock sector, milk is the most important produce and essential item of our daily food requirements. It is consumed as fresh and also in the form of various byproducts such as yogurt, butter, cheese etc (Pak. Economic Survey 2011-12).

As the population of Pakistan is continuously increasing, the demand for milk is also expanding. Buffalo is the major dairy animal in Pakistan and the

estimated buffalo population in the country is 36.6 million heads (2010-11). Buffalo is the major source of milk production contributing 12.1% in world, 38.0% in Asia, 55.0% in India, 66.6% in Pakistan, 16.4% in China and 65.2% in Nepal's total milk production. In addition to milk, the buffalo contributes 1.3, 2.8, 24.4, 26.9, 0.6 and 51.38% of total meat in these countries respectively, which is a by-product of buffalo farming in the aforementioned regions. In Egypt 50.8% of the total milk and 21.2% of the total beef is contributed by the buffalo (FAO, 2007).

Pakistan processes superior genetic resources in ruminant livestock including buffaloes in whole of the Asia. Buffalo, (Bubalus bubalis) has been the most domesticated animal in the sub-continent and buffalo population in the world was over 150 million heads in 2003 and in 2010-11 this increased to 180 millions. Buffaloes are recognized as the "Black Gold of Asia". The average yield per lactation has been calculated from 1800to 2500 liters, while few specimens can produce up to 4,000 liters in 305 day (Hafeez M. 2011).

Despite all this, the average lower yield in buffalo had been of great concern as compared to their counter-parts (Cattle) in western countries. This is mainly due to the fact that buffaloes in Pakistan being different germplasm are not being maintained on scientific lines. Health of animals (both physical and reproductive) is also consistently being affected due to intensive animal production activities on peri-urban farms. During the last two decades there has been a growing awareness to develop buffalo based dairy and meat industry in the Near and Far-Eastern regions (Shafie, 2001).

The shortage of conventional feed resource is a major constraint for increased milk production. In order to utilize the animal, feed and economical resources as efficiently as possible, one must know the nutrient requirements of the dairy animals Conventional feeding patter for buffaloes all over the world is subjected to forage and crop production of the season which affects the level of milk production. Forages are insufficient during the dry season and abundant during the rainy season. Shortages are overcome by conserving forages as hay or silage. Formulating feed ratios for milk producing buffaloes starts with theoretical

calculating of their requirements. Currently there are no established feeding standards for dairy buffaloes.

The total requirements are gained by summing-up requirements for maintenance and for milk production. The traditional feeding system adopted by buffalo dairy farmers in Sindh province is not correct because of imbalanced formulation, directly affecting health status, quantity and quality of milk produced. There are a number of commercial rations in the market manufactured by various companies. Care should be taken to ensure that the quality of the commercial rations is up to the standard and requirement of dairy buffaloes.

MATERIALS AND METHODS

The experiment was conduct on 12 kundi buffaloes between 6±1 years of age, weighing between 500±50 kg, kept at a commercial dairy farm, Mir Colony, Tandojam. Buffaloes in group A were fed on traditional ration, while buffaloes in group B were fed on balanced ration prepared at Department of Animal Nutrition, Sindh Agriculture University Tandojam. The buffaloes in Group-C were given commercial dairy ration available in Hyderabad market (Table-1).

Table No. 01 Showing the composition of various rations fed to Kundi Buffaloes

Ingredient (kg)	Traditional ration	Scientifically balanced ration	Commercial ration
Barseem	08	18	18
Wheat Straw	04	4	4
Cotton Seed Cake	04	3.2	1.4
Mustard Cake	0	0.2	0.2
Moong Kutta	0	10	10
Wheat Bran	02	08	2.0
Maize Crushed	0	04	1.0
Rice Polish	0	2.0	08
Molasses	0	04	08
Di-Calcium Phosphate Limestone	0	0.05	0.05
Nutrients (%)			
Dry Matter	61	61	61
Drude Protein	16	16	15
Total Digestible Nutrients	60	67	66
Crude Fiber	19	19	18
Ash	7	7	19
Calcium	0.78	0.78	0.79
Phosphorus	0.66	0.66	0.63

Ingredient volume are on D.M basis.

Daily milk yield was recorded on day-to-day basis for 90 days.

Data Analysis

The data thus collected was tabulated and statistically analyzed to discriminate the superiority of treatment means using Analysis of Variance (AoV) for overall significance of difference and L.S.D test was employed to compare the treatment groups as suggested in the methodology by Gomez and Gomez (1984). Milk production data were analyzed by a randomized statistical model as described by Tessman *et al.* (1991).

RESULTS

Milk yield response to scientifically balanced rations and commercial rations was 656 and 448 liters ($P<0.01$) more-than traditional rations throughout the experimental period (Table-2). Milk secretion curve showed progressively increased pattern with group-B and C, whereas group-A remained constant with little or no variation in milk yield per day (Figure-1). Milk production increased steadily throughout the study period in group-B. The milk yield group-C increasesd during the middle of the experimental period but then diminished toward basal production.

The total cost per day on feeding of traditional, scientific balanced and commercial rations was Rs.124, Rs.155 and Rs.139 with total profit per day of Rs.48.38, Rs.80.55 and Rs.80.45 respectively (Table-3 and Fig.2). However, the total cost on feeding of traditional, scientific balanced and commercial rations were Rs.11175, Rs.13950 and Rs.12510 while net profit was Rs.4354.5, Rs.7249.5 and Rs.7240.5 respectively. It is evident from the result that the ration formulated on scientific lines though expensive but more profitable than traditional and commercial ration.

DISCUSSION

Milk production for the first 12 weeks of 4^{th} lactation were lactation were analyzed by a randomized statistical mode, described by Tessmann *et al* (1991). Average milk yield response to commercial rations increased 1.8 liter/day ($P<0.01$) liters per day from group-A than B and C, respectively (Table-2). Milk yield response to scientifically balanced ration averaged 656 liters ($P<0.01$) and 448

liters (P<0.01) from group-A than group-B and Group-C, respectively, Milk secretion curve showed progressively increased pattern with group-B and C, whereas group-A remained constant with little or no variation in milk yield/day (Figure-I).

There was significant (P<0.01) decrease in the milk production of Group-A than B and C, whereas, group-B produced significantly more (P<0.01) milk per day than group-C. These improvements in milk yield are similar to those reported by others in cows (McGuffey *et al.* 1990, Fronk *et al.* 1983 and Peel *et al.* (1983). Milk yield of Group-A, B and C were 1794.30 ± 41.04, 2450.32 ± 64.95 and 2080.38 ± 61.57 liters/buffalo, respectively (Table-2). There was significant difference (P<0.01) between the Group-A and C, whereas, group-B produced significantly more (P<0.01) milk per buffalo than group-A and C.

CONCLUSIONS

It can be concluded from the present study that scientific rations responded better in kundi buffaloes. The animal with well balanced ration had produced more milk per day and throughout the lactation. This increased the net profit per animal.

Table No.2 showing the effect of various rations on yield and composition of milk in Kundi buffaloes.

Particulars	Group-A	Group-B	Group-C
Milk Yield (Liters/buffalo)	1974 b ± 41.04	2450 a ± 64.95	2280.38 a ± 61.57
Milk Yield (liter/day)	4.93 b ± 0.05	6.73 ± 1.02	6.27 ± 1.198
Post treatment period (days)	90 ± 0.0	90 ± 0.0	90 ± 0.0

Fig-1: Effect of various rations on milk yield in lactating buffalos

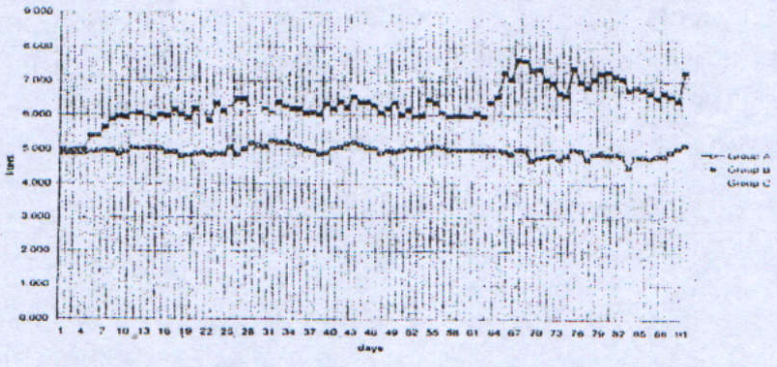
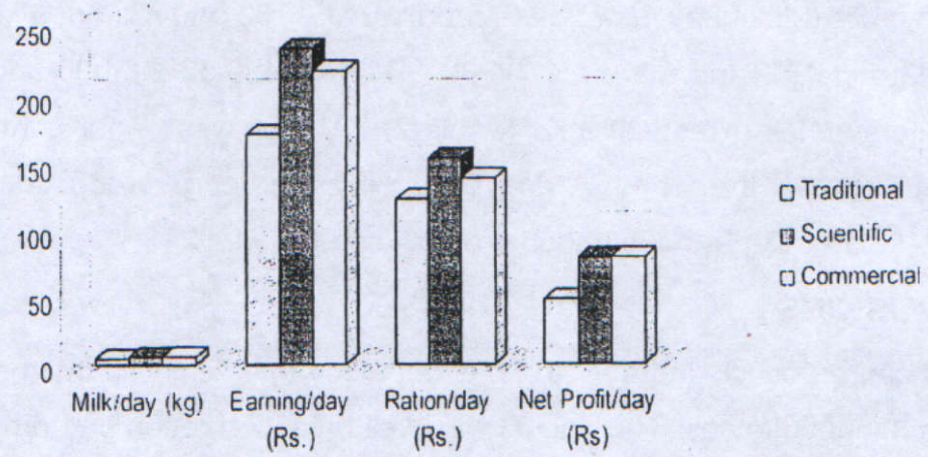


Table No. 3 Showing the cost effectiveness and performance of buffaloes on various rations.

Rations	Milk yield (Lt/day)	Milk Earning (Rs./day)	Ration cost (Rs./day)	Net Profit (Rs./day)
Traditional	4.93	172.55	124	48.38
Scientific Balanced	6.73	235.55	155	80.55
Commercial	6.27	219.45	139	80.45

Fig-2 Cost effeteness and performance of rations in buffaloes



REFERENCES

Anonymous (2009). Pakistan Economic Survey 2009. Government of Pakistan, Finance Division, Economic Advisor's Wing, Islamabad.

FAO, 2007. Agriculture Data. Food Agriculture Organization Statistics, Rome Itly, http://faostate.fao.org.dafault.asp.

Gomez and Gomez, 1984. Statistics and Agriculture analysis.

McGuffey, R.K., H.B. Green, R. P. Basson, and T.R Ferguson 1990. Lactation response of dairy cows receiving bovine somatotropin via daily injections or in a sustained-release vehicle. J. Dairy Sci. 73: 763.

Shafie, M.M.2001. Environmental effects on water buffalo production. Anim. Prod.7:283-289.

Tessman, N. J., H.D. Radloff, J. Kleinmans, T.R. Dhiman, and L.D. Satter. 1991. Milk production response to dietary forage: grain ratio. J. Dairy Sci. 74: 2696.

A STUDY ON EQUINE CASTRATION PRACTICE BY CAUTERIZATION/ FIRING TECHHIQUE UNDER FIELD CONDITIONS

Riasat Ali*, Iftikhar Hussain, Mehboob Ali Butt***, and Hammad Ahmed Hashmi, 2009******

ABSTRACT

Two hundred and ninety male equines, 02 to 2 ½ years of age, were selected for castration by cauterization/firing method. These equines were divided into five groups A (50 horses), B,C,D and E (comprising of 60 mules each). These equines were castrated by cauterization/firing method at an interval of twenty days between each group, at an environment temperature of 10^0 to 12^0C involving two dressers one surgeon and 16 attendants. The group A (horses) took 325 minutes and all male groups were operated within 5 hours each. On the average one horse took 6 ½ minutes and one mule took 5 minutes each. Laxative in the from of lush green ration and bran mixture was offered immediately after the operation. De-clotting was performed after 48 hours of operation. Dressing with dressing oil was carried out for 15 consecutive days and mild exercise/stroll in trot was given daily before dressing for 20 minutes, twice a day. By adopting above practices tremendous results were obtained as healing took place within 16 days post operation, saving of medicines, manpower and animal stress. Only 1 (0.344%) animal developed inguinal hernia, 2 (0.689%) were injured during operation 22 (7.58%) required vitamin- K injection and cold water application to stop bleeding 14 (4.82%) required vitamin-K injection and suturing/Plugging to stop post operative bleeding and 26 (8.96 %) developed edematous swelling on sheath or penis.

Key words: Equines Castrati on Cauterization Declotting – Pakistan.

INTRODUCTION

The term castration refers to the removal of testes or ovaries, specially the former, the main objective of castration is removing the major source of male sex hormones (Amresh, 1996; Venugopalan, 1986). Castration are one of the most common surgical procedures performed by equine veterinarians (Turner *et al.*,1982). In equine management castration is very important as it increases the animals tractability (particularly when the animal is used with or near females), docility undesirable secondary sex characteristics (Venugopalan, 1986). Surgical removal of testes (Orchidectomy) is routinely performed in equines. Two types of techniques are presently in use i.e. open technique and closed technique performed through two scrotal incisions made on either side of median raphae (Turner *et al.*, 1982). Under field conditions, these techniques cannot be used effectively as these are time consuming, uneconomical and hire chances of

infection and complications are there. This study was designed to carryout castration operations in equines on large scale under field condition easily and effectively with minimum wastage of time, labor, medicines and minimum complications.

MATERIAL AND METHODS

Two hundred and ninety male equines including two hundred and forty mules and fifty horses, 02 to 2 ½ years of age were selected for castration by cauterization/firing method. These equines were divided into five groups named as A (50 horses), B, C, D and E (comprising of 60 male mules each).

Fasting and Pre-medication. These animals were kept under fasting for 24 hours before operation. Magnesium sulphate @ 250 gm per animal per stomach tube as single doze and oxytetracycline @ 10gm per kg intramuscular was given 24 hours before operation. Chloral hydrate @ 1gm per 5 kg b.wt. of mule & 1gm per 10 kg bw of horses were given orally per stomach tube, A.T.S @ 10,000 IU per animal intramuscular and oxytetracycline @ 10 gm per kg b.wt. intramuscularly was given about 30 minutes before operation in case of horses and 45 minutes before operation in case of mules.

Arrangements for Operation. The operation beds of 1 ½ feet height, 12 feet diameter were prepared by using rice hay these beds were named as bed no 1, bed no 2 and the Reserve bed. Two support pads (one for head support of animal and other for support of surgeon) were prepared by tightly filling the grain baigs with rice hay and one anal pad to cover the anus of animal, during operation, were prepared. Lush green fodder (Barseem) was made available in mangers for feeding, after operation. A firing pit of 2x3x1 feet in size (fig.1) and 200 kg firing wood was made available. 4 mechanical cauterizes (Daghni), made up of 1 ½ feet long and 1cm diameter metallic rod provided with a wooden handle at one end pressed fan shaped metal at the other end, were made red hot immediately before operation. 2 long ropes of cotton, two bricks, two instrument sets containing surgical trays (fig.2), crushing clamps blind-pointed ends scissors, scalpel handles

fitted with blades, catgut of no 4 (1 per operation), artery forceps and 1 bucket were provided. To facilitate the operation procedures, two parties of attendants were made, named as 1st party and 2nd party, each comprising of one dresser and 8 attendants while the surgeon worked commonly in both parties. 1st party was detailed on bed no. 1 while 2nd party was detailed on bed no. 2. Operation was managed in such a way that when the operation was carried out on bed no 1 the 2nd party was preparing the next animal on bed no 2. Simultaneously when the operation was carried out on bed no 2 the 1st party was preparing next animal on bed no.1.

Casting and operation Technique. Operations were carried out at an environmental temperature of 10° to 12° in lying position at recumbency while animals were casted on operation beds by double side line method. During recumbency head pad was placed underneath the head and 2 persons were holding the head in position. 2 persons were utilized to stretch the upper hind limb by tying it with a rope, passing under the body and holding it firmly in position (fig.3). One person was detailed to hold the tail and one on anal pad to hold it firmly on anus. Pre-operative preparation was carried out by shaving the scrotum and applying Tincture Iodine on it. The operation technique include the following steps.

First the lower testis was firmly held by the dresser against the ventral wall of scrotum with fingers & thumb and a deep, bold, longitudinal incision was given by the surgeon along the length of testical parallel to the inter testicular septum cutting through the skin, tunica dortus & tunica vaginalis. After the incision the testicle come out itself due to pressure of dresser's hand or squeezed out and vascular parts of spermatic cord were separated (fig.4).

