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بسم الله الرحمن الرحيم

Key Note by the Chief Editor

In the name of Allah (SWT), with his kind blessings with the Darood-o-Salam on last of his prophets Muhammad (SAW). Alhamdolillah, we have been able to present Vol-XV, No-15 of Pakistan Journal of livestock Sciences (PJLSc) in Dec-2023, in hand, approved by its EditorialBoard (EB), in their 21st and 22nd meetings.

During the publication process, we received only 08 research cum review articles and one pending article was also finalized, making 09 article on various subjects of Livestock, Poultry, Rural Development; article No 138 through No 147. Mostly the articles concluded with the cost effectiveness of price hike of live animals and feed ingredients, daily human food items, animals price like of commodities due to fuel prices and electricity unitage highly charged.

As barter exchange is continued with other Journals of Agriculture Sciences (JASc) of PARC Pak vety Journal Faisalabad, Sarhad Journal of Agriculture (SJA), JARD journal of AIOU and exchange of annual reports of veterinary institutions specially VRI Peshawar and others. The data of Annual Activity Report of AQ Deptt: HQ Karachi , (MNFS and R), GoP ,Islamabad, is appreciated.

The Abstracting and Indexing also continued in NIABS Islamabad a subsidiary of (PJLSc) Vol-VI is now being finalized based on the abstracts of (PJLSc) Vol-XIII, XIV, XV of2021, 2022 and 2023.

One Research Associate Dr.Muhammad Sohaib Saleem (a DVM, MSc (Hons) with rich resume of livestock Sector working at managerial level, has joined our team, for (PJLSc) andFCS Islamabad for literary work, as per approval of th EB

Suggestions, proposals, amendments, if any, will further improve our working.

Dr. M. Hafeez
Chief Editor

IMPACT OF YOUNG SCHOLARS INVOLVED IN COACHING SCHOOL LEVEL FARMERS CHILDREN ,BHARA KAHU ,ISLAMABAD

Basharat Mehmood Awan[1] ,Uzma Kanwal[2] and Bilal Waheed Qureshi [3]

ABSTRACT

This research cum academic study provides an effort made by university Graduates ,involved in Coaching young generation especially farmers sons and daughters ,for improvement in the students calibre and future persuits. Mediocre number of students ,(50-52 in Bright Academy, Malik Abad 34-36 and Hashmi's Academy 38-40 Muhallah Ghosia and Quaid Academy ,Bhara Kahu).The data on three classes namely 8th ,9th and 10th for the 2021 was collected and results recorded which provided a great hope for the students who could not get admissions in Govt:or private schools because of short of 8-10% marks obtained in their previous exams (2019-2020).Although such students had enthusiasm and eagerly fond of studying with same qualified teachers , a home tuition. The study results showed a good percentage appeared in final examinations(exams) 86-90% of class 8,84-88% in class 9th and 85-92% in class 10 ,with a still better overall performances in pass percentages of 88.88% in middle standard ,83.33% in 9th and 86.66% of class 10th respectively. The individual academy's results for class 8th ,9th and 10th for appearing was in FBISE ,Islamabad 88.79 ,80.5and 78.24 with their passing results recorded as per the reported years was by bright Academy 88.88 ,87.50 and 90% while the appearing in final exam of Quaid Academy was 83% (8th)and 78.50%(9th) and 80%for 10th class ..The appearing in exams by Hashmi's Academy was recorded as 75%,72% and 87% with passing results of class 8th ,9th and 10th respectively ,in the three classes .The paper ends with the hope that the rural education needs home tuition badly and the results remain encouraging ,specially for farmers sons and daughters.

Key words : Rural education ,home tuition coaching of youngsters Bhara Kahu ,Isbd

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INTRODUCTION

Educational Coaching had been a continuous process since centuries ago,with face to face efforts by Reverent prophets of Allah (SWT) since Prophet Adam (ASLM) ,descended from heavens on the earth, followed by all of them , some based on revelations as well as some based on written documents (The Sahaif/books) as blessed by Allah (SWT) in the last of his holy-book ,The Al-Quran (Surah Al-Rehman –verse-02-03), certifying that the teachings and preaching were already there and also in the holy Bible of prophet IEsa (Jesus) and Sahaif/Sohofs of Prophet Ibrahim (A.S) Propher Musa (A.S) and others.

1. Principal Bright Academy ,Malikabad Bhara Kahu ,Isbd
2. Principal Hashmi Academy ,Muhallah Ghousia,,Bharakahu Isbd
3. Principal Quaid Academy ,Seri-chowk,Bhara Kahu,Isbd

Such delebrations , supported with the sacred deeds of Prophet Muhammad (SAW) , the teaching and preaching continued decending to followers (Tabieen –RHA) and redecendents (Tabe-Tabieen-RHA), the scholarly leaders (Aima-Mujtahiden-RHA) came in written form and face to face to this modern era of computer and scientific age ,as of today the 21st century reciprocal to 1444 Hijra.

Written material in the form of books for religions as well as science subjects ,has developed with a fast speed of at least 100 years or more ,the subjects of History ,Physics ,Chemistry ,Engineering ,Biology Agriculture ,Medicine (Veterinary and human),Mathematics (Calculus and statistics) supported with very recent computerized information system, the communication skills ,Journalism (Print and Electronic media) has put us in a modern tenure of education.

Basic education is almost uniform for growing children (both boys and girls) but attention has been given with special reference to the age of puberty .The youngsters of class 8 ,onwards of the real grooming stage ,across gender .In a review conducted by 16 countries of EU member countries ,it was found that real interest develops at the age of 12-13 years which has been declared as critical stage of youngsters ,either they cling to students (the real students) or became High school failure (HSFs) .Attention has been paid by the educational researchers in developing (28 countries across South Asia the middle east, Central Asian Republics and African as well as developed. Economically Developed Countries (EDCs) =32,diverting the attention of United Nations (UN) 183 member countries to provide necessary health and education for the wellbeing of the inhabitants under Millenium Developmental Goals (MDGs) (2015) which has been discussed across the global Fore (2018)(2019).

The United Nations Development Program (UNDP2015-20) has been funding various projects on health ,under United Nations International cooperation for Education Organization (UNICEO) as well as the United Nations International Scientific and Educational Fund (UNICEF) have highlighted priority areas of children education (2021-21) International Education Conference.

At home the Educational Policy (2018) drafted by the Ministry of Education ,together with supportive and coordinated efforts of all the provinces ,Punjab Sindh ,KPK, Balochistan ,AJK, Northern Areas(NAs) Gilgit Baltistan (GB) have supported ,with overwhelming majority ,abstaining None agreed to pay attention on primary and middle level education (Education Policy -2020,Gop,Isbd), increasing the number of educational Institutions (the schools), upgrading primary schools to middle and higher schools ,for the future requirements of the younger children ,Provinces thus have been coming up with project proposal for such tasks under public sector Development projects (PSDP) ,Pak Economic Survey Report (2018-2019) (2019-2020) and (2020-21with the slogan of “Education For All”(EFA).

Farmers could not afford education for their sons and daughters in bigger private Schools, but mostly got admissions in Govt. schools (FG Boys ,FGGirls) or mediocre. Private schools in

IV Zone ,Agriculture Sector ,Rural Islamabad .Such students need home tuitions to increase their literacy and merit etc.

We need .as a matter of fact that a feeding crop of classes 9th and subsequently 10th , out of which most of the high –students than join either higher –Secondary classes and /or become college students in a short span of time .

REVIEW OF LITERATURE

Studies have been conducted in rural-Islamabad on various aspects by researchers of universities on particularly school children as well as in rural Rawalpindi(Rwp) exploring the economic conditions ,reasons of dropouts from schools ,better achievements including scaffolding techniques in English essay writing ,as well as students achievements enhanced with better facilities ,as reviewed .The international workers findings on dropouts and positive impact of home tuitions on school children ,have also been included in this review

Nadia Hafeez Uzma Kanwal and Muhammad Hafeez (2021) carried out a study on Positive Response and Progress achieved in computer techniques amids, co-vid-19, online schooling in rural Islamabad. This study although limited to N-77 students of National Police Foundation Model School (NPFMS), Bharakau, rural Islamabad, involving class-IX (41) and class-X (36) students in newly introduced "On-line schooling had been a great help amidst corona virus pandemic, in the country and closure of schools. Three subjects were selected (a) English (b) Maths and (c) General Science starting Oct-Nov, Dec-2020 and January-2021 and the scores (marks obtained) were evaluated in the Examination of Feb-2021, compared with the examination of Nov-2020. It was observed that an overall 21-24% increase was recorded as progress achieved in this limited quantum of study, in one school only in rural Islamabad. It is thus recommended that since this approach not only, saved to academic duration of students but remained involved in the subject and avoided wastage of time, with the recommendation that such a system may also be practiced in vacations, as well.

Uzma Kanwal , Naveed Sultana & Nadia Hafeez (2021) reported the effect of scaffolding on English Essay Writing Skill of secondary students , in rural Islamabad: A Review. The teaching of the writing is very important at the school level as many schools are working on it. Many schools of Turkey are not working on the writing skills of the students but working mostly on the text books and not working on the teaching writing skills because of lack of the time and energy used in these writing instructions facing difficulty in the writing of English as a Foreign Language (EFL). Whenever the students were conducted with a writing pretest, showed difficulty in the writing, especially in vocabulary and grammar, majority of the students faced this difficulty. A number of the experts have worked a lot on it and explored many ideas to improve the writing skills of the students as described by (Faraj, 2015).

Anam Ahsan , Shafiq Qadir Memon and Ahsanullah (2020) carried out work on analysis of drop outs in middle level schools across the gender in rural area of tehsil Rawalpindi to

investigate the drop outs in middle level schools (both boys and girls) in rural area of tehsil Rawalpindi in the targeted villages of Chauntra, Salmoon and Bhall. In this study total enrollment was recorded in the years 2014-15 as 115 (56 boys (B) and girls (G) 59) with the gender ratio of 48.70% (B) and 51.30% (G), from classes I thru Class IV respectively. This enrollment was 101 during the year 2015-16 with gender ratio of B=56 and G=45 of the same classes while the total enrollment in the study period of 2016-17 in Government Primary-cum Middle School Chauntra was 106 with B=52 and G=54 respectively. The targeted classes were VI, VII and VIII and the enrollment for 2014- 15 recorded was 56 (B) and 51 (G) totaling 107 with gender percentage being 52.34% (B) and 47.66% (G). The information of total enrolled students of middle level for 2015-16 was 144 with B=81 (56.25%) and G=63 (43.75%) while the enrollment recorded for 2016-17 was 120 with B=67 (55.83%) and G=53 (44.17%) in all the three targeted classes. The enrollment of classes VI, VII and VIII cumulatively recorded for the years 2014-15 as 99 out of which Boys (B) were 47 (46.64%) and Girls (G) were 52 (53.54%). The number of enrolled students for the year 2015-16 of middle classes only, were 117 out of which B=57 (48.71%) and G=60 (51.28%) whereas this number for 2016-17 was B=73 (47.4%) and G=52.6% and of total enrolled as 154, respectively. As per school record, out of all the three village schools, a total of 368 students (both boys and girls) were sent to sit in the BISE-RWP Examination, in the duration of our study (2014-15, 2015-16 and 2016-17) with 188 boys (51.09%) and 180 girls (48.91%). The total drop out out (of three villages) during study periods, were 32, 30 and 28 for the years 2014-15, 2015-16 and 2016-17 respectively. The reasons attributed to drop-outs were (i) students discouragement from various directions (ii) financial attraction as child labor, (iii) involving young children helping their parents in economical activities and (iv) shifting the drop-outs to private schools. Further studies were recommended to be carried out, in the similar parameters in at least each Tehsil, of most of the districts, involving rural schools.

Uzma Kanwal , Nadia Hafeez and Muhammad Usman Hafeez (2019) carried out a survey on socio-economic aspect and its effects on academic achievement of children in rural area Islamabad in the year 2018 in Muslim Town BharaKahu Rural Islamabad to assess the number and type of houses, inhabitants households heads (hhhs) and school going children (studying in private/Govt Schools with their progress (of class VII, IX and X) with facilities as well as parents approximate income and means of conveyance. The data collected on a structured questionnaire that there revealed were a total of 320 houses, 10-12% double storied and 3-4% triple storied in 12 streets, (identified 1-12) with 1991 inhabitants (1240 men and 750 women respectively. A total number of students (both enrolled and drop outs) was were 180 with 126, 76, and 60 in 8 th, 9th and 10^{th} the year 2018) reported but when verified in 2019 the remaining enrolled/admitted were 167 both private and govt schools after the results the remaining students were recorded for 2018 as 61,59 and 60 for the year 2019 the number was 61,56 and 50 for the classes VIII, IX and X respectively. To a further parameter of this study 137 inhabitants were recorded as drawing Rs40,000/- and above PM while 163 were less than this amount as financial resources. Out of the inhabitants of 294 houses of 12 streets, 48 had a car each, 112 owned

motorcycle each and 155 used public transport for them and for their school going children. It was concluded that students were regularly going to schools (High Schools, Higher Secondary Schools) and some of them to colleges and universities across gender. It was further concluded that those (hhh) who afforded the education of their children were satisfied with the schools and the studies of their kids even in private schools.

Ministry of Education (2020) The education policy (2019-20) denoted in its various clauses ,stressing individual attention be paid for every single student ,across gender. Both public and private sector institutions (this include private and academies) towards improvement and ,with specific stress on the reduction of drop-out at primary middle and secondary level as well as higher secondary levels.

Train Thu Ha and Trudy Harpham (2005) carried out study entitled " Primary Education in Vitenam: Extra classes and cut-cum" in a sample of 1000, eight years old across five provinces, to consider the extent and burden of extra classes ,as associated with improved educational status taken from a house hold population of 4716.it was found that there appeared 56% improved in rural and 58% in urban areas .It was further noted that 90% of the extra classes taken were for one subject ,the mathematics together with arts classes .The study revealed that suggestive care givers were school teachers and mother with other close relatives (over 60%of students).The time spent for extra classes ranged 7.9 hours in mountainous areas.8.9 hours in rural and 9.7 hours in urban areas coaching. It was also supported with cost of extra classes as roughly 25% the total cost of a child ,per year in schools ,(as duly supported by World Developmental Report (2003) and Vietnam Household Living Standards Survey (VHLSS) (2002) .In the conclusion it was recorded that the most children could read (89%),write (75%) and multiply correctly (86%) respectively. It was recommended that such practices of face to face teaching as helped young children which must prevail sustainably.

MATERIAL AND METHODS

A- Information on the (i) students admitted/enrolled ,(ii)students appeared in final examination (a)Internal and /or (b)Board examination (iii) students passed from the following academies in rural Islamabad ,Bhara Kahu area: as identified in table No-01,02,03

(iv). Reports of Bright Academy, Malikabad ,BharaKahu ,Isbd class 8^{th},9^{th} ,10^{th}.

(v). Quaid Academy Seri Chowk ,BharaKahu ,Isbd class 8^{th},9^{th} ,10^{th}.

(vi). Hashmi's Academy Muhallah Ghousia ,BharaKahu ,Isbd class 8^{th},9^{th} ,10^{th}.

B- Data was collected from three academies ,on the three prong approach as under:

(vii). Total number of students admitted /enrolled in 2021

i. Total number appeared in the examination (of class 8th ,9th and 10th)

(viii). Total number of students passed in the exams

C- Results were analysed with percentile approach

D- Statistical Analysis

Since this study was limited to a simple data hence percentile approach was adopted ,with Summation Σx and Average x were worked out for results.

E- The results thus obtained were presented in the tabulated form ,as per tabloe No-01, No-02 and No-03 respectively .

RESULTS

Table No-01: Number of students admitted in 2021 and results of Bright Academy –Bhara Kahu ,Isbd

	Class	Male	Female	Total Appear in exams boys	girls	Passed Boys only	Total Appeard	Passed	%
I	8th class	13	-	12	-	10	09	08	8
Ii	9th class	10	-	09	-	08	08	07	87.50
Iii	10th class	12	-	10	-	09	10	09	90
	∑x	**35**	**-**	**31**	**-**	**27**	**19**	**17**	**266.38**
	x̄	**11.66**	**-**	**10.33**		**09**	**` 6.33**		**88.79**

Source-information record of institute's head teacher

Table No-02: Number of students admitted in 2021 and results of Quaid's Academy –Bhara Kahu ,Isbd

	Class	Male	Female	Total	Appear B	G	Passed% B	G	Total	Passed	%
I	8th class	10	5	15	8	4	7	3	12	10	83
Ii	9th class	13	02	15	12	2	10	1	14	11	78.50
Iii	10th class	10	-	10	10	-	8	-	10	08	80
	∑x	**33**	**07**	**40**	**36**	**6**	**25**	**4**	**36**	**29**	**241.50**
	x̄	**11**	**35**	**13.33**	**10**		**8.33**		**12**	**9.66**	**80.50**

Source :Information from institution's head

Table No-03: number of students admitted in 2021 and results of Hashmi's Academy –BharaKahu ,Isbd

	Class	Male	Female	Total	Appeared in exams	Passed%		Total Appeared	Passed	%
I	8th class	08	03	11	07	06	75	11	06	75%
Ii	9th class	11	05	16	11	08	72.72	11	08	72.72%
Iii	10th class	09	06	15	08	07	87	08	07	87%
	∑x	**28**	**14**		**26**	**21**	**234.7**	**30**	**21**	
	x̄	**9.33**	**4.66**		**8.66**	**7**		**10**	**7**	**78.24**

Source: Information from institute's head teacher

Table No-04 showing the collective status of students of three classes of the three Academies appeared in FBISE , in recent years

Year	Class			Total students	Appeared in FBISE	Result pass	Fail
	8th	9th	10th				
A.2019-2020							
I	22	-	-	22	18	15	03
Ii	-	11	-	11	10	08	02
Iii	-	-	15	15	13	10	03
B.2020-2021							
I	18	-	-	18	16	15	01
Ii	-	13	-	13	11	9	02
Iii	-	-	15	15	14	12	02
C.2021-2022							
I	-	14	-	14	12	9	03
Ii	-	-	16	16	15	13	02
Iii	-	-	17	17	16	15	01
D.2023							
I	18	-	-	18	15	14	01
Ii	-	-	20	20	17	15	02
Iii	-	-	18	18	18	17	01

Source : information record of institute's head teacher

There existed three prong approaches to educate the present setup of children ,across gender namely,

(i) Govt institutions (the schools), if we take federal Govt system , the F.G Boys /Girls schools (Primary, middle , Secondary (High Schools and higher secondary schools)

(ii) Private registered schools under Private Educational Institutions Registration Authority (PIERA) Isbd .

