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EDITORIAL

Al-Hamdo-Lillah, with the kind blessings of Almighty Allah, and Darood-o-Salaam on His Last of His Prophets, Muhammad مسترامية . The Editorial Board (EB) of Pak.JLSc. in its 10th and 13th meeting accorded approval of publishing this 10th volume, No.10, in hand.

With day-to-day petty improvements, each Research Article clearly will carry, on its face the date received, date-accepted and date-published.

We received 13 Research Articles while 11 cleared whereas 01 Abstract and 01 Article both of which, were not included, due to some clarifications. All these Research Articles were within our domain of subjects i.e. Livestock, Agriculture and Rural Development. Some articles have been cleared for next volume-XII (No.12) to be published in 2019, In.Sha.Allah.

Since our clientele have now crossed 485 and we are regularly distributing 80% on gratis bases, we have, as per policy recommendation of EB, reduced the number of copies to 200 as 4-5 people in one organization can benefit from one, fresh print-out, as well as to reduce cost of publishing.

We are confident that Higher Education Commission (HEC) will finally accord its formal recognition, long pending since 08 years. The ISSN, authorities are simultaneously requested to accord/upgraded "Y" category of this sustained effort since 2009.

> (Dr. Muhammad Hafeez) Chief Editor



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- 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, concussions and recommendations followed by references/literature cited (in alphabetical order). Reference must appear in the text and preferably for the last 10 years.
- 3. Number of tables be restricted to minimum possible.
- 4. Two printed (hard copies) and a CD/E-mail (soft copy) may also be enclosed to quicken the process of References evaluation(s).
- 5. Colour prints, photographs, if indispensable, (include 200 prints/200 photographs with colour scheme advised). This is negotiable.
- 6. Reference be kept limited (Not more than ten) preferably for the last 5-10 years. Standard format be adopted.
- 7. Contribution of Rs.3500/- (three thousand five hundreds only)/article/paper be enclosed up-to five pages. Each extra page will cost Rs.500/- (Five hundred only).
- Abstracts be limited to one para of 100-150 wards in between he A-4 paper supported in separate line, with key words for example. Microbiology: Coliform bacilli; E-coli; incidence of food contamination,

Pakistan. Chemistry; Physico–Chemical analysis; algae, lotus lake water –

Chemistry; Physico–Chemical analysis; algae, lotus lake water – Pakistan.

- 9. First screening of the papers will be within one month and acceptance/or other wise will be communicated after a period of 30 (THIRTY) days.
- 10. Changes/Amendments/Reviewers comments and advises must be attended by the contributor(s) authors and final draft with CDs/E-mail, be re-submitted to the Chief Editor within 14 days (hard copies, of course).
- 11. Duplications be avoided.
- 12. Advertisements be sent according to subscribed rates.
- 13. Selected Scientific paper/Articles will be subjected to PEER REVIEWING simultaneously by the local as well as Foreign Referees, in accordance with the guidelines of HEC Islamabad Pakistan.
- 14. Year Schedule of Processing Articles of Each Volume is also enclosed.
- 15. Publishing PJLSc. upto this Volume-XI,No.11, 2019 is on Annual basis. The Editorial Board in its 10th and 11th 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.
- 16. We are now available on <u>www.Pak.JLSc.Org</u> as well as On-Line, URLhtpp://www.pjlsc.org.publication and email drmhafeez1949@gmail.com



PROPOSED ANNUAL SCHEDULE OF PROCESSING ARTICLES Pakistan Journal of Livestock Sciences (PJLSc.) Vol-XII, No.12 (2020)

Arrival of Articles (Receiving)	January – May, 2020
Submission to Referees	June – July, 2020
Corrections expected	July – August, 2020
15 ^{th &} 16 th Editorial Board Meetings	July – August, 2020
Referring back to Authors	August – September, 2020
Final Acceptance	September – October, 2020
Draft typed	November, 2020
Proof readings	November, 2020
Final printing (Pre-binding proof reading)	December, 2020
Corrected published	December, 2020
Post-printing reading (addendum if any)	December, 2020
Dispatch to clientele	December, 2020

NB: Acceptance is accorded only when Research Articles are cleared by Respected Referees (both reviewed and peer reviewed)

CELEBRATING DECADE OF PROGRESS PAKISTAN JOURNAL OF LIVESTOCK SCIENCES ISLAMABAD 2008-2018



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AN OVERVIEW OF SACRIFICIAL ANIMALS AND MARKETING TRENDS ON THE OCCASION OF EID-UL-AZHA (2019)

Muhammad Hafeez¹

ABSTRACT

Livestock Development Foundation (LDF) Regd. Islamabad since its establishment (2004) and publishing since 2012 on two yearly based of sacrificial animals (a month or a fort night before Eid-UI-Azha), with main focus on Rawalpindi Islamabad twin cities along with information collected through Social media. This research cum status article based on the comparative study describes trends of markets (s), influx of sacrificial animals both large and small ruminants (sheep and goats) including camel subjected to trade (sale and purchase) at local markets and outside. The markets with fluctuations of feed and fodder prices, as recorded in the recent years with an update on 2019 market rates of animal by-products (hides and skins etc), in August 2019, with recommendations of necessary precautions of sale and purchase of sacrificial animals. A comparison of previous years is also presented in tabulated form.

Key Words: Sacrificial animals, markets trends trade fluctuations of prices, Rwp-Isbd Pakistan.

Article received: Sept-2019 Accepted: Oct-2019 Published: Dec-2019

INTRODUCTION:

With the passage of time, livestock is gaining immense importance in its two broader domains namely (a) Production of milk and meat for human consumptions and (b) Socio-cultural and at religious occasions as slaughtering of large animals (cows, buffaloes and small ruminants (sheep/goats) at the time of mainly the Eid-UI-Azha. In this endeavor, main focus has been the comparative marketing trends of large and small animals with (i) average sale prices (ii) average rates of feed and fodder,(iii) Cost of Slaughtering and cutting of meat by buchers and (iv) Average rates of animal by products namely (hides, skins intestines (guts and casings) for recent years as compared to previous years.

In finding out detailed satisfactory information on Breed, color, age of animals (Dondas, chaggas) and small ruminant's age, approximate live Body Weight (B.Ht) and weight of actual meat carcasses weight coming out (after slaughter), specifically meat with bones, some of the precautionary measures have thus been suggested to the farmers, Livestock traders, the market management of local Government personnel and the common man involved in livestock trade (sale and purchase) with high lights on animal production and animal health. The study was carried out as an annual routine activity of the manifesto of Livestock Development Foundations (LDF,Regd) Islamabad, two yearly, but this work had been third of its kind since 2011, 2015 and 2019 (with a

*President LDF, Isbd and Chief Executive FCS, Isbd.



pause of 04 years with the aim to achieve maximum possible of following o its

objectives:-

- (I) To bring updated information and presented for stakeholders.
- (II) To elaborated the market trends of both large and small ruminants in 2019 and compared with previous years.
- To create awareness amongst common man for livestock trade. (III)

METHODOLOGY:-

The following methods was employed in this endeavor:-

- A gallop-survey was conducted on status and prices (Average Sale (i) Prices (ASP) of large and small ruminants.
- Feed and Fodder retail prices were also collected in Eid-ul-Azha (ii) davs.
- (iii) cost of slaughtering and cutting meat, by butchers for large and small ruminants.
- (iv) All possible information collected through large and small markets and from social media.
- Averaged prices of animals by products such as hides (large (v) animals), skins (small ruminants) guts and intestines, with stomach/Ojri etc in Eid-ul-Azha days.

BRIEF OVER-VIEW OF THE WORK DONE:

In an effort to bring similar status report, as observed, and documented by Muhammad Hafeez (2012) entitled "Comparative study of Market trends of influx of sacrificial animals of Eid-UI-Azha days at Islamabad" described mostly three four categories of large animals (bulls) such as (a) Dondas (Two Teeth), (b) Chogas (Four teeth) and (d) Kheeras (all milk teeth). Various Average Sale Prices (ASPs) of each categories, with different body size and body weight were recorded. In addition, prices of (i) feed and fodder (ii) Average rate of animal by products and (iii) sacrificial skinning and making meat prices. It was recorded that ASPs were increased by 14-16%, in both large animals as well as up to 08-10%, in small ruminants, during 2011, as compared to 2010 prices. The study was supported with detailed information in tabulated forms. Similar study was also conducted in the year 2015 as documented by M.Hafeez (2016) and has been summarized in tabulated form, for comparison.

RESULTS:

The results worked out in this study, in comparison to previous year have been detailed as under:-

Average Sale Prices (ASPs) of large animals (Bulls). The ASPs of (i) Dondas, Chogas and Chaggas as recorded for 2019 were Rs. 80,000, 86,700 and 1,30,000 with averaged B.Wt of 150-200 kgs, 201-250 kgs and 251-280 kgs respectively as presented in table No.01. The maximum ranges of increase in prices was revealed by not less than 20-25%, of ASP of large animals in 2019 as compared to 2015 ASPs.

- (ii) Average Sale Prices (ASPs) of small ruminants (male goat (bucks) and sheep Rams. The averaged prices, with apparent B.Wt of (a) 20-30 kgs, (b) 21-30 kgs and 30-40 kgs were recorded during 2019 as Rs. 19600, 22400 and 22800 with an increase in prices by 10%,12% and 13% respectively when compared with the year 2015 prices as detailed in table No.02.
- (iii) There had been movies, documentaries and gallop surveys conducted by social media both on TV and Print media reports indiating Average Demanded Prices (ADPs) of various (a) local breeds (b) exotic breeds and (c) Cross bred male bulls and (d) specially prepared, finished, well nourished and termed as "show animals" were displayed and prices ranged from a min. of Rs. 10,00,000 (ten lacs) with approximate B.Wt of 270-280 kgs to a max: of Rs 40,00,000 (forty lacs) of B.Wt of 450-500 kgs, with other information as detailed in table No.03.

(with Av. B.Wt) in Rwp-Islamabad Eid-UI-Azha Market of recent years										
Sr.#	Type of Animal	Average B.Wt (kgs)	ASP (Rs) (2011)	ASP (Rs.) (2015)	ASP (Rs.) (2019)	Increase %				
01	Dondas	150-200	70,500	74600	80,500	27.17				
02	Chougas	200-250	78000	80,500	87,700	25.50				
03	Craggas	250-300	90,500	95000	1,10,000	15.78				

 Table No.01 comparative Average Sale Prices (ASPs) of various categories

 (with Av. B.Wt) in Rwp-Islamabad Eid-UI-Azha Market of recent years

ASP- Average Sale Price, Source-LDF- Gallop Surveys.

Table No.02 comparative Average Sale Prices (ASPs) of small ruminants (sheep and goats) in RWP-Islamabad Eid-UI-Azha market of recent vears.

	ycurs.					
Sr.#	Type of Animals	Av.B. Wt (Kgs)	ASP (Rs.) (2011)	ASP (Rs.) (2015)	ASP (Rs.) (2019)	Increase %
01	Goat (bucks)	25-30	18000	20,000	22,000	10
02	Ram (sheep)	30-35	16000	17500	19600	12
03	Goat buck	35-40	16500	17500	20500	10.8
04	Ram (sheep)	30-40	16500	18000	19500	8.33
05	Goat buck	35-40	17000	18500	20500	10.01
06	Ram (sheep)	40-45	18800	21500	24600	14.42
	Source: Loca	l market c	hata-August	F-2010		

Source:- Local market data-August-2019.

	various markets	of the country	/.	
Sr.#	Local Kind of	A.V. B.Wt	Age	A.V Demanded
	animal Breed	Kgs	(Years)	prices (Rs.)
	based			
01	Breed Based			
	Sahiwal	400	04-5	10,50,000
	Red Sindhi	500	05-6	15,00,00
	Dhanni	400	04-5	11,00,000
	Chedish	300	05-6	19,50,000
	Tharparker	400	05-6	08,50,000
	Baghnan		04-5	10,00,000
02	Exotic	400	05-6	20.00.000
	Freision	4200	05-6	30,00,000
	Ausbaha	4500	05-6	35,00,000
	Black	500		40,00,000
03	Cross Bred			
	Frisian Red	3800	04-06	10,00,000
	Frusian Dhoms	3500	05-06	11,00,000
	Frusia Dhoms	230	05-06	09,00,000
	Frusia Lohan	2800	04-05	05,00.000
	Frusia	250	05-06	04,00,000
	Tharparkar			

Table No-03 Comparative ASPs,	of Highly demanded larger, bulls, in
various markets of the co	ountry.

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COMPARATIVE COST OF PRODUCTION OF MILK IN AN ECONOMICAL DAIRY UNIT OF 06 BUFFALOES IN RURAL ISLAMABAD

Mansoor Ahmed khan¹, Muhammad Hafeez²

ABSTRACT

This recent update comprises commercial and financial aspects of a dairybuffaloes (dairy-buff:) unit of 06 lactatering animals, kept at a rural farm in Islamabad. A comparative approach has been adopted taking the prevailing market rules of feed and fodder ingredients, as per Rawalpindi (Rwp), Islamabad (isbd) with average milk production of 08,09,10,11 litters (ltr:) of milk, per day. Simultaneously the local market cost of (i) green fodder, (ii) wheat straw, (iii) wheat bran, (iv) sarson oil seed cake/khall have also been included for the year 2017, 2018 and 2019. An important part of livestock management (LM), pertaining to miscellaneous expenditure on item such as (a) medicine and vaccine (b) animal health service, (c) soap/detergent and disposable, (d) utility bill of electricity and fuel-gas and (e) unfore-seen, as per record of the farmer. Lastly the production of milk and cost litter was worked out for 2019, compared with 2017 and 2018 respectively. The conclusion reached, after the detailed anaylsis evidenced a increase of 8.33% to 11.11% in cost of feed and fodder along with 6.66% to 10.53% increase in prices of live dairy buffaloes from the home-tract of dairy buffaloes (without cost of transportation). The cost of labour/gawala salaries were also recorded 13% in 2018 15% in 2019 increased as compared, whereas operational cost was recorded increased in 2018 in comparison with 2017 as 6%-11%. This effort ends with only one recommendation that farmers be advised to purchase feed at whole sale rates and dry fodder (the wheat straw) in the wheat threshing season to reduce operational cost, helping in containment of prices of milk per litre.

Key words: Dairy buffaloes, commercial and financial aspect, dairy unit. Pakistan

Article received: oct-2019, Accepted: Nov-2019 Published: dec-2019

INTRODUCTION:

Economical dairy farming of smaller units, of at least 06 milch cows and bufalloes, have been regarded as a small economic activity for beginner farmers, not only in Pakistan but in other agricultural developing countries, as identified way back in early seventees by researcher such as Delgado – (1993), an FAO consultant who also targeted that milk and meat production in Pakistan will have to be increased to twice (as of 1975) by the year 2020 when the human population was estimated to reach 200 million. The estimates become true when in the year 2017, the human population reached 207.7 million, before 2020, as documented in the Pakistan National Census Organization (PNCO - 2017), with the proposed estimated human growth studies of national institute of Population Studies (NIPS- 2010) an important institute of planning and development (P and D) Ministry GOP Islamabad.

As per recent estimated livestock population of the country, recorded during the year 2016 - 2017 was cattle = 44.4, buffaloes = 37.7, sheep = 30.1 and goats = 72.2 million with a total positive growth rate of 3.77, 2.90, 3.18 and

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<sup>1</sup>Statistical Officer- livestock whig M/O NFSR-GoP, Isbd.
<sup>2</sup>Chief Executive- FCS and President LDF, Isbd
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3.8%, whereas the growth rate for cattle, buffaloes, sheep and goats evidenced 2.9%, 2.6%, 1.3% and 2.6% respectively during the year 2017 - 2018.