Avascular parts were incised with scissor and a crushing clamp applied on vascular parts of spermatic cord (fig. 5). Vascular parts were ligated with Catgut of No 4 (by using figure of eight) immediately behind the crushing clamp. The vascular parts were incised about one cm in front of the crushing clamp by using sharp edge of red hot mechanical caurtery and bleeding was stopped by

cauterization (fig.6). After cauterization the crushing clamp was loosened and the cauterized stump of vascular cord was checked for any bleeding points. In case of any bleeding point found, caurtery was applied again, unless bleeding stopped completely. The mechanical carutery when not in used was placed in the fire place adjacent to the surgeon (to avoid catching of fire by the bedding material).

After the bleeding was stopped, the stump was pushed inside the scrotal pouch, Tr. Benzoenco and dressing oil was applied on the pouch. Same procedure was applied for the second testicle. After the testicles were removed, the scrotal incisions were manually enlarged to facilitate drainage and prevent seroma formation, or excessive swelling as described by Turner *et al* (1982).

Post-operative care. Immediately after the operation animals were offered lush green fodder (barseem) for three consecutive days. In those cases where oozing of blood was continuous, injection of vitamin-K @ 1mg per 30 kg was given intramuscularly along with cold water application on hind quarter. The cases which did not respond to vitamin-K therapy were plugged with gauze dipped in Tr. Benzoenco and pouches were sutured with silk thread by using simple interrupted pattern. These sutures were opened and plugs removed, after 3 days. On 2nd day of operation the skin around the wound was washed with luke warm potassium permanganate lotion (1: 1000 in water) Oxytetracycline @ 10 gm per kg intramuscular was given to check any infection.

RESULTS

Table showing the details of castration and complications.

S/no	Group	Species	No of Animals	Required vitamin-K	Required vitamin-K /plugging	Developed edematous swelling on Sheath / penis	Fever	Injured during operation	Hernia
1	A	Horses	50	4	2	4	1	1	-
2	B	Mule	60	5	3	6	2	1	-
3	C	Mule	60	4	3	7	3	-	1
4	D	Mule	60	6	2	5	1	-	-
5	E	Mule	60	3	4	4	2	-	-
Total	5	Horse/ Mule	290	22	14	26	9	2	1

De-clotting (removal of clots from scrotal sacs) was performed on 3rd day after 48 hours and dressing (with dressing oil) was carried out for 15 consecutive days. A daily exercise in the form of trot @ 20 minutes per day in the morning and evening was given from 4th day onward to reduce the stiffness of muscles.

Out of 290 male equines operated by cauterization/ firing method. One (0.344%) mule developed inguinal hernia. The mule was then anesthetized and the herniated small intestines were replaced back into the abdomen, 2 (0.689%) were injured during operation which were treated accordingly and healed within 7 days of injury. Nine (3.10%) experienced a fever above 102°F after surgery, which resolved by the next day without antipyretic treatment. The source of the fever was never determined but thought to be the result of incubation, 22 (7.58%) required vitamin-K injection and cold water application to stop bleeding within 12 hours, Fourteen (4.82%) resulted in appreciable hemorrhage and required vitamin-K injection and suturing/Plugging to stop post operative bleeding and 26 (8.96%) developed edematous swelling on sheath or penis which was ruptured/reabsorbed within 4-5 days. Cases of scirrhous cord, hydrocele and septicemia were nil.

These males were castrated at an interval of twenty days between each group by using two dressers, one surgeon and 16 attendants. The horse group took 325 minutes and all mules groups were operated within five hours each. On the average one male horse took 6 ½ minute and one male mule took 5 minutes, for operation.

DISCUSSION

The castration procedure reported here proved to be a quick and safe method of castration in equines as healing took place within 14 days of operation, saving of medicines, manpower and animal stress. It was quick as time required per mule was 5 minutes and per horse 6 ½ minute on the average. The procedure was associated with minimal complications. The most common complications following castrations of horses are excessive swelling, hemorrhages, incisional infection, scirrhous cords, and eventration

(Hunt, 1991; Amresh, 1996). The complication rate related to the procedure in this report (8.96% edematous swellings, 3.10% fever, 4.82% appreciable hemorrhage, 0.344 developed inguinal hernia while incidence of septicemia, incisional infection, scirrhous cords, hydrocele and eventration were 0%) is comparable to, or better than, the other techniques described by Lowe *et al.*,1972; Cox,1984 and Steven, *et al.*,2001).

Barber and Palmer et al both reported using a median scrotal ablation technique for removal of descended and nondescended testicles. The two techniques differed in that the spermatic cord was transected via emasculation or transected after ligation. Both authors reported good results, but both techniques were time consuming (Barber, SM. 1985; Palmer and Passmore, 1987).

Lowe et al (1972) reported on primary closure castration in 16 horses and 5 ponies, using an incision between the scrotum and the inguinal ring. Only 1 of 21 animals developed moderate edema and 4 of 21 developed fluid distention of the scrotum which decreased in time with exercise. In this report, the spermatic cords were transexed and transected rather than emasculated.

Cox (1984) reported primary closure of 311 scrotal testes removed from horses and donkeys. In this report, the structures in the spermatic cord were either ligated or emasculated. This report de-scribed making scrotal incisions and then suturing them primarily with polyglycolic acid suture. The authors believed the results of this technique were good, however, they reported slight swelling or edema in the surgical area and 12 castrations resulted in appreciable hemorrhage. They concluded that they had better results with ligation compared with emasculation.

In summary, the technique reported here provide a quick and safe method of managing equine castration on large scale under field conditions by cauterization.

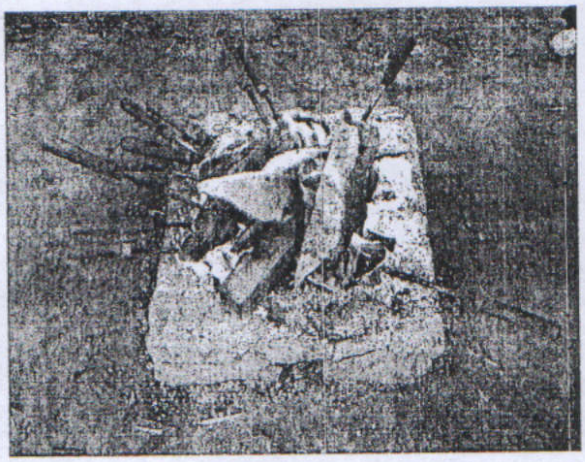


Fig. 1 – Firing pit

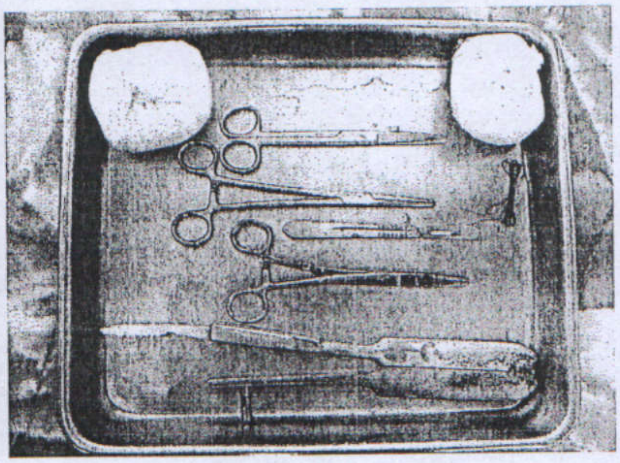


Fig.2- Surgical tray

Fig.3- Recumbent position for casteration

Fig.4- Separation of avascular parts and its incision

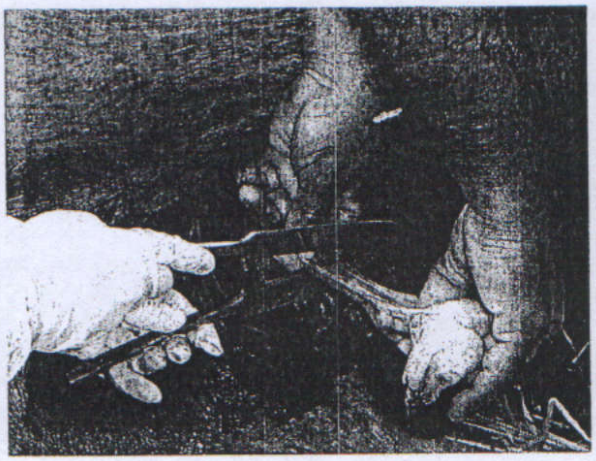


Fig.5- Application of crushing clamp on vascular parts

Fig.6- Application of caurtery to the vascular stump

REFERENCES

Amresh,K. (1996) Veterinary Surgical Techniques. Vikas Publishing House New Dehli; 331-337.

Barber SM. (1985) Castration of horses with primary closure and scrotal ablation. *Vet Surg*;14:26.

Cox JE. Castration of horses and donkeys with rst intention healing. *Vet Record* 1984;115:372375.

Hunt RJ. *(*1991) Management of complications associated with equine castration. *Compend Cont Educ Pract Vet*;13: 1835-1841.

Lowe JE, *(*1972) Dougherty R. Castration of horses and ponies by a primary closure method. *JAm Vet Med Assoc*;160:183 185.

Palmer SE, Passmore JL. *(*1987) Midline scrotal ablation technique for unilateral cryptorchid castration in horses. *JAm Vet Med Assoc*;190:283-285.

Steven, A. *et al* (2001) How to Perform a Primary Closure Castration Using an Inguinal Incision. AAEP Proceedings. 47; 423 424.

Turner AS, McIlwraith CW (1982) *Techniques in large animal surgery.* Philadelphia: Lea and Febriger,;177192.

Venugopalan, A. (1986) Essentials of Veterinary Surgery. 5th ed. Oxford & IBH New Dehli; 341-344.

A study on Mule Foot Lesions with Particular Emphasis on Treatment of Canker Resulting into 100% Recovery Rate in Sargodha

Riasat Ali*, Iftikhar Hussain**, Hammad Ahmed Hashmi*** and G.Khalid, 2010****

ABSTRACT

The present study was conducted to report the incidence of equine foot lesions among mule population of sargodha and surroundings, to outline treatment protocol for equine Canker. The proliferative lesions in the foot were diagnosed as cases of canker while the degenerative lesions as cases of thrush. Initial survey showed 103 out of 2284 animals suffering exclusively from foot lesions in 4.50% of animals. Incidence of foot lesions was predominated by 22.33% of canker followed by 56.31% of thrush. Depending upon the nature of work highest incidence of canker (73.91%) and thrush (70.68%) was recorded in non working mules followed by 26.08 % canker and 22.41% thrush cases in moderately working mules. Age-wise distribution revealed highest percentage (60.86%) of canker and (58.53%) thrush in 16-20 years age group followed by 10-15 years age group with 30.43% canker and 34.48% thrush. Sex-wise distribution showed that females suffered more (65.21% canker and 60.34 % thrush) than males (34.78% canker and 39.65% thrush cases). All 23 mules suffering from canker were treated by the reported method and 17 mules showed complete recovery after 1st application and 3 mules showed complete recovery after 2nd application while 2 mules required 3rd application for complete recovery. The treatments outlined in the available literature for this disease are sparse, varied and generally ineffective. The treatment protocol for canker outlined in this report, when coupled with post operative compliance, resolved the disease.

Key Words: Equine Foot Lesions Mules Canker, Pakistan.

INTRODUCTION

Equine canker is described as an infectious process that results in the development of a chronic hypertrophy of the horn and hoof producing tissues. Canker is characterized by numerous small finger-like papillae of soft off-white material that resembles a cauliflower-like appearance (Moyer and Colohan,1999).

The condition is frequently, but not always, accompanied by a foul odor and is covered with a caseous white exudate that resembles cottage cheese. The frog is often undermined with the horny frog covering the bulk of the disease. The affected tissue will bleed easily when abraded and may be extremely painful when touched. Varying degrees of lameness will be present depending on the extent and depth of the infection. Most equines are not lame when the disease is recognized and treated early. The presence of lameness frequently indicates that

the disease involves more than the superficial horny frog and warrants an aggressive approach to resolving the problem (Venugopalan, A. 1986). Canker generally originates in the frog and can be mistaken for thrush, in the early stages.

Thrush is limited to the lateral and medial sulci or the base of the frog if a fissure is present whereas canker invades the horn of the frog, anywhere throughout its structure. There is a proliferation of tissue with canker versus a loss of tissue as with thrush. In the early stages canker may present as a focal area of granulation tissue in the frog that bleeds easily when abraded. Upon closer inspection a light brown or grey tissue will surround this focal area. If left untreated, the disease will become diffuse and involve the frog, bars, sole and the stratum medium of the hoof wall in the palmar/plantar aspect of the foot.

The infection results in abnormal keratin production or dyskeratosis, which is seen as filamentous fronts of hypertrophic horn (Reeves *et al.*,1989). A mixed population of bacterial organisms is observed in the stratum germinativum layer of the epidermis of the frog (Reeves *et al.*,1989). Cultures per se are unrewarding as they typically produce an assortment of environmental organisms, Bactericides Species and Fusobacterium Necrophorum (Wilson, 1997 and Reeves *et al.*,1989).

Canker can occur in one foot or multiple feet may be involved. The disease can affect any breed or sex. The treatment described in the literature have consisted of debridement of effected tissue followed by cauterization with red hot mechanical caurtery and the application of topical medications including antibiotics, astringents, antiseptics, and caustic powders. This treatment has been proved very effective among all reported methods of treatment in treating this disease with very favourable prognosis.

MATERIAL AND METHODS

Two thousand two hundred and eighty four (2284) mules were clinically examined for foot lesions in distt. Sargodha and surroundings in 2008 -2010. These mules divided into three groups depending upon nature of work named as

group 'A' working mules, group 'B' moderately working mules and group 'C' non working mules. Age and sex wise distribution of these groups is elaborated in table-1 below:-

Table No.01 showing the detail of animals under study

Age (years)	Group - A			Group - B			Group - C			Total		
	No	Sex Ratio		No	Sex Ratio		No	Sex Ratio		No	Sex Ratio	
		Male	Female		Male	Female		Male	Female		Male	Female
5-10	249	123	126	261	126	135	254	129	125	764	378	386
11-15	255	130	125	257	128	129	253	128	125	765	386	379
16-20	252	122	130	251	123	128	252	123	129	755	368	387
Total	756	375	381	769	377	392	759	380	379	2284	1132	1152

All groups were managed under ideal management conditions i.e. hoof picking carried out daily, hoof dusting with lime and ash powder carried out twice a week and foot rasping or shoeing where required, was carried out monthly. These animals were clinically examined for canker, thrush, quitter and ring bones.

The canker was clinically diagnosed by presence of numerous small finger-like papillae of soft off-white material that resembles a cauliflower-like appearance in accordance with the methodology narrated by (Moyer and Colohan,1999). The condition was frequently accompanied by a foul odor and is covered with a caseous white exudate that resembles cottage cheese.

The frog often undermined with the horny frog covering the bulk of the disease. The affected tissue bleeds easily when abraded and extremely painful when touched. Varying degrees of lameness was present depending on the extent and depth of the infection. Doubtful cases were further confirmed by biopsy examination for which 6 mm biopsy punch including both normal and abnormal tissue as proposed and recommended by (Wilson,1997) were taken and examined histologically, the lesion was read as a chronic, hypertrophic, moist podo-dermatitis of the frog characterized by a proliferative papillary hyperplasia of the epidermis with dyskeratosis, keratolysis and ballooning degeneration of the outer layers of the epidermis.

Cases of thrush were diagnosed clinically by presence of degenerative tissue and presence of foul smelling grayish or blackish discharge along with

shedding of the horn of frog. Cases of the quitter were diagnosed by the presence of swellings at the coronet with one or more sinus openings in the region arising from the necrosed portion of collateral cartilages and irrigation of these sinuses with 10% zinc sulphate solution by removing pus and necrotic tissue. Cases of ring bones were diagnosed by the presence of exostosis on the phalangeal bones in accordance with the methodology proposed by Venugopalan, A. (1986).

Method of Treatment

Treatment consisted of thorough careful debridement of the affected tissue followed by a regimen of topical therapy applied daily and continued until the disease resolved. To debride the affected tissue, the mule were placed under general anesthesia. A tourniquet at the level of fetlock was applied. The animal's foot was trimmed appropriately with the help of a hoof cutter, removing all loose exfoliating sole as well as any excess toe or heel (Fig.1).

Debridement was carried out with the help of a set of sharp hoof knifes (Fig.2). The sole and frog, where required necessary, were grooved towards the matrix and grooving was continued till fairly profuse pin point hemorrhages were shown. Should grooving deep enough reach the matrix show no hemorrhage but instead a yellow stained horn, indicated that healthy matrix not reached, the groove was widened until hemorrhage showed (Fig.2).