(iii) Academies run by educational scholars (teachers) the home tuition centres

This research based article was conceptualized based on the fact that (a) those students who could not admissions in FG schools ,in class 8th ,onwards for want of 05-6% marks or sometimes 8-10% less marks lower than a set of target of 70% marks in majority of schools ,(b) such students could also be admitted due to private school's merit of 65-70% marks as target whereas the students (e) in the range of 60-65% or little less ,remain deprived of their eagerness to enhance their academic carriers ,this necessitates the importance of teaching academies .

Another privoted role of such academies becomes eminent in accommodating students on a very low tuition fee as compared to private sector educational institutes /private schools (Admission+ tuition+ Paper-money+ Uniform etc). Whereas these academies are run only on a very nominal tuition (only on monthly basis) no uniform ,no paper money, ,no admission etc.

Still another important factor is that student instead of wasting their time ,the evening time in games and leisure wandering and/or playing games in net cafe's or home computer games etc.As well as not assisting parents with their business ,and/or such students can do some work /economic activity in day time and evening for education getting enhanced.

Instead of Govt. schools ,where the enrolment is 60 students (always a,b and c,sometimes d), The class teachers hardly can give attention to every single student some of the back benchers remain deprived and/or might copy the class –work ,from their desk fellows and/or class fellows ,while there is 100%attention given to each and every student ,across gender , which attracts other students ,even from govt. schools and/or private schools in these academies..

This study was thus planned to access the working and progress achieved by comparatively small educational setup , the academies where home-tuition are practiced , in streets, Mohallas and towns and are getting recognized in the educational sector of the country.

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DISSEMINATION OF LIVESTOCK PRODUCTION TRAINING SKILLS FOR RURAL DEVELOPMENT IN PAKISTAN

Muhammad Hafeez

ABSTRACT

This research cum academic informative article envisages the training component of livestock Production ,comprising large ruminants (cattle and buffaloes), small ruminants (sheep and goat) and poultry in rural areas of country , with special reference to rural Rawalpindi. The training aspect deals with a project based skilled workers production /trained manpower at (a) Officer's level Veterinary officers (VOs), Livestock Production Officers (LPOs) while (b) Farmers level trainings of a month duration will be undertaken. He training comprises lecture material (based on six books (i) thru-(vii) and practical work (weekly) on feasibility based establishing Livestock farms to officers to become trained personnel and future trainer of trainers .(TOTs).Simultaneously the farmers also involved in imparting similar training programs .(both theoretical based on six training manual (TM) (i) thru(vi) supported with practical. The approach is mainly in the light of objectives towards Rural Development and poverty reduction .The training text books and training manuals will become as asset of these trained manpower in the future.

Key words: Training skills livestock production rural areas Livestock economics and business management

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INTRODUCTION

During the year 2021,two books were written and got registered with national Libraries of Pakistan ,Islamabad, Namely (a) Rural Development and poverty reduction Approaches in Pakistan –Regd.ISBN.978-969-9219-15-3 and (b) Livestock Economics and Business Management Approaches ,in Pakistan –Regd.ISBN.978-969-9219-16-0.These two books were recommended by the editorial board (EB) of Pakistan Journal of Livestock Sciences Pak.jlsc to be included in any forth coming Training programme and be included for MSc (Hons)/M.Phil-Livestock Management in of the universities of the country or obtained. The author and writer of the Books Dr.M Hafeez was also advised to submit one article each on the various chapters of these books one by one. This is the first endeavour in this respond.

Livestock Production is Alhamdullilah ,increasing with a moderate pace of 2.5-2.7%, per year, with poultry increasing @08-10% yearly .The population of cattle was recorded 51.50 millions and 42.4 millions buffaloes while 31.6 millions sheep and 80.30 millions goats.The milk produced was recorded as 63.68 millions tons where as 4.95 millions tons of meat was recorded.(This included 0.075 millions tons of mutton and 1.809 million tons of poultry meat) for the year 2020-21.The most recent actual figers of Livestock are now available for the year 2021-22 which indicated cattle populations as 53.4 millions ,buffaloes 43.7 millions, sheep

- President LDF, Isbd

31.9 and goats 82.5 millions numbers .The milk production was recorded as 65.74millions tons while meat produced was 5.219 million tons. (This included 0.78 million tons of muttons and 1.977 millions tons of poultry meat in the country, as recorded by Imtiaz Ahmed (2021-22) documente3d in the Pak.Economic Survey Report,Gop,Isbd.

The Human population of the country was 211 millions in the year 2017 as per National Cencus Organization of Pakistan (NCOP) -2017 which stood as 220-2212 million as in ,the year estimated figures in the year 2022 (with a growth rate of 1.9% per annum) Thus more animal proteins were needed for our domestic utilization such as milk ,meat and poultry (both eggs and poultry meat) .So, 18,000-20,000 large animal farmers and 5000-6000 small ruminant farmers ,together with 3600 poultry farmers (both 2800 broiler farmers and 800 layer farmer and 29-30 breeder farmers) remained involved in producing milk, meat and eggs in the country ,as well as producing live animals (cattle buffaloes ,sheep/goat and poultry birds) .The present human population involved in livestock production sector have been increased from 1.35 million (as was previously advocated during 2019-20: documented everywhere to more than 1.38-1.40 millions) vide the two projects under Prime Minister's Special initiative (PMSI) of Livestock Production towards (a) growing more cattle calves and Rural Poultry Production ,450 PMSI Backyard Poultry farmers have been registered in addition to the previously existing ones and at least 0.05 million people ,estimated are added to the old –figures ,thus now it can be said that almost 1.40-1.4 million people are directly involved in livestock and poultry production (This is Farming Community) whereas now 3.5-3.6 million people are directly or indirectly involved in Livestock business (trade and sale) of Livestock Production ,indirectly.

Since 126 Agriculture Business Countries (ABCs) have been established during 2021-22,only in Punjab Province, and business centres will just be introduced in whole the country and Livestock Economics and Business will be a part of it. Approaches are thus needed to impart Livestock Economics and Business Management.(LEBM) training skills to farmers and officers also at levels (Veterinary Officers–(Research) (VOs)-(R) and Livestock Production Officers (LPOs) with recently developed taught–material" supported with practicals ,for at least a months'duration ,to produce trained man power to be added to our Human Resource Development (HRD) in the country in livestock sector which will ultimately lead to self-reliance resulting in Rural Development (RD) and poverty reduction ,in the country .

MATERIAL AND METHODS

This article is developed ,involving Training material both (i) Text Books and (ii) Training Manuals recently developed by the Author :consulted continuously ,developed and got registered for ISBN in the National Libraries of Pakistan (NLP) Islamabad.

i. Farmers Training Manuals:-

These are the different manuals for farmers :

(a) Animal Health and Production Workers Training Manual (AHPWTM) -2021-URDU
(b) Participatory Training Manual for Rural Development workers URDU-2015
(c) Participatory Training Manual for Rural Development –URDU
(d) Poultry Industry In Pakistan URDU-(2016)
(e) Boriler Production URDU-(2016)
(f) Layer Production URDU-(2016)
(g) Dairy Farming –URDU-(2016) Management Approaches in Pakistan (2021)
(h) Production in Pakistan (2011)

ii- Officers (VOs) /LPOs Training Books

(i) Rural Development and poverty Reduction Approaches in Pakistan(2021)
(ii) Livestock Micro-economics
(iii) Economic Losses due to Livestock Diseases(2014)
(iv) Investment in Livestock sector A Real Business in Pakistan
(v) The Economics and its development with special Reference to Agriculture and Livestock (2015)
(vi) Livestock and its Allied Industries of Pakistan

Training Program –Plan of Work

The proposed training program as per plan of work of a project proposal (PC-1), Under consideration ,in the Federal Govt. envisages to train 30 officers in every three months of Vety, Officers category (VOs) (R) and LPOs and 120 trained officers per year to provide them theoretical and practical knowledge on Livestock Economics and Business Management (LEBM) Approaches to equip them with new business management technologies ,with weekly practical on feasibility preparations and last week as involvement in Research and Development (Rand D) with a modal approach of Pakistan journal of Livestock Sciences (PJLSc) ,An ISSN encoded Online journal of (ISSN-2521--8697) and print –ISSN-2077-933x also encoded with Scientific Indexation Services (SIS) od US –ID 7465.

This strategy will provide an opportunity of such trained officers became Training of Trainees (TOTs) and also to become Resource Persons (RPs) for training others in their areas and an asset added to Human Resources Development (HRD) in the country .

Dissemination of Livestock (LEBM) skills

This aspect was neglected ,in many training programs as pointed out by academia ,the researchers and planners , in the country together with livestock Progressive Farmers (LPF) .Hence this multidimensional approach will help assist Newly Interested Investors in Livestock Sector (NIILs) and /or Beginner Livestock Farmer (BLF) , thus a separate training program has been chalked out for both the categories

The second category is Farmers and Veterinary Assitt (VAs) to go on a Month's Training based on Training Manual afore –mentioned 5-6 and will also undergo a Month's training.

CREATION OF JOB ON SELF RELIANCE BASIS

(i) Construction of Shed (involving people)

For housing 06 ,12 or 24 cows/buffaloes , a shed is constructed , mainly 10 marlas (50x50sqft) covered, with additional 02-03 kanals of open yard .This involved 02 mason +04 labourers for atleast.9-10 days reaching the beams ,(upto 12feet high), concrete shuttering and iron-fixing people required –who will get job for this work.

(ii) Bringing livestock dairy animals

One truck load is sufficient for 06 cows/buffaloes (with calves) and transported to livestock farm-(Transporter job created)

(iii) Gawala's job created

One gawala for six cows/buffaloes being sufficient ,for Rs 15,000/-pm, in rural – remote areas (villages) and Rs.18000/- pm, very close to urban areas ,15-20km from towns and cities and Rs18000/-to Rs20,000/-pm rural area touching towns and big cities.(15-20km and away).In third year's operation one additional Gawala is appointed .

(iv) Milk man's job created

The biker or vehicle operating for milk collection from the dairy farm (on farm gate price) and transporting it to milk shop, in the nearest town.

(v) Commercial dairy plant (milk collecting people)

At least 16-17 commercial Milk Processing Plants (MPPs) have already hired bikers and milk collecting van's people-regularly working on sustainable basis- This has created job for many hundred people. In commercial dairy milk processing plants 100-150 labourers, mechanics, packing and transportation people are involved on an av .with 3-4 persons in the management +Quality assurance etc.

(vi) People involved in retail

The following jobs are created in a central milk sale point in any village/town , model town ,city Abadies (door to door sale)

(i) Gawala with bikes
(ii) Owner of milk sale point
(iii) One sale man (some times two)with washing and cleaning the milk utencils .
(iv) Yogurt making (overnight),
- 200-300kgs with 20% extra cost on sale
- 1000-2000 liters of milk sold per day ,sometimes per time(morning or evening)

(vii) Revenue generated

With establishing, one dairy unit/dairy farm and transporting etc the following revenue is generated through

- Electricity bills
- SNGPL bills ,petrol +diesel
- Telephone bills

LIVESTOCK ECONOMICS AND BUSINESS MANAGEMENT APPROACHES IN TRAINING PROGRAM

A comprehensive theoretical and practical approach is involved in the proposed training program /project.Most of the newly emerging scientific advanced economics and business management ,computer mediated skills and techniques have been incorporated such as :-

(a) E-commerce, (b) E.business ,(c)E.Accounting .(d) Online Trading with easy paisa /money transfer (e) market intelligentia, (f) the national and international tariffs ,(g) The WTO regime, (h) The Animal Quarantine Rules and Regulations, (i) import and export policies, (j) bank loaning/credits available. (k) the actual implementation of four stages of Production (l) The margins, (m) the whole sale and retail trade secrets, (n) commercialization of AHCs and (o) no compromise on vety drugs and medicines used in animal and health management of live animals etc.

TRAINED PERSONNEL AS SOURCES OF HRD

As we can see in such training both officers and farmers get trained and become rich resources for Human Resource Development (HRD) in the country and all livestock domains of Livestock will be backed up with such trained manpower , and this will bring a livestock Production and animal health change rather a revolution in the coming few years.

BENEFITS OF THIS PROGRAM

(a) Thirty Veterinary Officers (VOs)/ Livestock Production Officers (LPOs) will be trained in one month's (30 days) training program.
(b) In four such trainings 120 officers get trained in one year and become Trainer of the trainers (TOTs) in the country.
(c) Thirty farmers /interested/interested persons will simultaneously be trained in one month training program and in four such trainings 120 trained farmers will be added into the technically skilled manpower.
(d) The subjects of Livestock Industry ,(ii) Livestock Economic Business Management (LEBM) , (iii) Rural Development and Poverty Reduction ,(iv) The Economics and its Development with , (v) Livestock Micro economics and (vi)Economic losses due to Livestock Diseases ,(vii) Investment in Livestock Sector will be taught in lectures (3-4 lectures per day) with one practical of 2 hours.
(e) Weekly one to four hours practical work will be still strengthen their knowledge and develop confidence.
(f) The course book will become a potential asset for each trained officer ,to further disseminate their knowledge to others (officers ,farmers and para Vets).

(g) The Libraries of each 05 nominees from Punjab , Sindh ,Balochistan ,KPK, AJK, Federal Area ,Islamabad and NAs/GB will be equipped with this recent literature .

(h) The officers will become practically aware of all ABCDs of the feasibilities for establishing Livestock Farms, with updated status.

(i) A mediocre amount of pocket money will support the trainees per day (but TA/DSA) will be arranged by their respective govts, as the nominees will be employees of respective Livestock and Dairy Dev: Deptts of the Provinces.

(j) Simultaneously the study tours /Visits of the Deptts and Research Laboratories With Livestock Products ,processing plant units including feed mills ,will broden the horizons of the Trainees.

(k) The farmers and interested persons also from Provinces and Federal Areas will get similar academic and practical benefits and make them more competent.

(l) Some of the farmers might strengthen their own farms and in the area, as well

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THE IMPACT OF ORGANIC FERTILIZER (THE FYM) TOWARDS DECREASING USE OF CHEMICAL FERTILIZERS AND INCREASED FOOD GRAIN PRODUCTION , IN PAKISTAN

Muhammad Hafeez

ABSTRACT

This research article provides an appreciable approach is encouragly utilizing the organic fertilizer ,the farm yard manure (FYM) although a steady but sustained effort in reducing the direct cost of chemical fertilizer (the urea ,the Di Ammonium Phosphate (DAP) and others).Being used 2-3 bags of 50 kgs each, per Aore of fertile-agricultural land , in the country .As per recent updates ,a minimum of 1.44 million tons of FYM and 0.43 millions tons of urine is produced by cattle , buffaloes , sheeps and goats together with poultry litter 0.408 trolleys equalling 0.0408 million tons (cumulatively 1.1918 million tons) is produced on an average .Although most of the farmers neighbouring dairy sheds /sheep goat pens and poultry farms are utilizing this organic fertilizer but this is a slow and steady process and sustained progress to be achieved is more than 50 years or more to cover 50-60% of the agricultural land reducing cost of chemical fertilizer together with the natured fertilized soil (not addicted to chemical fertilizer –each year) and leading to increased food grain production of other crops as well as fruit and vegetables .This shall also reduce the possible human ailments attributed to chemical fertilizers .The paper ends with encouraging message to the farmers and policy guideline for Agrarian reforms to the stake holders.

Key words: Organic fertilizer use of FYM in Agri:fields Pakistan

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INTRODUCTION

As per available recent information , the utilization of chemical fertilizer is increasing by the agricultural farmers (Agri-farmer) in both Rabi and Kharif season , in the country .The fertilizers namely (a) Urea off-take was 3.2 million tons and (b) Di-Ammonium Phosphate (DAP) off-take was 0.889 millions tons during 2021-2022 in Rabi season while in Kharif seaon of the year ,2022,the off take of (a) Urea was 3.5 million tons..This quantity (Qnty) is increasing year after year ,as can be seen in the table No-01 below,PESR (2021-22).