The production of milk was recorded as increased from 56.08 million tons during 2016-17 to 58.23 million tons in the year 2017-18 resulting in a growth rate of 3.69%. The human milk consumption was recorded as 45.23 million ton in the year 2016 – 17 which was increased to 48.13 million tons in the year 2017 -18, showing a acceleration rate of growth as 2.7% duly documented by livestock wing –(2017-18), Ministry of Food Securities and Research GOP, Islamabad.

Rural milk production, of smaller dairy units and scavenges have been recorded but on limited scale as per personal communication for which efforts needed to be carried out by livestock personal of Federal, Provincial and Local govts: on weekly and monthly basis, to find out factual positions, as pointed out in previously documented reports.

Work done in the recent past

i. Various traits affecting milk production

In a recent effort made by Syed Hassan Ali et.al (2018) a detailed study, on the economic traits of buffaloes in two districts of Okara and Jhelum, Punjab, province, Pakistan Various aspects of production traits namely (i) season, (ii) age at first calving, (iii) age at first service, (iv) lactations periods (days), (v) milk yield (per lactation), (vi) gestation period (vii) inter-calving interval were involved examining N=100 (n₁=50 at okara, and n₂=50 at Jhelum farms) apart from other parameter, the milk production of these bufalloes were recorded with mean of 285.5 ± 5.20 days in milk producing 2142.86 ± 35.10 liters of milk in one location, in first calvers while in the second calvers produce 2258.81 ± 20.21 liter of milk per location.

ii. Climate and environmental affect

Milk production in buffaloes in rural Islamabad was recorded in reduced quantity, when brought from plane areas of Punjab province as per recorded previous observation, majority of milk buffaloes either first calvers or second calves yielded 11-12 liters of milk per day (on an average) when acelimatised in Islamabad rural area, resulted in lower yield (up to one liter or one and a half lit/day) as an environmental affect, duly reported by Sarwar et al (2009), Bashir et al (2007), M. Hafeez (2011), Warraich et al (2009), and Hassan Ali et al (2018).

iii. Acclimatization of breed and area

With the passage of time, the water buffaloes, as were recorded, producing upto 5000 liters of milk (by the selected milk buffaloes) in early sixteens and seventeens, over the last half a century while recently been recorded as producing 3000 plus liters by well-nourished and healthy ones but the mediocre majority have been recorded as producing up-to 2600 to 2800 liters per location, as reported by Kumar et al (2007) and Bilal, Suleman and Raziq (2006).

iv. Nutritional affect towards milk production

The cost of production of milk in buffaloes, specifically, as evidence by research workers, based on a balanced and complete feed supported with fresh seasonal fodder, had a significant contributing factor in milk production, apart from breed, the Nili-Ravi in Punjab, kundi in Sindh and Azakheli/Azi-kheli in Swat valley of Pakistan, as duly advocated by text books and field experimentation over the past one century or more, recently documented by Sunilkumar and Kataria (2011), duly supported by Mashookali Bhutto et al (2015) advocated and supporting provision of balanced nutrition to milch buffaloes for increased milk production as documented by Muhammad hafeez (2008) in livestock Industry, code-782 of graduate students Text Book of AIOU and Muhammad hafaz (2011). Livestock Industry II: Livestock and Poultry Production in Pakistan, published under Higher Education Commission (HEC) of Pakistan.

The main ingredients as documented in the text books, recently endeavored namely Livestock Economics and Business Management (M.Hafeez-2009) and Livestock Microeconomics documented by M.Hafeez (2014) duly referred and incorporating findings of researcher from home (in Pakistan) and abroad supported with results of studies carried out on microingredients helping in increased production of milk. Such micro-ingredients include Di-Calcium Phosphate (DCP), the addition of hormones and vitamins in appropriately recommended quantity in feed, have resulted in increased milk production with an average quantity of half to one liters of milk per day, taking breed, strain, health status, amidst balanced daily ration and animal Health Care Services (AHCS) as part of Good Management Practices (GMPs).

v. Animal health care Services

Lastly, a brief but updated aspect of animal health needs to be discussed as healthy animals remain in production for a longer period, and healthy lactating cows and buffaloes, with their bulls remain reproductive with more than 85% of re-productivity, at dairy unit or a breeding unit supported with the animal health text books and major text books of microbiology by William Topley and Miles (1975) text book on Veterinary virology by Mahanty and Dutta (1983), advocating the profhylactive vaccination of academic diseases of large ruminants (cattle + buffaloes). The endemic diseases prevalent in Pakistan namely Hemorrhagic Septicemic (HS) Anthrax Foot and Mouth Disease (FMD) reinderpest is no more prevalent and Office International des-Epizzooties (OIE) the international animal health organization Paris France, has declared Pakistan a free of Rinderpest country, in the year 2005 as well as, reported in joint FAO/WHO/OIE world animal health report (2005).

The bacterial, viral, parasitic and fungal disease cause economic losses if Annual Animal Health Care (AAHC) schedule is not properly implemented at a livestock farm, as an endeavor duly made and described detailed animal health as parts of an economic loss due to livestock diseases as documented by Muhammad Hafeez (2009). A book equally beneficial to student's researchers and farmers.

MATERIAL AND METHODS:

To make this effort, an update, the following information was collected: -

- 1- The farmers record, as an update was collected with informations jotted below:-
 - (a)- Feed and fodder costs on monthly basis.
 - (b)- All record of financial implications on miscellaneous expenditures (monthly and yearly)
 - (c)- Expenditure record of drugs/medicine and vaccines, incurred.
 - (d)- Animal health care services cost on monthly and yearly basis
- 2- Review of Literature relevant to economic dairy unit of 6 buffaloes/cows
- 3- Text books and researcher's findings was also incorporated the three recent years 2017, 2018 and 2019.

RESULT AND DISCUSSION:

The comparative differences recorded in various parameter of an economical unit of 06 milch buffaloes, for the three study years has been narrated as under:-

(a) Feed and fodder (based on retail price)

Local market of green fodder showed a percentage increase of 6.66%, 6.25% and 11.11% for the years 2017, 2018 and 2019 while the wheat straw (Bhoosa) showed 5.26%, 10% and 11.9% increase in the study period whereas a lesser percentage in wheat brain (Chokar) of 2.50%, 2.6% and 3.66% while increase was recorded in sarson oil seed cake (khal) showed 7.6% and 15.38% and 20% in the three recent years, respectively, as detailed in table no.-01

It is evident that all the main feed ingredients namely (i) green fodder, (ii) wheat straw (bhoosa), (iii) wheat bran (chokar) and (iv) the sarson oil seed cake (khall) were on the successive but steady increase in the yeat 2019, as compared to 2017 and 2018 while green fodder and sarson oil seed cake showed increase from 6.25% to 11.11% in green fodder and from 7.7% to 14.28% in 2019, as compared to 2018, in Rwp – Isbd twin city market, based on retail rates.

Table No. 01: showing comparative increase(s) of cost of feed ingredients over the recent years (2017, 2018, and 2018), RWP – ISBD

		Retail Market rates (Rs.) per 40 kgs						
Sr.#	Feed ingredients		2017		2018		ncrease	
		increase		increase				
01	Green fodder	300	6.66	320	6.25	360	11.11	
02	Wheat straw (Bhoosa)	300	5.26	420	10	470	11.9	
03	Wheat Bran (choker)	800	2.50	820	2.6	850	3.66	
04	Sarson oil seed cake (Khall)	1300	7.6	1500	15.38	1800	20.0	

Table No.02:	comparative	increase(s)	of cost of	dairy	buffaloes i	n recent	years
(2017	, 2018, and 2	018), RWP -	ISBD	-			-

Sr.	Dairy buffaloes	201	7	2018		2019				
#		increa	ase	increa	se	increa	ase			
A	Average size with 08 liter milk per day	1,40,000	16.16	1,50,000	7.14	1,60,000	6.66			
В	Average size with 09 liter milk per day	1,50,000	7.14	1,60,000	6.66	1,70,000	6.25			
С	Average size with 10 liter milk per day	1,60,000	6.66	1,750,00	9.38	1,90,000	8.50			
D	Average size with 11 liter milk per day	1,65,000	3.12	1,80,000	9.09	1,95,000	8.33			
Е	Average size with 12 liter milk per day	1,70,000	6.25	1,90,000	11.76	2,10,000	10.53			

Table no. 03: comparative laor/gawala salaries (PM) with percent increase over the recent years (2017, 2018, and 2018), RWP – ISBD

Sr. #	Average dairy cow/buffaloes	No. of gawala	2017	7 %	2018	3 %	2019	9%
А	06	01	8500	6,25	9800	11.76	11,000	15.80
В	06 with 5 – 6 calves	01	9000	5.88	10,000	11.11	11,500	15
С	06 + 10- 12 calves	01	10,000	11.11	11,500	15	13,000	13.04

NB. The salary of gawala was supported with free – messing, at the form

Table No. 04: comparative miscellaneous expenditure on a 06 dairy cows/buffaloes, unit per year in rural RWP – ISBD over recent years (2017, 2018, and 2018), RWP - ISBD.

Sr.	Misc. items	Expenditure (Rs)					
#		2017 increase		2018 increase		2019 increase	
i	Drugs/medicine and vaccine	42,000	7.14	48000	6.6	52000	8.88
ii	Animal health centre	48,000	9.0	53,000	10.42	60,000	13.21
iii	Soaps/detergents/ dusters and disposable	65,000	11.11	9000	11.11	10,000	11.11
iv	Electricity, gas etc.	30,000	12.5	35000	6.94	42,000	9.09
v	Unforeseen guests, student visit	8000	14.28	10,000	20	12,000	16.66
	Total	1,42,000	14.29	1,59,500	11.13	1,77,000	11.26

(b) Comparative prices of live dairy buff: (in milk)

The prices of dairy milk buffaloes, mostly first calvers in plane areas of Punjab province, the local market for the years 2019 when compared with 2017 and 2018 showed an averaged percentage increase with different categories of milk production day. The categories mainly assessed for price of such first calves and second calves on (a) as 08 liters/ day, (b) as 09 liter/ day (c) as 10 liters / day, (d) as 11 liters/ day and (e) 12 liter/ day. These dairy milk buffaloes showed a steady but sustained increase of 6.66% to 10.53% in 2019 when compared with 2017 or 2018, as detailed in table No.02. It can be observed that on an average there appeared at least Rs. 10,000/= per increase of one liter/day of milk. This cost did not include transportation cost, from plane areas, of Punjab, to upstream or downstream areas in the country.

(c) Comparative labor cost/gawala's salary

Since a continuous observation of this factor, in developing feasibilities, the record of the farmer was observed with strict but frank vigilance. The increase in gawala salary showed a successive increase of 6.25% in 2017, 11.76% in 2018 whereas 15.89% without taking care of additional grown up calves when the buffaloes calves ware grown up for 2-3 years the gawala salary was increased from Rs 5500/= to Rs.10,000/=. This salary was recorded, with grown up calves (05 - 06) which were declared as adult =s as Rs.10,000/= in 2017 with increase of

11.11% while it was recorded Rs.11500/= with an increase of 15% while the same gawala was paid Rs. 13000/= in the year 2019 respectively as presented in table No.03.

It was querry responded by the farmers, as well as the gawalas, that such an amount was reasonable as the labor rate of daily wages for 08 hours work was Rs.600/= to Rs.700/= per day, in Rwp – Isbd. It was further recorded that the gawala was provided breakfast, lunch and dinner with two or three times tea, by the farme/owner.

(d) Miscelleous expenditure

It was recorded that (i) drugs and vaccine cost was increased from 7.14% in 2017 to 8.33% in 2019, (ii) the Animal Health Care Services (AHCS) on the other hand showed an increased of 20% in 2017 while 12.5% in 2018 and 11.11% in 2019. The detergents/soaps and disposable also showed sustained increase of 11.11% through out the study years whereas the electricity and fuel gas showed fluctuating increase of 12.5%, 6.95% and 9.09% in the years 2017, 2018 and 2019. The unforeseen expenditure grew from 14.28% in 2017 to 20% in 2018 while it was recorded increased by 16.66% in 2019 respectively, as presented in table No.04.

(e) Comparative cost of milk production (A with or B without concentrate feeding)

Adjacent to the economical farm one rural farmer, raised 06 buffaloes without providing concentrates hence as an additional effort of comparing (a) gawala salary, (b) cost of feed and (c) miscellaneous expenditure was obtained to reach at cost of milk production, as detailed in table No.05 and 06.

It can be seen that milk sold @ Rs. 80/ and Rs.85/= in the year 2018 saved Rs.11,855 to the farmer (a) PM with providing 05 kgs of concentrate per buffalo per 305 days. Whereas the farmer (B) saved Rs. 15553/= PM. When milk was sold @ Rs. 80/= per liter. The main out come as per record was the buffaloes provided with concentrate feed yielded 10 liter of milk/ day on an average but the milk production without concentrate was recorded, on an average 09 liters of milk/ day.

(f) Animal Health Care Services

It was observed that with proper provision of medicine, drugs and vaccines mediated with timely animal health care services, no death was

recorded in the adult milch buffaloes as well as the calves, at the farm during the period of three years of study.

CONCLUSION:

Based on the efforts made, supported with farmer's record, the following conclusions have been drawn: -

- i. The cost of feed/ fodder grew @Rs. 8.33% to 11.11% during the three years' period (from 2017 to 2019), at an economical dairy milch buff: unit of 06, in rural Islamabad.
- The cost of labor/gawala's salary simultaneously increased from 13% in 2017 to 15% in 2019 as justified by both the owners and gawalas.
- iii. Cost of dairy milch buffaloes showed an increase at local market rates (Live-Rates) in plane – areas of Punjab both in first calvers and Second calvers from 6.66% to 10.53% categorized as with 08 liters of milk/ day to 12 liters of milk day, during the three study years.

RECOMMENDATION:

As a result of this study findings only one recommendation is made to the effect that:- The farmers of smallest economical dairy unit of 06 buffaloes are suggestively advised to purchase feed ingredients on whole d=sale prices and wheat straw in threshing season with no compromise on animal health expenditure.

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ECONOMIC IMPORTANCE OF WORM'S INFESTATION IN SMALL RUMINANTS IN SURROUNDING VILLAGES OF ARID ZONE SMALL RUMINANT RESEARCH INSTITUTE, KOHAT

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ABSTRACT

The current study was conducted at "Veterinary Research and Disease Investigation Centre (VRDLC) Kohat and Arid Zone Small Ruminants Reasearch(AZSRRI) Institute Ghulam Banda Kohat, Khyber Pakhtunkhwa from January 2015 to December 2015. A total of 355 fecal samples of sheep and goats (235 from sheep and goats of surrounding villages and 120 from AZSRRI were processed during this study. Analysis shown that 104 out of 235 samples (44.25%) collected from surrounding villages were positive while the remaining 131 (55.74%) were declared negative through light, microscopy. Among positive samples, the percent positivity of different parasites was, Haemonchus 15.38% (16/104),Trichuris 9.61% (10/104). Strongyloides 12.50% (13/104), Oesophagostomum 18.26& (19/104), Amphistomes 11.53% (12/104), Ostertagia 10.57% (11/104), Dascila 4.80% (5/104), Chabertia 9.61% (10/104) and Cooperia 7.69% (8/104). Out of 120 samples from AZSRRI, 22 samples (18.33%) were found positive for different parasites while the remaining (98/120 = 81.66%) were declared negative. Percent positivity of different endoparasites among positive at AZSRRI were, Haemonchus 13.63% (3/22). Trichuris 13.63% (3/22), Strongyloides 09.09% (2/22), Oesophagostomum 18.18% (4/22), Amphistomes 13.63% (3/22) and Trichostrongylus species were 31.81% (7/22), Greater infestation rate I surrounding villages as compared to AZSRRI kohat may be due to lack of deworming and improper management practices among the farmers.