All abnormal tissue was removed down to normal corium in a way that a clear demarcation was visible between normal and abnormal tissue, importantly not removing excessive corium (as this could retard cornification following surgery and may decrease the quality and depth of new sole being produced). The removal of about 1-2cm of normal tissue around the wound margins to ensure all abnormal tissue removed as per advice of Turner, (1988).

The tip and sharp edge of cautry were effectively used to cauterize the left over growth in the grooves. After cauterization a paste containing 16% Kaolin, 4% Boric acid, 02% Tr. Iodine, 02% sulphur, in glycerin, was applied (Fig.4) followed by packing with a Gauze (4 x 4) sponges soaked in a solution of 10% benzyl

peroxide in acetone. In large defects, to help ensure contact of the medication in the depths of the wound and to minimize the production of exuberant granulation tissue, a compression bandage was used to form an insert to fit in the bottom of the foot (Fig 5).

The impression material has not extended below the bearing surface of the hoof wall as this would create excessive pressure and make the animal sore. The foot was then bandaged (with a dry bandage) and secured in a leather boot (Fig.6). The affected foot was kept untouched for three four days. After this, the dressing was removed. The antiseptic dressing and packing was then reapplied until a firm, healthy dry horn was secreted over the hole of the previously diseased. Area, at this stage a tar and tow dressing was applied and the animal returned to work.

RESULTS

Initial survey showed 103 out of 2284 animals suffering exclusively from foot lesions in 4.50% of animals. Detail of results is given in table-2 below. Incidence of foot lesions was predominated by 58 cases (56.31%) of thrush followed by 23 cases of canker, 22.33% of the total cases of foot lesions. Incidence of quitter was 13 out of 103 (12.62%) and that of ring bones was 8.73%. Depending upon the nature of work highest incidence of canker 17 out of 23 (73.91%) and thrush 41 out of 58 (70.68%) was recorded in non working mules followed by canker 6 out of 23 (26.08%) and thrush 13 out of 58 (22.41%) in moderately working mules.

Table No. 02 showing the incidence of foot diseases in various group.

Groups	Thrush	Canker	Quitter	Ring Bone	Total
Group A					
4-9 Years	-	-	4	4	8
10-15 Years	2	-	3	1	7
16-20 Years	2	-	1	-	2
Total	**4**	**-**	**8**	**5**	**17**
Group B					
4-9 Years	3	1	2	2	8
10-15 Years	4	2	1	1	8
16-20 Years	6	3	1	-	10
Total	**13**	**6**	**4**	**3**	**26**

Group C					
4-9 Years	11	1	-	1	13
10-15 Years	14	5	1	-	20
16-20 Years	16	11	-	-	27
Total	**41**	**17**	**1**	**1**	**70**
G. Total	**58**	**23**	**13**	**9**	**103**
Males	23	8	6	5	
Females	35	15	7	4	

Age-wise distribution revealed highest numbers of canker cases 14 out of 23 (60.86%) and 24 out of 58 (58.53%) in 16-20 years age group followed by 10-15 years age group with 7 out of 23 (30.43%) canker and 20 out of 58 (34.48%) thrush cases. Thrush and canker cases were minimum recorded in 4-9 years age group that was 14 out of 58 (24.13%) and 2 out of 23 (8.69%) respectively. Sex-wise distribution showed that females suffered more (65.21% canker and 60.34 % thrush) than males (34.78% canker and 39.65% thrush cases). The records of 23 cases of canker that were treated with the above protocol from 2008 - 2010 were also examined.

There were 09 mules with forelimb involvement, 12 with hind limb involvement and 02 with one forelimb and one hind limb affected. Four mules were affected bilaterally. Two mules were affected from three limbs and one with all four limbs involvement. Reoccurrence was recorded in five mules three required 2nd treatment and two were completely recovered after 3rd treatment.

DISCUSSION

The low percentage (4.50%) of mule foot lesions is attributed to better foot care and managemental practices. However, percentage of canker among the foot lesions remained 22.33% in which 73.91% cases were observed in non working animals which may be due to poor foot exercise followed by 26.08% in moderately working animals. While no case of canker was observed in working animals which may be due to regular foot exercise and functioning of frog. Among 56.31% thrush cases highest percentage i.e. 70.68% was observed in non working animals

followed by 22.41% in moderately working animals. Our results are quite in agreement with Higgins (1999(, Reeves *et. al* (1989) and Steckel (1987).

It is crucial to keep the animal in a dry environment. A shoe with a treatment plate can also be used but it is sometimes hard to keep the foot as dry as necessary with this method use of bandages and leather boot is preferable. Small reoccurrences were managed with the animal standing and local anesthesia in the same way as mentioned above.

The lowest percentage of thrush cases (6.89%) was recorded in working mules. Incidence of quitter remained 12.62% with highest 61.53% in working mules as they are more prone to foot injuries like picked up nail and concussion etc and due to the same reason incidence of ring bones was highest (55.55%)in working animals. Sex-wise distribution showed that females suffered more (65.21% canker and 60.34 % thrush) than males (34.78% canker and 39.65% thrush cases) which may be due to comparatively tough and stout hoof structure in male. The incidence, the lesions and treatment are also in agreement with the work detailed by Turner (1988) and Venugopalan (1986).

The prognosis of canker is always guarded but this approach of treatment has been proved very successful. The treatment of equine canker has always presented a dilemma for veterinarians and farriers due to the poor prognosis. The etiology of canker remains obscure; however, the disease differs in some respects from the disease that was described in the old surgical texts. It does not appear to be a disease of poorly cared for horses. In fact most of the horses in the study were well cared for and received routine hoof care. While the hind limbs seemed to be affected more frequently, forelimb involvement is common. In the majority of cases, the condition starts on the frog near the heel lateral or medial to the sulcus. From that point, it can extend anywhere in the foot and even break through the hoof capsule.

Fig. 1 – Trimming of exfoliated sole with hoof cutter

Fig.2- Debridement with hoof knife

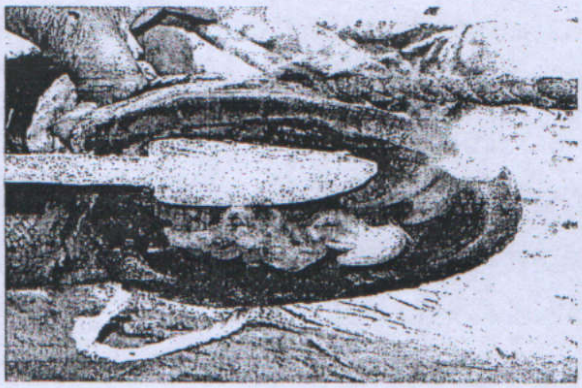


Fig.3- Cauterization

Fig.4- Application of astringent paste

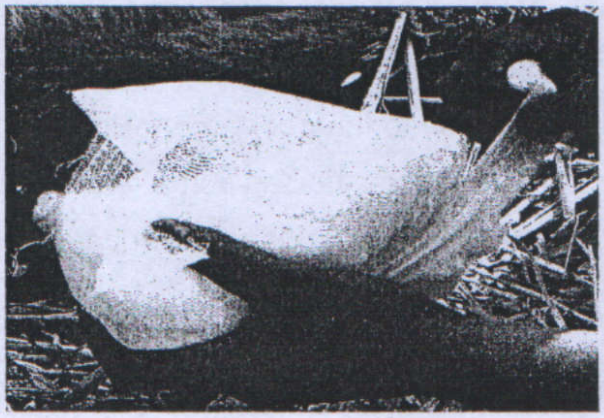


Fig.5- Application of bandage

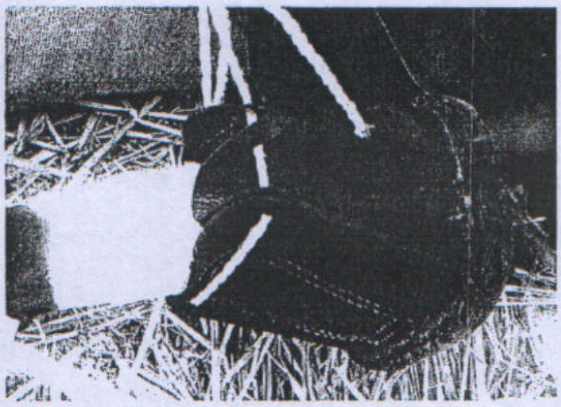


Fig.6- Application of leather boot

A variety of systemic and topical therapies have been tried for canker. While a given treatment protocol would seem to work in some instances, results were inconsistent. Using a topical therapy in our study resembles by the work of

(J.B.M-1997) reported by a Texas farrier consisting of benzyl peroxide in acetone and metronidazole. Since that time, majority of horses have been managed with surgical debridement followed by this combination of topical therapy with excellent success. The combination of thorough surgical debridement coupled with topical benzoyl peroxide in acetone and metronidazole have yielded consistent predictable results in 56 cases of out study. The cause of canker remain obscure as there are several principles of therapy for this condition.

Thorough debridement of the lesion as essential was the method used to achieve this but probably of less importance. Electrocautery or cold steel excision followed by cryotherapy both cause tissue necrosis away from the surgical margins ensuring complete resection of the mass, hence were not adopted in our study.

REFERENCES

Higgins, A.J and Wright, I.M. (1999). The Equine Manual. Saunders Co., Philadelphia ; 868 - 870.

Higgins, A.J and Wright, I.M. (1999). The Equine Manual. Saunders Co., Philadelphia ; 811.

Moyer, W.A., Colohan, P.T.: Canker (1999). In Equine Medicine & Surgery, 5th edition, Mosby, St. Louis; 1544-1546.

Reeves, M.J., Yovich, J.V., Turner, A.S (1989). Miscellaneous Conditions of the Equine Foot. In Veterinary Clinics of North America – equine practice. Vol 5 (1) ; 236-237.

Steckel, R.R.: Puncture Wounds, Abscesses, Thrush, and Canker (1987). In Current Therapy in Equine Medicine 2. Edited by Robinson, N.E., W.B. Saunders Co., Philadelphia; 271.

Turner, T.A.: Treatment of equine canker (1988). Proc 34th Annu Conv Am Assoc Equine Pract, , pp 307-310.

Venugopalan, A (1986). Essentials of Veterinary Surgery. 5th ed. Oxford & IBH New Dehli.; 241-242.

Venugopalan, A (1986). Essentials of Veterinary Surgery. 5th ed. Oxford & IBH New Dehli.; 242.

Venugopalan, A (1986). Essentials of Veterinary Surgery. 5th ed. Oxford & IBH New Dehli.; 229-230.

Venugopalan, A. (1986). Essentials of Veterinary Surgery. 5th ed. Oxford & IBH New Dehli.; 223-224.

Wilson, D.G.: (1997). Equine Canker. In Current Therapy in Equine Medicine 4. Edited by Robinson, N.E., W.B. Saunders Co., Philadelphia; 127-128.

COMPARATIVE STUDY OF WEIGHT GAIN (KGS) IN GROWING KUNDI BUFFALOES BULLS OF FOUR CATEGORIES, IN SINDH SOUTH (PROJECT NO.AS-137)

Mashook Ali Bhutto*, Muhammad Hafeez, Inder Lal Sajnani*** and Sajid Aziz Sammo******

*,**Livestock Development Foundation®, Islamabad ***LDF Tando Allahyar, ****SAO, Tandojam

ABSTRACT

Body Weight (B.Wt) Data of growing kundi buffalo Male Calves (N-94) registered in LDF-ALP-PARC Project No.AS-137 was compared for three years. Male calves were identified from Bull Mothers of Elite (with 17-20 liters of milk) n=06, A+ (with 15-16 liters of milk) n=17, A (with 13-14 liters of milk per day) n=15, B+ (with 11-12 liters of milk per day) n=36 and B (with 10 liters of milk per day) n=21. Weight Gain Data was fortnightly collected on R-II Proforma and yearly Wt: gain was average for the year 2010 (initial weight) 2011, 2012 and 2013 respectively in each categories. Age of puberty and age of maturity was also determined with observation of signs and practical function. The Av: Wt (Kgs) of Elite group was 87, 230, 530 and 712 while in A+ category it was 80, 290, 476 and 630 in initial, 2011, 2012 and 2013 respectively. This data in A category was 78, 293, 473 and 584 kgs in B+ group the wt (Kgs) was 81, 300, 540 and 716 while in B Category these figures were 76, 283, 473 and 683 respectively. Age of puberty and maturity was also determined by symptoms and mounting.

Key Words: Kundi Buffalo Bulls Comparison of Weight Gain Sindh Pakistan.

INTRODUCTION

A study was undertaken to compare weight gain (in Kgms) of growing male calves in the ALP-PARC funded project executed by Livestock Development Foundation (LDF) in 21 villages of 11 Union Councils (UCs) of District Tando Allahyar, Sindh during 2010-2013. The original project entitled "Production of Genetically Superior Bulls of Kundi Buffaloes in Sindh Province" was initially approved for three years but was stopped after one and half year upto June-2011. The study however continued. The male calves were selected from Elite, A+, A, B + and B Categories, as detailed in the methods.

Comparative Studies in male buffalo calves has earlier been done by various workers e.g. Thevamanoharan *et.al* (2001), Pawan Singh (2010), Abdelhadi and Babikar (2011), M.Younas *et.al* (2003), Salas *et.al* (2000), WMCB WeeraSinghi *et.al* (2009) and Hafeez *et.al* (2012). Comparative Studies in growing buff. Bulls (from 6-7 months to 24-28 months) have been studied and advocated

by K.B. Mirbahar (2010), Babar Masroor Elahi (2011) which has always led to potential breeding bulls. Similar work is continued in Nili-Ravi bulls as well.

In addition to Genomic Studies on Blood Samples, studies such as our, has made a land mark in selection, identification and three years weight gain comparison in Natural circumstances. No concentrates or any commercial feed supplement was provided to the calves/bulls under this study. Grazing in the pastures and ad. lib. stall feeding, at home (in the evening), by the farmers was the practice.

Observations were also made in the determination of approximate age of puberty and age of maturity in the bulls under study, as these were grown from calf-hood (at the age of 4-5 months in 2010) taken from bull mothers of Elite, A+, A, B+ and B Categories. Such studies have been fruitful in making/collecting baseline data of similar studies in Kundi Buffaloes.

MATERIAL AND METHODS

1. The male calves/maturing bulls were identified from the following categories of bull mothers (BMs) and kept with farmers in their sheds.
   - (a). Elite – n=06 from B.Ms with 15-16 liters of milk per day.
   - (b) A+ - n=17 from BMS with 15-16 liters of milk per day.
   - (c) A- n=15 from BMs with 13-14 liters of milk per day.
   - (d) B+ = n=36 from BMs with 11-12 liters of milk per day.
   - (e) B= n=21 from BMs with 10 liters of milk/day.
2. Male calves were allotted proper ID Nos. and Ear Tagged throughout the study period.
3. Fortnightly weight gain study was carried out first with inches tape followed by the weighing balances.
4. Three Electronically controlled weighing balances were kept in the main village farmers sheds and utilized.
5. R-II Proforma was used in this study.
6. Annual Animal Health Care was provided as under:-
   - (i) 100% vaccination of male calves/growing bulls against endemic diseases, with HSV, BQV, ASV and FMDV.
   - (ii) 100% de-worming with Vermont drench.
   - (iii) Spray of 100% calves with acaricide/parasiticide of choice (ectofon).
7. Age of Puberty and Maturity was observed by body developments (Scrotal measurements, scrotal developments) and Physical actions of mounting in the year 2013.

8. Data analysis was done by simple calculations (summations, SEs, The SDs + SE, were avoided in final calculation and SD etc).

RESULTS

- The Average (AV) weight of Elite Category Bulls was 231.8 kgs, 334.6 kgs and 475.5 kgs in 2011, 2012 and 2013 respectively. The initial wt (kgs) of these calves in 2010 was 87 as detailed in table No.01.
- The Av. B.Wt (Kgs) in the A+ category was 291, 375.5 and 446.6 for the year 2011, 2012 and 2013 respectively while the initial average wt of these calves was 80 kgs in 2011 (Table-01).
- The Av. B. Wt (Kgs) in A category of calves grown to bulls was 293, 473 and 584 for the years 2011, 2012 and 2013 respectively while the initial Av.B.Wt. of these calves was 71 kgs (Table-01).
- The Av.B.Wt of B+ Category was 300, 440 and 616 kgs for the years 2011, 2012 and 2013 respectively. The initial Av.B.Wt however was 81 kgs in 2010.
- The Av.B.Wt of B Category of calves/grown to bulls was 283 kgs. 478 kgs and 583 kgs for the years 2011, 2012 and 2013 respectively while the initial Av.B.Wt of these calves in 2010 was 76 kgs (Tale-01 and Table-04)

Table No. 01 Showing Body Weight of Mature Kundi Bulls of LDF-ALP-Project No.AS-137 (Tando Allahyar)

			N=0	April/2011	June/2012	May/2013
01	Elite	17-20	06	231.8	334.6	475.5
02	A+	15-16	17	291.	375.5	446.6
03	A	13-14	15	300.5	413.3	564.
04	B+	11-12	36	310.5	435.5	576
05	B	1	21	258	344.6	450.6
			92	Total N=94 (2012 onwards)		

Table No. 02 Showing Av.Age of Mature Bulls of Kundi Breed of LDF-ALP-Project No.AS-137

S.#	Cat.	BM's. Milk	n=0	Initial Age	April 2011	June 2012	May 2013
01	Elite	17-20	06	5-6	17-18	29-30	39-40
02	A+	15-16	17	..	..	..	..
03	A	13-14	15	..	..	..	..
04	B+	11-12	36	..	..	..	..
05	B	10	21	..	..	..	..