The utilization of both (a) Urea and (b) DAPin one ACRE (08 Kanals) of (Agri-land) in on an average (av.) two bags @ Rs.6000/- and (b) DAP three bags @ Rs3600/- (2021-22 rates) which is directly increasing the cost of only one cash crop the staple food grain the wheat even in irrigated land as we discuss in Pakistan for instance in Barani (Arid-Agricultural land (AA land), the utilization of both the chemical fertilizers (i) by DAP and urea costs increases.

- President –LDF-Islamabad
- CEO-Farsalan Consultancy Services(FCS)-Isbd

Effermentation Microbiological (E.M) Technology:

This technology has also been introduced , 3-4 decades earlier, implementation in early eightees and widely documented in journals of repute and in various projects reports. A specific Quantity (Qty) of EM bacterial growth is introduced to the small drainage system irrigating the Agri-land and has been playing positive role in reducing the cost of chemical fertilizers and protecting valuable land from addiction of chemical fertilizers.

LITTLE REVIEW

Work done at home and abroad on organic fertilizer used in Agri-land , for various grain crops and other cash crops , with positive results is briefly summarized below:-

Yu Cen et al (2020) examined using organic fertilizers to increase crop yield, economic growth, and soil quality in a temperate farmland. They used a constant total N application base rate to conduct a two-year field experiment comparing the effects of three organic fertilizers (Rapeseed Meal (RSM), Soybean Meal (SBM), and Cattle Manure (CM)) on the crop yield, economic growth, and soil quality of a winter wheat-summer maize rotation system. Winter wheat and summer maize in rapeseed meal treatment (RSMT), Soybean Meal Treatment (SBMT), and cattle manure treatment (CMT) showed yield increases of 161%, 299%, and 256%, respectively, when compared to no organic fertilizer treatment (CK) ($P < 0.05$). The annual net incomes of SBMT and CMT were 1.46 and 1.42 times higher, respectively, than RSMT. Compared to the results of the CK group, RSM, SBM, and CM stimulated the soil physically, chemically, and biologically. They found the highest soil macroaggregate proportions, soil Organic Matter (SOM) levels, Total N Introgen (TN) levels, and Phospholipid Fatty Acid (PLFA) levels in SBMT. The highest soil pH, Microbial Biomass Carbon (MBC) levels, and Microbial Biomass Nitrogen (MBN) levels were observed in CMT. They used a Soil Quality Index (SQI) to evaluate soil quality. After the two-year fertilization treatments, calculated the SQI using a minimum data set (MDS). They used SOM levels and actinomycetes quantity for the MDS properties. The SQI values were significantly different across the four treatments, with the highest values occurring in SBMT, than CMT and RSMT. In conclusion, SBM and CM were found more effective than RSM at maintaining crop yield, economic growth, and soil quality.

Shirani et al (1987) found the Effects of Farmyard Manure (FYM) and tillage systems on soil physical properties and corn yield in central Iran . Tillage management and manure application were among the important factors affecting soil physical properties and crop yield. A 2-year field experiment was conducted on a silty clay loam soil (fine-loamy, mixed, thermic Typic Haplargids). Effects of two tillage systems (moldboard plowing as conventional tillage (T_1) and disk harrowing as reduced tillage (T_2)) at three farmyard manure rates (zero (M_1), 30 (M_2), 60 (M_3) Mg ha^{-1}) were studied on the soil physical properties and corn (*Zea mays* L.) yield. The experiment was carried out in split block design with three replications. Organic matter (OM) content, Bulk Density (BD), saturated hydraulic conductivity (K_S), aggregate Mean Weight diameter (MWD) and Dry Biomass Yield (DBY) were measured after harvesting in the second year. Manure application increased OM on both the row and inter-row tracks significantly. Manure application rate of 60 Mg ha^{-1} increased MWD (0.33, 0.40 and 0.75 mm for M_1, M_2 and M_3, respectively) at the 0–5 cm soil layer, but the effect was not significant below 5 cm depth. Adding manure significantly decreased soil BD on the row tracks (1.39, 1.22 and 1.17 Mg m^{-3} for M_1, M_2 and M_3 treatments, respectively), but did not have any significant effect on the inter-row tracks. Hydraulic conductivity was improved by manure applications both on the row and inter-row positions. Manure treatments M_2 and M_3 increased DBY compared to the M_1 treatment. Although moldboard plowing increased the depth of root penetration significantly (43 cm for T_1 and 30 cm for T_2), the effect of tillage systems on yield and soil physical properties was not significant.

Hemmat et al (2010) found out the Long-term impacts of municipal solid waste compost, sewage sludge and farmyard manure application on organic carbon, bulk density and consistency**.** Increasing Soil Organic Carbon (SOC) is vital in terms of improving the soil physical and mechanical properties related to conditions for tillage and traffic, and to crop development in arid and semiarid regions. This study was conducted to characterize the SOC, bulk density (BD) and consistency limits (shrinkage limit, SL; plastic limit, PL and liquid limit, LL) of a calcareous soil (Typic Haplargids) in relation to the seven-year application of manures (municipal solid waste compost, MSWC; sewage sludge, SS; farmyard manure, FYM) at three rates (25, 50 and 100 Mg ha^{-1}) and one inorganic fertilizer (NP) management in irrigated wheat–corn rotation. There was also a control treatment (UNF), i.e. without any organic and/or inorganic fertilizer addition. The SOC, BD, consistency limits, plasticity index (PI = LL − PL)

and friability index (FI = PL − SL) were measured for the soil taken from the 0–20 cm layer. The SOC in SS, FYM and MSWC treated soils increased on average by 2.5, 2.2 and 2 times of the amount in the UNF, respectively. The BD varied from 1.03 to 1.37 Mg m^{-3}. The lowest BD was recorded in 100 Mg ha^{-1} application rate of manures, whereas it was the highest in NP treatment. The PL and LL varied from 19% to 30% and 30.1% to 40.9%, respectively. The PL for the SS treated soil was significantly higher than the FYM and MSWC treated soils. However, the LL and PI were not significantly affected by manure type. The SL and PL were increased significantly but in small percentages by the application of NP as compared with the UNF. The optimum water content (WC) for tillage (i.e. 0.9PL) as well as the workable WC range (i.e. FI) was the largest in the soil amended with 100 Mg ha^{-1} of SS and the smallest in the UNF. There was a significant relationship between the application rate of the manures and the SOC. The positive relationship between SOC and SL, PL, LL or FI was found to be significantly linear whereas the relationship with the soil BD was significantly negative. For soils amended with SS which the data on Cation Exchange Capacity (CEC) were available, the relationships of PL and LL with CEC were significantly linear as with SOC. This study showed that the manures improved soil WC ranges at which the optimum conditions for tillage and traffic can be obtained. Moreover, the improvement depended on the application rate of the manures.

Malie et al (2017) found the importance and profitability of farmyard manure application to an organically managed crop rotation .The benefit from organically cultivated crops was strongly related to the maintenance of soil fertility based to a great extent on the soil organic matter content. Farmyard manure (FYM) was one of the more valuable organic fertilizers maintaining soil fertility in the systems of alternative agriculture. To investigate the influence of FYM from several aspects, a field experiment was carried out on a sandy loam Albic Stagnic Luvisol (LVab-st). A five-year crop rotation (potato → oats → barley → clover and rye) was organically managed without manure (ORG) and with manure (ORGFYM) treatments. 8.3 t ha^{-1} of organic dry matter as solid cattle farmyard manure was spread prior to the rye stubble ploughing for potato grown the next year. For the both treatments, the whole mass of clover and straw was ploughed into the soil. During a seven-year experimental period, no significant changes were found in the soil organic carbon (Corg) content. For the ORG treatment, a significant ($P < 0.05$) decrease in potassium, copper and boron contents in the soil occurred. The application of FYM significantly increased the contents of phosphorus and magnesium in the soil. Under the

influence of FYM, the yields of potato, oats and barley increased by 52, 23 and 10 %, respectively; this allowed us to gain an extra 30 GJ metabolizable energy during the crop rotation. The economic calculations showed that the application of farm own manure was profitable even if the yield was sold as a non-organic product. If the yield was sold as an organic product, it would be profitable if the transportation distance of purchased manure to the fields is up to 15 km.

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FEASSIBILITY BASED REARING CATTLE CALVES (C-CALVES) FOR SACRIFICIAL PURPOSES : A COMPARISON OF RWP-ISBD RURAL AND PUNJAB –RURAL-(FOR GROWING 2 AND A HALF YEARS)

Mohsin Kiyani[1] ,Tabinda Khwaja[2] and Muhammad Hafeez[3]

ABSTRACT

This feasibility cum managemental articles provide bare minimum factual figures (based on prevailing market rates) in growing /rearing young cattle calves (c/calves) for sacrificial purposes, (i) one year ,(ii) two years and , (iii) two and a half years, at Rawalpindi-Islamabad (Rwp-Isbd) rural areas as compared to central Punjab and Southern Punjab. The summarized cost of growing /rearing A-10 c/calves ,B-20 c/calves and C- 50 c/calves for the period 2021,2023 and projected to 2024 came to PKRs0.184 (A), for (B)=PKRs0.138 and for (C)PKRs 0.152 millions each ,with an added margin of Rs20,000/- for each growing c/calves in central and Southern Punjab: whereas growing such c/calves in Rawalpindi rural areas the cost of grown c/calves came to A=Rs0.30,B=Rs0.225 aand for C=Rs0.256 millions each (including a safe margin of Rs20,000/- in each . The article also includes market rates of (a)green fodder ,(b)dried hay (the wheat straw bhosa) ,(c)gawal's salary ,(d) Vety Medicines with ,(e) Animal Health Care Services (AHCS)as well as (f) Miscellaneous expenditures for the (i) first six months (grown up to the age of one year) ,(ii) for the second year management and (iii) for 3rd year's growth (up to the age of 3½ years .The conclusions indicates that such efforts are economically difficult in Rwp-Isbd but with little margins (and market rates increased as compared to central and southern Punjab where rates of green fodder wheat straw ,gawala's salary and AHCs are comparatively low. The farmers and animal lovers are still encouraged ,as recommended.

Key words : cattle calves growing for sacrificial purpose Rwp-Isbd central-southern Punjab informants Pakistan

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INTRODUCTION

Livestock Sector's administration has been providing facilities through farmer-friendly plicies ,approved by the federal Govt. Livestock Wing, Ministry of National Food Securities and Research (MNFS and R) as well as implemented in the Provinces ,in terms of import of seed and of proven sires of cattle, from different countries , as well as feed pre-mixes and recent equipments for automation in livestock farming (livestock wing and ECNEC-2023), in continuation with previous policies ,the livestock sector is showing positive growth per year (Pak Economic Survey Report 2021-2022) The recent information gathered from three sources(i) Pak Statistical Bureau(PSB)2021-2022 ,(ii) Pak, Economic Survey Report (PESR) 2021-22 (iii) The Livestock Development Foundation, Islamabad(LDF)Regd ,(iv) Info-

- Project Manager –PMSIL-Fattering calves,LDDB-MNFS and RGop-Isbd
- Project Manager –PMSIL-Rural Poultry-LDDB-MNFS and R-Gop-Isbd
- President LDF-Isbd and CEO-FCS-Isbd

L/Stock(2022-23) which indicated liverstock share in agriculture as 61.89% and its share in GDP as 14.04%with a positive Livestock Growth of 3.26% (as compared to 2.38%(the previous year -2021-22). The livestock strength simultaneously came up in millions as cattle =53.4, buffaloes =43.7,sheep 31.9,goat=82.5, camel 01.10,horses 0.4,asses=5.7 and mules 0.2, respectively .

Out of both cattle and buffaloes (97.1%) milk producing females (lactating ones) produced 65.74 million tons of milk (gross production)providing 53 million tons of milk for human consumption. Whereas both cattle and buffaloes (slaughtered only) produced 2.46 million tons of beef while 114.4 millions sheep and goat (slaughtered only) produced 0.78 million tons of muttons .If poultry meat amounting to 1.97 million tons is added the total meat produced during 2022-23 comes up to the tune of 5.21 millions tons ,as documented in the above refered sources.

Earlier approaches were made in published articles No-127,PJLSc-Vol-XIV,2022, entitled “quick Survey Report of LDF-updates (info-L/stock) on cost of sacrificial animals feed and fodder for three recent years” encompassing data of 2020-2021,as well as earlier similar documented approaches way back in 2009,till 2019,a regular feature of the LDF activities provided and also detailed feasibilities, included in text books with a recent one entitled “Livestock Economics and Business Management approaches in Pakistan” (2021) by the FCS;supported with “Developing an economical and diary farm of 06 buffalloes/cows in rural areas of Rwp-Isbd ” article No-136,PJLSc-Vol XIV 2022.The attention is invited to the very recent efforts on “Price Hike in animal Feed /poultry feed ingredients in local markets :amidst-Petroleum price increases ”affecting costs of transportation of sacrificial c/calves from southern and central Punjab ,to upstream need attention of farmers .

This approach was endeavoured in demanded requests of beginner farmers ,the interested –ones in producing/rearing cattle calves (c/calves) for 1-2 years ,either maintained at Rwp-Isbd rural areas or in rural southern /central Punjab.

MATERIAL AND METHODS

The following information was best utilized for producing growing young c/calves(ycc) of 6-7 months ,purchased and grown reared up to the age of 2½ years and up to the age of 2½ to 3 years, as dondas:-

i. Information on Livestock population(info-L/stock) of LDF-Isbd2021-2022

ii. Pakistan Bureau of Statistics ,(PBS),Gop,Isbd "2021-2022

iii. Livestock Wing ,MNFSand R, Gop,Isbd,

iv. Pak.Economic Survey report 2021-2022 Agri-livestock,chapter

RESULTS AND DISCUSSION

This effort made on estimated calculations was splitted into different categories and results thus obtained have been presented as under:-

(A) **Cost of young cattle calves (ycc) with transportation** :-

The initial cost of ycc's, at the age of 5-6 months with transportation for categories of I-10# came up as Rs0.4 millions , if shed building is available and or open yard barbed wiring can be saved which comes to the tune of Rs.85, Rs.92, and Rs 1.78millions for the three categories of sheds of one and two kanals(k) of land ,as presented in table No-01.The shed equipment is also shown to cost Rs.03,Rs..04, and Rs.08 millions respectively ,hence the total initial expenditure /investment with the cost of ycc's transportation and construction of shed and barbed –wiring for I,II and III categories estimate comes to Rs1.3, 1.82 and 3.9 millions ,table No-01

Table No-01 cost of cattle calves with transportation and shed building –Rwp-Isbd ,Rural Areas 2022 onwards (Rs in millions)

	Particulrs	Cost of single c/Calves	10x	20x	50x
i	Initial cost price	@Rs35-40000/- each	0.40	0.80	2.00
ii	Transportation from central Punjab	6000/-	0.06	0.06	0.100
iii	Shed building 00k,01k,02k		0.80	0.80	1.60
iv	Open yard (barbed wring +gate)		0.06	0.120	0.18
v	Shed equipment (hand trolly and spades broom etc and ropes		0.03	0.04	0.08
	Total		1.30	1.80	3.96
	Less open yard		-0.85	(-)0.92	(-)1.78
	Av cost of c/calves		0.45	0.90	2.18

(B) Operational and Miscellaneous expenditure

This expenditure includes (i) gawala's salary (ii) cost of vety, medicines and vaccines ,together with (iii) Animal Health Care Services (AHCs) and (iv) miscellaneous expenditures on utility bills ,kitchen ,SNGPL and etc. Which cumulatively come to the

estimated figers of Rs0.41, Rs0.72 and 2.05 millions for (a)six months ,(b) one year (c) next year for I,II and III categories ,as detailed in table No-02.