Keywords: Sheep, Goats, Endoparasites, Prevalence, Kohat Khyber P.k

INTRODUCTION:

Livestock plays a vital role in the economy of Pakistan. The sector meets the domestic demand of milk, meat, mutton, hides, skins and different types of byproducts. More than 8.0 million rural families are involved in raising livestock. contributing 56.3 percent to agriculture and 11.8 percent to the national GDP (Economic Survey of Pakistan 2014-15). Due to unhygienic improper care, environment, mal nutrition, extreme climate and close contact with infested animals they get diseases of parasites (Gadahi et al., 2009). Parasitism is the single most important hurdles in successful farming all over the world. Many species of endoparasites are found to infect livestock species (Saeed at al., 2010). causing the industry huge economic loses throughout the world (liaz et al., 2009; Bilal et al., 2009). The economic aspect goes to high treatment expenses and mortality (Gupta et al., 1978). In Pakistan the prevalence of parasitic infestation is very common and causes heavy losses per annum to livestock industry (Haleem

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et al., 2016).studies on prevalence of different parasites in different parts of the world have showed varied incidence under different management and parasite control systems (Chaudhry et al., (1991); Boxell et al., 2004 and Capewell et al., 2005). Small ruminants in this regard cannot be neglected because of their large population of 29.4 million sheep and 68.4 million goats (Economic Survey of Pakistan 2014-15) although representing an important source of animal origin protein in countries like Pakistan, seems to have least benefits from veterinary care and improved/ advanced production systems. Sheep and goats are often the main source of mutton, milk and are also used in traditional festivals throughout the country. Together, sheep and goats provide a good source of income for the poor farmers of hilly and semi hilly areas where cattle rearing is of lesser importance (Ijaz et al., 2009). District Kohat and its surrounding areas are mostly hilly and are therefore more suited for rearing small ruminants. The study was designed to investigate the prevalence of different endoparasites in sheep and goats in the surrounding villages of AZSRRI Kohat.

MATERIAL AND METHODS:

The work was carried out at "Veterinary Research & Disease Investigation Centre Kohat from January 2015 to December 2015 (one year). A total of 355 fecal samples from sheep and goats (235 from surrounding villages and 120 from AZSRRI) were collected. Five grams fecal sample was collected directly from the rectum of each animal in a clean polythene bag labeled accordingly and refrigerated at 4C till further processing, were subjected to saturated sodium chloride flotation technique to isolate the eggs of various parasites (Cable, 1985; Urquhart et al., Zajac and Conboy, 2006). The slides were observed under 40 lens of light microscope. The parasitic ova's were identified by using key as described by Soulsby (1982).

STATISTICAL ANALYSIS:

The data thus obtained were analyzed by calculating percentage positivity of parasites, using MS excel version-16 separately for surrounding villages and AZSRRI Kohat.

RESULTS & DISCUSSION:

The Analysis showed that 104 samples out of 235 (44.25%) collected from surrounding villages were positive while the remaining 131 (55.74%) were

declared negative through light microscopy (Table 01). Among positive samples, the percent positivity of different parasites were, Haemonchus 15.38% (16/104), Trichuris 9.61% (10/104), Strongyloides 12.50% (13/104), Oesophagostomum 18.26% (19/104), Amphistomes 11.535 (12/104), Ostertagia 1057% (11/104), Fasciola 4.80% (5/104), Chabertia 9.61% (10/104) and Cooperia 7.69% (8/104). Out of 120 samples from AZSRRI, 22 samples (18.33%) were found positive for different parasites while the remaining (98/104 = 81.66%) samples were declared negative.

Percent positivity of different endoparasites among positive samples at AZSRRI were, Harmonchus 13.63% (3/22), Trichuris 13.63% (3/22), Strongyloides 09.09% (2/22), Oesophagostomum 18.18% (4/22), Amphistomes 13.63% (3/22) and Trichostngylus species were 31.81% (7/22) as shown in table 02. Comparatively lower infestation rate in the experimental animals of AZSRRI Kohat compared to the surrounding villages may be attributed to regular dewoeming schedule of experimental animals as compared to that of surrounding villages. The findings of this study differ from that of Raza et al., 2007 and Ijaz et al., 2009 who reported overall infestation rate of 62.0% and 70.67% in sheep respectively. Deference between the findings of two studies may be attributed to change in geo climatic conditions and health status of animal's samples as they collected samples from diarrheic sheep.

The results of present study did not match with the findings of Fakae (1990), who reported infestation rate of 87.1% for Haemonchus, 22.4% for Oesophagostomum, 18.8% for Strongyloides and 17.2% for Cooperia species in eastern Nigeria. The difference may be due to different geo climatic conditions and the control measures adopted by the farmers. Gadahi et al., 2009 reported 0.66% prevalence of Fasciola in sheep and goats in Rawalpindi and Islamabad which is almost matching with the findings of AZSRRI Kohat and lower than prevalence of Fasciola in the surrounding villages. Lashari and Tasawar (2011) recorded comparatively lower prevalence rate (5.73%) of Trichuris globulosa in sheep in southern Punjab, Pakistan. Difference between the findings may be due to variety of factors like grazing habits, level of education of farmers and their economic capacity, standard of management and anthelmintic use. Prevailing agro-climatic conditions like overstocking of animals, garzing of young and adult animals together are also some of the factors responsible for different infestation rate in

different localities. Khoramian et al., 2014 reported 3.28%, 2.76% and 3.68% infestation rate in sheep, goats and cattle. Their findings are almost in line with the findings of the current study. As for as parameters in considerations that effects economics. They include mortality due to parasites infestation, chronic III-effects on weight gain, feed conversion efficiency, poor carcass conformation, decreased fertility and production, severe anemia and depletion along with treatment cost (Khormian et al., 2014; Urquhart et al., 1996). In this study additional parameters of various factors were not taken up which needed another full fledged study.

CONCLUSION:

It is concluded from the findings of this study that infestation rate of different endoparasits was lower in experimental sheep and goats of AZSRRI Kohat as compared to the of surrounding villages. Higher incidence of endoparasites in the animals of surrounding villages may e attributed to poor manage mental practices, imbalanced nutrition, lack of proper deworming schedule, exposure to extreme climatic conditions, less awareness and lack of education in farming community. These factors results in poor health condition of their animals leading to low market value directly affecting the socio economic status of the farming community.

RECOMMENDATIONS:

Keeping in view the results of this study, the following suggestive recommendations are made to control endoparasites and losses caused by them.

- 1. Practicing separate grazing of different age animals with low stocking density accompanied by rotational grazing might be helpful to minimize the problem.
- 2. Anthelmintic treatment, after every two to three months should be implemented to reduce the risk of re-infestation.
- 3. Avoid overuse and under dosing of anthelmintic drugs to avoid parasitic resistance.
- 4. Provision of balance ration to small ruminants, from among the available ingredients will result in improved health condition ultimately improving the immune response against the parasitic infestation.

5. Ensure well ventilated and clean housing for sheep and goats in order to

minimize the chances of re-infestation, resulting in energetic animals.

ables. No. 1 showing overall infestation rate/ percent positivity								
of endoparasites in surrounding villages and AZSRRI Kohat.								
Location	Overall Prevalence/	Overall						
	Infestation Rate of	Negativity (%)						
Endoparasites								
Surrounding Villages	44.25% (104/235)	55.74% (131/235)						
AZSRRI Kohat	18.33% (22/120)	81.66% (98/120)						

Tobles No. 1 showing everall infectation rate/ newsort

Table. No. 2 showing the percent distribution of different endoparasites among the positive samples in surrounding villages and AZSRRI Kohat.

Location	Parasites Name	Prevalence (%)		
Surrounding Villages	Haemonchus	15.38%		
	Trichuris	9.61%		
	Strongyloides	12.50%		
	Oesophagostomum	18.26%		
	Amphistomes	11.53%		
	Ostertagia	10.57%		
	Chabertia	9.61%		
	Cooperia	7.69%		
Location	Parasite Name	Prevalence (%)		
AZSRRI Kohat	Haemonchus	13.63%		
	Trichuris	13.63%		
	Strongyloides	09.09%		
	Oesophagostomum	18.18%		
	Amphistomes	13.63%		
	Fasciola	00.00%		
	Trichostrongulus Sp.	31.81%		

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DETECTION OF SUB CLINICAL MASTITIS IN LACTATING ANIMALS INCLUDING IDENTIFICATION OF PATHOGEN FROM MILK IN KOHAT AREA

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ABSTRACT

The present study was carried out at Veterinary Research and Disease Investigation Center Kohat (VRDIC) w.e.f July-2018 to June-2019, with the aim of the study was to find out the incidence of sub-clinical Mastitis in lactating animals throughout Kohat & surrounding using white site test (surf test) as well as to isolate and identify the pathogens responsible for the cause of the melody. Three hundred (300) Milk samples from different areas of Kohat and surrounding were received at VR&DIC Kohat, processed for sub clinical Mastitis through surf test (3%), and subsequent bacterial isolation. The overall prevalence of subclinical mastitis was 29.33% (88/300). The bacterial isolates identified were Staphylococci, Escherichia, coli, Streptococci, Pseudomonas, Salmonellae, Bacillus and Corunebacterium species respectively. The highest prevalence of sub clinical Mastitis recorded was of Staphylococci (29.54%) followed by Escherichia coli (17.04%), Pseudomonas (15.90%), Bacillus (13.63%), Streptococci (10.22%), Salmonellae (7.95%) and Corynebacterium (5.68%) respectively.

Key words:- Milk Testing, lactating animals, mastitis, kohat, Pakistan.

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INTRODUCTION:

Mastitis being the most costly disease of dairy industry, resulting in profound losses in terms of milk production throughout the world, is the inflammation mammary glands with physical, chemical and microbiological changes characterized by an increase in Somatic cells, especially leukocytes, in the milk with pathological changes in the mammary tissue. Mastitis is one of the devastating maladies of milking animals causing huge production losses to livestock industry in Pakistan and recognized as one of the most economically important diseases affecting dairy animals worldwide (Lightener et al., (1988;). It causes production losses in the form of condemned milk, loss in milk yield, earlier culling of animals and replacement as described by (Khan and Khan, (2006) can cause 10% or more milk loss on the quarter level (Dijkhuizen and Renkema, (1978) and 10% decrease in the remaining lactation after acute mastitis, as supported by Blowey, (1986).

Subclinical mastitis is more prevalent than clinical mastitis. although it is not manifested as visible changes in either the mammary glands or in milk it does increase the somatic cells in milk. Therefore, it is not easily recognized by farmers

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and had led to large production losses as investigated by Hogeveen et al., (2011), hence cows with subclinical infections should be considered as a source of new infections within herds. Symptoms are though not evident in sub clinical mastitis (Blosser, 1979), milk yield can drop as much as 20% per infected quarter (Schepers and Dijkhuizen, 1991). Sub clinical mastitis causes two third losses of the total milk production due to affected quarters (Radostits et al., 2007). Subclinical mastitis was 3-40 times more common than the clinical mastitis and causes the greatest overall losses in most dairy herds as reported by Schultz et al., (1978). In USA, subclinical mastitis infections as investigated by Merrill & Galton, (1989). These losses may even be higher in Pakistan because mastitis prevention practices like teat dipping and dry period antibiotic therapy are not in vogue. Since there is no gross swelling of quarter or abnormality of milk, subclinical mastitis was recognized only by laboratory examination of milk or by white side tests.

Most of the common pathogens isolated from mastitis milk are contagious. Bilal et al. (2004) reported 16.72 and 21.08% clinical mastitis among cattle and buffaloes, respectively. According to a report 70-80% of all the clinical and sub clinical mastitis cases were either infected with Staphylococcus aurous or Streptococcus agalactiae in cows and buffaloes (Memon et al., 1999). Over one hundred different microorganisms were staphylococci, streptococci and gramnegative bacteria as analyzed by Hussain et al., (2012; 2013).

The common farmers are not so much familiar with these techniques. So the present study was conducted to determine subclinical mastitis in lactating animal in Kohat region including district Kohat and surrounding areas which are thickly populated with dairy animal.

MATERIALS AND METHODS:

Kohat region is mostly hilly and semi hilly hence most suited for dairy animal in the province of Khyber Pakhtunkhwa Pakistan. A total of 300 milk samples received from different areas of Kohat and surrounding during the year 2018-19 (July 2018 to June 2019) were subjected to surf Field Mastitis Test (SFMT). For this purpose, 3% Surf solution was prepared by adding three grams of commonly used detergent powder (Surf Excell, lever Brothers, Pakistan) in 100 ml of water. Quarter milk samples and surf solution were then mixed in equal quantities in petri dishes separately. The formation of gel indicated positive mastitis samples. The gel formation was graded into four categories from lower to higher intensity as +, ++, +++ and ++++, respectively as per the methodology detailed by Muhammad et al., (1995). In order to have an authentic analysis, the positive samples were cultured on tryptose agar media and incubated at 37° C for 48 hours in the culture room adopting all the precautionary measures. The bacterial colonies were then picked with culture loop; smears were prepared using Grams staining techniques and examined under microscope at 100x (oil emersion lens).

REVIEW OF LITERATURE:

A brief review of Research workers is summarized below:-

Hameed et al (2012) studied the epidemiology of mastitis in lactating cows and buffaloes in tehsil Burewala, Pakistan. A total of 673 animals (n=291 cattle, n=382 buffaloes) from 300 livestock farmers were tested using Surf Filed Mastitis Test (SFMT) for the presence of mastitis. A higher prevalence rate (24.60%) of clinical mastitis was found in buffaloes than cows (18.21%). The prevalence of sub-clinical mastitis was 36.38% and 33.67% in buffaloes and cattle, respectively. Quarter based prevalence of clinical mastitis in buffaloes and cows were 8.04% and 5.75%, respectively. Quarter based prevalence of sub-clinical mastitis was 16.04% in buffaloes and 14.47% in cows. Risk factors of mastitis found were (i) age (ii) lactation number (iii) stage of pregnancy (iv) state of lactation, (v) dry period length, (vi) hard milking, (vii) calf suckling, (viii) folded thumb milking technique, (ix) teat injury, (x) backyard housing bricks floor, (xi) uneven floor, (xii) poor drainage system and (xiii)low frequency of dung removal.

Khan et al (2006) evaluated 100 milk samples clinically mastitis of bovines (50 each from buffaloes and cows) for bacterial isolation. A total of 90 bacterial isolates, including 33 of staphylococci and 57 of other bacterial species were 33 recovered. Of the staphylococcal isolates, 23 were identified as 10 All Staphylococcus aurous and as Staphylococcus epidermidis. Staphylococcus aureus islolates were positive for deoxyribonuclease and mannitol fermentation test and produced β-harmolysis on blood agar. All staphulococcus epidermidis isolates were negative to these tests and failed to produce β harmolysis on blood agar containing 5% sheep erythrocytes. Penicillin resistance was detected in 13(56.5%) isolates of Staphylococcus aureus and 8(80%) isolates of Staphylococcus aureus and 3 of the 8 penicillin resistant were identified Staphulococcus epidermidis isolates.

Dieser et al. (2014) studied the prevalence of different mastitis pathogens in Argentinean dairy farms. Composite milk samples were collected of 2296 cows from 51 randomly selected herds in Cordoba, Argentina. Somatic cell count was determined in all samples and bacterial examination of the milk samples with a somatic cell count (SCC) exceeding 200,000 cell/mL) was performed. Out of cows, 54% were diagnosed with subclinical mastitis (SSC \geq 200,000/mL). Bacteria were isolated in 83.1% of milk samples were subjected to bacteriological analysis. The most frequently isolated pathogen was coagulase-negative staphuloccco (CNS) (52.1%), followed by Staphulococcus aureus (21.3%), Corynebacterium spp. (5.2%), Streptococcus agalactiae (4.4%) and streptococcus dysgalactiae (4.4%). This study demonstrates that among the major pathogens isolated, the contagious bacteria caused most of the subclinical infections of dairy cows in Cordoba, Argentina. Moreover, CNS was the most relevant group of minor pathogens causing subclinical mastitis.