Table No. 03 Showing Av. Ages of Puberty and Maturity of Bulls of Kunid Breed Produced in LDF-ALP-PARC Project No.AS-137

Sr. #	Cat	Av:Age of Puberty	AV:Age of Maturity
01	Elite	28-30	30-34
02	A+	27-28	29-30
03	A	28-29	31-32
04	B+	27-28	30-32
05	B	28-29	33-35

Table No.04 Showing Yearly Wt. Gain of Kundi Buff. Bulls produced in LDF-ALP-PARC-Project No.AS-137

Sr.#	Cat	Initial n=0 Wt (2010)	Av.Wt 2011	Av.Wt 2012	Av.Wt 2013
01	Elite	(06) 87	230	530	712
02	A+	(17) 80	290	476	630
03	A	(15) 78	293	473	584
04	B+	(36) 81	300	440	616
05	B	(21) 76	283	478	583

Average Ages of the Bulls

The Av. Ages of all the categories (Elite, A+, A, B+ and B) initially were 5-6 months in 2010, 17-18 Months in 2011, 29-30 Months in 2012 and 39-40 months in May-2013 respectively as shown in Table-02.

Average Ages of Puberty and Maturity

The Av.ages of Puberty in this study was 28-30 months in Elite, 27-28 months in A+, 28-29 months in A, 27-28 months in B+ and 28-29 months in B Categories of Bulls respectively as shown in Table No.03.

One Male calf/growing bull died due to snake bite our of B+ category hence the data for n=35 was taken for averaging in 2012 and 2013 instead of n-36 in the year 2010 and 2011.

- Majority of bulls remaining with farmers N-56 instead of N-94, were available with registered farmers in 2013 (May-2013) and Natural breeding has since started.
- The remaining bulls have since been sold by the farmers to other farmers within the project area.

DISCUSSION:

Growing male calves of any breed specially the buffaloes had been the subject of research not only in Pakistan but in other parts of the world (Abdel Hadi OMA-2009 in Zebu Cattle, Bongso TA *et.al* (1984) in swamp buffaloes, Pawan Singh 2010 India, Sales *et.al* (2000) in Murrah Buffaloes of Philippines and Thevamonoharan *et.al* (2001). At home, work on body wt in Nili Ravi Buffaloes Bulls has been reported by M. Younas *et.al* (2003) which is quite resembling with our studies and some work prior to 1990 + 1980 which referees were not included to avoid length of the paper.

In Kundi Buffaloes alone, work on body wt. and growing of bulls from calf-hood and periodic growth studies are well documented and were presented in the First National Seminar in November 2010 by K.B. Mirbahar and Babar Masroor Elahi (Proceedings) while detailed work done in Sindh was also presented by Ghulam Sarwar Sheikh (2010) and Hafeez M. (2010) Average age of puberty was noted and observed by male characteristics as well as Maturity by mounting and was recorded on the R-II proforma, hence data summarized. This approach was in the high of Livestock policy 2009 after the implementation of which results of various projects are helping farmers, as reported in Pak. Economic Survey 2011 and 2012.

Similar studies will establish baseline data for future projects towards increased milk and meat production in the country.

RECOMMENDATIONS

- Kundi buffalo bulls can be prepared/produced from buff. Calves right from the age of 5-6 months.
- Rejections be based on the characteristics not pathognomonic to true prototype of the breed.
- Growth data collection, on a fortnight interval, will lead to wt.gain studies like ours.
- Similar studies from other districts of Sindh can be obtained and a baseline criteria can be set for minimum and maximum range of body wt. year after year, alongwith breed improvement studies.

- Our studies did not involve supplements/feed additives/growth promoters rather it was in natural conditions of grazing and stall feeding which is an example for formers.
- Health coverage against endemic diseases has reveled protection and no death due to endemic diseases was observed in three years 2010-2012 uptill 2013 (May-2013)
- Such studies will reveal the actual baseline data for future project preparations towards increased milk and meat production in the country.

REFERENCES

Abdel Hadi O.M.A, and Babiker S.A (2009) Prediction of Zebu Cattle live weight using live animal measurements. Livestock Research for Rural Development vol-21-Article NO.133.

Anonimous (2009). Livestock Breed improvement program. Milk Collection, processing and Dairy production and Development Program. Pak. Economic Survey Report 2009.

Mirbahar, K.B (2010). Work done on Kundi Breed of Buffaloes in Sindh. Presentation No.3, First Orientation Seminar-April-2010 (Proceedings).

Babar Masroor Elahi (2010). Genetic Studies Based on cell genotype alongwith body growth studies in Kundi Buffaloes in Sindh. First Orientation Seminar April-2010 (Proceedings).

M. Younas, H.A. Samad, N. Ahmad and I. Ahmad (2003). Effects of age and season on the body weight, scrotal circumference and Libido in Nili Ravi Buffaloes bulls maintained at Semen Production unit Quadirabad. Pak. Vety. J. 23(2) pp.59-65.

Pawan Singh, Inderjeet Singh, Kalyan Singh, Sajjan Singh and S.K. Phulia (2010). Relationship of age and body weight with scrotal circumference in Murra Buffalo Bulls. The Ind. J.Ani.Sc Vol-80.

W.M.C.B. Weera Singhe, R.A.U.J. Marapana and ThaleShala Seresinhe (2009). Predicting Body weight of cross breed buffaloes through body measurements under field condition. Pakistan J.Zo.Supple.Sr.No.9 pp.155-157.

Thevamonoharan, K.Vandepitte, W, Khan M.A. Mohiuddin G and Chantalakhana C (2001) Environmental factors affecting various body measurements of swamp buffalo calves. The Journal of Animal and Plant Sciences (Pakistan) Vol-II (2) pp-42-47.

IMPROVING STATUS OF LIVESTOCK SECTOR WITH GOVERNMENT INTERVENTION: THE COMPARISON OF FACTS

Dr. Muhammad Hafeez*

*President Livestock Development Foundation and Chief Editor-PJLSc, Islamabad

ABSTRACT

The paper describes the factual comparative data of Livestock population Livestock Main Products namely milk and meat and Livestock by-products (Hides and Skins), Bone and Bone products, poultry and eggs for two years 2009-10 and 2010-11 while some recent figures from 2011-12 have also been incorporated. A Summarized tangible achievements evidenced in various documents, of seven mega projects in initiated with Govt. of Pakistan (Federal Government) intervention funded through Federal Public Sector Development Projects (PSPP), with a total amount of Rs.9.01 billion, over a period of five years (2003-04) to (2010-2012) have been jotted down with recommendations of continuation/follow-up of such projects and creation of Livestock Sector Endowment Fund (LSEF), involving private sector.

Key Words: Livestock Sector information Livestock Products – Pakistan.

INTRODUCTION

There are discussion and querries about the improvements taking place in Livestock Sector, as observed through the data presented in 2011-12 when compared with the information of 2009-10. We will have to go back in the year 2010 where the Livestock Population was recorded as cattle 35.6, buffaloes 31.7, sheep 28.1 and goat 61.5 millions. These figers were 36.9, 32.7, 29.4 and 63.1 millions for cattle, buffaloes, sheep and goats respectively in the year 2011-12. The population had been on the increase at a steady rate of 3.5, 3.7, 4.1, 3.8 and 4.2 percent since 2007-08, as detailed in Table 01.

Like wise livestock main products milk and meat also showed increasing trend as being 44.97 million tons of milk in 2009-10 and 46.44 in 2010-11 while meat was recorded as 2.96 million tons in 2009-10 and 3.09+ million tons in 2010-11. The Livestock by-products namely hides and skins, bone and bone products, casing and guts also were recorded with increasing trend as tabulated in table No.02-03.

Poultry Sector as a whole was also progressing well when comparative figers of domestic poultry commercial poultry (layers, broilers, breeding stock and day old chicks produced including Eggs and Poultry meat for the years 2009-10 and 2010-11 (please see table No.04).

The national figers, as a result, also grew from 55.1% of the agriculture value added in 2009-10 to 58.4% in 2011-12 while the direct contribution of Livestock in GDP also increased from 10.3% in 2009-10 to 11.6% in 2011-12.

It is also worth noting that the gross value addition of Livestock Sector at constant factor cost increased from Rs.672 billions in 2010-11 to Rs.700 billions in 2011-12, showing an increase of 4.00 percent (Pak. Economic Survey 2009-10, 2010-11 and 2011-12), while this has been recorded as Rs.728-730 billions in 2012-13.

Table No. 01 Showing Livestock Population of the Country for the last three years

Species	2009-10	2010-11	2011-12	2012-13
Cattle	34.3	35.6	36.9	38.2
Buffaloes	30.8	31.7	32.7	33.9
Sheep	27.8	28.1	28.4	29.4
Goats	59.9	61.5	63.1	65.4

Source: Ministry of Food Securities and Research (Livestock Wing) GoP, Islamabad
Pak. Economic Survey 2011-12 and 2012-13

Table No. 02 Showing main Livestock products milk and meat for the last years

Product	2009-10	2010-11	2011-12	2012-13
Milk (million tons)	44.97	46.44	47.95	49.81
Meat (million tons)	2.96	3.09	3.23	3.42

Source: Livestock Wing Ministry o Food Securities and Research GoP Islamabad
Pak. Economic Survey 2011-12 and 2012-13

Table No. 03 Showing the status of Poultry for the last four years

Items	2009-10	2010-11	2011-12	2012-13
(i) Domestic Poultry (million)	77.35	78.51	79.68	80.86
(ii) Commercial Poultry				
Layer	30.41	32.54	44.10	55.70
Broilers	493.40	542.74	547.02	656.0
Breeding stock	8.39	566.89	623.58	680.3
Day old chicks	515.36			
(iii) Eggs	8137	8690	9281	9872

Source: Livestock Wing, Ministry of Food Securities

The Government Intervention had been maximum possible in the last 5-6 years initiated on the private sector demands which has resulted in positive growth indicators, facilitating the farmers both in kind and coin. The project wise achievements have been detailed in various documents such as Hafeez *et.al 2011*, SLPS-Final Report 2009-10, LDF-Final Report 2012-13, Livestock Wing, Ministry of Food Securities and Research 2012-13, Various Community Organization Report while supported with training of Livestock personnel brief on Livestock (Pak. Economic Survey 2012-13) and others.

There have been promising results amidst a sigh of relief of farmers community supported with the patronage of the Federal Government in the light of "Farmers Friendly Livestock Policy" developed by Livestock Wing in 2009-10 and 2011-12. The paper amidst discussion and touching various documents referred to also proposes as one of its recommendation the creation of Livestock Sector Endowment Fund (LSEF) involving Private Sector. This will become a regular source of Financial Assistance for Livestock Sector Projects on sustainable basis.

Similarly Livestock Credit Scheme (LCS) be launched by the Government as well as private banks on the analogy of Agri. Credit scheme of National Bank of Pakistan and youth business investment in Poultry, Sheep/Goat and Dairy Farming, announced by the Prime Minister of Pakistan in December, 2013.

The Joint Venture Agreement of Zaraai Taraqiati Bank Ltd (ZTBL) and Nesle Pakistan (Ltd) can be taken as an example in Livestock Sector. The Habib Bank Horyali Scheme can also be extended to Livestock Sector Schemes while the Bank of Punjab, Livestock Sector Credit Schemes and others are already in vogue since 2004-05 in the country.

MATERIAL AND METHODS

This write-up was based on data of various livestock related institutions namely:-

a. Livestock Wing, Ministry of Food Securities and Research Government of Pakistan, Islamabad.

b. Pak. Economic Survey Reports 2009-10. 2010-11 and 2011-12 and 2012-13.
c. Federal Livestock and Dairy Development Board (LDDB) Reports 2009, 2010, 2011 and 2012.
d. NRSP's N-IRM, Report 2010-11, Islamabad.
e. SLSP's Final Report 2009-10.
f. Poultry year book 2009-10.
g). Proceedings of various National, Regional and International Seminars (2007-08, 2009-10, 2011, 2012, 2013)
h). Various Research papers from the Journal of Repute at home and abroad.

TANGIBLE RESULTS

Before we come to the actual outcome, the tangible results achieved by Govt. intervention, let us have a look of various 07 mega projects initiated by the Federal Government (with cost in millions), as detailed in table No.4 below:-

Table No.4 Showing the Mega Development projects initiated by the Federal Govt. with Cost (in million Rs.)

Sr. #	Title of the project	Year (from to)	Cost (Million Rs.)
01	Strengthening of Livestock Services Projects (SLSP)	2003 to 2009	1992.66
02	Milk Collection processing and dairy production and development program	2005-2010	1588.00
03	Prime Ministers Special Initiative for Livestock (PMSIL)	2005-2011	1992.00
04	National Program for the control and prevention of Avian Influenza	2007-2010	1180.42
05	Improvement reproductive efficiency of cattle and buffaloes in small holder production system	2007-2012	495.15
06	Up-gradation and establishment of Animal Quarantine Stations in Pakistan	2006-2011	336.00
07	Livestock Production and Development for Meat Production	2004-2009	1520.00
		Total	**9103.81 Million 9.103 Billions**
		Actual Utilization Rs.	**8.8 billions**

TANGIBLE RESULTS

The salient achievements of each mega project, supported under PSDP funding depicted from various reports are narrated below:-

Project No.1 Strengthening of Livestock Services Project (SLSP).

i. The following main achievements can be counted:-
   a. Backyard Poultry Model.
   b. Wool Production Model Chitral.
   c. Beef Production Model.
   d. Small Holder Dairy Model.
   e. Fodder production Model.

ii. Field Study on five (05) models of service delivery were completed:
   a. Community Animal Health Extension Workers (CAHEW)
   b. Women Livestock Extension Workers (WLEW)
   c. Animal Health and Production Centres (AHPCs)
   d. Wool Production Association
   e. District Disease Reporting Centres (DDRC)

   It is only due to efforts of this project that Pakistan was declared rinderpest free country in 2007.

iii. Introduced PPR Vaccine Production in the Country.

iv. Distributed 2200 Motorcycles to field staff of Provincial Livestock Departments (on hire-purchase basis)

v. Established the National Epidemiology Network for Livestock Disease Surveillance and Reporting.

vi. This was further integrated with Pakistan Automated Livestock Disease Information System (PALDIS) and linked to the Office International Des Epizooties (OIE), Paris France.

vii. Information and Communication System

viii. Project Website launched (www.slsp.org.pk)

Project No.2 The Salient achievements of Livestock Production and Development for meat production (2005-2010) were as under:-

i. At least 13000 feed lot fattening units developed and made operational in which 1,63,000 beef animals (cattle and buffaloes calves) and 2,00,000 mutton animals (sheep and goats) were produced.

ii. It was only due to this govt. intervention that the export of meat (beef, mutton and camel meat) and live animals were increased from

US Dollars 74.4 millions in 2008-09 to US Dollars 137.5 millions in 2009-10, showing an increase of 35%. In the year 2010-11 (July-March) the export of meat only (beef, mutton and camel meat increased by 44.4% in quantitative terms while 53.4% in value terms and stood at US dollars 108.7 millions. It is stated that 60% of this meat is exported while 40% consumed at home.

Project No.3 The salient achievements under the Prime Minister's special initiative for livestock were as under:-

i. A total of 290 veterinary clinics established.
ii. Quality medicines and vaccines were made available on 30% reduced price.
iii. A total of 3150 community organization formed.
iv. In the project duration, 3000 community persons (Males) trained in basic livestock services.
v. A total of 4265 Livestock Female Farmers trained in better animal husbandry practices.

This was also advocated by Muhammad Hafeez (2006 and 2009) and this concept is flourishing.

Project No.4 The project on control and prevention of Avian Influenza (A.I) (Bird flu) was only for three years (2007-2010) and the following salient achievements were the results:-

i. A total of 40 surveillance and 66 Rapid Response Units (RRUs) were established in the country.
ii. A total of 0.4 millions (04 lacs) suspected samples processed against screaming of A.I. (Blood and Swabs).
iii. Bio-Security Lab. Was established.
iv. An amount of Rs.23.5 millions was disbursed, as compensation to A.I affected Famers.
v. It is only due to this project that Pakistan is enjoying Avian Influenza Free Status, since 2008.