Table No-02 Operational and Miscellaneous Expendure on c/calves (2022 onwards) for six months ,one year and next year

	Particulars	Cost for 6 months	Cost for 1 year	Next year	Total
(a) I	Gawala salary@Rs15000/-for 10xpmc/calves	0.09	0.18	0.18	0.37
Ii	For 20xc/calves@Rs15000/-each=(30,000/-pm(two)	0.18	0.36	0.36	0.90
Iii	For Rs50xc/calves @15000/-eachx03 gawalas	0.27	0.56	0.56	1.39
(b)	Vety Medicine	• 10 0.04	0.07	0.07	0.18
	Vaccumes+ AHCS	• 20 0.07	0.08	0.08	0.23
		• 50 0.08	0.08	0.08	0.24
(c)	Miscellaneous	• 10 0.03	0.06	0.07	0.16
	(kitchen ,utility bills /SNGPL,meeting	• 20 0.04	0.07	0.08	0.19
	etc.	• 50 0.06	0.08	0.08	0.22
	Total	**I10 0.16**	**0.35**	**0.83**	
		II20 0.29	**0.51**	**1.45**	
		III50 0.41	**0.72**	**2.05**	

(C) Feed and Fodder expenses

This includes the cost of green fodder ,dried hay (wheat straw/Bhoosa) and concenterate conc.feed on daily basis as well as for six months ,one year and for another year for I,II and for III categories ,which estimatedly appear as Rs.1.98,2.22 and 8.90 millions, for the period of 2 ½ years ,(table No-03)

Table No-3 Feed and fodder expenditure on c/calves fatten for sacrificial purpose for 2 and half years, in Rwp-Isbd Rural areas

			10x	20x	50x
a	(i)	Green @20kg200x180 days	0.36	0.72	1.60
	(ii)	For one year			
	(iii)	Next year 10% increase	0.72	1.44	3.20
		Sub total	0.80	1.60	3.50
			1.88	3.76	8.30
b	**Dry hay/wheat**				
	(i)	10 kgs for six months	0.36	0.72	1.60
	(ii)	For one year			
	(iii)	For next year	0.72	1.14	3.20
			0.80	0.16	3.60
c	**Conc feed** 500gm@ Rs.55/-and 550x180 days				
			0.10	0.20	0.50
	Sub total		**1.98**	**2.22**	**8.90**
	Grand Total		**2.86**	**5.98**	**17.20**
	Cost on each		**0.386**	**0.299**	**0.340**

(D) Cumulative Expenditure for growing YCC in rural Rwp-Isbd

While taking into account each of the (i) initial expenses (ii) operational cost and (iii) feed and fodder in growing ycc in rural Rwp-Isbd based on retail markets rates

,the cumulative investment expenditure for 2022-23 for a period of 2 ½ years comes to categories I,II and III as Rs.5.15(say Rs6.00); 8.33 and 21.41 as per simple statistical calculations and thus each calf (now grown to the age of up to 03 years comes to Rs.0.51, 0.416 and 0.428, as laid down in table No-04.

Table No-4Cumulating expenditure investment for growing /fattening c/calves for sacrificial purpose up to three years of age

	10x	**20x**	**50x**
1st year	1.30	1.82	3.96
2nd year	0.83	1.45	2.05
3rd year	3.86	5.98	17.20
Total	6.00	9.25	23,21
If shed and open yard available (less)	0.85 (-)	0.92 (-)	1.78 (-)
Total	**5.15**	**8.33**	**21.43**
Cost of each	**0.51**	**0.416**	**0.428**

(E) Home made concentrated feed (con/feed) for rearing sacrificial ycc (2022-23)

As per prevailing market rates , the minimum possible cost of home made con/feed comprising items (i) thru(viii) which comes to Rs.100/- per kg and recommended quantity in 500gms(1/2kg) daily for such calves ,in addition to green fodder and dried hay etc.displayed in table No-05.

Table No.05 Economical conc: feed formulation for growing fatteming cattle calves/c-calves for sacrificial purpose

S.no	Feed ingredients	Weight (Kgs)	Prevailing rates (Rs)	Total cost (Rs)
I	Maize crushed	20	80/-	1600
Ii	Wheat crushed	15	110/-	1650
Iii	Wheat bran	20	80/-	1600
Iv	Sugar cane pith or bagasse	20	60/-	1200
V	Mollasses	08	100/-	800
Vi	Sarson oil seed cake	10	140/-	1400
Vii	Mineral mixture	06	300/-	1800
Viii	Commom salt	01	20/-	20
	Total	**100**		**10,070**

Cost per kg =100.70

NB-costly item (Rs be replaced with cheaper available feed/fodder

Daily feeding 500gm (1/2kg to each c/calf)

(F) Cost Estimation of rearing yccs in southern and central Punjab (2022-23)

As understood the cost of growing yccs in Rwp-Isbd twin cities rural areas appear expensive with less margins due to retail market rates of (i) feed and fodder (ii) increase in the salary of gawala's ,(iii) Vety medicines and AHCSc with

(iv) transportation cost as well as (v) miscellaneous expenditures etc.Such yccs when grown in rural southern Punjab and rural central Punjab , the farm gate price (FGP) of categories I,II and III become Rs.0.86,1.34 and 4.20 millions with a plus margin of Rs.10,000/- each and the category wise price of each yccs(now grown to the age of 2 ½ years to 3 years comes to Rs0.86,0.172 and 0.084 millions as displayed in the table No-06

Table No.06-Cost estimation of rearing /fattening c/calves for sacrificial purpose in rural areas of central and southern Punjab ,(in millions PKRs)

Sr.No	Total cost investment	10x	20x	50x
I	Initial cost of calf	0.30	0.60	1.50
Ii	Cost of feed			
	• Green @Rs100/day(20 kgs each 180 days	0.18	0.36	0.90
	• Wheat straw@Rs50/- (55days/days	0.90	0.18	0.45
	• Subtotal	0.27	0.54	1.35
Iii	Vety.Med and AHCS	0.60	0.07	0.30
Iv	Gawala Salary Rs10,000/-per month	0.60	0.12	0.30
V	Miscellaneous Shed equipments Leverus +Kitchen	0.07	0.08	0.25
	Subtotal	0.70	1.41	3.70
	Upto six month (i+ii+iii+iv+v)	0.10	0.20	0.50
Vi	Margins@Rs10,000/-each			
	Total cost	0.80	1.34	4.20
Vii	Farm gate price of (FGP) of each	0.08	0.08	0.084

Table No.07 Economic impact of rearing /fattenin c/calves for additional two years in central and southern Punjab

Sr.No	Particulars	10x/I	20x/II	50x/III
I	Cost after one year @Rs80,000/-	0.08	1.64	3.20
Ii	Feed and fodder(one year)	0.57	0.60	2.70
iii	Gawala salary 1x,2x@Rs10,000/- and 3x	0.12	0.24	0.30
iv	Vety Med &AHCS miscellaneous	0.15	0.18	0.40
V	**Sub.total**	**1.64**	**2.36**	**6.60**
vi	2nd year margin@Rs20,000/- each	0.20	0.40	1.00
vii	**Total cost**	**1.84**	**2.76**	**7.60**
viii	**FGP for each**	**0.184**	**0.138**	**0.152**

Table No.08 cost estimation of growing rearing c/calves for sacrificial purpose for the 3rd year (already grown upto 2nd year)

Sr.no		10x	20x	50x
I	FGP (now) after 2 years efforts @Rs0.184/-each	1.84	2.76	7.60
Ii	Feed/fodder for 3rd year (10% increase over 3rd year)	0.62	0.70	3.10
Iii	Gawala's salary 01,02 03@Rs 15000/-pm	0.18	0.36	0.54
iv	Vety Med+ AHCs and miscellaneous	0.18	0.20	0.58
	Subtotal	**2.80**	**4.02**	**11.82**
v	Margins @Rs20,000/-each	0.20	0.500	1.00
vi	FGP now total (after 3rd years effort) Total cost exported	3.00	4.506	12.82
	Price of each	**0.30**	**0.225**	**0.256**

DISCUSSION

Economic impact in growing /rearing yccs for sacrificial purpose in southern and Central Punjab (2022-23) onwards is positive and with good returns.

The simple estimated calculations show that growing such yccs at for atleast 2-1/2years(reaching the age of upto three years , in categories of I,II,and III. The FGP appears as Rs0.184,.138 and 0.152 millions each with a safe margin of Rs20,000- to the farmer (table No-7)

But still if we manage a number of such calves (yccs) very close to pasteuas/ free grazing areas and most of the home made feed (con/feed)ingredients are purchased on whole sale prices in the respective seasons .The cost can still be reduced 9(table No-08)

As understood the prices of yccs are lower in rural areas of both central and southern Punjan ,the salary of a gawals is still 20-30% less than Rwp-Isbd rural areas while the cost of green fodder is gain 45-46% less than the main cities and towns.

This is how the main city's sacrificial Animal markets are now business centres for such an activity and truck loads of such yccs (grown to mature bulls are ready for marketing, specially in Eid-ul –Adha days ,for sacrificial purpose.

CONCLUSIONS

Based on the factual data ,collected analysed and compared within three groups and categories I(10yccs), II(20yccs) and III(50 yccs) grown upto the age of 2½

in Rwp-Isbd ,Rural Areas and in Central /Southern Punjab ,the following conclusions are reacher:-

1. Growing /rearing c/calves up to 2½ years is more feasible and with good margins in southern and central Punjab as compared to Rwp-Isbd rural areas .
2. As the market rates (both whole sale and retail) of green fodder , dried hay (wheat bhosa) and grazing is cheaper the production of grown c/calves for sacrificial purpose is profitable business.
3. This approach can still be more profitable if the farmers get feed /fodder on whole sale price and specially in the particular season

RECOMMENDATIONS

It is recommended that the growing yccs ,in the areas where green fodder is near by available and low paid gawalas are available ,investment in producing c/calves for sacrificial purpose is a good business and healthy animals shall be available for sacrificial purpose ,to encourage both farmers (a) Livestock Progressive Farmers (LPFs) and (b) Livestock Beginners Farmers (LBFs) in the country .

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PRODUCTION OF 100,200 AND 300 MALE SHEEP RAMS AND/OR GOAT-BUCKS FOR SACRIFICIAL PURPOSES IN RURAL RWP-ISBD-PAKISTAN (2022-23)

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ABSTRACT

This feasibility based article describes the estimated costs of producing/rearing sheep-lambs/goat kids (growing to approx. one years age) specifically preparing these for sacrificial purpose in three categories, I=100x, 2=200x and 3=300x in rural Rawalpindi-Islamabad(Rwp-Isbd) during the period 2022-23.The estimated investment/expenditure involves purchase of young sheep-lambs(Sh/lmbs) and /or goat kids (g/kds) of almost -03-04 months of age (of different local breeds) subjects to good management practices(GMPs) for a period of nine(09) months.The estimate pertain to a cost of animals{(sh/lmbs)/g/kds}with cost of economical shed including double the space as open yard.The expenditure on B-cost of feed and fodder stall feeding and C-Miscellaneous expenditure which come to the tune of A=Rs0.81,1.63 and 2.45 millions , B=0.19,0.20 and 0.32 millions while C miscellaneous Expenditure amounts to Rs 0.218, 0.238 and 0.266 millions respectively .When total sale with good margins of Rs5000//- to Rs7800/- each can provided earning and this becomes a profitable business for beginner Livestock farmers (BLFs) as well as for Livestock Progressive farmers (LPFs) in the country ,with suggestive conclusions and recommendations.

Key words : Sheep/goat rearing stall-feeding producing sacrificial animals Rwp-Isbd-Pakistan
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INTRODUCTION

An updated information on Livestock sector as a whole and specially live animals indicated particularly small ruminants as sheep 32.3 millions and goats 84.7 millions , documented during 2022-23, simultaneously recorded in PBS, PESR, Livestock wing MNFS and R ,GOP ,ISBD and included in the info—L/stock of LDF,Isbd. Such a population of 117.00 millions (both sheep and goat) together produced 0.799 millions mutton(out of slaughtered ones only) adding to the total meat produced as 5.504 millions tons,in the country. in the same period.

The very recent data down loaded from the above sources .indicated sheep-N-goat population together as 117.90 millions producing 0.799 million tons of muttons out of total meat produced 5.504 million tons ,in the country , PBS-2022-23,PESR-(2022-23) Livestock Wing ,MNFS and R , Gop,Isbd (2022-2023) included in info-L/stock of LDF- ISBD 2022-2023, respectively.As the livestock sector growth has been acceleratedly reported during the previous

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year as 2.38% (2020-21) , 3.26% (2021-22) and 3.4%-3.5% this year (2022-23) .The mutton production has likewise been reported with a steady increasing rate from 0.782 million tons (2021-2022) to 0.799 million tons (up to 4% growth)

An additional dormant factor is the production of sheep and goat milk estimated to 4% of the total milk produced as 1.05 million tons (2021-22) but not declared (as this portion is sufficiently utilized by sheep lambs (sh/lmb) and goat kids (gt.kids) as a routine .

The fast food preparation ,food restaurants , mutton karahi shops, and various precooked meat products namely seikh kebabs, tikkas ,meat balls ,nuggets all mutton related items like champs ,leg roots etc have an exaggerated demand of mutton – meat as lavishly eaten by families.

Furthermore The Shadi Halls have exclusive demand for mutton items in weddings walimas and other family functions ,such a high demand in many hundred eating places in the country , have triggered the prices of the mutton from Rs1100/-per kgs in 2019 to Rs1500/- in 2021 while in big cities of the country the mutton shop prices recorded were Rs1600/- per kgs (in the year 2022) respectively (LDF-Quick survey Report ,info-L/Stock 2021-2022) and fortnightly Market Price Indicated reports of the print and electronic media (TV-channels)

The price hike since has been reported throughout the country ,attributed to (i) US Dollar (USD) inflation Vs Pak Rupee(ii)increase in petroleum products /specially petrol and diesel) ,resultantly the cost of transportation increased affecting major food items ,and animal feed ingredients such as green fodder ,the wheat straw (bhoosa) and wheat Bran (wht/brn) which jumped almost 19% to 26% at two places (a) the whole sale and (b)retail level .

With such an intro: and background when Eidul-Adha was coming neat (June-July-2023), the prices of sheep-N-goats, Rams(sh/rms) were increasing ,at farm Gate Prices (FGP) upto 20-28% increased as compared to previous year.

Every year people related to the author ,enquire the prices .One to the months prior to Eidul Azha gt-bks for sacrificial purposes.

Specially the beginner Livestock Farmers (PLFs) , keep on enquiring economic aspects of diverting their attention to small ruminants to small ruminants .Not only the farmers but our

graduate students who earlier qualified , and have sufficient land available in their native villages have requested for a fresh feasibility based write up , for starting work on this economic activity.

The financial Institutions , banks and other organizations such as SMEs and SMEDA also look forward for a freshly documented write up to help-assist this area of Livestock in the country.

This write up in hand is a fresh and updated answer comprising (a) cost of Sh/lmbs and gt/kids with cost of open yard and sheep equipments (b) operation cost (animal; attdts salary, and management etc) with feed-N-fodder and (c) miscellaneous expenditure including (i) veterinary medicines and vaccines (ii) Animal Health Care Services(AHCSs) (iii) Utility bills, kitchen and disposable etc, categorized as I-100 Sh/gt, II-200sh/gts and III-300 Sh/gts kept in one ,one and two Kanals (k) of land (half covered) with half shaded and double the space as open yard ,two, and four k of barbed wired with feeding and watering arrangement.

MATERIAL AND METHODS

This write up ,being a feasibility –based document ,has been prepared taking the following information ,into account :-

1. Recent data on Livestock Sector (2021-22)
2. An updated information of Livestock (2022-23)
3. Excessive utilization of the following Reports:-
   (a) Statistical Bureau of Pakistan (2021-22 and 2022-23)
   (b) Pak- Economic Survey Report (2021-22 and 2022-23)
   (c) Info-L/stock record of livestock Dev.Foundation (LDF) Isbd for the referred years.
   (d) Published articles of Pakistan Journal of Livestock Sciences (PJLSc-pakjlsc-2020-21) (2021-22) and recent articles-2023,Isbd various volumes.
   (e) National Indexing and Abstracting services (NIABS) Islamabad
4. Reports from Livestock and Dairy Dev.Board LDDB-MNFS and R.GOP ,Isbd.
5. Livestock Economics and Business Management Approaches in Pakistan (2021) ISBN,Regd,FCS,Isbd Publication

6. Rural Development and Poverty Reduction Approaches in P:akistan (2021). ISBN Regd,FCS,Isbd-Publication

RESULTS AND DISCUSSION

RESULTS

The estimates for the cost of animals (ysk/ram and/or ygt/kds) ,in the categories of the I=100, II=200 and III=300 ,subject to availability of land reached at were Rs0.81,1.63 and 2.45 million and detailed in table No 01.