Muhammad Ahmed Ali (2011) carried in a study in studied six hundred lactating dairy buffaloes from four districts (Lahore, Sialkot, Narowal and Okara) of Punjab, Pakistan and screened for sub clinical mastitis, using White Side Test and subsequent bacterial isolation. Overall prevalence of subclinical mastitis was 44% (264/600). It was the highest (58%) in animals kept as individual holding at backyards followed by small holdings in periurban area (42%) and the lowest at organized farms with reasonable good managemental conditions (32%). Two hundred thirty four (234) bacterial isolates of nine genera i.e. Staphulococci, Escherichia, Streptococci, Pseudomonas, Salmonellae, Bacillus, Klebsiella, Enterococci and Corynebacterium species were identified. The highest prevalence was of Staphylococci (28.32%) followed by Escheruchia coli (16.18%), Pseudomonas (13.29%), Bacilli (12.42%), Streptococci (7.51%), Salmonellae (22%), Corynebacterium (6.64%), Klebsiella (5.20%) and Enterococci (3.17%) respectively.

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Bilal et al. (2004) studied certain physiological (stage of lactation and lactation number) and managemental (source of milk let down, method of milking and floor condition) factors to determine their effect on clinical mastitis in buffaloes. The study area included peri-urban and rural areas of Faisalabad. The data indicated the prevalence of clinical mastitis was higher in peri-urban (25.12%) than rural (19.74%) areas. The highest incidence observed during 4 to 6 months after calving both in peri-urban (45.76%) and rural areas (45.08%). Maximum cases of mastitis were found during third lactation both in peri-urban (19.00%) and rural (22.98%) areas. Prevalence was higher in animals milked with folded thumb pressure and in those in which milk let down was induced through suckling calves. Cemented and brick floors contributed more towards mastitis in comparison to kacha floors. The incidence was higher in hind-quarters 73.3 and 63.1% than in fore quarters 26.6 and 36.8% in peri-urban and rural areas, respectively.

According to (Schepers and Dijkhuizen, 1991) many attempts were made to estimate the economic importance of animal diseases and disease control, but almost no attention has was paid to the reliability and consistency of these calculations. The estimates of total losses varied, expressed in an equivalent amount of milk, from 1277 kg per average cow present in the herd per year to 267 kg per clinical mastitis case. The profitability of a control program, varying from - \$19.65 to \$274.50 per average cow present in the herd. The analysis shoes that sources of loss included estimation method and origin of (field) data are the main reasons for the observed differences. A consequence was attributed to the results from different calculations have to be interpreted with care. It is necessary that internationally accepted guidelines be established for the methods by which losses of mastitis and the costs and benefits of control programs are estimated. Hence further studies were also recommended to be carried out.

Hussain et al., 2012 determined association of some morphometric characteristics of udder with mastitis in dairy cattle taking 100 animals each negative and positive for mastitis by California Mastitis Test and bacteriology, were selected from amongst those brought for slaughter at Faisalabad abattoir. Morphometric observations on udder were recorded pre slaughter; whereas, samples from mammary tissues were collected post-slaughter for histopathology, alkaline phosphatase and protein activity. Staphylococci were predominant (95%)

C.I.= 3.8-14.6) in mastitis cattle. Morphometric comparisons revealed lower (P<0.0001) teat and teat canal length; whereas, higher (p<0.0001) teat base and mid diameter in mastitis cattle correlating mophometric parameter with mastitis in mild and dry cows and buffaloes.

Muhammad et al., (2010). Evaluated a 3% solution of house hold detergent viz., Surf Excel (Surf Field Mastitis Test, SFMT) vis-à-vis California Mastitis Test (CMT), While Side Test (WST), Somatic Cell Counts (SCC) and bacteriological cultures for the detection of subclinical mastitis in quarter foremilk samples (n =800) of dairy cows and buffaloes. Methods Culture and SCC were used as gold standards. All tests were evaluated parallel and serial patterns. The sensitivities of SFMT, SCC, culture, CMT and WST in parallel testing were 72.82, 81.55, 87.38, 75.73 and 54.37% respectively in cows, while 66.22, 79.73, 82.43, 70.27 and 50.00, respectively in buffaloes. Results indicated SFMT was significantly (p<0.05) more sensitive than WST and comparable to CMT in both species. In serial testing, percent specificity of SFMT (87.12 in cow; 85.16 in buffaloes) was significantly (P<0.05) higher than that of CMT (83.33 in cow; 80.64 in buffaloes). On the basis of closely similar diagnostic efficiency of SFMT to CMT in terms of sensitivity, specificity, predictive values and kappa index together with inexpensive and ready availability of SFMT reagent, it tempting to suggest that SFMT can be used as a cheaper, user-friendly alternative animal-side subclinical mastitis diagnostic test in poor countries.

RESULTS AND DISCUSSION:

The present study was carried out at Veterinary Research and Disease Investigation Center Kohat w.e.f. July-2018 to June-2019. The aim of the study was to know the incidence of sub clinical Mastitis in lactating animals in selected area Kohat and surrounding using white site test (Surf test) as well as to isolate & identify the pathogens responsible for the cause of the melody. Sub clinical mastitis is one of the major infections of dairy animal which causes huge economic loss and is increasing day by day. Among the most causes, wide variety of microorganism, particularly different bacterial species are the main reason of sub clinical mastitis. The most known species of bacteria encountered in most of the mastitis cases in cattle and buffaloes are Staphylococcus aureus, Streptococcus agalactiae and E. coli (Giraudo et al., 1997; Razzaq, 1998).

In the present study three hundred (300) milk samples from different areas of Kohat and surrounding were received at VR&DIC Kohat. The sample were processed for sub clinical Mastitis through surf test (3%), and subsequent bacterial isolation. The overall prevalence of subclinical mastitis was recorded as 29.33% (88/300) in Table. I. Incidence of cumulative percentage of mastitis on dairy animal was found as 54.7, 32.85 and 23.18 by pitkala et al., (2004) and Igbalet al., (2004). These variations in prevalence of mastitis may be due to different ecological zones, medications, management practices and presence of microorganisms in the environment. Pitkala et al. (2004) reported microbial growth in 21-33% of milk samples, whereas, lqbal et al. (2004) reported only 15.16% in dairy buffaloes. The difference may be due to season, management at the farm, area, transportation, difference in sample handling farming conditions in Narowal, Lahore, Okara and Sahiwal using White Side Test (WST). The prevalence was higher at individual holding buffalo farms (52%) as compared with small holdings (48%) and organized (32%) farms. These findings area in agreement to the current study. Difference may be due hygienic condition and managemental practices adopted.

The data of organism wise prevalence for subclinical mastitis is presented in Table 2. Different bacterial genera like Staphylococcus, Streptococcus and Escherichia Cause clinical bovine mastitis (Allore, 1993; Ahmad, 2001). Animal surrounding such as bedding and manure are source of common contagious bacterial pathogens. These pathogens may be present in soil and air as environmental microorganisms. Besides this milker's hands, cloth towels and flies spread these pathogenic bacteria to clean udders during the milking process and are responsible for most of the mastitis cases (Allore, 1993). In the present study, bacterial growth was observed only in 29.33% of milk samples. Seven different bacterial genera were identified as Staphylococci (29.545) followed by Escherichia coli (17.04%), Pseudomonas (15.90%), Bacillus (13.63%), Streptococci (10.22%), Salmonellae (7.95%), and Corynebacterium (5.68%) respectively; in present study Staph (29.54%) was isolated as top ranking pathogen from cases positive for mastitis. In previous studies, it was also reported as major pathogen (Kapur t al., 1992; Allore, 1993; Rabello et al, 2005; Arshad et al., 2006; Ebrahimi et al., 2007; Ali et al., 2008; Botrel et al., 2009). Ebrahimi et al. (2007) reported 8.33% Streptococcus Agalactiae and 9.44% E.Coli isolates from subclinical bovine

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mastitis milk samples while Ali et al. (2008) obtained 30% growth of Streo.agalactiaae and Strep.dysgalactiae and 42.6% Staph. aureus. Contaminated environment at farm is a main source of mastitis in dairy animal. Cumulative percentage of mastitis in buffaloes observed by WST was 44% which is much lower than that of 92% recorded by Lafi and Hail at (1998). Similarly, an incidence of 54.7%, 32.85 and 23.18% has been reported by Getahun et al., (2007), Pitkala et al., (2004) and Iqbal et al., (2004), respectively. Variation in prevalence of mastitis might be due to the different ecological zones, medications, managemental practices and presence of microorganisms in environment.

Contaminated environment of farm is a main source of coliforms and mostly cause clinical infections. Mastitis control programs reported in recent years may need to be evaluated under our farming systems and local conditions.

and surroundings.					
Total# of milk sample	Total negative sample	Total positive sample	Positive percentage		
300	212	88	29.33		

Table, No. 01 The overall prevalence of sub clinical mastitis in Kohat

Table No. 02 show the organism wise prevalence (No/Percentage) of sub clinical mastitis in Kohat and surroundings.

Name of Organism	Staphy- Iococci	Esherichia -Coli	Pseudo- monas	Bacillus	Strep- tococci	Salmo- nellae	Coryne- bacteruim
#	26	15	14	12	9	7	5
%age	29.54%	17.04%	15.90%	13.63%	10.22%	7.95%	5.68%

CONCLUSION:

- It is concluded from the findings of this duty that sub clinical mastitis being a i. complex disease, involves interaction of numerous factors including environment, management, animal risk factors (Milking Method, Teat size, breed, species, milk yield etc.) and causative agents prevailing in the surrounding.
- ii. Its prevalence will vary a lot in different regions and species. The climate plays greater role in prevalence of sub-clinical Mastitis in the study area.

RECOMMENDATIONS:

Keeping in view the results of this study, the following recommendations area made to curtail the prevalence of sub clinical mastitis in lactating animals causing great economic losses to the Livestock Industry in Kohat and surrounding areas in particular and country in general. The prevalence of sub clinical mastitis examined revealed the huge potential economic loss to the dairy sector.

- a. The findings of this study warrant the need for strategic approach including dairy extension services, that focus on enhancing dairy farmers' awareness.
- b. Proper implementation of the routine mastitis prevention and control practices by all of the herd owners be ensured.
- c. Proper hygienic milking practices and regular screening for sub-clinical mastitis be carried out.
- d. Regular dry cow therapy and culling of chronically infected cows.
- e. Improved Good Manage-mental Practices (GMPs) in the farms to decrease the prevalence of sub clinical mastitis to a possible lower limit.
- f. Quality antibiotics shall be used to control sub clinical mastitis in lactating animals.

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APPLICATION OF NANOPARTICLES FOR ACCLIMATIZATION OF EXOTIC GLOXINIA (SINNIGIA SPECIOSA L.) VARIETIES IN ARID REGION

Jalal Ahmad Khan¹, Ishfaq Ahmed Hafiz²

ABSTRACT

Gloxinia (Sinnigia Speciosa L.) a florist plant, belonging to the family Gesneriaceae native to tropics, Europe and U.S, an emerging crop has favorable growing conditions Attempts had been made to acclimatize exotic gloxinia cultivars in arid region. However temperature fluctuation, heavy rainfall during monsoon, high or low light intensity results in many problems such as disease and insect incidence, chilling injury as well as biotic and abiotic stress. Therefore an emerging technique known as "Nano-technology" has been used to prevent the problems associated with growing of exotic cultivars in arid region. An experiment was performed in glass house (PMAS- Arid Agriculture University (AAU) (Rwp) to evaluate the effect of silver nano- particles on five different varieties of gloxinia. The result indicated that varieties 'Gloxinia blencha de meru' and 'Gloxinia montblance' performed well under different treatment. Thus these 2 varieties are easy to acclimatize in partial shade condition and can be used for commercial trails. Whereas on average basis treatment $T_{2 (40ppm)}$ greatly influenced plant growth and development in various sectors. The application of nano particles is environmental friendly and helps reduced the use of toxic chemicals. It was concluded that nano-particles reduces germination time of gloxinia and also increased its vigor in indoor partial shady condition. Hence it is recommended that silver nano-particles having good effect on gloxinia be used in such plants.

Key words: Gloxinia, Arid region, Silver nano-particles.

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INTRODUCTION:

Gloxinia flowers having vibrant shades, colors and splendid inflorescence are most suitable for decorating the gardens. All the species of gloxinia can be used as garden plant, to make attractive hanging baskets, edging flowers and sometimes with strong support, these plants can climb up the walls. The vigorous foliage provides attractive and extended beauty. Gloxinia is one of the most neglected flower crop, mostly cultivated in tropical regions and its original production range is unknown. Growers usually produce gloxinias on small scale and producers usually obtain established seedlings from wholesale distributors. Gloxinias can be problematic to grow and propagate as it can take weeks to show signs of growth and it often requires a period of dormancy during its natural life cycle. (Roalson, 2005).

Gloxinia is an emerging crop and popular among interested people due to its different flower shapes and variety of colors. As different agro ecological zones of world has favorable growing conditions thus attempts has been made to

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acclimatize exotic gloxinia cultivars in arid region. However due to temperature fluctuation, heavy rainfall during monsoon and high or low light intensity results in many problems such as disease and insect incidence, chilling injury or many other a biotic stress. Therefore an emerging technique known as 'Nanotechnology' has been used to prevent the problems associated with growing of exotic cultivars in arid region (Chautems et al., 2010).

Nanotechnology is one the emerging science in previous few years. Nanotechnology discusses the design, production and application of nanoparticles in various fields of life. The principle behind particles in small size have different physical and chemical properties as compared to large and dissolved particles. Highly developed surface lead to improve activity, biocompatibility and hardness of particles at nano scale (Kedziora et al., 2015). Nano particles have obtained a particular consideration because of the positive impact they have casted in improving quality in different sectors of financial systems including pharmaceutics transportation energy and agriculture cosmetics and other consumer products. And their production is increasing day by day for broad variety application in industrial area (Novack, Bucheli, 2007). Thus keeping in view the importance of gloxinia, present research was conducted with an aim improve the growth and development of gloxinia crop through the application of silver nano particles.

MATERIAL AND METHODS:

The research was conducted at Pir Mehr Ali Shah (PMAS) Arid agriculture University Rawalpindi. The longitude and latitude of experimental region was 33° 40' N, 73° 10' E. In Rawalpindi the total mass of monsoon rainfall occurred in July and August and with monthly average of 200 and 225 millimeters. The hottest month is June when the mean maximum temperature reaches 40 °C. while January being the coolest month in which mean minimum temperature remained 3 °C.

The following steps were involved in the study:-

(i) Soil preparation and planting of bulbs

Soil was comprehensively organized but addition of well rotten farm yard manure, stones were extracted and soil was leveled from above cords. After soil was prepared, it was then placed in 14 inches earthen pots. Bulbs of 5 different gloxinia varieties (VI: Gloxinia Kaiser Whlhelm, V2: Gloxinia Violaciea, V3: Gloxinia Blenche de Meru, V4: Gloxina Mont Blane and V5: Gloxinia Tigrina Red) were planted in the center of pot at the depth of 1.5 inch. Gloxinia plants were unable to tolerate direct sunlight and needed a partial shade for growth. So, these pots were placed in Glass house with the precaution that sun light will not hit plants directly. There were fans to cool down the temperature of glass house and take out the suffocation with the help of exhaust fans from glass house.

(ii) Silver nano particles synthesis

Silver nano particles (AgNPs) were synthesized by chemically reduction of silver nitrate (Ag NO_3) by tri-sodium citrate dehydrate ($Na_3C_6H_5O_7.2H_2O$) as per methodology forwarded by S. K. Kulkarni, (2007) in Crop Physiology Lab Department of Agronomy, PMAS UAAR. The reduction of silver nitrate is demonstrated in the following equation.