Project No.5 The project on improvement of reproductive efficiency of cattle and buffaloes in small holders production system gave the following salient achievements:-

i. Embryo Transfer Technology Centre (ETTC) Okara completed.

ii. Six (06) Semen quality Analyzers (SQA-VB with test Kits) provided to

Korangi, Quetta, Khairi-Moorat, Quadirabad, Harichand and Karaniwala Centres of the country.

iii. The ETTC produced successfully 5,02,996 Semen Doses and 2031 Embryos from Elite Exotic Cattle and Carried out 178,318 Artificial Insemination and 168 successful embryos transferred upto 2011-2012.

Project No.6 In the milk collection, processing and Dairy Production and Development program, the salient achievements had been as under:-

i. A total of 207 Milk producing Groups (MPGs) were formed in all the four provinces, AJK and NAs.
ii. A total of 150 milk cooling tanks/chillars were installed in the country.
iii. At least 1004 breeder farmers were registered rearing sahiwal, Red Sindhi, Cattle and Nili Ravi Buffaloes.
iv. The MPGs were provided with 663 tons of fodder crop seed and 63.3 tons of green fodder in the scarcity-hit areas of MPGs.

Project No.7 The upgrading of existing five (05) Animal Quarantine Stations (AQSs) was completed and two new AQS developed to facilitate imports and exports of Livestock and Livestock Products.

DISCUSSION

A simple discussion in the light of results obtained from the government intervention to the tune of putting financial resources under PSDP from the period during 203-04 and 2005 to 2009-10 to the tune of Rs.9.01 billions has been prominently shown the Tangible achievements. This has become an example and warrants similar approach towards increased milk and meat production.

A contemporary approach should be on analogy of agriculture credit scheme proposed as Livestock credit scheme by the National and Commercial Banks so that we should provide Milk, meat (beef, mutton, poultry meat, eggs and fish for our growing population). The Macro. and Micro-economics are playing their role. If the price of green folder and concentrate feed are on the rise including cost of animals the market price is also on the rise, simultaneously.

Researchers, Planners, Farmers and Administrator are required to concentrate on Production of Genetically Superior Bulls as some efforts have been done in Kundi Buffaloes by Mashook Ali Bhutto *et al* (2011-12) DNA testing of

Kundi strains of buffaloes by Masroor Elahi Baber et al (2011), registration, patronage and follow-up of breeder farmers of potential breeds (Hafeez *et al* – 2010), K.B. Mir Bahar (2010), Saeed Ahmed et al (2010), integrated approach in A.I and Embryo Transfer, Annonimous (2012), and Breed improvement program both by Govt. Institutions and Private Sector involving NGOs (Hafeez M. *et al* 2012) as proposed and recommended in various documents.

RECOMMENDATIONS

1. Similar projects, as narrated above b continued as follow-up and sustainability showing interest by the Govt. Institutions.
2. A handsome amount of Rs.9.00 to 10.00 billions be earmarked for Livestock sector through PSDP in each financial year or at least in any next FIVE YEAR PLAN.
3. Livestock Sector Endowment Fund (LSEF) be initiated at the Federal Govt. taking (a) 50% from the PSDP Budget (b) 25% from the export earnings of Livestock exports (c) Total income generated from Animal Quarantine Department (AQD) and taking (d) 20% of the profits of Livestock Traders and Exporters which includes (Hides and Skin Industrial Units) (03%) Casing and Guts Traders and Exporters, (03%) Bone and Bone Products Traders and Exporters (03%) Animal Feed Traders, and Veterinary Medicines and Vaccines Traders (02%) including Poultry Producers (02%).
4. Livestock & Dairy Development Board (LDDB) be restored and be given the status of an operational entity, the working of which was better in the previous years.
5. NGOs working in the Livestock Sector be involved in Livestock Production, Training of Livestock Farmers, Community Organization and mediating with farmers and Government Institutions.
6. Research and Development (R&D) be allocated sufficient funds not only to Teaching and Research Institutions of the country but also to the Livestock Experiment Stations (LES) of the country, so that the production oriented applied research is carried out by graduate students and researchers.

REFERENCES

Anonimous (2009) (2010), (2011), (2012) Annual Reports of Animal Quarantine Departments, Ministry of Food Securities and Research, Karachi.

Anonimous (2010-2011). Annual Report of Livestock and Dairy Development Board, Ministry of Food Securities and Research, Govt of Pakistan, Islamabad.

Anonimous (2008-09) and (2010-11). Progress achieved by NRSP in CBO based training and services to extension workers in Pakistan Annual Report of NRSP –IRM-Islamabad.

Anonimous (2004) Annual Technical Progress Report. Support for emergency Prevention and control of main trans-boundary Animal Diseases, in Pakistan GCP/Pak/OSS-ED-FAO-Technical Report Series.

Anonimous (2011) Final Reports of various projects included in the Livestock & Dairy Development Boards Reports Govt. of Pakistan, Islamabad.

K.B. Mirbahar (2010) Research and Development in Kundi Buffaloes in Sindh. Key paper in the 1st Orientation Seminar on "Production of Genetically Superior Bulls of Kundi Buffaloes in Sindh Nov, SAU-Tandojam (proceedings).

Muhammad Hafeez (2009). The concept of establishing CBO-based Animal health and Production Centres (AHPCs) in Pakistan. Pak.J.L.Sc Vol-I (No.1) pages 6-11.

Mashook Ali Bhutto and Muhammad Hafeez (2011-12) Final Report of PARC-ALP Funded Project No.AS-137 production of Genetically Superior Bulls of Kundi Breed of Buffaloes in Tando Allahyar Sindh, LDF Report No.AR-II-Islamabad.

Masroor Elahi Babar and Tanveer Muhammad (2011) DNA Testing of Kundi Buffaloes Bulls (produced at Tando Allahyar), Institute of Biochemistry and Biotechnology, UVAS, Lahore (Technical Report).

Muhammad Hafeez, Sajid Aziz Sammo, K.B. Mirbahar, Masroor Elahi Babar and Inder Lal Sajnani (2012) an initial approach in Production of Genetically Superior Bulls of Kundi Buffaloes in Sindh. Pak J.L.Sc Vol(IV) No.-4 2012 pages 295-302.

Muhammad Hafeez (2006) Training of Livestock Farmers in Animal Health and Production. Training Manual for farmers of shorter duration INBN-Regd.

Saeed Ahmed, R.H. Usmani and Muhammad Hafeez (2010). SLSP. A success story of Livestock Projects in Pakistan. Pak. J.L.Sc (Vol-II) No-2, pages 51-57.

REVIEW OF TEACHERS TRAINING MANUAL (TTM-VOL-I) FOR TEACHERS OF PRIMARY, ELEMENTARY AND SECONDARY SCHOOLS IN PAKISTAN

Khizar Hayat*, Muhammad Hafeez, Iram Shahzadi*** and Fazal-ur-Rehman******

*Visiting Professor (Agriculture Sciences) UAA Rawalpindi, **Chief Editor P.J.L.Sc, Islamabad, ***M.Phil Education Research Fellow, AIOU, Islamabad, ****Incharge Early Childhood Education and Elementary Teacher Education (ECEETE) AIOU, Islamabad.

ABSTRACT

This article overviews the summarized contents (chapter wise) of the write-up laid down in the book format entitled "Teacher Training Manual for Primary, Middle/Alimentary and Secondary School Teachers in two volumes. This review is limited to first volume only Teacher Training Manual (TTM) Vol-I comprising 12 chapters (01 through 12) duly supported with pre-fixed for preface, the introduction of course contents and a bibliography at the end. The chapter-wise titles indicate importance of trainings of teachers; the Education Society and Schooling; Education Planning and management (EPM); the Techniques of Teaching Syllabi (in Primary, Middle and Secondary Schools). The role of text books in Teaching, The Education Policy and Education Sector o Pakistan; The Developing/Writing of Text books for various levels, in the country; use of Audio-visual aids and Computer in Teaching; Educational Psychology; the role of intelligence; implementation of Teachers Trainings in Schools; and the role of Sociology in Modern Education in chapters 01 to 12 respectively. The efforts of the Author and co-authors have been acknowledged for such an important endeavor published by the Livestock Development Foundation ® (LDF) duly registered by the National Library of Pakistan ISBN 978-969-9219-08-5.

Key Words: Education, Literature, Teachers Training Manual, Primary, Alimentary Secondary School Teachers, Islamabad, Pakistan.

INTRODUCTION AND BACKGROUND

Not only in government Schools of Primary and Alimentary/Middle Schools but in the Private Sector Schools also, there are thousands of teachers who are untrained, meaning thereby that the school teachers (either on contract, temporary or on Ad-hoc appointments) possessing masters degrees in other subjects but not in education (M.A Teaches Educations, MEP or MEd), neither they have acquired B.Ed, as a pre-requisite for teachers. Only in Sindh Province alone 30,000 untrained teaches will be provided with training of shorter duration (may be one month) as per Pak. Economic Survey Report 2011-12 [23].

An NGO running three (03) Primary Schools committed to provide such training, if sponsored by Financial Institution(s). Under a separate project proposal, submitted to USAID, in 2012-13 committed to provide this Teacher Training Manual (TTM) Vol-I & II, to be used in training 50 participant (Teachers) each month and over a period of 03 years at least (800 teachers will thus be trained [33]. The principal author with the practical assistance of his co-author developed this document for the first time, incorporating material from text books both B.Ed and M.A (Teachers Education) including material of Education Importance from M.Phil (Education) books. Specially recent information, data and reports including thesis and survey reports [3, 13, 19, 28]. Fresh Editions of text books were consulted, as will be seen in the detailed review.

Before we go into the chapter-wise critical review it is also hoped that Training Manual (both volumes I&II) with be provided to Directorates of Education, Federal Area Islamabad, Lahore, Quetta, Karachi and Peshawar, including their Text Book Boards. The Ministries of Education in Federal Govt. Islamabad and Provinces will also be approached for making good use of this fresh material for training teachers in their Training Institutions.

The chapter-wise review with an eagles eye is narrated below:

The principal author, Dr. Muhammad Hafeez started with the importance of Teaches's Training, in first chapter, this comprises six pages and describes the status of schools, with an overview of pre-primary education, primary education, middle education, the facilities missing and the results of education survey (Annual status of Education Report-ASER) (2011-12). This chapter also narrates the Funding for Educational Institutions stressing for the need of trainings for teachers. Data from Pak. Economic Survey (2009-10), (2010-11) and (2011-12) [27, 22] has extensively been referred. The future utilization of such trainings has also been highlighted. Various reports and papers published, in Journals of repute, have been identified and included, as reference.

Chapter two (02) of this TTM-Vol-I pertain to "Education, Society and Schooling" which comprises Muslim Teachers and Scholars in the history of

education, the picture of the last 6-7 decades and touches the relationship of teachers with the subject (to be taught) and the Early Childhood Education (of primary schools), the students learning capacity with various kinds of students (the child students, putting age-wise subject knowledge and finally the difference found (observed) in school going children. This is a simple, easy to digest chapter which the teachers (under-training) must digest for dissemination [13, 14].

Chapter three (03) has exclusively been written on "Education Planning and Management (EPM)", a very vast and detailed area of education which the author has summarized in 09 pages. Starting with its importance, definition, recent figures of information [from (a) to (k)] taken from the Pak. Economic Survey Reports 2010-11, 2011-12 and some figures from 2012-13 [34] which is worth going through the educational organizations in provinces and Federal Govt. Additional responsibilities towards EPM, the Boards, the centres for Education Extension and Development courses, syllabi and books etc.

This chapter also encompasses the information about schools (both Govt. and Private) Cadet Colleges, Model Schools; all supported with recent data [22, 27,34].

Chapter-04 describes the "Techniques of Teaching Syllabi in Schools" as a preamble starting with importance of teaching which cannot be over emphasized. All basic facts and crux of the professional methodologies of teaching and handling students right from early childhood, speaking of teaching as "an art" elaborated in terms of organization and discipline, students response (involvement), the central position of teachers and categorizing students groups in rows in a class etc. Touching students duties and responsibilities of teachers for communicating and dissemination of knowledge (subject matter). Most of the techniques (traditional and new concepts) having also been described in a simple but narrative terms. This is also a small chapter of hardly 06 pages but full of information, supported with references in the light of work done and forwarded by Uzma Elahi [30], Manzoor Hussain and Shah Syed [19].

Chapter 05 is comparatively a concised one spread over 07 pages (page 28 to 35) summarizing the "Role of text books in Teaching", as usual a page of preamble background of teaching history, earlier teaching, phased development and students [13] requirements of today (2011-12 and 2013-14) touching various books for both Urdu medium and English medium schools, specially an attention to the contents of these books. This chapter also provides a picture of Allama Iqbal Open University (AIOU) approach in course books (various codes) related to education and specially the school teachers [13]. The role of Committee of Courses (CoC) and Faculty Board Meetings concurrence of which is needed for the finalization of chapter-wise/unit-wise contents, the material, the recent information and the references have been elaborated specially by Fazal ur Rehman and S.M. Shahid (2003) and others.

As a part of this important chapter the role of libraries (the central libraries of various institutions), the school/College and University Libraries where Books, Journals and Periodicals are available for the guidance and referencing many items worth studying specially in the field of education having been referred to. The role of librarian, the registration of books in the National Library of Pakistan, Islamabad, for issuance of ISBN number of each registered book, with a touch of catalogue in a library has been narrated, NLP-2010 [35].

Chapter 06, spread over 09 pages (Pages 35-43), deals with the "Education Policy and Education Sector of Pakistan". The recent Educational policy in vogue is of 2009-10 being referred to, in various reports, the Pak. Economic Survey Reports 2010-11, 2011-12 and 2012-13, until we get any recent document. Fully referenced, data of schools, teachers and students with facilities missing and provided through PSDP funding to Federal and Provincial Education Departments and complete update of literacy rate, enrolments both Grass and Net, (GER), (NER), with male/female comparison has been tabulated. A clear picture depicted from the Pakistan Social and Living Standard Measurements Survey (PSLSMS) 2010-11, the Annual Survey of Education Report (ASER) 2011 National Summary (Rural), the status of Education and the report of Academy of Educational

Planning and Management (AEPM), Islamabad, has also been added for the information and guidance of Trainee Teachers [22, 23, 27].

In the same chapter the Educational program under Public Sector Development Projects (PSDP) 2010-11 and 2011-12 has been highlighted with fiscal allocation of Rs.26 billions (Punjab Rs.10.4 billions, Sindh Rs.4.5 billions, Khyber P.K. Rs.9.3 billions and Balochistan Rs.1.6 billions) for schools and colleges education. As a result of this financial intervention, salient achievements observed and noted have also been described.

Last but not the least development program for 2011-12 has also been narrated so that all trainee teachers and readers of this book must become aware of it.

An exclusive writ-up has been included which pertain to National Vocational and Technical Training Centres (NAVTTC) where 134,118 youth received training, 117 new Technical Training Centres were established. Under Technical, Vocational Education and Training (TVET) a sum of 42.40 million program has been signed with GTZ. Furthermore international linkages with UNESCO, UNIDO, BC, EC, TIKA, ILO, CPSC, JICA and KICA has also been narrated [23] these organizations are as under:-

i. German Technical Cooperation Agency (GTZ)
ii. United National Education and Scientific Cooperation (UNESCO)
iii. United Nations International Development Organization (UNIDO)
iv. British Council (BC), European Commission (EC)
v. Turkish International Cooperation Agency (TIKA)
vi. International Labor Organization (ILO)
vii. Canadian Pakistan Scientific Cooperation (CPSC)
viii. Japan International Cooperation Agency (JICA)
ix. Korean International Cooperative Agency (KICA)

Chapter 07 has been written exclusively on "the development of text books for various levels in the country". Spread over 06 pages (page 44-49) a brief account of an overview touching the Primary Alimentary and Secondary School text books in vogue, the better use of these text books, supportive material in each subject is detailed, while the author has not gone into the detail of the subject

matter of each text book (which would have been a laborious and painstaking effort), the author has rather taken a simpler approach in teaching the subject text book(s). In the last pages some hints to the teachers have been narrated in teaching the subject books with supportive material and approach like introduction of day's lecture, simplifying the teaching, Q&A, additional material, preparation of students ahead of time, involving majority of students for the lecture of the day, encouraging positive criticism, teaching followed by practical work collective communication by the teacher and the students with a touch of assignments on the subject matter {10] [11] [19] [24] have been added.

Chapter 08 is limited to "use of Audio Visuals and Computer in Teaching", spread over 09 pages (50-58). Although a very important aspect of teachers education but simultaneously of good use by the students, has been summarized in a concised manner. Teachers must be aware of audio visual aids and each equipment to be used in the learning process. Various aspects such as the role of Radio and Audio Cassettes in teaching, the role of Television (TV) etc their impact has been categorically narrated [14].