Table No.01 initial cost estimates for sheep /goat(kids) with construction of shed and open yard (2022-23)

A				
I	Initial cost in millions	I-100	II-200	III-300
	Age 3-4 months @Rs6000/-	0,05	1.00	1.50
Ii	Cost of shed (economical) For 300-400	0.15	0.30	0.45
iii	Open yard per head wiring With temp:gate 01k,01k,02k	0.06	0.16	0.24
Iv	Water troughs	0.06	0.08	0.15
	and mangers	0.29	0.54	0.84
V	Water supply system With water tank	0.01	0.14	0.14
		0.30	0.64	0.98
vi	Shed equipment and trolly ,disposable essential livestock (kit)-60 items	0.04	0.05	0.06
	Sub total	**0.81**	**1.63**	**2.45**

Table No-02 The infrastructure remains to be utilized for next batch months Operational cost for upto one year's period (8-9 months) 2022-23

B				
	Initial cost	I	II	III
I	Sheep/goat adult @Rs10000/-pm	0.09	0.09	0.18
Ii	Vety.Medicine and vaccines	0.02	0.03	0.04
iii	AHCs(yearly) (Part time)	0.04	0.04	0.05
Iv	Miscellaneous Utility bills +SNGPL+kitchen +disposables	0.04	0.04	0.05
	Sub total	**0.19**	**0.20**	**0.32**

Table No.03cost of feed and fodder arrangements at the farm for growing sheep lambs/goat kids to maturity -2022-23

C.	Feed items	I X100	II X200	III X300
(a)	Green fodder 10kgs/day @Rs100/-x270-days	0.022	0.040	0.060
(b)	Dried hay or wheat Bran 500gms daily @Rs40x270days	1.08	2.16	3.24
(c)	Home made conc/fed@ 900/-kg =2000gms/day 20x270	0.54	01.08	1.62
	Sub total	**1.82**	**3.28**	**5.12**
	Grand total	**2.91**	**5.38**	**8.07**
	Expenditure A+B+C			
	Production cost	0.029	0.027	0.027
	One year margin @Rs10,000/-	0.010	0.010	0.010
	Farm gate price of each	0.039	0.037	0.037
	Total sale	3.9	3.70	3.70
	Gross saving (Rs in millions in up to 09 months)	1.10	1.168	0.437

Table No.04 Actual feeding schedule formulation and estimated cost of sheep lambs/ goat kids to be grown (upto 11-12months of age

	Initial age 03 months	B.wt 7-8kgs	Mid age 06 months	B.wt 20-25kgs	Final age B.tw 11-12 months(30-35kgs)
I	Feed /fodder 2kgs +200gms	→	4 kgs	→	6-7kgs
	wht/bran	→	30gms	→	400-500gms 0.45
	Cost Ix100	0.18	0.36		0.90
	IIx200	0.36	0.72		1.35
	IIIx300	0.54	1.08		
Ii	Dry hay (wht/brn) (300gmsx90x100) @Rs33x90x100	0.30	0.36		0.45
iii	Home made conc/fed 300gmsx90x100 @Rs20x90x100	0.18	0.225		0.297
	Sub.total	0.28	0.945		1.197
	Approx. cost of feed &fodder (8-9 months)				

Table No-05 Total estimated production cost of sheep /lambs, goats kids to grown /bucks or sheeps/Rams in three categories of farming

	Kinds of cost	I=100	II=200	III=300
i	Initial cost (03 months age) with shed+equipment			
		0.81	1.63	2.45
ii	Operation cost			
	Attdt-salary ,vet Med			
	miscellaneous	0.28	0.47	0.50
iii	Feed and fodder (actual)			
		1.82	3.28	5.12
	Total cost	**2.19**	**5.38**	**8.07**
iv	Margins	1.00	2.00	3.00
		3.91	7.38	11.07
	Cost of individual buds/rams	3.91/100	7.38/200	11.07/300
	This is farm Gate Price(FGP)	**0.0391**	**0.369**	**0.0369**

Table No-06 Estimated split cost of miscellaneous items expenditure /investment,at the farm (202-23)

	Kinds of animals	I=100	II=200	III=300
	Sheep lambs/goat kids (aprox age =3 months)			
i	Utility bills ,electricity (8-9 months)@Rs2000/-pm	0.016	0.016	0.018
ii	SNGPL @Rs500/-pm	0.054	0.054	0.054
Iii	Vety:medicine and four vaccines per year	0.020	0.030	0.040
iv	AHCSc (part time) @ Rs4000/-pm			
		0.036	0.036	0.040
v	Disposables	0.010	0.012	0.014
vi	Kitchen expenses@Rs8000/-pm			
		0.072	0.075	0.080
v	unforeseen	0.010	0.015	0.020
	Sub total	**0.218**	**0.238**	**0.266**

The estimates of operational expenditure, in terms of animal attendant , Vety medicines with AHCSs and miscellaneous items was calculated as Rs0.19, 0.20 and 0.32 millions as displayed in the table No.02

The feed-N-fodder arrangement for the categories I,II,and III for a period of 9- months if the ysh/rams and/or ygt/kids purchased were of 03 months old (of initial age) the estimates of expenditure appeared as Rs2.01, 3.80 and 8.07 millions.

DISCUSSION

This simple calculation gives an average cost of one shp/lmb and/or gt/kd as 0.039,0.037 and 0.037 as farm gate price (FGP) in the three categories which included the safe margins of Rs.0.01 on each animals (table No.03).the ingredients of home made feed; the increase of B.wt with age and cost calculated fragments as detailed in table No.04 with total investment cost and sale in the Eidul-Azha days(table No.05)(as prepared for the sacrificial purpose) and table No.06 provides us the sale price (the farm gate price -FGP) with a minimum possible margin in three categories comes to Rs0.039, 0.037 and 0.036 million each .

The investment expenditure in Rural areas of Central and Southern Punjab is still a better investment , as worked out , in the year 2022 and 2023 with the main difference in (i) availability of sheds ,(ii) additional salary to gawalas in dairy farms , for growing sheep goats to the tune of Rs4000/- to Rs5000/-PM. Simultaneously (iii) the AHCss can also be hired on lesser emoluments in rural areas as compared to bigger cities ,especially rural Rwp-Isbd.

This is why that such sheep/goat mature rams and bucks are grown in rural areas of Punjab (both central and southern Punjab) and transported to big cities, for sale,with good profits.

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GROWING SHEEP LAMBS TO RAMS FOR MUTTON PURPOSES: A REVIEW

Nadia Hafeez,[1]Muhammad Hafeez [2] and Uzma Kanwal[3]

The efforts of Researchers at home and abroad on the subject of growing sheep lambs to rams for mutton purpose are done continuously .This is the review of the work done in the home and abroad for growing sheep for mutton purpose which is summarized as belo;

Martin Maquivar et al (2021) studied in sheep farms, achieving economic and productive efficiency and sustainability goals is directly related with the reproductive management of the animals. Genetically, the male contribution to the offspring being 50%, but in practical terms, there was a greater potential impact of the ram on reproductive results, because one male has the potential to affect a large group of females and therefore greatly affects the entire flock. Unfortunately, the selection of males for breeding in the US sheep industry had been traditionally conducted based on phenotypical traits, without a genetic/reproductive evaluation, and/or health assessment or records. Therefore, it was important to establish integrative management practices to select the rams and ram lambs to be used in the breeding season. Among the practices were genomic testing, a comprehensive breeding soundness evaluation and assessment of health status with records of the males before the breeding season, to detect and correct potential issues.

Nasser Ghanem et al (2022) studies on the topic of Co-expression of candidate genes regulating growth performance and carcass traits of Barki lambs in Egypt Sheep were considered one of the main sources of animal protein and the producers of sheep mutton eagered to find biological criteria for selecting fast-growing lambs that reach market weight early. Therefore, the study aimed to find a link between the expression profile of selected candidate genes with growth performance and carcass traits. Thirty-eight Barki lambs were kept and fed individually after weaning till 12 months of age and were divided into 3 groups according to growth performance (fast, intermediate, and slow-growing). Three samples were taken from different body tissues (eye muscle, liver, and fat tail) of each group, directly

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during slaughtering and stored at − 80 °C until RNA isolation. Real-time PCR was used to profile selected candidate genes (RPL7, CTP1, FABP4, ADIPOQ, and CAPN3) while GAPDH was used as a housekeeping gene. The results indicated that the final body weight was significantly ($P \leq 0.05$) greater in the fast (49.9 kg) as intermediate (40.7 kg) compared to slow-growing animals (30.8 kg). The hot carcass weight was heavier ($P \leq 0.05$) in the fast and intermediate-growing (24.57 and 19.07 kg) than slow-growing lambs (15.10 kg). The blood profiles of T3 and T4 hormones in addition to other parameters such as total protein, total lipids, and calcium level showed no clear variations among different experimental groups. At the molecular level, our data demonstrated upregulation of genes involved in protein biosynthesis (RPL7), fatty acid oxidation (CPT1), and lipolysis (FABP4) in the fast and intermediate-growing lambs in all studied tissues which facilitate protein accretion, energy expenditure, and fatty acid partitioning required for muscle building up. Moreover, the expression profile of the gene involved in muscle development (CAPN3) was increased in fast and intermediate-growing compared to slow-growing lambs in order to support muscle proper development. On the other hand, a candidate gene involved in lipogenesis (ADIPOQ) was expressed similarly in fat and liver tissues; however, its expression was increased in muscles of fast and intermediate-growing lambs compared to slow-growing animals. In conclusion, the current study indicated that the expression profile of genes involved in metabolic activities of liver, muscle, and adipose tissue was linked with the growth performance of lambs although no variations were detected in blood parameters. This provided an evidence for the importance of co-expression of these genes in body tissues to determine the final body weight and carcass characteristics of Barki sheep.

PaneI Boujenane (1998) described that a total of 545 performance data of Timahdite, Sardi and Béni Guil ewes bred to Ile de France, Suffolk, Mérinos Précoce, and rams of their own breeds were studied during three breeding seasons. The breed of service ram had a significant effect on fertility and litter weight at weaning, but not on litter size at birth. Litters sired by rams from meat-type breeds, especially Ile de France, were heavier at weaning than litters sired by rams from native breeds. The breed of sire significantly affected the weight of lambs at birth and at 90 days, but not preweaning lamb survival. Progeny of Ile de France rams had the heaviest weights at birth and at 90 days (4.09 and 22.4 kg). The breed of dam

did not significantly affect lamb growth, but had a significant effect on fertility, litter size at birth, and litter weight at weaning. Timahdite ewes weaned the heaviest litters (21.2 kg). It was concluded that the use of rams from meat-type breeds, particularly Ile de France, on ewes from native breeds, increased litter weight at weaning by approximately 12% as compared with rams from native breeds.

Hamidou Nantoumé (2020) worked on sheep feeding on sahel countries of Africa With an area estimated to 3.305 million km2, the Sahel had a quickly growing population. According to CILSS, there would be 100 million people in the region by 2020 and 200 million by 2050, almost four times the current population. The region, frequently struck by drought and food insecurity, was one of the areas most severely affected by global climate change in the coming years. With up to 80% of its people living on less than $2 a day, poverty was more widespread in the Sahel than in most other parts of Africa. Sheep farming is very important for the Sahel countries. It did not require a high input at its beginning, so even women and children are involved in small ruminant raising ,provided food and play important socioeconomic factors. However, productivity of livestock including the one of sheep was low. Nutrition was the most important constraint in sheep farming especially during the dry season when both availability and quality of forages are low. The most complex and limiting production factors in sheep farming for the Sahel countries being those concerning nutrition and feed supplies. The objective of the reviewed matter was to describe the major nutritional constraints to sheep farming systems in the Sahel countries and explored ways of overcoming the most important constraints for efficient and sustainable sheep feeding. Issues addressed in the reviewed included matter causes of undernutrition and environmental implications, adaptation by sheep to it, and manipulative strategies to cope with feed scarcity in smallholder sheep farming systems.

Aschalew Abebe (2018) undertook a task to evaluate the efficiency of selection on growth performance of Menz sheep under a Community-Based Breeding program (CBBP) from the period 2009 – 2017. A total of 3996 lamb records (ram lambs 2025/ and ewe lambs 1971) were used to evaluate the phenotypic and genetic factors affecting the growth traits of Menz sheep. REML in Wombat and General linear model on SAS (version 9.0) were used to

evaluate selection efficiency for growth. The least squares means and standard errors on phenotypic growth weight for birth, weaning age, six month age and yearling age were 2.58±0.004, 8.99±0.02, 13.28±0.02 and 19.94±0.06 kg, respectively. The effect of sex was significant (p<0.001) only for birth weight and no significance effect (p>0.05) was observed for weaning, six month and yearling weights. All growth traits were not affected by fixed effect of parity and birth type in this particular study. However, birth season and birth year had a great influence (p<0.0001) on all growth traits. The genetic trend on estimated breeding values (EBV) was not consistent across years and varied between sexes. The highest EBV for weaning, six month and yearling were recorded for the year 2013 and the lowest in 2009 (at weaning and six month) and 2015 (at yearling).The female EBV (at weaning, six month and yearling) was higher than male for the current (2017) and base population (2009).The responses to selection as compared to base population (2009) for birth, weaning, six month and yearling weight were – 0.00446Kg, + 0.11Kg, + 0.54Kg and + 0.75Kg respectively. This study indicated that improvement in body weight for Menz sheep through CBBP as possible; however, the response to selection varied across years and its pattern was irregular for the implemented years due to the problem on selection of breeding rams (lower availability of breeding rams) and management effect.

Ellen Meijer et al (2021) studied that those started milk production, dairy goats needed to give birth at least once. While most female kids were reared to become the next generation of dairy goats, only a small proportion of male kids (buck kids) reared with reproduction aims. The market for buck kid meat, especially within Northern European countries, was currently relatively small compared to the number of bucks born. Therefore, the purposes for buck kids were limited and a substantial proportion of buck kid meat is used for pet food. Due to the limited economic value of buck kids, farmers were faced with the dilemma. Although raising bucks costs more money than it yields, the birth of kids was a prerequisite for production of milk and should be seen as an investment for business-wise healthy dairy goat farming. In that perspective, dairy goat farmers had an ethical responsibility toward buck kids, as well. In this paper it was to compare various scenarios of dealing with the issue of surplus male animals. We provide recommendations for the rearing of buck kids based on the sector‘s experience and current practice in the Netherlands.

Reducing the number of surplus (male) offspring, e.g., by an optimized prolonged lactation management and/or by artificial insemination with sex-sorted semen, could alleviate the issue of low value buck kids. Killing surplus animals before or directly after birth, on the other hand, was met with increasing societal scrutiny. Initiatives to propagate a market for buck kid meat for human consumption are important to enable a suitable and sustainable production system. To maintain the health and welfare of goat kids, amongst other factors, sufficient and good quality colostrum, milk, and an appropriate diet as these grew older, needed to be provided. One option to assure the safeguarding of health and welfare of all goat kids were quality assurance schemes for milk production. These schemes made dairy farmers accountable for the health and welfare of all kids in the rearing period, including the provision of colostrum and adequate care for newborn buck kids. It was concluded that the combination of reducing the number of surplus kids, increasing the demand for goat products, and quality assurance schemes that might help to safeguard the welfare of buck kids.

Melese Gashu et al (2014) conducted a study on feeding trial in washhera sheep lambs to find out the effects of supplementation with non conventional feeds on feed intake and body –weight change fed urea treated finger millet straw at the school of vety. Medicine Addis Ababa University ,Ethiopia, used 25 growing washera lambs with initial live weight of 17.8+1.72(mean+SD) dividing into five groups of equal number . Group-I(T-I) was provided sole urea treated finger millet straw, as control group.Remaining groups were provided suplemented diet with mixture of Neug Seed Cake (NSC) and wheat Bran (Wht.Brn) in the rations of 100:0, 70:30 and 0:100 for T_1,T_2.T_3 & T_4 groups.The level for supplementation was 300 gms/day on dry matter (DM) basis. It was found that supplementation of NSc, wht.Bran and the mixtures significantly increased the intake of total DM (743-843 gms/daily)and total CP (99-134..34gsm/daily) ,when compared to control (589.49 gsm/daily) .They further observed that supplementation urea treated millet straw with concentrate (T_2-T_5) promoted higher daily wt.gain which ranged between 50.2-71.3 gms daily. Lambs supplemental with higher proportion of wht.Brn (70%) in T_4 and solve (100%) in T_5 gained more weight.

Mirza and Mushtaq (2006) conducted a study on the effect of supplementing different levels of Corn Sheep Liquor (CSL) on the post weaning growth performance of Pak. Karakul lambs, subjecting to 30 lambs of Av.Six months age,with av. B.Wt of 19.2± 0.39 kgms,at Sheep and Goat Development Centre (SDGC) Rakh Khairawala, District Layyah. Punjab,Pakistan The CSL Group A was control group with basel diet and no CSL while groups B,C,D and E were provided ,in addition to basel diet 05.10,15 and 20 % CSL .the basel diet were provided ad.lib comprising barley 30% ,wheat bran 18,5% wheat straw 08%, rape seed cake 14%, maize gluten feed 22%.Molassess 05% mineral premix 02% and urea 0.5%.The study period was 90 days while three times data was collected at 30th ,60th and 90th day of this trial. This growth performance study had only two parameters namely (i) body weight gain and (ii) feed gain .The results of the trial indicated that supplementing CSL at 05% of the diet was useful for growth and feed gain but higher levels of CSL considerably depressed growth as well as increased feed gain which led to increased cost of production.

Mehmat Koyun (2016) conducted a study on 36 male growing Kivicik lambs with Av.B.wt of 32 .1 kgms to assess the growth performance of different silages.the 12 lambs each were fed (i)concentrate alone ,as control group, (ii) 2% maize silages in diets did not alter significant dry matter intake and feed conversion.Rumen fluid pu and Butyric acid were increased by maize silage levels (P>0.05)

Nagireddy et al (2000) carried out a study on “Growth performance and carcass characteristics (of growing ram lambs fed sweet Sorghum-Bagasses (SSB) based complete ration varying in roughage to concentrate rations, used 24 growing Nellore Deccani ram lambs aged about 05 months , with Average Body Weight (Av.B.Wt) of 16.62 ± 0.25 kgs and were alloted to four Complete Rations(CR) varing in roughage to concentrate rations viz 60:40 in group CR-I,50.50, in group CR-II, 40:60 in group No CR-III and 30:70 in group CR-IV for a period of 180 days (six months). They found that daily wt.gain on average was 77.31±4.90 gms, 81.76±5.16gms,85.83±2.83 gms and 86.30±3.25 gms in the CR-I, C-II,CR-III,CR-IV respectively .The data on dressing percentage and cost per kgm was also gained .