 $3AgNO_3 + Na_3 + Na_3C_6H_5O_7$. $2H_3O$ $\epsilon_6H_5O_7 + NaNO_3 + CO_2 + 3A_g + 2H_3O$

The silver nano-particles (AgNps) standard solution were synthesized by reducing 317 mg/L of Ag NO_3 by 147 mg of $Na_3C_6H_5O_7$. $2H_2O$ retain stirring (6000-7000 rpm) at 70 °C resting on a magnetic stirrer and 100 ppm (AgNPs) solution was got synthesized used in the experiment, later dilution. Although silver nano-particles can be obtained by reducing the bulk material of onion, the prepared silver nitrate particles (AgNO₃) can also be used.

(iii) Cultural practices

Hoeing was done with 3 weeks interval to overcome the rate of weed competition and providing aeration in the soil. Form completely eradiation of weeds sometime weeding was done manually by hands. Fungus attack being common during the experiment, mainly attacked the area which was subjected to the muddy water leaves were cleaned time to time by using water spray a fungicide named as 'radomil' was applied once in 2 weeks. Insects mainly attacked the leaves of plant. Insects were eradicated by manually sorting them out by hands. Spray of vegetable extract was also applied for better growth and development. To protecting the crown portion from getting wet plants were provided irrigation water with a pipe instead of sprinkler. Crown portion being highly susceptible to fungus of it is kept wet all the time. Water standing in the pot was avoided because in partial shade conditions standing water caused suffocation to the roots.

(iv) Sowing and senescence

Gloxinia bulbs were sown in April 2015 in pots kept in glass house the temperature ranged from 25-30 °C. Senescence of plants was started in September and bulbs were dig out from the pots as the plant died. Bulbs were stored in cool and shady place.

(v) Data collection

Data for different morphological parameters such as date of flower emergence, plant height, number of lateral branches, leaves and flower, length and diameter of flowers, leaf area, fresh and dry weight of flower and number of petals were collected to in both control and treated plant to study the effect of silver nano-particles on gloxinia plant growth and development.

(vi) Statistical analysis

Complete Randomized Design (CRD) was used for this research study. The data collected was analyzed statistically by statistics 8.1 as per methodology by Steel et al., (1997).

(vii) Results and discussions

Effect of silver nano-particles on different morphological parameters of gloxinia plants number of leaves and Statistical analysis regarding effect of silver nano-particles on number of leaves showed significant difference among treatments and varieties. Number of leaves as shown in figure (1) was maximum (19) in (VI) 'Gloxinia Kaiser Wilhelm' under T_2 (40ppm) followed by (V3) 'Gloxinia blenche de meru' having (17) number of leaves under T_1 (30ppm). It was followed by (V5) 'Gloxinia tigrina red' having (15) number of leaves when subjected to T_1 (30ppm). Whereas (V2) 'Gloxinia violociea' was having minimum (8) number of leaves under controlled condition. (VI) 'Gloxinia Kaiser wilhelm', (V2) 'Gloxinia violociea' and (V5) 'Gloxinia tigrina red' performed better on average basis under all treatments respectively. T_1 (30ppm) and T_2 (40ppm) performed well on average causing (14.6 cm) plant height.

Results signify that increase in the concentration of silver nano-particles cause significant effect on increasing number of leaves in plants. It directly influences the plant vigor and causing the plant to do more photosynthesis by using large number of leaves. Kumar et al., (2007) conducted an experiment on onion applying zinc nano-particles to check their effect on various physiological characters. Results clarified that plants subjected to the nano-particles having concentration 30 µg ml/l resulted in higher number of leaves as compared to the other treatments including control plants. Hence it is concluded that nano-particles can cause significant effect in enhancing number of leaves per plant. It directly increase plant vigor and provides more area for photosynthesis.

(viii) Number of flowers

Data regarding number of flowers showed that (V3) 'Gloxinia blenche de meru' resulted in same and higher number of flowers (6) under $T_{1(30ppm)}$ and $T_{2(40ppm)}$ followed by (V3) 'Gloxinia blenche de meru' and (V4) 'Gloxinia mont blance' having (5) number of flowers under controlled condition. Whereas (V2) 'Gloxinia violociea' resulted in less (2) number of flower under controlled condition. On average basis (V3) 'Gloxinia blenche de meru' resulted in maximum (5.6) number of leaves and $T_{1(30ppm)}$ showed maximum average of (4.2) (Figure 2). An experiment was carried out to in which taken form leaves and flowers of cucumber (Cucumissativus L.) was applied on gloxinia. These treatments resulted in the early flowering without the use of gibberellins (GA) supplements (Zhang et al., 2008) whereas Chaitanya et al. (2003) reported that the reduction in water status can cause cell growth, shoot growth, root growth and it also cause inhibition of the cell expansion. An experiment reported that the biologically created nano-silver particles used on hydroponically grown plant enhance catalase and peroxidase movement Lin et al., (2007). In our study concluded results showed that application of nano-particles may influence plant in other terms but there was no effect regarding number of flowers in the plant.

(ix) Number of lateral braches

It is indicated from the results in figure 3 that maximum (6) number of lateral branches were found in (V2) 'Gloxinia violociea' under $T_{2 (40ppm)}$ followed by (V3) 'Gloxiniablenche de meru' and (V5) 'Gloxinia tigrina red' having (5) lateral braches

under treatment $T_{1 (30ppm)}$ whereas (V2) 'Gloxinia violociea' resulted in minimum (1) number of lateral branch kept in control condition. In terms of treatment, $T_{2 (40ppm)}$ performs significantly different from remaining ones in producing maximum numbers of lateral branches. On average basis (V3) 'Gloxinia blenche de meru' performed well by resulting (4) number of lateral branches. However, $T_{2 (40ppm)}$ showed the best average of (4.2) among the varieties. Our results are in agreement with findings of (Laware et al., 2014) who conducted an experiment on onion (Allium cepa L.). Results suggested that application of silver nano-particles in a concentration ranging within 20 to 60 ppm lead to enhance development, growth and seed yield as was recorded in our study.

(x) Diameter of flower

Highest flower diameter (7.9 cm) in both varieties (VI) 'Gloxinia Kaiser wilhelm' and (V2) 'Gloxinia violociea' were observed under $T_{2 (40ppm)}$ followed by (V4) 'Gloxinia mont blance' having diameter (7.6 cm) under $T_{2 (40ppm)}$ respectively. Whereas (V3) 'Gloxinia blenche de meru' resulted in minimum diameter (5.9 cm) of flower under controlled condition. (V2) 'Gloxinia violociea' resulted in the best average (7 cm) (Figure 4). Kalayeh et al. (2011) reported that rose (Rosa indica L.) flower treated with 250 mgl/l of hydroxylquinolonesulphate combined with 2 mgl/l of silver nano-particles enhanced the flower diameter in rose and it also positively influenced flower opening. Feizi at al. (2013) reported that by applying silver nano-particles by means of magnetic field on the crop of muskmelon can significantly affect fruit size, fruit yield, fruit quality and fruit ripening.

(xi) Fresh weight of flower (gm)

The statistical analysis of the data regarding fresh weight of flower is shown in figure (5). (V2) 'Gloxinia violociea' showed maximum fresh weight (2.41 gm) under treatment $T_{2 (40ppm)}$ followed by (V3) 'Gloxinia blenche de meru' having fresh weight (2.15 gm) under $T_{2 (40ppm)}$ respectively. Whereas (V5) 'Gloxinia tigrina red' was having minimum fresh weight (1.1 gm) under controlled condition followed by (V4) 'Gloxinia montblance' with fresh weight (1.47 gm) under controlled condition. On average basis (V3) 'Gloxinia blenche de meru' resulted in maximum fresh weight of flower (2.05 gm) whereas $T_{2 (40ppm)}$ performed well on average basis.

(xii) Dry weight of flower (gm)

The statistical analysis of the data regarding dry weight of flower is shown in figure (6). (V5) 'Gloxinia tigrina red' showed maximum dry weight (0.24 gm) under $T_{2 (40ppm)}$ and $T_{2 (30ppm)}$ followed by (V4) 'Gloxinia mont blance' having weight (0.23 gm) under $T_{2 (40ppm)}$ followed by (V5) 'Gloxinia tigrina red' having (0.21 gm) under controlled condition respectively. However, (VI) 'Gloxinia Kaiser wilhelm' under controlled condition resulted in minimum dry weight (0.09 gm) followed by variety 3 'Gloxinia blenche de meru' with (0.15 gm) dry weight. Results revealed that significant difference was observed among treatments with $T_{2 (40ppm)}$ as best treatment.

Nano-particles prevent the plant from losing freshness so they can contribute to sustain the vase life of flowers. Tuberose cut flowers treated with nano-particles showed no significant difference in first 10 days whereas flower kept in controlled condition were dried early. By inhibition of ethylene production flower can last days (Hutchinson et al., 2002).

(xiii) Plant height (CM)

The statistical analysis of the data regarding plant height are shown in figure (7) depicted that (V3) 'Gloxinia de meru' resulted in maximum plant height (23 cm) under $T_{2 (40ppm)}$ followed by (V4) 'Gloxinia mont blance' (20 cm) under $T_{2 (40ppm)}$ with height (20 cm) and (VI) 'Gloxinia Kaiser wilhelm' with height (7 cm) under $T_{1 (30ppm)}$ respectively. Whereas (V5) 'Gloxinia tigrina red' resulted in minimum height (11.7 cm) under controlled condition followed by (V2) 'Gloxinia violociea' having (13 cm) of plant height under controlled condition respectively. On average basis (V3) 'Gloxinia blenche de meru' resulted in maximum (18.7) plant height. Statistically it is found that $T_{2 (40ppm)}$ was significantly different from control.

Silver nano particles can be substituted with nano-hormonal and hormonal chemicals and can be used as proposed blend to enhance the vase life of gladiolus cut flowers (Vinodh et al., 2014).

(xiv) Leaf area

Area of leaf is fundamental variable that defines the plant structural canopy and plays a magnificent role in gas, water and energy exchanging between atmosphere and canopy. Leaf area is one of the main sources of input for plant which stimulates physiological functions like transpiration, light reflectance and photosynthesis (Fang 2015).

Under controlled condition. On average base (V4) 'Gloxinia Mont Blance' resulted in maximum leaf area. Statistical analysis regarding effect of silver nanoparticles on number of leaves showed significant difference among treatments and varieties. (Ashraf et al,m 2002) reported that many essential morphological and physiological characters like leaf enlargement, photosynthetic process and stomatal conductance were significantly influenced by the water potential in leaf which was enhanced by the use of silver nano-particles. Silver nano-particles comprises wide-ranging antimicrobial properties in opposition all the classes of microorganisms and having various distinct characteristics regarding physical and chemical properties as related to Ag substance, (Anjum et al., 2013).

(xv) Number of days of emergence

The effect of different levels of nano particles on number of days of emergence of different varieties of gloxinia is given in figure (9). (V4) 'Gloxinia montblance' under $T_{2 (40ppm)}$ took minimum number of days (81) in emergence of flower followed by (V2) 'Gloxinia violociea' with (83) days subjected to $T_{1 (30ppm)}$ and (VI) 'Gloxinia Kaiser.

A study reported that the application of silver nano-particles can inhibit the ethylene production process in plant which is directly linked to flower abscission and senescence. Silver nano-particles can cause positive effects on the hydraulic conductivity mainly in plant stem. By viewing through electron microscope it was noticed that silver nano-particles gat themselves attached to microbial cells, which most often causes pitting in cell wall. It was revealed that the nitrifying microbial organisms are susceptible for the inhibition of silver microorganisms during waste water recycling treatment Choi et al., (2008).

A study conducted by (Kumar, 2007) reported that nano-particles of zinc oxides applied on onion crop resulted in early flowering by reducing the days required for flowering. Plants treated with the concentration of 30 μ g ml-l initiated the flowering earlier than those plants which were kept in controlled condition. Obtained results and reviews signifies that by applying silver nano particles plants

can flower early but the response can be different according to the specific plants. It can inhibit the production of ethylene which is directly linked to the abscission and senescence of plant.

(xvi) Number of petals

Krishnaraj et al. (2011) reported the recorded results of chemical silver nano particles application on (Bacopamonnieri L) species grown hydroponically. The plant development and growth metabolism were estimated as ratio of carbohydrates protein and enzymatic movement of silver nano particles of plants which were grown in hydroponic solution.

(xvii) Length of flower

Ashraf et al. (2002) reported that water potential of leaf affect numerous vital morphological and physiological activities, like stomatal conductance, leaf enlargement and photosynthetic processes of guar (Cyamopsistetragonobola L). Nano-particles have both positive and negative effects on plant growth and development. Among different nano-particles, silver nano-particles are most widely used to its various advantages such as enhancement of seed germination, growth of seedling increase root length, shoot length, leaf area, antioxidant enzymes and biochemical contents (proteins, chlorophyll, carbohydrates) (Jasim et al., 2016).

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EFFORTS MADE BY THE AGRICULTURE AND LIVESTOCK PANEL OF AIOU IN PAPER (SCRIPT)EVALUTION OF MATRIC AND FA STUDENT IN AUTUMN-2018

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ABSTRACT

Thisinformative and research based article provides the effort made by the Agriculture and livestock Panel No-3349, for evaluating Matric and FA courses code answer scripts (paper evaluation) of AIOU for Autumn -2018 (work done in June July and August-2019). A total of 9661 answer scripts comprising Matric =2296 and FA 7365, out of 03-Matric Codes (254-256 and 257) and 05- FA codes (313, 326, 328, 329, and 349). The work was a combined effort of 08 sub-Examiners (S/Es) who evaluated on the average 1854 and512 paper of both FA and Matric over 35-40 days. The article concludewith the recommendation for stopping self-marking and -or-out –side Agriculture panel for quality evaluation and better results.

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Key words: Matric-FA courses Codes, Agriculture paper evaluation, AIOU-Islamabad.

INTRODUCTION:

The Agriculture and Livestock courses are offered by Allama Iqbal Open University (AIOU), at Matric and FA level, each semester and students opt these courses ether of half credit or full-credit, to complete their four semesters programe, in the university. The final Examination, written Answer scripts are properly qualified and Registered (Regd) with Tutorship IDs, as recorded in table No-01. The subject course codes are identified by number allotted to each. The matric course codes No.253 pertain to Livestock Management (Umoor-e-Haiwanat) No.254 as Livestock Production (Haiwanat Ki Paidawar), 256-the Basic Agriculture (Bunyadi Zaraat), 257-vegetables and Fruits Production (Sabzion our Phaloon Ki Paidawar). The FA courses are identified by 300 level and the courses offered in agriculture discipline are 313-Dairy Farming, 326-Modern Agricultural Techniques (Jadeed Zarrai Maharatain),327-Farm Machinery and Equipment (Zaraati Machinain our Aalat), 328-Oil Seed Crops (Taildar Faslain), 329-Horticulture (Baighbaani), 342-Agronomy and new agricultural technology (Zaraat our Nai Technology), 349-(Plant protection) (Podon Ki Hifazat)

PREVIOUS REVIEW:

Agriculture panel had practically been involved in script evaluation/paperchecking since 1992-93 headed by H/E Prof. Fazalkarim with various Group

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checking since 1992-93 headed by H/E Prof. Fazalkarim with various Group IDS say two decades but the Research based investigated and evaluation work of the panel was started in the last decade 2012-13 to 2017-19 as documented by khizarhayat et al., (2014) An over view, to this effect, indicated that the number of Answer scripts were on the increase from 5800 in 2007-08 to 6400 in the year 2008-09 and for 8800 in 2009-2010 to 9350 in the year 2011 (with fluctuations) depending on admissions and those taking the final Examinations.