An exclusive approach has been given to the use of computers, various programs, specialties, like MS-Word, Excel, Choral, Inpage have been discussed. The essential uses, data storage and the communication has also been narrated. Lastly the Information Technology (IT) has been highlighted in use in Education Sector of Pakistan and abroad. Many ingredients can be described but only those essential, have been touched, as the author has deemed it fit for this teachers training course. In this connection, the use of E-mailing, the use of inter-Net, the On-Line courses and various systems have been indicated.

The last items in this chapter is the role of computer in education, well understood pages and pages could have been written but only the important touches have been given towards, development of education material, the course books, the typing/composing and correspondence through E-mail using the inter-Net facilities together with record keeping of students teachers and support staff.

The Development of CDs the use of floppy/discs, the USB, the EVO and other Electronic devices like multimedia and printing technologies specially the developing and updating the presentable material (books, periodicals, journals, lecture material and various reports, has been discussed and narrated for the information and guidance of trainees of this TTM. References have been shifted purposely, to the end of the manual in the Bibliography.

Chapter 09 has been added on the subject of educational psychology. This is an important aspect of teachers and the students, specially the child student, laid down in 20 pages (page 59-79) touching the most serious and neglected issues which need attention in any institution of learning. Starting with the psychology as a science, the author has linked the subject towards character building of a child, its versatility and comprehensiveness, relating it with education as a whole, quoting references of various authors (their books of course). The author has briefly jotted down, the various systems namely structuralism, Functionalism the Psychoanalysis, the gestalt's principles, and its role in learning and the behaviorism etc. [02] [17] [25] [06] [07] [08] and [26].

Still in the same chapter the scope and implementation of educational psychology has been discussed which need be practiced in schools and has resulted in healthy mind. Also, with the use of Psychology growth and development of a child student has flourished as advocated by any workers [02] [01] [06] [18] [12], various steps involved in body, mind and intellect of a child student have been briefly narrated linking it with comparison, competition, following other, importance of initial stage learning, sustained physical maturity, heredity and environment such as hidden social expectations, various good habits, expressions, (both joys and sadness etc.) narrated annotatedly for the trainee teacher, to be benefitted.

In the last pages different stages of growth and development of a child student from early child hood to puberty like boyhood or girlhood, in various classes, as observed and reported/recorded has been narrated by the author in a simple but categorical way. More so the stage of grown-up students (class ix-x), as

as seen through the knowledge of Psychology, has been written step by step which will be a land mark guideline to all trainee teachers (both males and lady teachers).

Chapter 10 has exclusively been included in this training program which highlights the important aspect of "the role of intelligence in Education". Spread over 08 pages (page 81-88), this chapter encompasses little importance, as a trade secret of the author, the preamble linking it with the blessing of Allah (SWT) to the mankind, specially the young children, with various brief definitions narrated by eminent educationist, scholars and scientists, as presented in various text books [09] [10] [11]. Various theories have simultaneously been put forward in understanding intelligence as of biological, psychological and operational in nature. Referring to various personnel (the educationists) example have also been quoted. An outstanding approach has been jotted down by the author on artificial intelligence to awaken one's intelligence, solving a problem in a shortest possible time.

In a similar way the author has pointed towards computer based intelligence quizzes and fool proof testing of preparation of various examinations and the online libraries have also been narrated while to check the duplication of educational material which is the intellectual property of any writer scientist, an intellectual, an educationist or a subject specialist) which may not be hacked by unwanted people.

In this connection, the author has referred to trinity, devised by Higher Education Commission (HEC), Islamabad. This is a computer based program where books, Journals and Periodicals are subjected to verification. At least 60 institutions of the country are encoded using trinity and 1000 users were allotted to use this service. The institutions mentioned are 54 Universities and 06 Text Book Boards while 45 science Journals were in access in 2011-12 including Institutes of Scientific Information (ISI) and more than 270 Text Book printing press of the country are using this service, HEC [36].

The author has, in the last pages of this chapter, dwelled upon the intelligence and aptitude. The aptitude can be observed in various admission test, as a prerequisite of any degree program, at home and abroad. These tests are TOEFL, GRE, CAT, GAAT, IELTS, as conducted by the NTS (Islamabad), Education Testing System (ETS) with brief and summarized narration of each. The author hopes to benefit thousands of trainees and readers of this TTM.

Chapter 11 deals with the "Implementation of trainings by the Teachers" for the betterment and improvements in any teaching institution, spread over 13 pages (page 90-102) the author has tried to stress the practical importance of such trainings and linked with each and every area of a school e.g. The school EPM, teaching higher classes, developing course books, students evaluation, Science Teachers, Trained Teachers and School Libraries, together with the involving of trained teachers in administration of any school. Such involvement will be in preparation of teachers Work Books and allotment of subjects for teaching. Furthermore the subjects of trainings can be of (i) shorter duration, (ii) in service training program and (iii) various degree/higher degree training programs for teachers have also be discussed.

How further the teacher training can be of use in education? This will be utilized in conducting regional national provincial and area studies, utilization of teachers trainings in research and investigative work and the use of such trained manpower in developing courses and syllabi for students of various classes. In the last pages of this chapter, the author has diverted the attention of trainees and readers of this TTM in utilizing their services in publication work. These publications can be the scientific papers/research or review articles survey reports. These are the people who can become writers, the reviewers, the referees and may be one day they become the members of Editorial Boards of any scientific journal of the country or abroad.

Last but not the least the author has quoted guidelines of submitting research papers/articles, to any journal and a printing procedure has also been

given. The trained teachers are supposedly to get better prospects if they make good use of this essential training and should make up their mind to shoulder additional responsibilities, as detailed in the last pages of this chapter. An example of research paper is also enclosed for ready reference.

The last chapter No.12, spread over 14 pages (pages 103-117) pertain to the subject of "role of sociology in modern education". It comprises importance, social motives and stimuli in learning. These are further split into (a) organic and biological motives, (hunger, thirst) and (b) social motives (c) the external motives are categorized as (i) investigative, (ii) manipulative (iii) competitive and/or comparative, (d) the emergent type of motives are totally different with separate impacts (social and individual). The emergent type of motives comprise sentiments, attitude, interest, purpose, sense of competition and pace making. The author has laid down the practical use of motives in the education for child students.

Some touches have been given to the sociological techniques of teaching which the author advocates as leading to better results and improvements, supported with referenced books and published material. These include Pre-PREP coaching at home, patronizing by the parents, teachers sympathetic treatment, the positive, factual and truthful language of teachers and students, the impact of socio-economic conditions, the tradition of awards/prizes as encouragement and a polite and social approach in punishments.

A separate/exclusive approach of "Negative impact of the punishment on the child students" has been elaborated in the annotated paragraphs which has been observed in the form of depressing the students capabilities, the child student may start disliking the sir or the madam, the students might become reactionary, students avoid playing games etc. The author has further detailed that the Students subjected punishment to (excessive punishment) might not sit in the examination, might avoid home works, might show absentees, and become victim of inferiority complex, show symptoms of insomnia, slow body growth, hesitation,

dyslexia, mental disorders, speaking while sleeping, bed soaking, reluctant in answering parents and teachers questions etc. etc. In the last pages of this chapter, the author has categorically jotted down the "variations in the sociological aspect of a child student" with observations, interviews and inter-action in the light of work done by researchers. Lastly, the author has come up with "Psychological and sociological tests in the education of child students" which have been summarized in the light of (a) Socio economic factors and (b) questionnaire based factors when analyzed, enumerated from (i) to (xii).

This TTM Vol-I after the culmination of this last chapter-12, the write up is supported with bibliography at the end.

DISCUSSION:

Review papers/articles are never subjected to discussions but amidst degree training programs of B.Ed, MA (Teachers Education), MA (EPM) MEd, M. Phil (Education) and/or PhD. (Education) simple graduation in both arts and science or a master's degree holders working as teachers in Govt. and/or private Schools but do not possess even B.Ed Degree which is must for running the School and all its allied organization. Such training are a must if we take the example of AIOU the enrolment of B.Ed in one semester say Autum-2013 has reached more than one lac sixty thousand (1,60,000) plus, as reported in its recent prospectus (2013 AIOU).

Still there is a need to provide a training of short term duration, say e.g. for a months time in which summarized lectures on various aspects of course work (academic) and the school organization in the second phase which have concisely been included in this TTM, Vol-I and Vol-II as laid down in various course books of B.Ed MA (Teachers Education) MA,EPM and/or M.Phil Education.

RECOMMENDATION:

Going through the TTM (Vol-I), the following frank recommendation is made for planning, Educationist, Researchers and Administration for organizing such trainings:

i. This training will help untrained teachers in further streamlining their educational horizons.
ii. This training will help assist the teachers in better re-orienting their capabilities in the organizing of all school affairs.
iii. This training will help stimulating the ambitions of teachers towards enhancing their educational qualification.
iv. The teachers after acquiring this training will feel more competent and more capable to shoulder additional responsibilities within the school.

REFERENCES:

Abid Hussain (2009) a comparative study of the performance of Secondary School teacher working on Regular and Contractual basis in District Okara (371-102/ABC) AIOU Thesis.

Anwar Akhtar Saeed (2008) contribution of Private Schools in promoting education at Secondary level in Rawalpindi Region (373-ANC) AIOU Thesis.

Abdul Hye Alvi (1956) Educational Psychology. Ilmi Printing Press, Lahore, Pakistan.

Abdur-Rauf (1973) Modern Psychology. Feroz Sons Book Corporation, Lahore, Pakistan.

Atta Rahim (1981). Introduction to Psychology. Kifayat Academy, Karachi.

Ahmann, J. Stanley andMarvin, D. Clock (1981) Evaluating Student Progress Allyn and bacon Ine, Boston, USA.

Abdur-Rauf (1973) Modern Psychology. Feroz Sons Book Corporation, Lahore, Pakistan.

Bergan, J.B and Dunn, James A (1970) Psychology and Education. A science of Instructions John Wiley and Sons inc: New York, USA.

Crow and Crow (1963), Educational Psychology. American Book Company New York, USA.

Ch. Muhammad Saleemullah (1973) Educational Psychology. 3rd Edn, Majeed Book Depot, Faisalabad, Pakistan.

Faiz-ur-Rehman and Muhammad Arif Zia (2011). Revised Edn. Educational Psychology and Syllabus Code. 518, B.Ed program, Department of Early Child Hood and Elementary Teachers Education, AIOU, Islamabad Pakistan.

Fazal ur Rehman S.M. Shahid (2010) various Units/Chapters; Islam, Pakistan and Modern World, Course Code 652, B.Ed Program, AIOU, Islamabad Pakistan.

Gange R.M. (1964) Problem Solving in Multan (AW.Ed) Categories of Human Learning, New York Academy Press, N.Y. USA.

George J Movly (1968). Psychology for effective teaching 2nd edition, Holt rinehert and Winston Ine: London.

Higher Education Commission (2012). The use of Turnition, an anti plagiarism in publication work.

Manzoor Hussain Shah Syed (2009) a comparative study of the performance of

Trained Primary School teachers with and without in service Training in Hazara Division and development of a strategy for future (372/MAC) AIOU Thesis.

Niaz Ahmed Sheikh (1959), comprehensive Psychology of Education. Ilmi Printing Press, Lahore, Pakistan.

National Library of Pakistan (2010-11), Guidelines for registration of Books and Manuals for International serial of Books numbers (ISBN), Islamabad.

Pak. Economic Survey Report (2009-10), Education Economic Advisers Wing: Ministry of Finance "Q" Block, Pak. Secretariat, Islamabad.

Pak. Economic Survey Report (2010-11) Education: Economic Advisers Wing, Ministry of Finance and Economic coordination. Q. Block Pak. Secretariat, Islamabad.

Pak. Economic Survey Reprot (2011-12) Education: Economic Advisers Wing, Ministry of Finance an Economic Coordination Q. Block Pak. Secretariat, Islamabad.

Pak. Economic Survey (2012-13) Education, Updates, Progress achieved, Budget allocation and comparative achievements. Economic advisory and Research Wing. Ministry of Finance and Economic Affairs, Govt. of Pakistan, Islamabad.

Particia, Waller and Johan Goa, (1974), Motivation in the class room. Harper and Row, London. U.K.

Surayya Khatoon (2008) A survey of in service training needs for heads of Secondary and Higher Secondary Schools (371-4/TAT) AIOU Thesis.

Syed Sajid Hussain (1975). Educational Psychology, Kifayat Academy, Karachi, Pakistan.

Stones, E. (1977) An introduction to Educational Psychology. Methuen and Co. Ltd. London, U.K.

Siddiqa, Masoom Memon and Muhammad Hafeez (2012) Annual Report of Nari Welfare Association (NWA) Regd.

Uzma Elahi (2000) Role of Educational Technology in Teacher Training (371-122/UZR) AIOU-Thesis.

Uzma Kanwal, Aimen Ajaz, Nadia Hafeez and Muhammad Hafeez (2012) the growing prospects of Private Schools and Colleges Systems in rural areas of ICT, Islamabad. Pak. J.L.Sc Vol-IV (No.04)-35 pages 285-294.

Zanib Khan (2008) role of emerging technologies in promoting education and training to MA education students of AIOU (371-33/ZAR) AIOU Thesis.

LIVESTOCK TO THE YEAR 2030: SETTING PRIORITIES AND TARGETS FOR FURTHER NEEDS FOR MILK AND MEAT IN THE COUNTRY

Muhammad Hafeez* & Mashook Ali Bhutto**

*Patron in Chief LDF, PJLSC, Islamabad, Ex-Advisor Livestock Group, Islamabad
**Chief Editor Pak. J.L.Sc and president Livestock Development Foundation Islamabad

ABSTRACT

The Article discusses the existing status of Livestock Sector and envisions further requirements to the year 2030. Comprising comparisons of data, the GOP intervention for the last 5-6 years amounting to Rs.9.1 billions (in seven projects), need assessments of milk and meat taking into consideration the human population growth rate, livestock population and growth rule in phase (the years 2015, 2020 and 2030). The paper proposes Financial Assistance to the tune of Rs.150.1 billions in next 10 years (with a minimum of Rs.16.1 billions per year) and also proposes a Livestock Endowment Fund (LEF) which to be established with a total initial amount of Rs.10 billions taking 50% fro PSDP, ONCE and every year 50% share for livestock services of the Provinces, Animal quarantine Department (AOD). The private sector shearing 05% of the their profits every year from 32 Bone crashing units, 48 casing processing of exporting units, Galantine manufactures, the Hides and Skins processing units (725) of the country. The leather and leather garments producers and exports must contribute at least 06% of their export amount on invoices (on the spot) to the Fund. The local government should also contribute 50% of the animal market revenues to LEF on monthly basis which Eidul Azha markets per year. The Govt. interruptions will automatically be reduced by 20-30 % every year and LEF will increase more than 30% each year. The LEF will invest 40-50% towards Livestock Development, based on project proposed on commercial lines. The paper ends with recommendation and broader outlines for project preparation to be funded out of LEF.

Key Words: Livestock 2030 Milk & Meat. Production GOP Intervention LEF Pakistan.

INTRODUCTION

An action plan was initialed by the Livestock Wing Ministry of Food Agriculture and Livestock way back in 2003 with the Assistance of Food and Agriculture Organization (FAO) of the United Nation under TCP-PAK-0168 (Delgado-2003) in which comparison was made in the Milk and Meat requirements for Pakistan, for the years 1963, 1983 and forecast fro 2020. The proposed National needs of Milk from human consumption and meat consumption were far less when seen into the actual figers for the years 1993 and 2014-15.

The author and co-author of this write-up remained involved with Apex Body of Livestock Wings Policy formulations, projects preparation and implementation through public sector Dev: Projects (PSDP), funding for the GOP to all provinces AJK and northern areas, since 1992. Some of the national level projects proposed in the years 1993-96 (namely Livestock Development Project (LDP), Strengthening Livestock Services Project (SLSP), which after revision could be implemented in 2003-2010) with tangible achievements, the National Veterinary Laboratories (NVL) Islamabad finally executed in 1997-98 and is still operational. Simultaneously the Regional projects for Rinder pet eradication project merged with National SLSP were executed w.e.f 2003 and remained operational till 2009 with positive results.

With the revival of Livestock and Dairy Development Board (LDDB) in the years 2000-2001, mega development projects were initialed (07 projects-detailed in this write-up w.e.f. 2003-01 to 2009-10), the tangible results/salient achievements with the government interaction of through PSDP to a tune of Rs.9.1 billions, had been a real partridge by the Federal Government to the livestock sector, as detailed in table No.07, duly reported by the LDDB, Livestock Wing, Ministry of Food Securities and Research Government of Pakistan.