Sajid Ali Khosa et al (2010) carried out feeding trials on 24 Balochi lambs, for 14 weeks period, with an average age of around 6 months weighing 15-24 kgs,in Group-A,12 lambs were kept on conventional (green fodders; sorghum,barley and /or Barseen and group –B 12 lambs were feed commercial feed in SAU ,Tandojam, Pakistan. Body Wt.Weekly with feed consumed and feed conversion ratio were the parameters of the study.Total feed intake for the over all 14 Weeks in Group-A was 91.47 which resulted in a weight grain of 7.34 kgs with 12.45 FCR while in Group-B total feed consumed was 76.05kgs gaining 17.06kgs B.wt with 4.38 FCR. Balochi lambs responded well to commercial feed was better to achieve high profits , Based on their study they found that Balochi sheep lambs of Group-B earned Rs510/- per sheep lambs while Group-B lambs earned 108/-, extra.

Nasrullah et al (2013) conducted feed trails to see the performance of Lohi sheep under different feeding management systems, they used 45 Lohi sheep (approximately 13 months of age and 22±0.69 kgs B.Wt divided into (03) groups of 15 sheep each. The growing sheep were put on (i) grazing lucern for 04 hours per day and pen feed lucern for additional 04 hours ,While (ii) pen feed Lucerne for 08 hours in groups(i), (ii) &(iii) respectively.The parameters of performance being (A) feed –intake and (B) Wt.gain lasted for three months .Sheep presented a significant higher crude protein (CP) intake (144.4 gms/day) under intensive feeding system. It was concluded that extensive grazing of animals on Lucerne would result in the cheapest and most effective system to raise sheep in that area.

Abebaw Nega and Soloman Melaku (2009) carried out a study to determine feed intake digestibility and body weight (B.wt) change in Farta sheep fed hay supplement with Rice Bran (RB) and/or Noug seeds Meal (NSM) , took 25 sheep (yearlings) with mean B.wt of 19.23±0.28 kgms and were subjected to 05 Randomized Block Design (RBD) of (Ti) hay alone ,(Tii) hay+RB, (Tiii) hay +mixture of RB + NSM (Tiv) hay + mixture of RB + NSM (2:1) and TV) Hay + NSM .It was also supplemented 300 gms of Dry Matter (DM) ,fed regularly for a period of 90 days of the study .The results of the study showed that

supplementation with either of both mixtures of NSM and RB at 43% of Total Digestable Matter (TDM), promoted better feed intake ,digestibility and B.wt gain in Farta sheep.

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GROWING GOAT KIDS TO BUCKS FOR MUTTON PURPOSE :A REVIEW

Uzma Kanwal[1] and Nadia Hafeez[2]

The research workers who have made efforts on sheep and goats growth performance (Body Wt.gain) in limited period of duration either endeavored and as advocated as combined feeding trials or (a) both sheep and goat or (b) sheep alone and (c) goats alone .Further more (d) concentrate feed and roughages used (hays, straws and/or green fodder etc) and/or (f) supplementation of silages as well as (g) oil seed cakes as an addition in concentrate feed while some workers have endeavored (h) in feeding in our carcass characteristics with (i) in body measurements and wool characteristics etc. Such research studies carried out by local and foreign workers in sheep and goat production and nutrition are presented below:-

Martin G. Maquivar et al (2021) studied in sheep farms, achieving economic and productive efficiency and sustainability goals, as directly related with the reproductive management of the animals. Genetically, the male contribution to the offspring was 50%, but in practical terms, there is a greater potential impact of the ram on reproductive results, because one male had the potential to affect a large group of females and therefore greatly affected the entire flock. Unfortunately, the selection of males for breeding in the US sheep industry had been traditionally conducted based on phenotypical traits, without a genetic/reproductive evaluation, and/or health assessment or records. Therefore, it was important to establish integrative management practices approach to select the rams and ram lambs to be used in the breeding season. Among these practices were genomic testing, a comprehensive breeding soundness evaluation and assessment of health status and records of the males before the breeding season, to detect and correct potential issues.

Trop Anim. (2022) described that sheep were considered one of the main sources of Animal protein in Egypt and the producers of sheep muttons eagers to find biological criteria for selecting fast-growing lambs that reach market weight early. Therefore, the study aimed to find a link between the expression profile of selected candidate genes with growth performance and carcass traits of Barki lambs. Thirty-eight Barki lambs were kept and fed individually after weaning till 12 months of age and were divided into 3 groups according to growth Performance (fast,intermediate and slow-growing). Three samples were taken from different

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(eye muscle, liver, and fat tail) of each group, directly during slaughtering and stored at − 80 °C until RNA isolation. Real-time PCR was used to profile selected candidate genes (RPL7, CTP1, FABP4, ADIPOQ, and CAPN3) and GAPDH was used as a housekeeping gene. The results indicated that the final body weight was significantly ($P \leq 0.05$) greater in the fast (49.9 kg) and intermediate (40.7 kg) compared to slow-growing animals (30.8 kg).

The hot carcass weight was heavier ($P \leq 0.05$) in the fast and intermediate-growing (24.57 and 19.07 kg) than slow-growing lambs (15.10 kg). The blood profiles of T3 and T4 hormones in addition to other parameters such as total protein, total lipids, and calcium level showed no clear variations among different experimental groups. At the molecular level, our data demonstrated upregulation of genes involved in protein biosynthesis (RPL7), fatty acid oxidation (CPT1), and lipolysis (FABP4) in the fast and intermediate-growing lambs in all studied tissues which facilitated protein accretion, energy expenditure, and fatty acid partitioning required for muscle building up. Moreover, the expression profile of the gene involved in muscle development (CAPN3) was increased in fast and intermediate-growing as compared to slow-growing lambs in order to support muscle proper development. On the other hand, a candidate gene involved in lipogenesis (ADIPOQ) was expressed similarly in fat and liver tissues; however, its expression was increased in muscles of fast and intermediate-growing lambs compared to slow-growing animals.

In conclusion, the current study indicated that the expression profile of genes involved in metabolic activities of liver, muscle, and adipose tissue linked with the growth performance of lambs although no variations were detected in blood parameters. This provided an evidence for the importance of co-expression of the genes in body tissues ,to determine the final body weight and carcass characteristics of Barki sheep.

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Hamidou Nantoumé (2019) carried out a study with an area estimated to 0.305 million km2, the Sahel had a quickly growing population. According to CILSS, there would be 100 million people in the region by 2020 and 200 million by 2050, almost four times the current population. The region, frequently struck by drought and food insecurity, was one of the areas most severely affected by global climate change in the coming years. With up to 80% of its people living on less than $2 a day, poverty was more widespread in the Sahel than in most other parts of Africa. Sheep farming was very important for the Sahel countries. It did not require a high input at its beginning, so even women and children were involved in small ruminant raising. They provided food and played important socioeconomic factors. However, productivity of livestock including the one of sheep was low.

Nutrition being the most important constraint in sheep farming especially during the dry season when both availability and quality of forages are low. The most complex and limiting production factors in sheep farming for the Sahel countries are those concerning nutrition and feed supplies. The objective of the review of the study was to describe the major nutritional constraints to sheep farming systems, in the Sahel countries and explore ways of overcoming the most important constraints for efficient and sustainable sheep feeding. Issues addressed in the write-up included causes of undernutrition and environmental implications, adaptation by sheep to it, and manipulative strategies to cope with feed scarcity in smallholder sheep farming systems.

Aschalew Banarjee et al (2018) conducted the study which was undertaken to evaluate the efficiency of selection on growth performance of Menz sheep under a Community-Based Breeding Program (CBBP) from the period 2009 to 2017. A total of 3996 lamb records (ram lambs 2025/ ewe lambs 1971) were used to evaluate the phenotypic and genetic factors affecting the growth traits of Menz sheep. The REML in Wombat and General linear model on SAS (version 9.0) were used to evaluate selection efficiency for growth of Menz sheep. The Least

Squares Means (LSM) and standard errors on phenotypic growth weight for birth, weaning age, six month age and yearling age were 2.58±0.004, 8.99±0.02, 13.28±0.02 and 19.94±0.06 kg, respectively. The effect of sex was significant (p<0.001) only for birth weight and no significance effect (p>0.05) was observed for weaning, six month and yearling weights. All growth traits were not affected by fixed effect of parity and birth type in this particular study. However, birth season and birth year had a great influence (p<0.0001) on all growth traits.

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optimized prolonged lactation management and/or by artificial insemination with sex-sorted semen, could alleviate the issue of low value buck kids. Killing surplus animals before or directly after birth, on the other hand, was met with increasing societal scrutiny. Initiatives to propagate a market for buck kid meat for human consumption as important to enable a suitable and sustainable production system. To maintain the health and welfare of goat kids, amongst other factors, sufficient and good quality colostrum, milk, and an appropriate diet as grown older, needed to be provided. One option to assure the safeguarding of health and welfare of all goat kids for quality assurance schemes for milk production. The schemes made dairy farmers accountable for the health and welfare of all kids in the rearing period, including the provision of colostrum and adequate care for newborn buck kids. It was concluded that the combination of reducing the number of surplus kids, increasing the demand for goat products, and quality assurance schemes that might help to safeguard the welfare of buck kids, was also recommended.

Pirzado et al (2016) carried out a study on fattening of male goats kids by freeding various levels of Crude Proteins (CP) and Total Digestable Nutrients (TDN) , using 12 goats of mixed breeds with an average age of 5-6 months divided in four groups A,B,C and D at Sindh Agricultural University (SAU) ,Tandojam ,Sindh goat kids were feed on various rations having 12,14,16 and 18% CP with 73% of TDN respectively. The study lasted for 90 days adopting period . The results indicated that the fattened goat kids (now bucks) responded significantly with increase in CP levels in ration. Growing kids/bucks fed 16% CP gained 10.92 kg wt in 90 days and consumed 177.19 kGMS of feed with a result of 16.50 .Feed Conversion Ratio (FCR) and generated net profit of Rs1028.91 per animal.Goat kids /bucks fed containging 18% CP consumed 177.5 kgms of feed ,gained 84 kgms of weight ,resulted 18.05 Feed Conversion Ration (FCR) and generated net profit of Rs850.47 per animal.Kids/bucks fed on 14% CP ration consumed relatively greater quantity of feed (181.82 kgms), gained 9.94 kgms body weight (B. Wt) with FCR 20.21 and resulted in net profit of Rs676.38. The kids fed 12% CP ration consumed maximum quantity of feed (183.32 kgms gained lowest profit Rs 586.80).Hence it was concluded that the goat kids fattening will be profitable when a balance ration containing 16% CP is provided .

Sultana et al (2012) conducted feeding trial to find out the effect of concentrate supllementation on (a) growth , (b) reproduction and (c) milk yield of black Bangali goats in

the department of Animal Nutrition Experiment Station , Mymen Singh Agriculture University ,Bangladesh ,taking 16 female goats (10±0.6 months of age and 11.5±1.3 kgms live weight) divided into four groups A,B,C and D were given ,150 ,200,250 and 300 gms concentrate mixture with ad. libitum (ad lib) green grasses.Total Dry matter (DM) intake was recorded as 333.6, 347.7, 416.3 and 465.5 gms daily in groups A,B ,C and D respectively .The CP intake was 45.2 , 57.0, 66.4 and 75.7 gms per day for these groups .Milk yields for these groups was significantly increased as 206.8, 233.4, 359.3 and 374.7 ml per day for groups A,B,C and D together with 250 gms of concentrate daily to females in addition to feeding of ad :lib roughages .

Nasrullah et al (2013) carried out a study on performance of beetal goats under different feeding management systems .A total of 45 beetal goats approximately 15 months of age , and with av. B.Wt of 15 kgs , three groups of 15 animals each ,were subjected to grazing lucerne for 8 hours /per day extensive (i) grazed Lucerne for 4 hours per day and pen –fed lucerne for additional 4 hours (semi extensive) and (iii) pen-fed lucerne 8 hours per day (intensive).Feed intake A and weight gain (B) of animal were monitored every three (03) months with crude Proteins (CP) intake was 127.92 gms/day. It was concluded that extensive grazing of animals on Lucerne would result in the cheapest and most effective system to raise goats in our region ,for milk and muttons productions.

M.Atta et al (2011) conducted a study on the "Effect of two different feeding systems on body growth measurement in Sudan Nilotic Male kids ".A total of 13 animals were involved with an av.Age of 04-05 months, in the study out of which 05 were reared on (i) standard and 08 were reared on (ii) complete system. The standard system was composed of meshed Sorghum based concentrate Diet (SMD) and sorghum Straw portions fed separately.The second system known as complete Molasses pellected Diet (MPD) was fed .It was concluded that Nilotic kids feeding MPD reduced feeding cost by 43% without diffracting their growth performance in comparison with SMD.

Barberi goats are famous for low body wt, throughout the country ,being a goat breed of Punjab but farmers and mutton producers are rearing it for the last 2-3 decades and

or more even in Sindh Province and Khyber PK ,including Balochistan .Farmers are rearing Barberi with great interest but they are always looking for better formula feed for growth performance .Specially the Barberi bucks are reared from 5 months to one year ,with feedin g system of choice ,for attaining good growth increased body weight and finishing for better meat .In the light of the above status of goats and reviewed literature ,a study focused to be carried out to achieve our proposed objectives as detailed .Farmers and researchers are looking forward for an answer of growth performance of Barberi goat in Balochistan and on which work was being done but the study provided a positive response to some querries to the approach , based on scientific principles and remained within the permissible limits of C.P and TDN towards increased milk production and body W.t growth in 90 days ,duration ,as other workers had also investigated for the duration and 6-7 months etc.

Muhammad Hafeez (2008) deliberated on sheep and goats .Specially , since Baberi goat has always showed maximum body growth and being goat breed of the country the adult male might reach to 40-45 kgs while female might reach 30-35 but it needed scientifically prepared feed supplement ,in addition to grazing ,within the permissible limits of TDN and CP with mineral supplementation DCP. Nacl and others had been always beneficial many researchers progressive farmers and mutton producers of our country. Barberi bucks right from the age 4-5 months ,as kids needed economical feed formulation and most of the farmers liked it or otherwise but new approaches ,such as the one might pave the way for better needed results , as foreseen as put forward by M.Atta et al (2011), Nasrullah et al (2013). Abdullah et al (2008), Hang et al (2007), Hussain et al (2003) and others.

Workers at home and abroad are making efforts in devising economical feed formulation based on the locally available feed ingredients, with a minimum , time period of feeding ,with better growth performance and at the same time ,the feed formula must be cost effective , as referred to above .

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GROWING PULLETS FOR EGG PRODUCTION IN RURAL ISBD BHARA KAHU (PHASE II)-2023 :CONTINUOUS RESEARCH IN RURAL POULTRY

Salman Hafeez[1] and Muhammad Hafeez[2]

ABSTRACT

This is the second part of the study (phase-II), a continuous research process of the small number of pulllets grown (in the 2022) brought as two weeks chicks ,known as the desi- birds from commercial hawkers (but vaccinated with once) with New Castle Disease (NCD) vaccine prior to bringing in the home cage ,later transferred to the a poultry shed. This part of the continuously observed and recorded data on daily basis , weekly produced eggs by these ,divided into (summarized as Quarterly (Qtr) data) December -2022 and January to March and December (I) April to June(II), July to Sept (III)and was published in PJLSc, Vol-XIV,2022- 2023 .The conclusions of the phase (Second -phase) indicated the inventory of the birds was 10(2m+10), (Qrt-I), 7(1M+06f) in Qtr-II and July-Sept. (Qtr-III) the number remained 6(1M+5F). The production eggs was recorded as $\bar{x}$=134,150, 208 eggs per Qtr, while feed consumption, was recorded as x=134.5gms per day and the B.wt increase was recorded as 150 gms per month (starting $\bar{x}$=1100gms to 1300gms from Dec 2022 to to March 2023.The feed consumption as were provided 3kgs feed +01kgs wht-Brn, per two weeks and ad.lib kitch refuse fruit peelings ,veg. peelings, left over rice and dried bread upto 2 kgs on alternate days. The inventory was recorded as 13(3m+10), 11(1m+5f), 10(2m+8f), 7(1m+6f), 7(1m+6f), 7(1m+6f), 6(1m+5f), 6(1m+5f) in the month of December 2022- Jan 2023 Feb, March, April , May ,June , July , August and September -2023 respectively. The B.wt grew by1 50-160 gms per month and the both M and F grew by 1400 gms to 1500 gms up to Sept -2023.No major disease was observed , except pick up infection of coccidiosis and sudden stoppage of eggs and death of one male due to natural disease of heavy rain and damage of shed –roof .This research work is still continued .

Key words : rural poultry , pullets grown to layers , ,one year data on feeding ,egg produced and growth

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INTRODUCTION

This research work is a continuation of rural poultry kept in small shed (constructed on the roof top) in Muslim Town ,Bhara Kahu ,Rural ICT –Islamabad .This second part (Phase-II) pertain to the data observed and recorded on daily basis, by a young farmer ,interested to grow small chicks or pullets to become layer hens based on birds of indiscriminate breed .The period of the part of the study comprised quarter (Qtrs) I (December 2022 to 2023),

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Qtrs-II (April ,June -2023)and Qtrs-III (July-Sept-2023) and summarized data Qtr=iv, (Oct-Nov-2023)on weekly ,monthly and quarterly basis ,is described on various aspects namely (i) feed provided , (ii) egg produced (iii) inventory of birds (iv) Average Body Weight and lastly (v) miscellaneous aspects of poultry health ,mishaps (natural disasters) and additional feed items provided with the general poultry production routine etc as enumerated in the plan of work.