Muhammad Hafeez (2016) as published by This number increased in 2012-13 to 9840 with the introduction of four course codes in Agriculture 256-207 and livestock 253-204, as documented by Iramshahzadi et al., (2015). In the year 2014-15the number of answer scripts evaluated reached 1030 and 11240 respectively when 05 course codes of Matric 211, 253, 254, 256, 257, and 07 codes of FA 313, 326, 327, 328, 329, 342, and 349 were evaluated by the Agriculture panel as documented by Iramshahzadi et all (2016).

Recently the trend and status of influx of Matric and FA students enrolled, took examination and were evaluated for the last semesters 2015-16 and 2017 with a total number of evaluated as 6878, ad 7021 for Autumn and spring2017 documented by Uzmakanwal, Nadia Hafeez and Iramshahzadi (2017).

METHODOLOGY:

In this article a summarized work done for evaluating Matric and FA course codes for Autumn-2018(work done in June(10 days) July -2019(20 days) and August-2019 (08-days) extended 2019 the whole work from 30-40 day, as per routine, every semester: A total of 9661 Answer scripts (of both Matric and FA courses, comprising 03 courses codes 254, 256, and 257=(2296) and 05 course codes of FA=313, 326, 328, 329 and 349=(7365) while course codes 211 Matric and two courses of FA 327 and 342 were not evaluated by this panel.MSC(Hors)/M.Phil qualified and Registered(Regd) with the university (AIOU) and a proper (S/E) ID is allotted as mentioned in table No-1. Each and every script is evaluated as per guide lines of AIOU-Secrecy, as Notified by the controlled of Examination (C/E), in the light of Text-books of each code. The Head Examiner (H/E) is supposed to prepared "key" for each code (with correct answer) and all the panel S/Es work under strict vigilance while the marks obtained are posted on



the computerized lists of each Bundles of any code and duty signed by S/ES, The Agriculture and the H/E on the "Days" work," asso scripts per S/E per day. Sometime the work load is shared by external-evaluation on Self-marking basis, also but only subjected specialists are detailed to this task.

The financial aspect of the answer-Script evaluation as Not hand sum, was enhanced from Matric Rs 14/= per paper to RS 17/= each, as per C/E notification of 2018 with simultaneous enhanced of FA From Rs. 16/ To Rs. 18/- (C/E-Notification of 2018-AIOU) With H/E recommendation as 16/ of the total scripts in each bundle. The Federal Board of Intermediate and Secondary Education (FBISE) Islamabad and Rawalpindi Board of Intermediate and secondary Education (RBISE) have already enhanced the paper evaluation of Rs. 28/= for Matric and Rs. 42/- for FA paper-each(Directorate Notification (2017) and Directorate General (2017) Islamabad. Most of the S/ES, and H/ES have been listened murmerng, with sometime in low profile or sometime in loud voice pronouncing – enhancement of remuneration per asnswer script, for quality evaluation and better reward.

 Table No-01:Total number of Scripts evaluated by the Agriculture panel, no-3349, of Matric and FA students of AIOU-Islamabad.

Sr.#	Examiner(s)	ID.No	Matric	F.A	Total
01	Dr.M.Hafeez(H/E)	0413			
02	M.KaleemUllah (S/E)	1282	506	1741	2247
03	BushraTabassum(S/E)	2275	560	1657	2207
04	BasharatMehmood (S/E)	3387	505	1748	2553
05	Jalal Ahmed (S/E)	3740	501	1337	1838
06	Shiraz Sajid (S/E)	3661	-	884	884
07	SaimaBibi (S/E)	2575	94	-	99
08	M.Ibrahim (S/E)	456	137	-	137
09	ShenazShahid Assistant	626	-	-	
	Total		2296	1365	9661

Source-H/E record of Agri-Panel-AIOU-2019

Table NO-02:Total number of Scripts evaluated by the Agriculture panel, No-3349, Matric and FA students of AIOU-Islamabad.

S.No	Course Code	Course Matric Code Bundles		FA Bundles		
01	256	04	313	04		
02	254	05	326	04		
03	257	06	327	Nil		
04	211	Nil	328	04		
05	253	Nil	329	08		
			342	Nil		
			349	11		
	Total	15		31		



CONCLUSIONS:

- i. The paper evaluation work of Agriculture panel lasted for 35-40 days
- ii. Majority of S/Esexaminel on as average attended the work. Mean Number of 1854 FA and 512 Matric Scripts with the range of Maximum as 2272 and Minimum =884
- iii. Two S/Es could only evaluate 94 and 137 scripts due to their official engagement and urgent duties
- iv. As per routine of agriculture panel as in previous years, used to evaluate 05-Matric and 07 FA course codes, but in the semester under report only 03-Matric and 05 FA Course codes work was entrusted to be evaluated.

RECOMMENDATIONS:

In the light of a little effort done by the Agriculture and Livestock panel-ID-

3349, Autumn-2016, of 08 S/Es, supervised by H/E assisted by one Assistant to

H/E, The following recommendation are made:-

- i. Self evaluation by Non- Regd examiners be discouraged, as un-Noticed, as were as observed discrepancies were recorded in previous, and in this Semester work
- ii. Course codes pertaining to Agriculture and livestock must not be evaluated from other groups (which has always resulted In low-quality evaluation)
- iii. Answer scripts evaluated on self-base, must be evaluated again by the Regd examiners of the panel, for quality evaluation.

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STAKE HOLDERS AND POTENTIAL FARMERS REQUIRED CONCERIED EFFORTS FOR INCREASED PRODUCTION OF ANIMAL PROTRINS IN THE COUNTRY, AMIDST AGRI-CREDIT

Tabinda Khawaja¹ and Muhammad Hafeez²

ABSTRACT

This explorative and investigative research article describes the existing situation of Livestock Sector including animal proteins (milk and meat) status, availabilities and future estimated requirements milk products, as well as meat (beef mutton and poultry meat) as compared to the year 2017-18, 2018-19 and 2019-20, quantified as Milk production of was recorded to the tune of 57.89, 59.76 and 61.63 million tons and milk availability for human consumption as 46.68, 48.18 and 49.68 million tons. Simultaneously total meat, (beef mutton and poultry meat) was produced to the tons of 4.26, 4.48 and 4.70 millions tons respectively. Since the human population growth rate was 2.1% annually, and the total human population of the country was declared as .207.7 million (PNCO-2017) the recent figers are 210.3 millions in the year 2018-19 still increasing. Since Pakistani Society is consuming one, of agricultural and Livestock products milk, meat (muttons, beef, poultry) and egg in the new established restaurants and house kitchens. The stake holders and potential farmers pre-emptively are required to sustain. Their hard work for increased animal proteins for our Country-man with export of surplus, for Foreign Exchange earnings competing with other countries in the trade markets of international level.

Key words: Livestock and Poultry farmers, milk and meat production, national food requirement,

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INTRODUCTION:

The market scenario of agricultural and Livestock products indicated a steady increase in day-to-day food requirements as evidenced and documented Amides increased demand of milk and milk products together with meat and meat production as consumed by our country-man in our kitchen and increasing number of restaurants in big cities and towns. The social media and various TV channels along with popular food-oriented programs the Pakistani Kitchen is spreading fragrance in the streets, in specially.These houses who can afford maximum utilization of animal proteins.

It is also documented that Pakistani nation is not using international standards of requirements of milk and meat and still our average consumption is hardly 50% as compared to some of the developed countries.

The agriculture sector showed a growth of 0.85% much lower as targeted rate at growth of 3.8%. The Livestock Sector on the other hand has witnessed 4.00% growth against the target of 3.8% which is indicative of dedicative efforts, despite constraints, and both the farmers and state-holders continued the sustained output for making available, the animal proteins in terms of milk, meat and eggs produced.

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Poultry sector, being most vibrout and now regarded as Poultry Industry, as documented, as the investment recorded during 2018-19 was Rs 700 Billions (Bns) and has continuously showed on an average up to 10% annual growth, over previous year and has become 11th largest poultry production in the world. This sector is providing employment to 1.5 million people (both directly and indirectly as documented by Livestock Wing (2018-19), M/O NFSR, GoP, Isbd.

As further recorded, poultry meat contributed 34% to the tune of producing 1.52 million tons, of the total meat product (4.48 million tons) in the country Simultaneously egg production showed a growth of 5.6% (producing 19.00 Bns Number in the year 2018-19, as documented by Livestock Wing 2018-19), ministry of National Food Securities and Research (NFSR), GOP, Isbd.

In the light of brief introductory paragraphs, this article is attempted, with the aim to achieve maximum possible of the objectives in minds (i) To compare the milk and meat produced in the country (at least for recent years), (ii) To apprise the reader(s) with the frowning, demand of milk and meat in the country and (iii) to gare-cast estimated increased production of milk, meat and eggs, as required in future and that (iv) stake-holder, farmers and produces be supported with govt. interventions towards Agriculture Credits utilization for sustained farm out-puts.

LITTLE REVIEW:

The subject matter has continuously been death with in various research article, thesis research at Msc(Hons)/M.Phil and or Ph.D level in various Agricultural Universities faculties of Livestock and Veterinary Sciences in the Planning and Development (P and D) Sections of Livestock and Dairy Development Deptts.(LDDDs) of the provinces together with research organization of the country. Some of the endeavors are reviewed as under:-

Mansoor Ahmed khan and Muhammad Hafeez (2018) forwarded a recent picture of livestock Sector of Pakistan. Providing Livestock population (Cattle as 44.41 and Buffaloes recorded increased population by 3.77% and 2.97% respectively during 2016-17 when compared to previous year. The gross milk production was recorded as 56.6 million ton (20.14 million tons from cows and 34.12 million tons from buffalos), with human consumption of milk as 45.23 million tons. The meat production (Beef, Mutton and Poultry) was reported as

4.56 million tons. The data on egg production, local (Desi) and commercial Poultry birds (broilers and layers) have also been documented with export data. Potential and progressive farmers in Livestock Sector dealing with milk and meat production have continuously been involved in increased production and exports, subject to better nutrition and Good Management Practices (GMPs) as concluded by Hassan Ali etc al (2018) in their studies carried out in two govt dairy farms, as further reported the milk production was still better when compared with India, Botswana, Brazil and Egypt, have export of milk and meat potentials also laisted in Nili-Ravi buffalos of Pakistan.

TabindaKhawaja and Muhammad Hafeez (2018) in their earlier comprehensive and updated study, carried out in an economical dairy buffaloes unit, in rural Islamabad, found that milk production could be increased, in selected strains of Nili-Ravi buffalos subject to increase in the quantity of green fodder, replacing dried hay 10-12% (Dried grass and/or wheat straw), with Farm Gate Price (FGP) of Rs 85/- per liter, in the year 2017. (Where operational cost of gawalas salary, cost of Concentrate food, expediters on Veterinary drugs and vaccines, together with Animal Health Care Services (AHCS) remained constant). This cost was increased to Rs 88/- in the year 2018.

Mashook Ali Bhutto and Muhammad Hafeez (2013) deliberated on preemptive increased Livestock and products by the year 2030 to meet the national requirements of animal proteins. Providing details, it was transpired that almost 8000 registered large animal farmers and 14000 Registered Small Ruminant farmers (with Federal Livestock and Dairy Development Board-FLDDB) since 2011-12 were continuously involved for milk and meat products and food percentage of meat was exported, as per policy of the country.

Livestock Policy Guidelines

In continuation with the Farmer Friendly livestock Policy (2009) and in the light of 18th constitutional Amendments11in (2014-15) Livestock wing, M/o National Food Securities and Research (NFSR), GOP Islamabad, Continued to regulate the Livestock production, with various measures namely (a) allowed import of high milk yielding dairy Cattle breeds of Halstein Friesian and Jersy including genetic material of these breeds. (for improving of our domestic Cattle breeds (b) import of feed ingredients and/or micro ingredients (for improving our inchgenous feed formulation) and (c) allowed import of dairy farms/dairy milk plants including meat and poultry processing equipment on reduced taril and/or import Duty towards encouragement of increased production of milk and meat as well as value addition, as documented by WastiEjaz (2018-19), in Pakeconomic Survey Report.

Livestock Trade Scenario

Under the Livestock Policy (2017-18), import of 0.824 million doses of semen of genetically superior bulls, together with 8811 high milk producing exotic cows of Holstein-Friesian and Jersy Breed during the period July-March 2018-19.

Under the Livestock Policy (2016) necessary facilitation for export of 48.8 thousand tons of meat and meat-product during 2017-18 fetching US dollars 198.8 millions, from the potential export-oriented private sector. The exports of animal by-products namely (a) Casing, (b) bones (c) gelatin (d) harns and hoves to importing countries china, South Africa, Jordan and Indonesia.

Access of Agri-Credit to Livestock and Poultry Farmers

Main Agriculture Credit (Agri-credit) awarding Institutions Comprising (a) Five Major Commercial Banks (b) ZaraaiTaraqiati Bank Limited (ZTBL) (c) Punjab Provincial Cooperative Bank Limited (PPCBL) (d) Fourteen Domestic Private Bank (DPB), (e) Five Islamic Banks (f) Micro Financial Institution(ii) MFIs and (g) MFIs-Rural Support Program (RSPs) disbursed 50.2, 6.7, 124.9, 10.3, 88.4, and 19.5 Billion (Bns) rupees during 2017-18. The total disbursement had been Rs 666.2 Bns while the disbursed amount of Agri-credit was Rs 805 Bns in 2018-19 evidencing 20.8% higher than the previous year.

It can be observed that access to farm credit remained 48.7% (Rs 392.0 Bns) as compared to access Non farm Credit was 51.3% (412.9Bns) during 2018-19 when compared to previous year farm credit of 47.4% (315.6Bns) where as for Non farm credit it was 52.6% (350.6Bns).

Both the Farm-Credit Comprised Livestock and poultry farm while Nonfarm personal Comprised of Traders (Importers and exporters) of Livestock products and Value additions as documented in Pak-economic Survey Report (2018-19), Agriculture and Livestock Chapter-2 GoP, Isbd.

MATERIA AND METHODS:

The following documents were excessively Consulted and various Reports filtered to collect updated information for preparation of this efforts:-

(i) Livestock Wing, M/o NFSR, GOP, Islamabad, Reports.

Pakistan Journal of Livestock Sciences® (PJLSc.) Vol-XI, No11-2019-98

- Pakistan Journal of Livestock sciences Pak-JLSc various volumes.
- (iii) Agriculture Chapter, Pak.Economic Survey Report, Various Volumes.
- Planning and Development (P and D) M/o Planning 12th fiveyear plan various documents.
- (v) Prime Minister Agriculture Emergency Program (PMAEP).
- (vi) Save and Fattening of calf project towards increased meat production, under (PMAEP).
- (vii) Data collected was analyzed for summations averages and percentages worked out, for result.

RESULT AND DISCUSSION:

- (i) While going through the information and data available, as filtered, it was evident that farmers were involved in Livestock and Poultry production, not only for our consumption, in Pakistan but a good percentage was exported to demanding countries China, South Africa, Thailand and UAR.
- (ii) The human population growth rate in Pakistan hadbeen 2.1% to 2.3% in the year 2017-18 and 2018-19 =, despite efforts made to contain this percentage of growth, animal protein were available in the form of milk, meat and eggs, for our people.
- (iii) The animal growth of Livestock (cattle and buffaloes) was recorded as 3.8-4% while the poultry production witnessed as 9-10% growth with eggs production to 5.6% in the year 2018-19(19.00 Bns Number).
- (iv) It is evident and a Blessing of Almighty, Allah (SWT) that with the production of 1.163 Bns broilers, annually (as recorded for the year 2018-19) has directly contained the market rates of both beef and mutton, as a biggest source of animal protein.
- (v) The surplus meat (beef and mutton to lesser percentage while poultry processed meat to the greater percentage and well as day-oid-chicks and eggs to the nearest demanding countries, such as UAE, Saudi Arabia, Afghanistan.