Government intervention in livestock sector was negligible during the years 2011-12 onwards neither the follow-up action of completed projects was taken-up nor the sustained approach of the objectives of 07 mega projects could be completed. The targets already envisaged were achieved but slower, due to non-availability of funding for follow-up action

As per our human population growth rated and per capita availability (the requirements) and consumption, could not be increased. Rather the rates of the milk meat were risen in is shooting-up manner. Thanks to the purchasing power of the posh and mediocre income groups (middle income groups), the milk and meat are silently being consumed without any hoe and cry. The natural principles of demand and supply are simultaneously prevailing and the farmer is also getting reasonable price of his/her products amidst high price of the green

fodder, concentrates, veterinary vaccines, medicines and veterinary services including management.

Keeping a normal track of production of milk and meat in the wake of at least 02% human population growth rate, we will have to increase he milk production to the tune of targets as detailed in the Table No.1 below:-

Table No. 01 showing the Livestock Population present and future (E) (Millions) (05% Annual Growth)

	2011-12	2012-13	2015 (E)	2020 (E)	2020-25 (E)	2026-30 (E)
Cattle with 3-4% growth rate	36.9	38.2	40.92	61.02	71.38	91.11
Buffaloes	32.7	33.9	36.11	44.58	54.28	69.30
Sheep 03.7%	28.4	29.4	31.79	40.21	48.90	62.40
Goats 3.9%	63.1	65.4	70.73	89.49	108.86	138.90

(E) Estimated @ 4% w.e.f. 2015 to 2025 and @ 5% from 2026 upto 2030

More than 178 billions were spent in the years 2008-09 till 2011-12 in the Public Safety Nets (PSN) but no attention was paid to the livestock farmers communities. The detailed figures have been quoted in table No.08 while the human population growth is also documented by the human population studies institute (2012-13), upto the years 2030 kin table No.02 below:-

Table No.02 showing the Human Population boom form 2015 to 2030

		2011-12	2015 (E)	2020 (E)	2020-25 (E)	2026-30 (E)
A.	under 15 years	62.36	64.16	66.87	67.67	65.41
B.	under 15 to 39 years	77.02	84.19	91.43	97.68	1012.71
C.	under 40 to 60 years and above	37.65	43.39	51.82	61.91	73.94
	Total	**177.03**	**2206.74**	**2230.12**	**2252.26**	**1152.06**

Source: National Institute of Population studies P&D, GoP, Islamabad.
E-Estimated: Pak. Economic Survey 2012

The Future Production Availability and Consumption of Milk and Meat.

The animal proteins, specially milk and meat availability to the human population in the year 2012-13, 2015, 2020, 2025 and 2030 must be given again

a careful and critical consideration when it was looked into the actual and estimated requirements for he next 25 years as detailed in table No.03 below:-

Table No.03 showing the future availability and consumption of Milk (liters) and Meat (Kgs.) for next 25 years.

Sr.#	Year	2012-13	2015	2020	2025	2030
i.	Human Population million No.	180.7	191.72	210.12	227.26	242.6
ii.	Milk Produced million tons	49.85	53.95	68.25	79.84	101.90
iii.	Milk Consumption millions tons	44.87	48.55	61.43	71.86	91.71
iv.	Meat Produced availability million tons	3.23	3.69	4.48	5.43	6.91
v.	Meat Consumption	18	19	21	23	28

Source: Human population estimate National Institute of population studies-NIPS, Islamabad and Livestock Development Foundation (LDF) Estimate).

Before we got further in the availability and requirements (NATIONAL NEEDS) for our people, we must also look in the previously forecasted per capita meat consumption by Delgado *et.al* (2003), as presented in table No.04 below:-

Table No.04 showing per capita meat consumption of previous years compared with 2020 forecast (Kgs)

Countries	1983	1993	2020
Developed World	74	76	83
Developing World	14	21	30
Pakistan	11	16	47

Source: GOP-2003-TCP-PAK-0168-Livestock Action Plain-MINFAL-ISBD, FAO-2003

Future Milk Production Availability and Consumption

Where we can expect to meat the milk and meat requirements of our growing human population as detailed in table No.05 in this write-up.

A new participation approach for this purpose by Public and Private Sector is the creation of Livestock Endowment Fund (LEF) created with the Govt. intervention and financed with a credit of Rs.10.00 billions (Ten Billions only) as a share of 50% by the Federal Government while the remaining 50% (Rs.10.00 billions) will be met, every year, from the (9) exporters of livestock (05%) and the

FEC earned from the export of livestock products. The private sector will contribute 20% of their profits (Veterinary Drugs and Vaccines Producers and Traders (05%), Animal and Poultry feed manufactures (05%) while 10% will be from the 32 Bone crushing units and 48 Cashing Processing and Export Units of the country.

The gelatin producing and exporting (0.22%). the hides and skins producing/processing and exporting (725 units) (0.10% each) of there profits (invoice based) Rs.2 billions while of least 10% will be from the leather processing and leather grants including leather used sports trader of the country upto Rs.3.3 billions this proposed LEF will financially support investment oriented projects upto Rs.10 millions to NGOs, Farmers, and Milk/Meat processing on PAY-BACK system rather LEF will become a share holder/ All partners in this investment will contribute only by 50% of their income in these projects hence LEF will grow without repeated funding by the federal as well as Provincial Govts. And we understand that this will become a continuous source of income for the LEF and Govt. intervention will be decreased every year as the Govt. intervention is only ONCE. The LEF will be run under the BoG shared 50% by Livestock Departments and one representative each from private sector entities.

METHODOLOGY

The following mythology study material was used and adopted:-

- The available data, the reports, Pak. Economics survey report and PSDP funded project completion report for the year 2010-11, 2011-12 and 2012-13 were studied including the human population growth proposed by human population studies institute:
- The availability, the consultation (exports and imports) were analyzed as will warrant in the year to come at two different stages (2020 and 2030).
- Products required as needs per capita, specially the animal proteins (Milk, Meat, Poultry (meat) and eggs etc. in the scenario of human population growth recommendation were based on the analyzed data and projection.

Summarized Picture of Livestock Sector 2012-13

The population figers for the year 201213 reveal Cattle=38.2, Buffaloes=33.9, Sheep=29.4 and Goats=65.4 millions. The milk animal (both

cows and buffaloes) produced 49.85 million tars of milk which 3.42 million tars med were produced in the seven year (Pak. Economic Survey-2012-13).

As understood the share of agriculture in GDP remained 21.24%, the contribution of livestock in national GDP was 11-6%, most of the date of agriculture credit to farmers in 2011-12 was Rs.197.4 Billions both farm and non-farm credit, out of which livestock sector credit is not clear. We also understand that milk and meat produced in the country has shown increasing trends over the previous year (Livestock Wing Ministry of Food Securities and Research 2012-13), Hafeez M. (2013), as appears in table No.1 and 02. The per capita availability of milk and meat to our people in also far less as compared to developed countries.

The Government intervention in terms of financial support of Rs.9.1 billions in the shape of PSDP of livestock w.e.f. 2003-04 upto 2009-10 and from 2004-05 to 2010-11 in seven (07) mega projects has resulted in tangible achievements as a result 1300 feed-lot units developed, 1,63,000 more beef animals produced buffaloes and cattle, calves at least 2,00,000 mutton animals produced, 207 MPGs organized, more than 9500 exotic animals imported, 3,1,8, 768 doses produced and 4300 embryos of high yielding animals imported during July 2010 to Dec. 2012. Similarly the export of meat (beef, mutton and camel meat) has increased from US Dollars 108.54 million in (2010-11) to US Dollars 123.61 millions in 2011-12 showing an increase of 13.9%. But we still need to produce more for our own requirements in the years 2020 as well as upto 2030 and beyond.

Comparative Analysis and Future Requirements of Milk in the Country

In the year 2014-15 when the human population of our country as per estimates, will reach 191.72 millions the production of milk will be 53.95 millions tons as human availability and at least 48.55 millions tons will be for consumption similarly the human population is expected to reach 201.12 million in the year

2019-20 while the milk produced will be available as 68.25 million tons with a least 61.43 million tons for consumption.

Table No.05 showing the future per capita availability and milk consumption by human population requirements (liters) in the country.

Year	Milk availability (liters)	Milk for consumption (liters)
2012-13	27	24
2014-15	28	25
2019-20	32	29
2024-25	35	32
2026-30	42	37

Source-Livestock Dev: Foundation (LDF) Islamabad

Our experience and various reports now claim 10% losses in milk production, collection, transportation, processing, packing and at the time of retailing/end users, against 15% losses previonly claimed by many reports.

The figers for human population for he year 2024-25estimed is 227.26 millions, the milk produced and available will be 79.84 out which at least 71.86 million liters for consumption. The human population for 2029-30 will be 242.60 millions and the milk produced to the tone of 101.90 millions liter out of which 91.71 million liters will be for consumption. The per capita availability of milk to our growing population will be 27, 28,32,35, and 42 liters for the years 2012-13, 2014-15, 2019-20, 2024-25 and 2029-30 respectively as detailed in table 05:-

This alarming figers indicate a low-production and we need to boost-up our production to at least double the availability for consumption of human population. The consumption estimates will be 24,25,29,32 and 37 liters in the years 2012-13, 2014-15, 2019-20, 2024-25 and 2029-30, respectively.

Government Intervention Through PSDP

As we have seen the actual figers of GOP funding through PSDP, by the Federal Government to the tune of Rs.9.1 billions over the last 10 years (2003-04 upto 2011-12). The results of which are the tangible achievements stated in this paper. The expenditure of the similar minimum amount of Rs.2-3 billions per

fiscal year, to a tune of Rs.9-10 billions per 3-5years will at least enable us to meat the national requirements.

Farmers Interest and Economy

Thanks to the shouting up of price of milk @ 20/- per liter in 2002-03 to Rs.80/- in 2012-13 (farm rate) and he plan yoghurt (not processed/packed) was and is recorded in major big cities of the country as Rs.90/- per Kg. (Hafeez, LDF-2012-13). Just in September 2013, the retail price of fresh milk has crossed Rs.85/- per liter and yoghurt as Rs.95/- per kg. (un-processed) is big cities. The farmer is getting approximately normal whole sale price, with a margin of Rs.3/- to Rs.4/- per liter while the whole seller rate is with the margin of Rs.2/- per liter. The farmer is always shouting about the high prices of green fodder, the wheat/straw/bhoosa and the concentrate feed (cotton seed cake, sarson-oil-seed cake, or commercial pallets/wandas etc.)

The farmer is also concerned with the demanding increase in salary package of dairy attendants/gawalas, the veterinary medicines and cost of animal heath coverage services (of the veterinary doctors and veterinary assistants).

Priorities and Targets proposed to Boost-up Milk and Meat Production

A. Milk Production

The following areas need special attention toward project preparation to be funded through PSDP just from 2013-14 onwards:-

i. Breed improvement program both in cattle and buffaloes. A minimum additional of one million breeding animals be produced per 03-04 years.
ii. High quality semen import for use in artificial insemination programs.
iii. High quality fertile embryos be either imported or produced in the country for distribution, among breeder farmers.
iv. Farmers be provided with good quality vaccines to be used prophylactively against endemic disease (both viral and bacterial).
v. Annual de-worming/anthelmintic drenches be 100% ensured in he coming years.

vi. The Government intervention should continue for the installation of chillers (cooling tank) in a phased manners increasing from 25 to 400 in next five years and double it upto the years 2030 and beyond, say 1000 chillers.

vii. Simultaneous Follow-up Action (SFA) in organizing and strengthening farmers towards doubling the Milk Producing Groups (MPGs) from 270 to 400 upto 2020 in selected districts and expanding. The net work to 1000 MPGs by the year 2030 and beyond.

viii. Low producer buffaloes and cows be culled with the selection based programs in phased maners.

ix. DNA tested bulls and buffaloes approach be given towards breed improvements.

x. Research and Development (R&D) must go side by side and university teachers must chalk out research studies leading to increased milk and mean production.

B. Meat Production

(i) Follow-up project on the analogy of Livestock and Dairy Dev. Boards (LDDB)'s, increased meat production project be launched in all the provinces, AJK, NAs and FATA simultaneously.

(ii) At least 2-3 million beef animals be produced in addition every 3-4 years, for quality meat in the country.

(iii) At least 03-04 million mutton animals in addition be produced every 02 years (both sheep and goats) in all the provinces, AJK, NAs and FATA simultaneously.

(iv) We can capture the Saudi Arabia market in the Hajj Season every year where 3.0 millions Muslims go for Hajj pilgrimage every year, and need similar number of male sheep/goats for sacrifice (ZABIHA). We can provide a reasonable number, each year.

(v) Mutton exporters be allowed/permitted only 60% exports while 40% be utilized in the country.

Bank Credits to Livestock Farmers

(i) In the yester years there have been good examples of bank credits/loans to livestock farmers. This practice needs be continued.

(ii) The quantity/amount of loan be increased to the livestock farmers. When we look into the credit facilities to agriculture farmers, the allocation, per year, is far less as compared to the needs of the livestock farmers.

(iii) The banks, may also support in the animal heath coverage, to livestock farmer loanees.

(iv) Newly established farmers be encouraged.

Social Safety Nets and Small Livestock Farmers

A considerable amount of budget was allocated to 07 large areas during 2003-04 and 2004-05 which was in operation until 2011-12 and 2012-13, as aforementioned but livestock farmers had totally been neglected.

We need to financially support the small holder farmer (with at least 03-04 animals). The number of these farmers is not less than 1.5-2.0 millions. They are the real stake holders and potential/traditional farmers. They are animal lovers but need financial support as well as good milk animals. They do have their animal sheds and green fodder available nearby some of them also depend 70-80% on grazing their animals in fields or meadows while some might be grazing their animals in the nearby ranges.

Expected Results

If we are able to get ONE liter increase, in daily milk produced by 450 Buffaloes in 03 years, it will mean that if the milk production of these buffaloes was 1.37 million liters @ 10 litter/per day, in say B category of Buffaloes OR 1.6 million liters in B+ category as experienced in LDF-PARC-ALP Funded intervention (Project No. AS-137) of Rs.9.8 million only in THREE years time when naturally bred with the DNA tested bulls of Elite (16-20 liters BM's milk OR A+ category with 14-15 liter of BMs milk, per year while in B+ category this figer will be 1.78 million liters per year, only in the project area (Registered Buffaloes with an increase of ONE liter of milk only). (Mashook Ali Bhuta and Muhammad Hafeez-2013).

After Project Intervention

B Category =	11 liters/day	= 13,420/-	78/-	10,46,760/-
B+ Category =	13 liters/day	= 15,860/-	78/-	12,37,080/-

In 2014-15@ Rs.80/-

Net Saving

We understand that the expenditure on one such buffaloes is 50% of the cost of milk (fodder 40 Kgs/day concentrate labour cost miscellanies expenditures) @ Rs 68/- per liter.

B Category = Rs.1,30,845/-
B+ Category = Rs.1,54,635/-

Per lactation

This is very close to the cost of one Buffaloes in this area while earlier it was as under:-

B Category = Rs.1,18,950/-
B+ Category = Rs.1,42,740/-

Difference per Milch Buffalo on Farm rate

B Category = Rs. (2,60,690 - 2,37,950) = 23,790/-
B+ Category = Rs. (309,2010 - 2,61,690) = 47,580/-

Less 50% cost of production (feed/fodder + labour cost + miscellaneous)

B Category = Rs. 11895/- per location
B+ Category = Rs. 11895/- per location

- Milk increased by 305 liters per lactation.
- In A+, A and Elite buffaloes we expect more than 1.5 liters/per day (minimum) and the next increase will be 455 liters per lactation. This will be an additional amount of Rs.(305x78)=23,790 in one buffalo and in A+, A and Elite Rs. (455x78)=35,490/- per lactation.

  NB: In the years 2013 the rate may be the same but in the years 2014-15 and 2015-16, the farm rates must be very close to Rs.85/- and Rs.88/- per liter, respectively (in rural) while it should be Rs.90/- per liter (in Urban) as reports coming in).
- The next benefit forecasted will be Rs.(305x85) =Rs.25,400/- per buffalo per lactation and in A+, A and elite categories this will be Rs.(305x90)= Rs.24,450/- in 2014-15 and Rs.25,010 and Rs.27,200/- respectively in 2015-16.

Collective Additional Benefit (In one Lactation)

All project buffaloes produce = 1,37,250 liters
(450x305) = 0.137 liters (per buffalo)

With farms rates as under:-

in 2013	=	Rs.78/- per litter =	10.68 million (Rs.)
in 2014	=	Rs.80/- per litter =	10.96 million (Rs.)
in 2015-16	=	Rs.85/- per litter =	11.23 million (Rs.)
in 2019-20	=	Rs.80/- per litter =	12.33 million (Rs.)