PLAN OF WORK

The simple daily routine was observed with interest ,as stated below:-

Daily observation of the birds, with their body conditions ,death if any ,activity of the birds ,(normal ,irritation, querrels ,mishaps) laziness ,sluggish ,normal faces ,any other abnormality etc.

(i) Inventory of birds

The number of birds with males (M) and (Females) was properly recorded which is tabulated in the results /findings of this phase of the study.

(ii) Feed Provider

The birds were provided ad.lib poultry feed comprising two kgs commercially available poultry feed plus one kg of wheat Bran (wht.Brn.) which worked well for two weeks with additional feed of (i) dried bread (1-1/2kgs) per every alternate day and (ii) kitchen refuse (peelings of vegetables, pleeing of fruit (apple +banana) and ground egg shells etc.

(iii) Eggs produced

The egg production started with a small size ,in Dec:2022 (when the pullets were 5-6 months of age) and then onwards ,recorded on daily basis, summarized weekly and monthly basis with finally, tabulated, on quarterly, as presented in tabulated forms in results section of this write up.

(iv) Average (Av) Body weight (B.Wt)

The randomized Body Weight (B.Wt) was recorded on weekly basis and anual basis , while summarized on qtrly basis as laid down in the results section.

(v) Miscellaneous aspects

In this aspect the fore most was poultry health ,apparently ,no major disease ,no death were recorded except the picked up infection of coccidiosis which was, Alhamdullilah ,recovered with coccidiostat, coccynil (provided in drinking water) The second important aspect was poultry apprant growth ,activity ,quarrels ,fighting etc, which approach was normal .One male also died with symptoms of Chronic Respiratory Disease (CRD) which was treated with oxytetractclin for three days, recovered but later on one died.

(vi) Natural Disaster

One incident of heavy rains with blowing winds for the roof-top of the shed and birds were so disturbed that low feed intake and low production of eggs was recorded in the month of June-2023.

RESULTS AND DISCUSSION

RESULTS

(i) Inventory of Poultry Birds

The growing pullets were 13 (3M+10F), in Dec-2022 ,which remained 11(2M+(9F) in January -2023, while in Feb ,March and April these were 10(2m+8F) , 8(2M+6F) and 7(1M+6F) until July -2023 whereas in August – Sept the number remained 6(1M+5F), as laid down in the table No-01,and 02 and 03 respectively.

(ii) Eggs Produced

The Qtr-wise eggs produced showed 08, 24,28 and 76 in the months od Dec (2022) ,Jan 2023,Feb and March while these were recorded as 58,56 and 36 in April ,May and June but appeared as 96,75 and 67 in the Qtr July –Sept (2023) respectively as described in table No-01,No-02 and NO-03 respectively. The Oct-Nov-Production, uptil 1st week of Dec: egg-laying continued.

(iii) Feed utilized/consumed

It was observed that on an average (Av)134.5 grams (gms) of feed supported with dried bread, veg.peelings , kitchen refuse and fruit peelings (of apple

+banana etc) in qtr-I while 136 gms and 139gms feed was utilized in qtr-II and III respectively (table No-01.02 and 03).

(iv) Age of poultry birds

As understood , the pullets were grown to laying stage in Dec -2022 , but started laying eggs with effect from (w.ef) January -2023 and by the end of this part(phase-II of the study) these were of 14th month of their age.

(v) The Av. Body Weight (B.wt.)

The weekly randomized B.wt., as recorded was 1100-1300 gms in Qtr-I and rose to 1300-1400 gms in Qtr-II ,while it was recorded as 1500 gms (1-1 ½ kgs) of B,wt in the month of Sept-Qtr-III as presented in the table No-01, No-02 and No-03 respectively.

Table No-01 , Inventory ,feed consumed eggs produced and B.Wt gained in second phase (Phase-II) 2023.

Month/Qtr	Inventory T=M+F	Total feed (kgs)	kitchen refused	Eggs produced in a month	Feed consumed	Age months	B.Wt (Av) gms
Dec-2023	13(3+10)	26	15	08	133	05	1100
Jan-2023	11(2+9)	24	15	24	134	06	1250
Feb	10(2+8)	25	16	38	135	07	1300
March	8(2+6)	26	17	76	136	08	1350
∑x	**42(9+33)**	**101**	**63**	**146**	**538**	**30**	**5000**
X	**10.5(2.5+8.5)**	**25.25**	**15.75**	**36.5**	**134.5**	**7.5**	**1250**

Table No-02 , Inventory ,feed offered and utilized eggs produced and B.wt gained in second phase (Phase-II) 2023.

Month/Qtr	Inventory T=M+F	Total feed (kgs)	kitchen refused	Eggs produced in a month	Feed consumed	Age months	B.wt gms
April-2023	7(1+6)	25	16	28	136	09	1350
May-2023	7(1+6)	24	17	56	137	10	1400
June	7(1+6)	25	17	36	137	11	1450
∑x	**21(3+18)**	**73**	**50**	**150**	**410**	**30**	**4200**
X	**10.5(2.5+8.5)**	**25.25**	**16.66**	**50**	**136.5**	**10**	**1400**

Table No-03 , Inventory ,feed consumed eggs produced and B.wt gained in second phase (Phase-II) 2023.

Month/Qtr	Inventory T=M+F	Total feed	kitchen refused	Eggs produced in a month	Feed consumed	Age months	b.wt (Av)
July-2023	7(1+6)	15	12	96	138	12	1500
August - 2023	6(1+5)	16	13	75	138	13	1550
Sept	6(1+5)	17	14	67	140	14	1600
∑x	**19(3+16)**	**48**	**39**	**238**	**416**	**39**	**4650**
X	**6.3(1+5.3)**	**16**	**13**	**79.33**	**135.33**	**13**	**1530**

Source data sheet of the farmers 2022-23

DISCUSSION

Let us remain limited to this phase (phase -II) of the study , delimiting it from Dec-2022 ,when the pullets actually started first laying hardly 10(8+02) eggs in last week of the month ,when small sized eggs were obtained. Egg laying crates (with cloth bedding) were provided ,but actually of complete size eggs was observed in January (2023) when 24 eggs and in Feb -28 eggs whereas 76 eggs were obtained .These 76 eggs were obtained from six hens ,while in Jan and Feb. The # of hens was nine and eight. It can easily be inferred that complete sized eggs were obtained in sixth to seven month of the pullets grown to laying hens in non-descript desi poultry birds. From June 2023 onwards ,the total eggs produced per month was 36, 96, 75 and 67 for June and July ,August and Sept. The month of June , as stated ,earlier was a set back of a natural disaster (heavy rains and wind storms that disturbed the poultry shed roof top and badly disturbed the birds.) when one male as well as two layers was a dent to the flock. This appeared as an effort of growing pullets to the age of maturing layer hens with 1-2 males. In earlier days (Dec-March) but later on one male (cock) remained with the birds.The overall health condition was recorded as normal except 1-2 layer showed picked up infections of coccodiosis which were recovered with cocciodostst of choice , the cocc-nil .While one male suffered from CRD and was treated with Oxytetracyline I/m infections for 3-4 days and was also recovered inshallah. This part of the study (Phase-II) ends up to Sept -2023 while the study is continued , same data is being recorded by Nov-Dec-2023 to observe the interest of the keeping of the rural poultry amidst daily observation , and strict hygienic measures adopted for feeding and watering etc.

As for the price of feed is concerned , the AV price of one kg poultry feed was raised to 130/- per kg and the wheat bran was Rs100/- per kg in the last months of the study , The August-Sept-2023, while the market rate of desi-eggs were @Rs360/- to Rs400/- per dozen ,but these eggs produced were utilized at home.

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BOOK REVIEW: SANAAT-E-MURGH BANI (POULTRY INDUSTRY)-URDU-2023

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ABSTRACT

This article is a summarized review of the content-wise chapter/unit –wise write up of an important book on poultry industry in urdu "Sanaat-e-Murghbani" written for the students level. comprising information mainly of indigenous material expressed on mainly on AIOU book format, spread over 9(nine) units ,each unit /chapter is spread over 20-25 written pages ,starting with unit one (i) a comprehensive introduction of poultry industry in the country in 30 pages containing historical background of early age poultry birds ,development of various breeds over ages ,the eggs ,the hatcheries and business with poultry meat and feeds etc with an overview of drugs and vaccines used with recent poultry setup in the country and problems faced encompassing various stages). Simultaneously in unit (ii) basic pillars of the industry are detailed namely broilers ,layers and breeders farms including feed mills ,hatchery and healthy processing of slaughter of meat production while chapter (iii) encompasses the basic infrastructure of a farm (comprising shed ,feed ,storage ,office ,water supply system and basic equipment ,manpower and power generation etc.) In unit four the healthy procurement of meat,eggs with its usage and possible reactions ,if any while every unit is supported with self assessment questions.A separate unit (v) pertain to other domestic birds namely turkeys ,ducks , quails guinae fowl ,pea-cock ,pigeons ,swans and ostrichs etc,with their detailed rearing while unit vi is developed on free range poultry for its farming requirements site selection separately for meat producing and egg producing birds, as well as their feeding and protecting from adverse environment .An exclusive chapter (unit -vii) describes the rural poultry of the country .It includes the various breeds namely kulangi , Desi,Aseel and some cross breed also; with some other birds .The last two units (viii) and (ix) explain the extention education and future of poultry industry in the country..These two chapters provide annotated steps in poultry education for students and farmers with a broad future fore seen in different areas of allied sectors of this industry in the country .This an in depth

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reviewed study of a book written on the subject of " Poultry Industry " The Sanaat-e-Murghbani in Urdu comprising nine chapters /units written by the author (a) Dr.M.Hafeez and (b) Dr Tabinda Khwaja ,on the pattern and format of Allama Iqbal Open University (AIOU) in the year 2022-23for students and in one of the course books used for traine farmers in a proposed 30 days training program of "Livestock Economics and Business Management Approaches project" (LEBMAP), under consideration with ministry of National Food Security and Research (MNFS and R) GoP Isbd.The content wise (unit-wise) reviewed observations are presented below:-

A- The First Chapter:

The (unit-one) describes the background information ,the history of poultry development thru ages and names of breeds (on continent and civilization basis) and over countries .This chapter includes recent status of poultry produced during 2011-12,2013-14 in terms of birds ,meat and eggs ,presented in the tabulated form (in both rural and commercial poultry),still some of the allied industries are also detailed namely (i) poultry feed business (ii) poultry medicine and vaccine ,(iii) poultry egg business and (iv) various poultry and egg products (food items),while recent updates of 2020-21 and 2021-22 are also included.

(v) Poultry farm and hatchery equipment .

The second last item detailed in this part of the book pertain to six various development phases of poultry development periods (of one decade each is from 1950-60 to 2015-2016,while the last part of this portion of the book describes various problems faced by the industry and recommendations made to possible solutions (specially when the author remained Assitt: commissioner (Drug and vaccine) in Livestock Wing .The then Ministry of food Agri:and Livestock (MINFAL) GoP ,Isbd, during the period 1992-2001.This part ends with seef Assesment questions and correct answers .

B. The Second Chapter :

The chapter describes the main infra- structure of a poultry farm splitted mainly as (i) the land and farm building , (ii) Essentials of the poultry sheds (iii) Link road and farm yard Manure (FYM) disposing pits , (iv) water and electricity supply system and (v) poultry equipment ,utencils , leveries ,disposable etc. Still ahead this portion of the book provides

various streps in producing broilers ,a complete annotated sketch and step wise care and management as a base and principal of (a) broilers ,a production at a farm.This aspect of a write up includes schedule of feeding health care and other related points of raising 4000 broiler from the age of day old chicks 43-45 days . Grown up broilers weighing one and half to one and 3/4of a kilo gram by weight .(b) still ahead there is a similar annoted step wise schedule of rearing layer birds and waiting with peace and tranquillity up to sixth month when egg production starts. In this part of the book ,a similar guideline for (c) breeder farm has been described in detail for the farmers who prepare breeder stock (the parent stock from which such eggs are obtained which lead to the production of the laying stock (the hatch eggs of which produce both layesrs and broilers.This aspect pertain to either a single line breed or a combination of 2-3 breeds maintained separately with all necessary precautions ,care jotted down in the book .

Furthermore this unit includes the feed mills and a comprehensive write up for the preparation of balanced feed for poultry ,starting with its ingredients and a composed composition of at least 127-128 feed mills of the country (bulk production of 2-3 trucks on daily basis) while some farmers are advised to prepare their own feed thru a mini feed mills,a s the author being a Director of Pakistan Livestock Farm Complex, got fixed a mini feed mill plant (a private company fixed it operated then transferred to PLFC) on built operate and Transfer (BCT) basis. In this plant 5-10 bags of poultry feed was produced every alternated days. Some of the feed formulates are also suggested by the author for own feed preparation which becomes economical for the farmer .In addition a comprehensive account has been narrated on the important subject of poultry hatchery from where day old chicks (DOCs) are produced and obtained ,although the rates are pretty old as compared to 2022-23 where the DOC rates are more than double of 2014-15.The detailed steps of the hatchery are given for academic point of view.

In the last part of this chapter poultry disease morbid material to be sent to the laboratories (for diagnosis) and various equipment and kits used in the farm as well as in the hatchery which is totally a paractially to be done by farm personnel while some of the equipment being sold in the market are also enlisted, to conclude this part of the book ,this ends with

self assessment questions and correcxt answers .,as a format approach of the writer ,and supported with references as a routine.

C. The Chapter Three :

The chapter provides the detail about the poultry farm's infra structure specially the shed building and its components (shed's direction ,water supply and electricity system feed storage and supply ,an office with the shed building record keeping ,power generating room ,attendant's residence room ,a kitchen ,,litter arrangement room and its disposal poultry farm clinic ,a mosque and essential equipment room etc).Still ahead there must be available the requisite number of manpower at the farm .Separately recommended for broiler and layer .The wages are in according to prevailing market rates. The chapter ends with the self-assessment questions and correct answers.

D- The Chapter Four:

The chapter pertains to procurement of poultry meat and eggs from fresh and processed birds. Although a small chapter by volume spread over 17-08 pages ,covers hygienic preparation of poultry meat ,obtained from broilers and layers. ($2^1/_2$-03 years), with preservation of such meat ,(with ultra violet rays) preservative gases (phosphene and/or sulpherdioxide etc.) and with biochemical (such as potassium meta by sulphate and Thimresol etc) and packed in various demanded packings such as (i) leg pieces (ii) breast ,(iii) wings (iv) necks (v) livers and gizzards etc. Such products are exported and as well as utilized as pre-cooked material by many restaurants in the country (namely meatballs, kebabs, minced meat, boneless and nuggets etc).

Since then a comprehensive note has been described in procurement of healthy eggs, DOCs parent flocks ,broilers and layers. Some of the chicken and mediated products are narrated such as sajji,roast karahi ,grilled B.B.Q ,chicken soup, grilled soup packs ,chicken cubes ,samosas ,shawarma ,noodles ,pizza berger ,biryani ,curries ,macronnies ,white meat and dahi karahi etc. Lastly some of the mis-concepts about the egg allergies etc have also been touched and the chapter ends with self-assessment questions and correct answers supported with references to prepare studentds for any examination in any training course where the book is taught .

E- The Chapter Five :

The chapter describes an exclusive area of various domestic birds ,other than poultry birds as in the introduction ,importance of such birds was detailed but in a concise manner ,namely turkeys, ducks , quails , guinea-fowl, pea cock ,pheasants ,pigeons, swans and ostrichs etc. Some of the important features of such birds ,procurements of eggs (hatching eggs of each kind of birds ,their chicks (from breeder farmers), health care and management ,their farming and establishing the aviaries), the reviewed observation are presented below:-

(a) **Turkeys** are less flaying heavy birds ,locally less reared but in western countries ,liked and lavishly eaten in special occasions namely "Thanks giving ", "home Coming ", and "Halloween" and other feasts etc.Specifically fawn color ,some strips also seen, with body weight (B.wt) of male could go to 8 kgs in two years while female remains up to 7kgs only, there appears dropping of an elongated piece of meat in both males and females. The slow and sluggish pacing /stepping like vulture is peculiar to turkeys. The procurement of eggs is atidius job (eggs are equal or a bit greater in size to ducks eggs and are almond or grey coloured. The broodiness is 15-20 days .Chicks need special care and management (as detailed) and health care is subjected to strict disease control (disease such as Salmonella and Turkey cholera, fowl pox and New Castle Disease(NCD) and tick infestation etc.) This can be a small business when turkeys became popular in the country ,Or exported .