CONCLUSIONS:

Stake-holder namely (a) Poultry farmers (b) egg-producers (c) beef produce (d) mutton produces (e) poultry meat processor (f) fishery production

personnal and traders (both importers and exporters) need encouragement of utilizing Agri-credit for increased and sustained production output.

RECOMMENDATIONS:

The policy guide-lines, for farmers, needs implementation with letter and spirit, at the time of import/export (both at air-ports and sea-ports including Dryports.

- The Agri-credit award and pay-back be regulated and coincided with export/import vouchers, with periodic consignments.
- Farmers both large-animals and small ruminants, must not sell animals for slaughter before the age of maturity.
- Livestock Traders of meat (beef, mutton and poultry meat) Must only export the surplus quantity of Not more than 40% while 60% be utilized, locally (with in the country).
- Agricultural Farmers must-grow green folder on 10-15% of their land, so that green fodder of the season is available for Livestock production.

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BOOK REVIEW INTRODUCTION TO THE ECONOMICS AND DEVELOPMENT IN PAKISTAN: WITH SPECIAL REFERENCE TO AGRICULTURE AND LIVESTOCK

Muhammad Ilyas¹, Muhammad Hafeez² and Basharat Mehmood³

ABSTRACT

This overviewed article comprises the critical and deliberated evaluation of the book entitled "the Economic and Development in Pakistan: with special reference to Agriculture and Livestock" "towards updated information on economics as a subject envisaging. (i) basic and applied economic models, (ii) Production of various crops, vegetables and fruits, (iii) Products of Livestock, milk and on Meat: with (iv) Agricultural and Livestock by-products, specially, (v) Value added products, with examples: In addition, (vi) Information on SAARC countries updates for population, labor involved in Agriculture, life expectancy, GDP, HDI and other related items. The book is based on lecture material briefly presented and most of the items elaborated in annotated form for students (both under-graduates and graduates of Agriculture, economic, livestock sciences and Rural Development each chapter is supported with self assessments and references, at the end, with salient conclusions and recommendation.

Key words: Economics Agriculture-economics, Livestock Products, by-products and value addition.

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INTRODUCTION:

The book cited as title was newly prepared, based on the lecture material on basic and applied economics but the teachers in various Universities stressed to include Agriculture economics (Agri-economics) and Livestock economics (L/S-economics), as these subjects were not available in most of the text books gathered in one write-up. Examples were exchanged with shooting-up of prices of the food grains, the Agri: products and Agri-by-products along with Livestock products milk, meat and L/S by-products. These were required to be documented for students, researchers, planners ad progressive farmers, as separately painted out by the M/O National Food Securities and Research GOP Islamabad, documents are already published in 2014-15, 2015-16 and 2017-18, GOP, Islamabad, Agri: Stat:- (2016-17) (2017-18) and Economic Wing updates, MNFSR-2014-15, 2015-16, Published as crops produced in Pakistan as well as Vegetables, Fruits and condiments of Pakistan (2015-16) and (2016-17), available as yearly publications.

While going through, the earlier lecture notes, given to undergraduates (BA/ BSc-economics) as well as MA/MSc economics, by the colleges and some University information, updated material was found scanty, as well as based on

discussions with such students, it was transpired that a document was badly needed, as the one under review, to be presented in the classes, in generating competences, when appearing in the examinations, as well as in their practical life.

The book comprises Nine (09) Chapters (1 through-09) every chapter critically, evaluated and reviewed, in a brief but concise manner worth presentable.

SUMMARIZED REVIEW:

The book is jotted down in a brief and summarized but updated patron, on the format of NGOs and/ or University monogram series, with each chapters outlines, starting with importance of each, and its constituent components, supported with recent tabulated data where needed, self assessment and references (for further reading) Chapter wise redressed evaluation is laid down as under:-

CHAPTER-01:

This portion describes importance of economics as a subject, comprising types of variables, expansion of production capacity with various theories involved, in understanding the subject together with growth and development and lastly the Development goals, popularly known as Millennium Development Goals (MDGs) and sustainable Development Goals (SDGs) as high-lighted in the international fora of the world. The chapter is supported with various examples where needed and an approach of self assessment as the authors want the students/ reader (s) evaluating themselves for preparedness for any examination, lastly in with prominent references.

CHAPTER-02:

This aspect of the book pertain to very basic terminologies needed and used quites often, in understanding the subject of economics, with various growth models together with implementation of development principle. The chapter also contains updated information on South Asian Association for Corporation (SAARC) countries population, Agricultural growth, GDPs, population and labor forces involved in Agriculture, human population growth and instant mortality rates with life expectancy along with Human Development Indicators, (HHDIs) lastly supported with self assessment and references, as the usual patron of the book.

CHAPTER-03:

This part of the book describes the agricultural economics, history of Agricultural Development in Pakistan (various historical phases), time series data summarized in 05-yearly data in spitted tenure periods, with a share in Agriculture. The chapter also includes sources of information (both local-Pakistan and International) Pak. Economic Survey Reports, Agri-stat: Pakistan Bureau of Statistics (PBS) and PARC Reports. The chapter culminates with self assessment and recent reference used in the text and with web-pages of various document which can be accessed on-line.

CHAPTER-04:

This portion of the book Exclusive comprises Agricultural transformation and production of various seasonal crops (both Rabi and Kharif seasons) vegetables, fruits and condiments, revenue generation including Livestock production, it's by-products as well as Agri-by-products and Livestock byproducts. Lastly supported with information on these lines from provinces in tabulated form. Lastly as per format of the book, self Assessment and reference.

CHAPTER-05:

Comprises over all Agricultural and Livestock sector productivity and rural manpower directly/ indirectly involved trade and productivity. The data on various exports and imports of crops, vegetables, fruits, condiments and byproduct as well as value addition is added. The chapter is supported with self Assessment and references as usual and further readings suggested.

CHAPTE-06:

This chapter describes the Research and Development (R and D) aspect of Agriculture and its sub-sectors. Most of the Research work done on seeds, crop-production, fertilizers and pesticides used, as well as improvements towards increased production, diseases resistance work and water utilization in Agriculture-production (crops, vegetables, fruits) and by-products required for value addition with up-dated information lastly supported with self Assessment and recent references as usual patron of the authors.

CHAPTER-07:

This chapter pertain to R and D of Livestock sector starting with (i) Economic aspect of breed improvement in cattle, buffaloes, sheep and goats

followed by (ii) work done on Livestock by-products (hides, skins, bones and bone products) as well as their utilization in value addition along with livestock trade (both imports and exports) World Trade Organization in the light of (WTO)-mediated Sanitory and phyto-synitory (SPS) agreement, Lastly supported with self assessment and recent reference.

CHAPTER-08:

Pertain to R and D aspects of Agriculture allied industries comprising (i) sugar mill products and by-product, (ii) textile industries related to cotton, (iii) Maize/corn products and by-products used in food technology as well as feed and fodder preparation, (iv) oil seed crops and by-products used as cotton seed-cake and other cakes for animal concentrate feed, (v) grams, pulses, vegetables, fruits and condiments etc. the chapter ends with self assessment and references.

CHAPTER-09:

The last chapter Comprises various components of value addition of many Agri-products and by-products including Livestock by-products. These value added products comprise of various starchy products from maize/corn, rice, wheat and gram made available in small packets and preserved, some value added products such as noodles, pastas, spegeddy and many verieties of fast foods, packs, specialty for children which are on sale even in street shops. Similarly livestock by-products, value addition in hids and skins for leather garments bone and bone products (for DCP, gelatin) sausage making from guts and casings for many human and animal uses. Lastly self assessment and references.

CONCLUSIONS:

- i. The book is an updated informative concise and summarized version of economics and economic development in Pakistan.
- ii. The students at undergraduate (BA/BSc) and graduate level (for MA/MSc) can benefit from this informative write-up, with recent data of 2016-17, and 2017-18.
- iii. This comprises lecture material and a conveniently be included in the Agri-economics syllabi of collage and Universites at home and abroad.
- iv. Agricultural main components of production of crops, vegetables, fruits and condiments have been briefly presented, easily digestibleto our younger generation, the students.
- v. Livestock production especially Milk and Meat, including by-products with their economic worth has for the first time focused in one book including value addition.

- vi. Research and Development (R and D) component in Agriculture and livestock touching salient points in the country, have been included in this write-up.
- vii. Self assessment, at the end of each chapter and supported with reference will create interest for the students who want to get more information.

FRANK OPINION

After critical evaluation and review, the book as a brief write-up, not voluminous will prove to be an asset for the students studding Agri cultureeconomics, Livestock Sciences and Rural Development, in Pakistan and a better asset for teachers, planners and progressive farmers.

RECOMMENDATIONS:

- i. It is recommended that such an updated information and comprehensive book be made available in college and university libraries for graduate student and teachers.
- ii. The authors need every appreciation, to make, further similar efforts, in the related subjects, such as Agro-livestock Industry, in Pakistan.
- iii. It is recommended that this book be included in the courses of students of Agri-economics, Livestock sciences and Rural Department at college as well as university levels.

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SOCIO-ECONOMIC ASPECT AND ITS EFFECTS ON ACADEMIC ACHIEVEMENT OF CHILDREN IN RURAL AREA ISLAMABAD

Uzma Kanwal¹, Nadia Hafeez² and Muhammad Usman Hafeez³

ABSTRACT

A Survey was carried out in the year 2018 in Muslim Town BharaKahu Rural Islamabad to assess the number and type of houses, inhabitants house holds 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 8th, 9th and 10thin 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 and 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 Rs 40,000/- and above PM while 163 hhh 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 gain children. It was concluded that students were regularly gaining to schools (High Schools, Higher Secondary Schools) and some of then 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.

Key words: Socio-Economic status of parents students academic achievement rural Islamabad.

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INTRODUCTION:

Muslim town, BharaKahu was not existing in rural Islamabad Prior to 1992 rather it was known as Malik Abad. The sale of land for plotting in this area started in 1993-94 when the land was sold @ Rs.14000/- to Rs.15000/- per marls (272 sqft). The plotting started with the slogan of leaving space for streets by sparing 03 feet from one side and similarly from opposite side with 6-7 feet by the land owner hence the plotting established with streets of 12 feet to 14 feet and some streets the width was 10 feet the main street being 16 feet as per Union Council instructions.

There were problems in early days up-to 1998-99 when streets sewerage system drains were piped on self help bases, electricity supply was restored by Islamabad Electric Supply Corporation (IESCO) earlier known as WAPDA. In the year 2004-05, keeping in view the difficulties of resident (water supply, kachra

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collection, house and streets numbering streamlining the post mail office, town committee and the ICT authorities) which needed immediate attention.

There were hardly two private schools and one Govt. School for class 08, 09 and 10 in 1998 while one (in street No-02 and one in main Malikabad) while the only hight schools (Begum Kiani FG School which was upgraded to Highter Secondary FG Model School in 2009.Number of Private Schools were increased to 13 in the year 2014-15 and 2017-18.

As further Pakistan National Census Organization (PNCO-2017) started their work on census, their was a need felt to carry out socio-economic survey of house hold heads (hhh), the students residing in 294 houses, of 1 through 12 streets. Under the Muslim Town Welfare Society (MTWS), Annual Progress reports of MTWS are available with the Director for these years.

The study carried out had the following objectives, with the aim to achieve maximum possible of these:-

- 1. To find out the socio-economic standing of majority of inhabitants of Muslim Town, in Rural Islamabad.
- 2. To assess the financial and educational background of parents and possible impact on educationed achievement of their kids.
- 3. To dig out the updated information on the subject, as base line data for further studies.

BRIEF REVIEW:

Muhammad Shoaib (2018) carried out a study exploring affects of the parental economic status on the academic achievement of secondary schools students in Attock district, Punjab Province Pakistan, taking responses of parents and a total of 1200 students of Class X (from 60 schools, with represented number of 20 each). A close ended semi-structured questionnaire was used to obtain information on the parameters of parents income, educational level. Occupation etc. as evaluated throught chi-squre and percentage etc. It was found that students achievement were better whose parents status of socio-economic was comparatively better. It was recommended that jobs be created for jobless and scholar ships programs be extended to needy students for better achievements.

Shevrathanamma and Khan (2005) carried out study of school students of high classes, as attributed to parents socio-economic status, financial statuses, and education of parents together with availability on own conveyance and significantly affected the education progress of higher classes, in schools. The study was conducted in 300 students and the parents were querry surveyed. It was concluded that parents with less resources and students who could not continue needed govt assistance as stipened for sustainable studies, specially for merited students.

Suleman and Hussain et al., (2012) investigated studies on the impact of elementaty students by the parental socio-economic status, in Karak, Khyber PK, Pakistan and found parents who enjoyed prominent social, cultural and financial status. The students achievement as compared to the students who could not get such environment at house. It was thus concluded that parents with education and socio-economic status produced academically better children.

METHODOLOGY:

The study was based on the following itemized questionnaire used a tool of the study in collection of data with the parameters and information:-

- (i) Number. of households in the study area.
- (ii) Number of school going children of class 8th , 9th and 10th across gender.
- (iii) Ownership of the house or rented one.
- (iv) Financial standing of House Hold Heads (HHHs)
- (v) Owning a conveyance (car, bike) or use of public transport for pick and drop of school going kids.
- (vi) Educational status of parents
- (vii) Students going to private or govt schools.

RESULTS AND DISCUSSION:

- The summarized cumulative findings of the study revealed that there were 320 houses in 12 streets of Muslim Town with a total of 196 houses (61.25%) were owners were residing with their families while 124 (38.75%) houses were occupied on rent.
- The educational status showed that there were 61 graduates (BA, B.Sc, B.Com) while 64 were recorded as Masters Degree Holders (MS/M.Sc and M.Phil). The educational qualifications holders of Matric and FA was recorded in 108 inhabitants whereas 74 were illiterate as detailed in table No.01,02 and 03.
- 3. The vehicle ownership indicated that 53 inhabitants owned a car each, 122 a motor cycle motor bile while 155 were using public transport for

themselves and a pick and drop for their school going kids.

- Financial resources of the hhh revealed that 137 of the inhabitants were earning upto Rs.40,000/- or more while 183 were contended to less than the amount PM (Table No.04).
- 5. Some of the drop outs were reported either transferred to other towns or district or were declared Re-appear or district subjects (as enquired).
- 6. There were indications that students better socio-economic status and financial resources supporting their kids for better education.

economic study of Muslim Town Bharakahu, Islamabad (2018).										
S.No	St/No.	No.of	In	habitants	5	Sch	ool	Total		
		Houses	т	м	F	Going Students				
						М	F			
01	01	26	162	92	70	04	07	11		
02	02	15	90	70	20	13	11	24		
03	03	23	176	140	36	13	09	32		
04	04	30	180	100	20	17	09	26		
05	05	14	98	70	28	09	05	14		
06	06	44	220	128	92	13	09	22		
07	07	43	258	138	120	19	10	29		
08	08	48	288	149	139	13	08	21		
09	09	27	162	80	42	14	06	20		
10	10	18	126	120	18	11	07	18		
11	11	15	105	63	58	08	04	12		
12	12	18	126	90	36	11	08	19		
Total	12	320	1991	1240	751	145	93	180		
	Σx	320	1991	1240	751	145	93	180		
	Mean	26.66	165.91	103.33	43.33	12.68	7.75	19.83		

Table No.01 Streetwise status of respondents and students socioeconomic study of Muslim Town Bharakahu, Islamabad (2018)

Table No-02 Number of Students Studying Class 8th, 9th and 10th across gender in various schools.