CONCLUSION OF LDF COMPLETED PROJECT 2012-13

The increase in milk production by ONE litter only, there will be an increase of 0.137 liters of milk in the 450 registered Buffaloes of the project, fetching Rs.10.68 million rupees, a direct benefit to the farmers which was more than the cost of he project i.e. Rs.9.84 million (in three years) together with long lasting benefit of breed improvement and increased milk production, after the

project period. If we take the figers for three years this will got THREE TIMS, as per simple calculations.

(i) We need to bring into main production system 02-million additional cattle and buffaloes in the next seven eight years (07-08) (Rs.20 billions).

(ii) The breeder farmer need financial support to produce one million male cattle and buffaloes (feed lot units fattening male cattle calves) for increased meat production (Rs.10 billions)

(iii) We need to double the existing distributed chillers/cooling tanks from 250 to 500 upto the year 2020 (Rs.12 millions) and upto 1000 in next ten years (2021-2030), in he MPGs and milk producing pockets. (Rs.48 millions)

(iv) We need to increase, organize and register breeder farmers with Elite (18-20 liter of milk producers buffaloes) A+ (15-17 liters of milk producers, per day), A(13-14 liters/day) and B categories (with 10-12 liters per day). The C grader less than 10 litters may be eliminated slowly and steadily, in support to (i) above.

(v) One two milk processing plants be installed with public private partnership in the next 07- years and another 2-3 milk plants in the next then years (2021-2030) totally be the private sector Rs.5000 millions).

(vi) Breed improvement program be launched with the involvement of NGOs of Livestock Sector (only potential NGOs be involved) based on DNA testing program in selected areas (Rs.5 billions allocation in 4 years) and 1000 each of DNA tested buffalo bulls, cattle bulls of 03 breeds and two breeds (500 bulls) in 05-06 years.

The total allocation of the above program was Rs.236 billions out of which Rs.180 billion were disbursed, it is noted that Livestock Sector as neglected (Table-08). If we take the one phase of Govt. intervention, through PSDD providing funding to the tune of Rs.9.1 billion, it was over 5-6 years (initialed in 2003-04 and 2004-05 upto the year 2010-11 and 2011-12) which is hardly Rs.2 billions per project. The total allocation in PSDP in the year 2011 was Rs.480 billions while it was in the Rs.730 billions in the year 2012 which stands hardly 0.027% in 2011 and 0.0018% in the year 2012 respectively.

What we need to explore is that projects must be prepared without further delay, in the livestock sector, as summarized in table No.06 outlined for the next 07 to 10 years and beyond in phases.

Table No.06 showing mega Development Projects initiated and completed in Livestock Sector of the Country, with cost.

Sr. #	Area of Projects (Propose)	Amount (Billions)	Per year (Billions)
i.	02 millions additional cattle and Buffaloes for increased milk production.	20.00	04.00
ii.	One million cattle/buffalo calves for fettering, for increased meat production.	10.00	02.00
iii.	1000 chillers for milk preservation (250 upto 2020) and 500 upto 2030	0.048	0.012
iv.	One milk processing and packing plant, by 2020 and one by 2030	0.050 0.050	0.050 0.050
v.	DNA tested bulls 1000 of each breed (Nili Ravi, Kundi buffaloes, Sahiwal, Red Sudhs Smidhs and cholistani cattle) (5000 bulls in 5-6 years	05.00	1.00
vi.	Farmers be provided financial loan under social safety nets(20 milch animals @ Rs.02 millions each to 1.5 small farmers (06 years)	30.0	5.00
vii.	At lest 05-06 million doses of Semen be produced from our own indigenous stock preferably DNA tested, Discak free bulls and made available to small farmers (for improved breeding program in 10 years	2.00	2.00
viii.	One million embryos be available to Regd. Farmers for up-scaling their low-producer cows and buffaloes under Embryos Transplant Technology (ETT), in next 5 years	01.00	0.02
ix.	Livestock Endowment Fund (LEF)-05 years with 50% share from GoP and 50% from Livestock Exporters.	10.00	2.0
x.	Livestock Departments Revenue collected through AI services and sale of veterinary Vaccines of VRIs Peshawar, Lahore, Quetta, PRDC-Karachi and NVL including PRI Peshawar be supported with 100% additional funds (10 years program)	20.00	2.0

Contd on Page 282.....

From pre page

xi.	Teaching and Research Institutions (Universities, Faculties and VRIs, PRI, PRDC, NVL, be supported 50% from LEF and 50% from P&DP (20 years program)	20.00	1.00
Xiii	Agricultural Farmer be provide seeds for Rabi and Kharif fodder crops and must be legally bound to grow fodder on 05% of their lands (10 yeas program). A 10% of the sale profit of fodder must go to (LEF), each season	4.00	0.4
xiii.	Livestock markets -180 markets of the country be provided facilities for farmers.		
	Total	**150.10**	**16.81**

Table No.07 showing mega Development Projects initiated completed in Livestock Sector of the country, with cost.

Sr.#	Name of Project/Title	Duration	Cost in Millions Rs.
01	SLSP	2003-10	1992.66
02	Livestock Production and Development for Meat Production.	2005-10	1520.00
03	Milk Collection Processing and Dairy Production and Development Program.	2005-10	1588.00
04	Prime Minister Special Initiative for Livestock (PMSIL)	2005-10	1992.00
05	National Program for the control and prevention of Avian Influenza	2007-10	1180.142
06	Improving Reproductive Efficiency of Cattle and Buffaloes in Small Holder Production System.	2007-10	495.15
07	Upgrading and Establish Animal Quarantine Stations in Pakistan.	2006-11	36.00
		Million Rs. Total	**9103.95**
		Rs. Billions	**9.10**

Human Population Growth

The human population of Islamic Democratic Republic of Pakistan (IDRP) has been recorded as 180.7 millions as of 2011-12 with an annual growth rate of 2.03%. It will be expectedly growing to 191.72, 210.12, 227.26 and 242.06 in the

years 2015, 2020, 2025 and 2030 respectively. The population is also expected to be doubled in the years 2026. The age group wise population based on present (2012) for under 15 years (Group A) remained 62.36 millions while the estimates for Group-B (15-39 years ages), and Group-C (40-60 years and above) will be 77.02 millions and 37.65 million respectively as reported by the Institutes of Population Studies GoP-Islamabad.

In the same report the ratio of urban population recorded for 2011-12 was 67.55 millions as compared to 113.16 millions rural population.

Per Capital Availability of Animal Proteins

After having a look of human population boom in our country's future, let us simultaneously look into the availability of milk, mead and (eggs per capita) which was 170 liters milk per year, 21.5 kgs of meat per year and six (06) dozen eggs per year (i.e. one egg ONCE approximately in 05 days).

Investment in other Sectors

The Government of Pakistan in the last five years plain put a lot of intention towards, poverty alienation. A total of 4.5% of GDP allocated for social safety nets under which 07 areas prioritized with their allocations are reproduced in the Table No.08:-

Table No. 08 showing PSDP Allocation under Public Safety Nets, During 2008-2012-GoP, Islamabad

i.	Benazir Income Support Program (BISP) Rs.178 billions (comprising 153 billions domestic and 25 billions foreign) in this program Rs.122 billions disburse upto March2012 (recipients 07 millions).
ii.	People Poverty Alleviation Fund (PPAF)
iii.	Pakistan Baitul Mall (PBM) (Rs.1.8 billions disburse. This also including Rs.7.8 billions of Zakat distributed by the Province.
iv.	Peoples Work Programe (PWP) Rs.38 billions for village electrification, Gas and Farm to Market Road.
v.	Employees Old Age Benefit (EOAB) Rs.8 billions to 3,50,485 beneficiaries.
vi.	Worker Welfare Fund (WWF) Rs.2.5 billions disabused through Watan Card.
NB:	Released Rs.180 billions against total Rs236 billions.

It is the dire need of the hour that we must divert the attention of Planning and Development Division (P&DD) of the Ministry of Planning, through project proposed by Livestock Wing. LDDB at Federal and/or Provincial Livestock and Dairy Dev. Departments (LDDDs) and approach Financial Ministries for funding these project so that we are able to produce the milk and meat required for our future needs as well as for exports (table No.09).

Table No. 09 showing the Livestock Endowment Fund (LEF) creation with Public Private Partnership from 2014-15 onward.

A.	i.	PSDP- share of 50%	10 billions
B.	ii.	Private sector share 50%	10 Billions
	a.	20% of the livestock export earnings	0.5
	b.	Veterinary Drugs and vaccine traders (25-26 companies)	0.5
	c.	48-casing processing units	1.8
	d.	32- bone crashing unit	1.5
	e.	Processing (hides and skins) 725 unit	2.00
	f.	Leather garments and sports exporters/traders	5.5
C	(i)	**Revenue Collection (GoP)**	
	a.	Veterinary Vaccines and biologics plus diagnostics services VR/s, Peshawar, Lahore, Quetta, PRI, PVDS	0.05
	b.	Veterinary Services of L&DD (cost) of veterinary hospitals	0.04
	c.	Cost of Article insemination	0.06
	d.	Revenue collected from AQ Department from AH Certificate	0.05
		Total Revenue Collection	**0.20**

REFERENCES:

Anonimous (2010-11) Livestock Sector, Pak. Economic Survey Report, Ministry of Finance and Economic Coordination. Economic Advisor, Wing, S-lock, Pak Secretariat, Islamabad.

Anonimous (2011-12) Livestock Sector, Pak. Economic Survey Report Ministry of Finance and Economic Coordination. Economic Advisor, Wing, S-lock, Pak Secretariat, Islamabad.

Anonimous (2012-13) Livestock Sector, Pak. Economic Survey Report Ministry of Finance and Economic Coordination. Economic Advisor, Wing, S-lock, Pak Secretariat, Islamabad.

Chief Executive (2009-10) Final Reports of Various Mega-Development Projects. Livestock and Dairy Development Board, GoP, Islamabad.

Delgado (2003) Livestock Action Plan: FAO Recommendation. TCP-Pak.0168-MINFAL, GoP, Islamabad.

Muhammad Hafeez (2011), Livestock Industry: Livestock and Poultry Production of Pakistan. HEC-Publication Series, Islamabad.

Muhammad Hafeez (2012). Prospects of Investment in various area of Livestock Sector in Pakistan. Pak.L.J.Sc Vol(IV), No.04, 28 pages 217-231.

Muhammad Hafez (2007). Livestock and Development. Unit No.07 and Feasibility Preparation. Livestock Industry Rural Code-782, AIOU, Books Series.

Mashook Ali Bhutto and Muhammad Hafeez (2013). Increased Milk Production Projects proposal of LDF for PARC-ALP funding using DNA tested bulls of Kundi Breed in Sindh South No.LDF-PARC-ALP/13-011.

R.H. Usmani (2009). Livestock Policy (2009-10). Livestock Wing. MINFAL GoP, Islamabad.

Saeed Ahmad, RH Usmani and Muhammad Hafeez (2011) SLSP-A success of Livestock Projects in Pakistan. Pak.J.L.Sc, Vol-II (No.02) 10 pages 51-57.

Sajid Aziz Sammo, K.B. Mirbahar, Masroor E. Babar and Muhammad Hafeez (2012). An initial approach in Production of Genetically Superior Bulls of Kundi Breed in Sindh Province. Proceeding of First Orientation Seminar, SAU, Tandojam and Pak. J.L.Sc, Vol-IV (No.04), 2012.

SHORT COMMUNICATION

Book Review: **Brief Introduction to AIOU Test Book Code-313 FA Dairy Farming-2013**

The book under review was earlier written in 1991-92 when Agricultural and Livestock courses were introduced for Matric and FA students, on the written demands of farmer's communities, Simultaneously, when graduate courses of MSc(Hons)/M.Phil level were offered in Agriculture Extension, Livestock Management and Forestry Extension.

As a matter of fact each and every course in first of all discussed in the Committee of Course (CoC) followed by critical appraisal and approval of Faculty Board of each Department, in this case Department of Agriculture Sciences (AIOU) at Islamabad.

This course book is written for FA students but farmers can also benefit from this book, specially the Livestock farmers.

The book comprises nine (09) chapters, as the AIOU format calls these as Units (01 to 09). The subjects details of these units as overviewed, by the Editorial Board of PJLSc are critically reviewed as under:-

The livestock sector has been introduced carefully, starting with the livestock population, recent figure of 2011-12 have been reproduced as Cattle 36.9, Buffaloes 32.7, Sheep 28.4 and Goats 63.1 million (the data of Ministry of food Securities and Research and Pak. Economic Survey 2011-12 is the same). Importance of Livestock in narrated form, govt. Intervention in terms of PSDP funded seven (07) Mega Development Projects from 2005 to 2010-11 have also been summarized. This part of the book also includes the livestock products namely hides and skins, casings and guts, bones and bone products, wool and hair etc.

The Second Unit (second chapter) provides salient features and characteristics of various breeds of dairy origin namely Sahiwal, Red Sindhi and Cholistani breeds of cows while Nili Ravi and Kundi Buffaloes have been incorporated, with typical body structure appearance of dairy signs of both male and female animals including daily milk and production per lactation with a simple touch of few sheep and goat breeds for milk production.

Unit-3 describes care and management of each category of dairy animals (a cow, a buffalo with bulls, the young stock particularly the male and female calves). This involves Good Management Practices (GMPs) feeding (Daily Rations), Health Care and all allied steps towards livestock production, growth and attention on daily basis.

The important aspect for feeds and feeding of dairy animals in Unit-04 has been discussed taking care of carbohydrates, proteins, fats, vitamins and minerals for the actual requirements of maintenance and production of milk and meat. The feed management plan for young stock has also been narrated in an annotated way, in accordance with the format of the book, although in Urdu but with Technological terms speaking the theme of the subject, for FA level of students.

The animal production experts stress on breeding and breed improvements in dairy animals which has been detailed n Unit-5 in a simple but impressive way specially cast for students to understands this aspect of Dairy Farming.

Two units No.06 and 07 pertain to animal health split into non-infectious in the former and infectious diseases in the latter. These diseases as reviewed, are mostly the endemic diseases prevalent in this area, mostly the South Asia, and Pakistan is no exception.

All precautionary measures to be adopted at a Dairy Farm including the prophylactive vaccination for protection against these diseases, specially the bacterial (Hemorrhagic Septicemia, Anthrax, Black Quarter, and Enterotoxaemia) and Viral (Foot and Mouth Disease, Pox, Bovine viral diarrhea etc.) origin which always give a dent of Economic losses to farmers.

Last chapter is an important approach for making recommendations in Dairy Industry based on the counted problems (being faced by the stake holders of Dairy Industry). By acting upon which improvements can be achieved by the sector when action based project proposals are implemented.

In an overall assessment based on chapter-wise/unit-wise review, the Editorial Board has categorically appreciated the efforts of the Authors, the Course Team and the Referee with the combined effort of whom this text book has been finalized, fully supported with recent data and references of the last 10 years.

PAK: JOURNAL OF LIVESTOCK SCIENCES (PJLSc)

RECENT INSTRUCTIONS / GUIDE LINES FOR CONTRIBUTORS

- The original Articles/Research Papers be sent on A-4 paper with one and half Inch Margin on left side. The Text should be on font No. 12 while the abstract with Font No.10 (reduced by half inch from both right and lift).
- The standard format should be abstract, introduction, review of literature (concise) material and methods, results, discussions, conclusions and recommendations followed by references/literature cited (in alphabetical order.
- Number of tables be restricted to minimum possible.
- Two printed (hard copies) a CD (Soft copy) may also be enclosed to quicken the process of Referee's evaluation.
- Colour prints, photographs if indispensable. (Include 100 prints/100 photographs with colour scheme, advised). This is negotiable.
- References be kept limited (Not more than ten) preferably for the last 5-10 years. Standard format be adopted.
- Contribution of Rs.750/- per article/paper be enclosed upto four pages each extra page will cost Rs.200/- each.
- Abstracts be limited to half or 3/4th page, one para of 100-150 words in between the A-4 paper, supported separately with key words, for example:
  (i). Microbiology. Coliform bacilli, E-coli, incidence of food contamination, Pakistan.
  (ii). Chemistry; Physico - Chemical analysis; algae; lotus, lake water - Pakistan.
- First Screening of the papers will be within one month and acceptance/or other wise will be, communicated after a period of 30 (THIRTY) Days subject to referees recommendations.
- Changes/Amendments /Reviewers comments and advises must be attended by the contributor(s) and final draft with CDs be re-submitted to the Chief Editor within 14 days.
- Duplications be avoided. Plagiarism will black list all of us.
- Advertisements be sent according to subscribed rates.
- Selected Scientific Papers/Articles will be subjected to PEER REVIEWING simultaneously, by the local as well as Foreign Referees, in accordance with the guidelines of HEC Islamabad-Pakistan.
- Late accepted papers/articles will be included in the next volume.

EDITORIAL BOARD

SR. # CONTENTS PAGE #