(b) **Ducks** were recorded as 0.31 millions (three lacks) during 2015-2016 which expected be estimated to 0.34 millions, say three and a half lacks by 2022-2023 (exact data is tabulated in the annexures of the book). These original belongs to water birds (with low flights), ornamental and regarded as heavy birds ,males weigh on an Average 3-3⅓ kgs while females 2- 2 ½ Kgs on maturity there is skin in between claws ,The procurement of eggs , incubation and hatching in 2021-22 days and the duck-chicks (day old) being 1½ to 2 times bigger than poultry chicks. Care and management is very close to poultry chicks and adults except water availability is ensured closer to facilitate these for swimming, disease care is always tedious job and attention is paid to health care (specially coccidiousis, Salmonellosis, e.coli infection, bronchitis and phenomonia has been recorded). Duck meat has not gained a trend to be eaten and not liked but demand in the foreign

countries, especially the skin of the duck ,it includes the seven servings of the Chinese and Thai foods (c) Quail rearing has a history of many thousand years ,a summarized historical and Islamic background has been described ,until recently ,cage rearing of quail has been done (initially brought from other countries to Indo-Pak in the year 1900,and indicated its origin from China and Japan known as conturnix while in 1950 one million (10lac)) quails were introduced in one-third of USA but could not flourish due to many reasons ,but still these are available in the island of Hawaii .In Pakistan in wheat season (growing grain and maturing wheat crop colour, before harvest quails are captured and sold/eaten as roasted ,mature ones weigh 100-140 grams, females remain more in weight. The av. Age being 1-2 years. The procurement of eggs is on the av. produced by females 200-300 ,while laying starts on 50th day of age ,spotted shells, egg's weight is 7-10 gms while 1 day old chick ,weight 7-8 grms and grows fast .Procurement of eggs care and management is again a tidious job and health care needs much attention towards disease such as crazy chicks disease ,quail bronchitis NCD coccidiosis ,salmonella infection and Mycoplamosis with worm infestation and black head disease are endemic .These can be raised as a business and lead to poverty alleviation and self-reliance in rural areas.

(c) Rearing **guinea fowl** another fancy bird of low flight and heavier bird ,white and black spotted ,with fast voice ,low paced and keep walking while come back to pens in the evening under the cage/pen care and management ,is needed for the procurement of their eggs , the females lays 70-80 eggs per year (on an average) and chicks hatch in 21-22days (either incubating the eggs user female or hens and /or in an incubator ,although resistant to many disease of poultry common ailments are given in other text books ,as indicated in the references. Animal Health Care Schedule (AHCSA) is always implemented.

(d) **Pea-fowls** (commonly known as "pea-cocks" has been regarded as ornamental birds , categorized in the wild life chapter or zoo-birds but has been domesticated since centuries ago and now a days fetch heavy price (say eg one bird has been recorded sold and purchased worth of Rs60,000/- to Rs80,000/- price while the farmers involved sell a pair (bone male and female) for not less than Rs1,50,000/- (one lac and fifty thousands) during

2015-16 while now these might fetch greater prices. Being a medium to big sized bird with a beautifully splendid long tail –Quills ,peculiar to this breed of ornamental bird . Specially the males when erect these quill –feathers gives a rainbow –flowering with different colors. Three different colours of pea fowls are famous while (i) white(both male and females), (ii) fawn colour with tail feathers shinning colours and (ii) Black with dark green feather quills ,remain in open yard except might in the pens. The procurement of eggs (per year, the female lay 70-80 slightly sluggish, and laid at nights time, smaller than hens and guinea fowls) . Three kinds of birds lay light –bluish – shelled eggs namely the crows vultures ,sharik birds ,nightingale and blue crows .Eggs when collected natural incubation under females during broodiness is done (18-20 days) and hatched in additional-2 days) .Some farmers get it hatched in incubators .Health care and management is again and again a tedious job .Disease like coccidiosis ,(AHCSh is implemented strictly) ,simultaneously fungal infections and tick infestation has been recorded litter also needs proper care.This is becoming a profitable business .Livestock and Agri: farmers in the country as well as land lords keep them as a hobby and these are found kept in various places of the country .As a centuries old tradition and cultures of big families livestock,sheep/goats, camel, horse and precious birds pea fowls are also gifted to respectable guests and honourable personalities at head of the state level as well as Wild life and zoo authorities have established Aviaries at different areas in the country(Peshawar ,Nizam pur ,Pind Nashery Khan(Taxila) Islamabad ,Lahore , Sialkot, Bahawalpur, Rahimyar Khan, Feroz Pur Faisalabad, Changa Manga , Tharparker, Nawabshah, Karachi, Lasbela ,Qalat, Qila Saifullah and Turbat and in various Safari Parks of the country.

(e) **Pheasant** rearing ,commonly known as “chakor” are purely a subject of wild life and zoo in the country , available in different beautiful colour (balck, guinea-fowl coloured , red-necked –collar, sometimes green and blue neck-collars, green and blue-wing feathers ,long tail with comb and wattles red like poultry birds). Although details are available in the wild –life books, No regular farming prevails except in the zoo bird family ,some interested farmers or house wives keep it.The very sound and sharp voice indicates their

presence.The author remains limited with the advice to get relevent information from research and literature.

(f) **Pigeon** rearing is centuries old affair ,as these were trained and used for communication in early ages .Scientific farming is slow and rare but interested people keep them in hundreds. On roof top cages and use them with competitions of flights. The pigeon (of today) in the off shoot of jungle fowl but some of the breeds are specific for a certain area eg. Pigeons of the two holy places of the world in the Saudi Arabia ,the Makkah Mukarama and Madinah Munawara the specific breed still exists . centuries old and remained out sides of the holy mosques.The pigeon normally is 40-45gm heavier in weight than the quails. wings ,feathers and tails are larger. Some local names of pigeons are Nuara ,Lagga Neck collared,Ganu dar,Bilora/Bilori, , Dari Dar , Paired Saji , White pigeon Albina , mixed coloured ,fawn colour, chocolate colour , Black spotted , Brown spotted , and black color are available. The procurement of eggs and hatching with health care and management are ,being a tedious job. The female lays 10-12 eggs per year (in two seasons) 5-6 is March –April and the same number in Sept—Oct. Spotted with marble shaped shells (fawn amd grey with dark brown spotted are famous;) natural hatching is after 18 days , the chicks (day old) weight 10-12 gms or up to 14-15 gms (recorded) while the egg is 2-3 gms larger in weight .The newly hatched chicks have delicate skin woolly hairs which drop in 2-3 weeks,and the feathers appear growing . Pigeon health care and management is an important aspect with feed ingredients ,available in the market .Regular farming is yet to be adopted and it is a good business .

(g) Rearing of **geese** , commonly known as “Rajhans” are zoo birds ,included in water birds , need water for swimming (nearby ponds ,stream ,canal or pools remain in pairs) costly birds are available in different colors (white ,fawn ,black are like ducks, brown and dark green feathered) the neck is 3-4 times longer than ducks and body weight (Bwt) 3 times that of a normal average ducks ,male geese remain always 7-8 kgs while females 6-7 kgs as regarded always keep swimming but come back to pens in the evenings procurements of eggs with care and management of new borns to again a tedious job,female lays 60-70 eggs which 1-1½ times bigger from that of ducks and weight on an

average 90-110 gms , in two seasons(30-35 in March –April and equal number is Sept-Oct) egg nests are provided but females never sit on eggs for natural incubation (for hatching) thus these are kept under hen or taken to incubators which baby chicks hatch in 18-20 days. The care and management of chick ,their feeding and disease care of both (baby chicks and adults) is as per AHCSH (always displayed at prominent place of the pen. It is a small business and interested people can keep these where ample space is available in the farm houses. The disease specific for geese include wet liter disease ,fungal infections and other endemic contaminants ,as recorded.

(h) **Ostrich** rearing is basically a wild life subject ,being zoo bird ,largest in size ,originating from Australia and African countries ,with long neck, long legs with slight flight but running ,the ostrich meat and eggs are not in common use ,as staple food in the country ,some ostrich farmers are famous and are involved in the valuable business . At govt. level ,two safari parks ,wild life parks , in Rahim Yar Khan and Bahawalpur are regularly rearing and elsewhere in Punjab and Balochistan being maintained .The bigger in size in birds 4-5 feet logn (height), grey or fawn colored,long neck beak strong and long ,eat reptiles , scorpions , frog and small snakes ,sleep while standing. ,but can sit for relaxing , special care for feeding is practiced in the zoo and in the farms.

The procurement of eggs and feeding with care and management is important , females lay only 4-5 eggs a year ,the egg bein ½ kg is laid at night in an egg nest or a sandy – bedding arranged in the pen, quickly collected otherwise the females or males start eating ,hatching eggs are placed in the incubators where baby chicks hatch in 18-20 days. At all farms and zoos AHCSh is implemented strictly .In addition to prescribed feed ,disease such as enteritis disease ,coccidiosis and selmonella infection including tick born disease and fungal infections are reported. Ostrich rearing is now becoming a profitable business ,as permitted by the wild life Deptts: through not lavishly eaten , the meat is exported to Arab countries ,UAE, Libya , and African countries, proper research based farming can be more wise as a business .The chapter.unit ends with a format of self assessment questions and correct answers.

(i) This chapter No-06 pertains to Free Range Poultry (FRP) ,in the country ,spread over 14-15 pages deals with the three to four breeds ,not farmed in the commercially organized set up (the eggs ,the hatching ,the increased numbers ,kept at farm houses and ment for egg production and/or meat production at large scales). Since this area of poultry industry needs explorative and investigative research work to be done in rural areas of the country , as some breeds have emerged out of free range poultry birds namely Roads Island Regd (RIR).Desi ,some fighter breeds like Aseel , Kaulangi while Austra-lorp, and Sussex and New Hampshires (NHS) of shoots which flourished in many thousand villages of our country and other countries . The procurement of eggs and preparing these birds for meat purposes are somehow arranged in Rural poultry Production Practically resistant to many disease ,very less vaccinated and confront wild animals like rats ,squirrels ,lizards ,small snakes and scorpions.The procurement of egg care and management however is also important ,lay 140-150 eggs ayear with a strong beak, freely roam about in uper yards and fields ,eat small spiders ,earthworms ,the loust grass hoppers, ants ,ticks ,mites and as well as centepedes. Eggs when collected in the nests , insite the pens, hatch under broody hens and chicks hatched out in 21-22 days. In the evenings get back to pens..These get ready in three months of age but lesser in weight then broilers (which grow to 1500 gms to 1700 grams in the 44-45 days).These seldom cross 2000grams by weight even after two (02) years. Feed is prepared locally , two formulaes have been tabulated .A detailed note has been given towards academic point of view for its housing ,water supply , the pen requirements (very economical) ,feeders. water and protection against various disease , strictly implemented AHCSh ,where possible. This poultry free range, is keeping busy many jobless villagers who remain involved in rearing such poultry and a main source of poverty reduction in the country. The chapter ends with self assessment questions with correct answers ,with relevant references.

G. The Chapter 7

This chapter/unit 7describes various aspects of Rural Poultry ,its development ,various breeds used in bird keeping ,procurement of hatching eggs ,incubation or natural hatching under broody hens ,feeding arrangements ,health care and taking it as a small business in the country .The history goes back when commercial poultry farming started in sixties ,there

existed rural poultry ,back yard poultry at house hold level was continued and in Punjab Province Poultry Development and Board (PDBP) was established and the rural development was given a stimulus spread over 28-29 district since 2015-16 and it prevails , mostly women were involved .There exists many thousand such rural poultry development centres ,earlier 25eggs and 3-4 hens were provided on low cost with one bag full of feed (50kgs), to an exemplary house, who had ample space, one poultry pen and water availability ends thus many poultry farm have been established . Breed specific rural poultry development expanded with dark colour ,fawn colour ,light brown , blade colour ,white and black ,small sized birds appeared .These laid 140-150 eggs a year; Aseel ,Kulrangi and Layalpur ,Silver Black Breed (LSB) appeared in this way and in seventees RIR Fayyoumi breed was imported from Cairo, Egypt and got acclimatized in our environment.This exact data of desi birds was recorded as 85 millions which produced 1.154 millions tons poultry meat and produced 3947 million eggs with a growth rate of 3.5-4.3 percent during 2015-16.Only 50-60 thousand people were involved in rural poultry and the egg rates was Rs96-110 per dozen in 2015-16 which is now (in 2022-23) Rs340-360 per dozen and desi poultry birds appear not less than Rs1100/- each .Simultaneously some other birds such as quails ,ducks ,turkeys another are less also being slowly raised at rural level ,as a small business. The chapter ends with the self-assessment questions (with correct answers as the patron/format of the book supported with the references).

H. The Chapter Eight :

The Chapter eight is an effort made to concisely describe the important aspect of Poultry Industry ,the extension Education in Poultry sector, spread over 17 pages ,provides information of academic and practical importance ,specifically the work and duties of poultry extension workers ,to improve poultry production ,to find out problems and difficulties faced by poultry farmers ,and finally to formulate suggestions and recommendations to solve such problems. This chapter has been divided in the four –five main categories which includes (a) Poultry extension workers induced interaction with both broiler farmers and layer farmers ,in their respective areas ,finding out difficulties and problems.(b) the difficulties faced by farmers (i-broiler farmers, ii-layer farmers) (c) hatchery men ,(iv) breeder farmers and traders namely, veterinary medicines and vaccine dealers,(ii)egg business people and (iii) poultry meat traders etc. Lastly there are inscribed various suggestions and recommendations are possible and just

solutions of the problems ,so identified ,at federal govt. Provincial govt. and local govt. level while in the last paragraphs there is mentioned an Annual Training Programs based on a Poultry Training Manual (PTM) being used for three four years in Rawalpindi ,Lahore , Peshawer, Faisalabad and Karachi. This booklet ,the PTM comprises different aspects of poultry development ,most of which have already been covered and followed by Financial Institutions /Banks awarding loans/credit for poultry farming with complete information getting access to such financial assistance .Lastly the self-assessment questions with correct answers and references ,as per format of the book, are available.

I. The Chapter Nine :

The last chapter/unit 9 describes the future of the poultry Industry ,in the country , (spread over 16 pages) touches the progressing and bright future of environment controlled poultry farming run on the modern lines ,with modernized automatic system of water supply and feeding in cage system ,attention on free range and rural poultry farming ,organic poultry farming ,procurement of eggs with special food ingredients, flourishing modern poultry meat processing and poultry meat value addition (different products –pre-cooked and restaurant requirements ,supported with established marketing system over and above at least 8.5 millions people involved directly or indirectly involved in various farms (broilers and layers breeder, flocks ,feed mills, poultry medicine and vaccines ,egg business ,meat processing and trade etc). If an over view of the data is looked into ,the todays (2022-23), the commercial poultry birds produced were 1742.46 millions ,as compared to 792 millions in 2014-15 simultaneoulsy ,the rural and free range poultry birds were recorded (namely domestic poultry) 92-62 millions in the previous year 2021-22 and reached 94.02 millions in the recent year 2022-23.The egg production reported in the year 2022-23 ,4634 million (Desi) and 19170 million eggs of commercial poultry respectively .The meat thus obtained from Desi birds was 13.24 million tons in the year 2022-23 as compared to 12.97 million tons previous year 2021-22,if compared these figures were 8.75 million tons in 2013-14.The poultry sector ,as whole (farm hatcheries feed mills ,eggs and meat processing including ,Vety, drugs and vaccines (poultry only) reached 1000 billions as compared to 700 billions during 2014-15.The number of poultry farmers (11000 broiler, 8000, layer and 3000 including breeder farms) is still on the increase and over the last –Decade (2012-22-23), many hundred have been constructed

double storied and poultry meat plants have been fully automated. This indicates the real prospects of a bright future of poultry industry in the country.

CRITICAL OBSERVATION AND EVALUAION

The book written as per AIOU book format indicated that this is part of the (Training Course program for farmers), under a proposed project " Livestock Economics and Business Management Approaches Project (LEBMAP) under process in the Ministry of National Food Securities and Research (MNFS and R) GoP, Islamabad. Although it had been a pain taking effort to prepare it, the information is mostly of the year 2013-14 and 2014-15 which needs to be updated to 2022-23) ,at many places ,with recent references , so that if it becomes an academic asset with trainees ,the students and teachers alike .As critical evaluators it is recommended that such an effort be made in English for students researchers and teachers as an addition in "Livestock Literary Corners" in any library of Faculties , Universities and Research Institutions in the country and abroad. "

This article is supported with 23-24 references available with the author .

RECENT INSTRUCTIONS/GUIDE LINES FOR CONTRIBUTORS/AUTHORS

1. The original Articles/Research papers be sent on A-4 size paper, with one inch margin on both right and left sides. The test should be on Font No.11.
2. The standard format should be Abstract, Introduction, Review of literature, Material and Methods, Result, Discussion, conclusions and Recommendations followed by references/literature cited (in alphabetical order). Reference must appear in the text and preferably for the last 10 years on APA style.
3. Number of tables be restricted to minimum possible as per format.
4. Two printed (hard copies) and a CD/or email (soft copy) may also be enclosed to quicken the process of Referees evaluation(s).
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14. Publishing PJLSc. upto this Volume-XV (No.15), 2023 is on Annual basis. The Editorial Board in its 10^{th} and 11^{th} meeting agreed to publish PJLSc. Twice-a-year (on Bi-Annual Basis), immediate after the formal approval of HEC is obtained, with possible Financial Assistance.
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Pakistan Journal of Livestock Sciences (pakjlsc.)
For Vol-XVI, No.16 (2024)

Arrival of Articles (Receiving)	January – May, 2024
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Referring back to Authors	August – September, 2024
Final Acceptance	September – October, 2024
Draft typed	November, 2024
Proof readings	November, 2024
Final printing (Pre-binding proof reading)	December, 2024
Corrected published	December, 2024
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