St.	8 TH	8 ^{Tth}		9 th				10 th		То	tal
		М	F		Μ	F		М	F	М	F
01	05	02	03	03	01	02	03	01	02	04	07
02	09	05	04	08	04	04	07	04	03	13	11
03	09	05	04	07	04	03	06	04	02	13	09
04	11	08	03	10	05	05	05	02	01	17	09
05	06	04	02	05	03	02	03	4	01	09	05
06	09	04	05	07	05	02	06	04	02	13	09
07	12	08	04	11	07	04	06	05	02	19	10
08	08	04	04	07	04	03	05	04	02	13	08
09	08	06	02	07	04	03	06	04	02	14	06
10	07	04	03	05	04	02	03	02	01	11	07
11	05	04	01	04	03	02	05	03	02	08	04
12	08	05	03	06	02	03	05	03	02	11	08
Total	97	54	43	80	44	36	61	41	20	145	93
Σx	238	97	54	43	80	44	36	61	41	20	93
Mean	8.08	4.50	3.58	6.66	3.66	3.0	5.08	3.42	6.66		

Street No.	hhh	Busir	ness	Status of	of houses	Education of hhh		
		Private	Govt.	Own	Own Rented		MA	
				House				
01	26	14	11	20	06	10	02	
02	15	06	05	10	05	06	01	
03	23	11	07	15	08	05	04	
04	30	15	11	21	09	04	13	
05	44	05	08	08	06	03	05	
06	43	20	10	34	12	08	11	
07	48	18	08	14	29	04	05	
08	43	20	23	28	20	05	06	
09	27	08	06	12	15	05	04	
10	18	07	09	13	05	06	05	
11	15	08	05	10	05	02	04	
12	18	09	05	12	06	03	04	
Total	320	14	96	18	124	61	64	
Σx	294	14	96	18	124	61	64	
Mean	23.83	11.75	08	3.0	10.33	5.08	5.3	

Table No-03 Showing business salary/income, owner/Rented and Education of House hold heads vehicle etc.

Table No-04 showing financial status of the hhh of Muslim Town Bhara Kahu Islamabad. (2018).

St.#	hhh	Vehic	cle Ow	nership	Mont		me	Priv	ate	Govt.
	mm				(15) 40,000	<i>,</i> ,-	Child	dren	Going
		Car	Bike	Public			М	F	M	F
01	26	05	08	17	15	11	03	02	02	06
02	15	04	08	03	07	08	13	11	-0-	-
03	23	04	12	06	11	12	10	12	08	-
04	30	05	10	15	11	17	03	08	04	04
05	14	01	06	07	08	06	02	03	04	05
06	46	08	10	28	20	26	08	07	07	03
07	44	07	10	27	21	25	08	06	05	08
08	43	06	20	16	18	24	05	04	06	07
09	27	05	08	14	09	08	04	07	07	04
10	18	03	05	10	08	17	05	04	7	02
11	15	01	08	04	05	08	05	03	02	02
12	18	04	06	08	08	10	07	06	04	01
Total	320	53	112	155	137	183	60	40	32	28
Mean	24.5	04	3.33	11.33	10.92	13.58	6.33	5.83	4.33	3.66

Stree	Tot	al Stud	lents	Private	Govt.	Â	dmitte	d	Remaining (2019)				
t No.				School	School	((2018)		Class				
							Class						
	Т	Μ	F	Μ	F	8 [™]	9 ^{тн}	10 [™]	8 TH	9 [™]	10 [™]	Т	
01	11	06	05	06	05	04	04	03	04	03	03	10	
02	12	08	04	080	04	05	04	03	05	04	02	11	
03	18	10	08	10	08	04	06	08	04	05	06	15	
04	16	09	07	09	07	06	05	05	06	04	04	04	
05	14	08	06	08	06	05	03	06	05	03	03	11	
06	17	10	07	10	07	07	04	06	07	04	06	17	
07	22	15	09	15	09	09	08	05	09	08	05	22	
08	21	12	09	12	09	06	08	07	06	08	06	20	
09	13	08	05	08	05	04	05	04	04	05	03	12	
10	14	07	07	07	07	05	04	05	05	04	05	14	
11	12	07	05	17	05	03	05	04	03	05	03	11	
12	10	06	04	06	04	03	03	04	03	03	04	10	
Total	180	10.6	7.4	55	37	61	59	60	61	56	50	167	
Σx	180	8.83	6.16	55	37	61	59	60	61	56	50	167	
Mean	15	8.83	6.16	4.58	3.08	5.08	4.92	5.0	5.08	4.66	4.16	13.92	

Table No-05 Respondents School Boys educational Progress, Muslim Town, Bhara Kahu Rural Islamabad (2019).

DISCUSSION:

Muslim town has a history of development established in 1992-93 plotting done in the then malikabad adjustment to simly dam road and Bhara kau. Most of the retired Govt. Servant and those business men who could afford the purchasing of land and construction of the houses. The influx of residents increased even when sui gas was not yet provided (pror to 2007-08) but the electricity and telephone (PTCL) facilities were available even in 992-93. There were only two private schools in the Muslim town or nearby township.

School was not a castier aspect in early 2000 when admission use to be Rs 400/- to Rs 500/- with tuitions of Rs 300/- to Rs 400/- PM for middle/elementary and for 9th and 10th it was Rs 600/-Rs 800/-.

This amount increased year after year, and in during 2018 the admission jumped to Rs 3000/- to Rs 4000/- and tuition to Rs 1000/- to Rs 2000/- PM which is still affordable in a rural area of Islamabad such as Bharakahu.

CONCLUSIONS:

 It was concluded that parents with better socio economic status and better financial resources their students were showing better academic achievements. 2. It was further concluded that this study has been based on a survey provided a base line data for further studies.

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PRODUCTION OF VEGETABLES (A COMPARATIVE TREND IN RURAL VILLAGES OF MARDAN KHYBER PK

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ABSTRACT

A Study was conducted to find out six vegetables production in the villages Jalala Pir Saddi and Khan Qala of rural area Mardan, Khyber Pk involving four farmers from each village for the years 2015, 2016 and 2017. The vegetables namely Carrots, Radish E/Radish, Spinach, Tomatoes and Turnips were investigated, the land was irrigated with the near by fresh stream water. The total production of these vegetables was recorded for each village and for each of the three study years. During 2015 the production of the six vegetables was 975, 1528, 1850, 1340, 2080 and 1890 kgs while in the year 2016 the production was 1060, 415, 1995, 1665, 2210 and 2195 kgs whereas the production in the year 2017 was recorded as 2020, 1660, 890, 1940 and 1490 kgs respectively. The seeds for these vegetables was used by the farmers own prepared the study concluded with the plant health services availability in the area as recommended..

Key Words: Vegetables production, fresh water, rural villages Mardan Khyber P.K.

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INTRODUCTION:

Vegetables are regarded as minor crops as well as included in the recently introduced terminology of "kitchen gardening" being used as additional staple food items (in curries in stue, soups, fast food and as salad, in not only in Pakistan, South Asia, SAARC countries but also in the developed countries (FAO-1983, 1996, 2004 and 2009. Vegetables are rich source of fiber, minerals, vitamins and anti-rheumatic of muscle relax and while these act as moderators when combined with rich proteins diets and animals origin of meat, mutton, poultry meat and or fish low fiber carbohydrates such as rice, wheat flour maize as well as pastas including spegeddies, vermicellies, nuddles (made from corn) can be eaten.

In almost all the big cities vegetable market, low priced weekly markets (Sasta Bazars) vegetables of the season (Rabi and Kharif) produced by the small farmers are brought directly for sale. With the availability of stream water nearby, the vegetables of the season specially (i) Spinach (ii) Reddish (iii) Turnips (iv) Tomatoes (v) English Raddish are grown in Kharif season (August, November each year and brought to the road sides as "fresh vegetables" and sold on comparatively lower price based on "Seed availability for vegetables than the big cities (Anonimous M/O Food Securities and Research GoP 2013-14).

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During 2015-16, Federal Seed Certification Registration Department (FSCRD), Islamabad carried out inspections in 2,68,290 Acre area for various crops including wheat, cotton, paddy, maize, pulses, oil seeds, fodders and vegetables and found that the total seed availability to the tune of 45505.10 Metric tons was ensured. Out of this quantity vegetables of exotic seeds were 5314.76 (with 118.42 metric tons of local and 5196.34 metric tons of seed varieties) of vegetables FSCRD 2015-16 as well as Federal Bureau of Statistics (FBS) 2015-16.

As the study area farmers mostly use locally available seeds of vegetables, the progressive farmers use (their own, preserved seed) for the season. It has been reported by the local farmers that a 5kgs of seed is sufficient for vegetables in one kanal of land; as they do this practice in each season, while the production of full sized Reddish, turnips, carrots, tomatoes reaches 1000-1200 kgs but the English Raddish had been practically been produced to 500-600 kgs based on plant health status and size in the study area.

It was also observed that the plant health management was carefully done and no serious out breaks of frui-flies and/or leaf curl were observed except the Aphids and Jassids which were eliminated with spray of insecticides.

Although Agriculture credit facilities were available but being a very small economic activity, the farmers involved in our study reported that they never availed such facility, as they were marginalized Agri: farmers and having less than 100 k land, but they used to pay irrigation of natural water course charges of thrice watering their vegetables to the tune of Rs 120/- per 100 kanals of land on yearly basic as revenue (Aabiana).

The study was conducted to achieve, maximum possible of the following of its objectives, in the study area:-

OBJECTIVES

- i. To find out the quantum of six vegetables produced, in three villages of Mardan district.
- ii. To actually assess the trend of production of four (04) farmers, in each village and comparisons made for three recent years.

- iii. To actually get the basic information of man-power involved in vegetable growing activity in these villages.
- iv. To evaluate the proposed income of small farmers towards poverty alleviation, of this rural area.

MATERIAL AND METHODS:

Three villages involved in this study were investigated namely (i) Jalala, (ii) Pir-Saddi and (iii) Khan Qala. Although the total population of these villages varies from 3000-7000 (AV-5000) people, we will involved four farmers form each of the three villages. Production of 04 vegetables of Kharif Season namely (i) Carrots, (ii) English Radish (iii) Spainach (iv) Reddish (v) Turnips (vi) Tomatoes and (vii) English Reddish, in quantities (kgs) were recorded.

- i. Individual farmers data of 06 vegetables each produced in the year 2015, 2016 and 2017, of four farmers at random was obtained from each of the three targetted villages, in the study area.
- ii. The sale price on the road side (farm rate) was also obtained for the years 2015, 2016 and 2017, for economic analysis.
- iii. The raw data, (primary data), as well as processed data (Secondary data) was presented in tabulated forms, already subjected to statistical analysis in terms of cumulative, processed data.

RESULTS:

- A. Total Production of Kharif Vegetables: The total production of six (06) different vegetables namely (a) spinach, (b) carrots (c) Radish, (d) Turnips (e) tomatoes and (f) English radish, of the three (03) villages of this study namely (i) Jalala, (ii) PirSaddi and (iii) Khan Qala, for the three study years 2015, 2016 and 2017 was recorded as 29852 kgs (29852) displayed in various tables of the study.
- B. Total yearly production of Kharif vegetables. The six vegetables targeted were year wise splitted, as produced in the three study periods namely in 2015 as 1633 kgs, in the year 2016 as 9990 kgs and in the year 2017 as 10,229 kgs respectively declareds as n1=9633, n2=9990 and n3=10229 respectively, as presented in table No 2.
- C. Village Wise production of six kharifvegatables in the year 2015
 - JalalaVillage.During the first production year of 2015 in Jalala village the total vegetables produced were recorded as 3415 kgs. The individual vegetables produced, namely Carrots, English (E) raddish,

spinach, Tomatoes and Turnips were to the tune of 390, 520, 655, 550, 645, and 655 kgs respectively, as laid down in table No 2.

- PirSaddi. During the period 2015, the four farmes produced six targeted kharif vegetables to the tune of 310, 480, 550, 410, 650 and 585 kgs respectively totally 2965 as detailed in table No 2.
- 3. Khan Qala. The last year of this study showed a cumulative vegetables, as an effort of the local four farmers, as 3343 kgs while the production of kharif vegetables namely carrots, E/Raddish, Raddish, Spinach, Tomatoes and Turnips were recorded as 285, 528, 645, 380, 760, and 650 kgs respectively, appearing in table No 02.
- D. Village wise Vegetables produced in the second year of the study-2016.
 - Jalala Village. The total production of six kahrif vegetables was recorded in Jalala Village during 2016 as 3295 kgs while the individual vegetables produced were 390, 370, 720, 675 and 700 kgs, respectively as detailed in table No 3.
 - 2. Pir Sadi. The total production of six vegetables was cumulatively recorded by the four farmers as 3375 kgs in PirSaddi while the individual vegetables produced were recorded as 260, 520, 635, 530, 705 and 725 kgs of carrots, E/Raddish ,Raddish Spinach, Tomatoes and Turnips respectively as shown in table No 3.
 - 3. Khan Qala. The production of the six targeted vegetables during 2016 was recorded as 3630 kgs with individual vegetables grown and harvested by four farmers were recorded as 410, 525, 640, 555, 820 and 780 kgs respectively as presented in table No 3.
- E. Village-wise production of six kharif vegetables during 2017.
 - 1. Jalala Village. The total production of six targeted vegetables during the last year of the study. 2017, as an effort of four farmers in Jalala village was 4660 kgs whereas the individual vegetables produced and recorded were 460, 500, 740, 1020 and 965 kgs respectively as detailed in table No 4.
 - **2. Pir Saddi.** A total of 3805 kgs of six kharif vegetables produced collectively by the four selected farmers during 2017 while the individual

vegetables produced recorded were 350, 365, 685, 815, 835 and 755 kgs respectively, presented in table No 4.

3. Khan Qala. In this village the collectively grown and harvested kharif vegetables during 2017, showed 5780 kgs while the individual vegetables grown and harvested by the four farmers were carrot = 515, E/Radish= 820, Radish=1035, Spinach=1195, Tomatoes 1345 and Turnips =910 kgs, respectively as laid down in table No 4.

F. Individual Kharif vegetables produced by the farmers, during 2015.

a. Carrots. The carrot produced by the individual 12 farmers (01-12) during 2015, (farmers ID, 01, 02, 03 and 04 from Jalala) produced 80, 110, 95 and 105 kgs with mean value of 97.4 kgs ±28.15 and in the same year 03 farmers of village PirSaddi produced 310 kgs of carrots (Farmers ID 05,06 and 07 with individual farmers production as 115, 85 and 110 kgs, mean=103.33±29.86 while during 2015 three farmers (farmers ID-09,10 AND 12 produced carrots to the tune of 90, 80 and 115 kgs with mean value of 95±27.45 in the village khan Qala, detailed in table No.02.

Two farmers (one each in villages PirSaddi and Khan Qala) did not grow carrots in the year 2015.

- b. English Radish. English Radish was grown and harvested by all the four farmers of each village of thish study (farmers ID 01, 02, 03 and 04 of Jalala 05, 06, 07 and 08 of PirSaddi while ID No-09, 10, 11 and 12 form khan Qala produced 75, 160, 170, 115, 110, 125, 120, 145, 128, 130 and 125 kgs with mean value of 127.33±36.80 showing a range of max: 170 and min:75 during the year-2015.
- c. Radish. Radish was produced in the quaintly of 170, 145, 160 and 180 kgs in Jalala village and 120, 155, 120 and 155 in PirSaddi while 160, 155, 170 and 160 kgs were recorded in Khan Qala village with the mean value of 99.58±SE and the range was max:180 and min: 120 kgs in the year 2015.
- d. Spinach. Spinach produced in Kharif 2015 was recorded as 135, 125, 120 and 170 in Jalala village while 90, 110, 115 and 95 kgs in PirSaddi and in Khan Qala Spinach production was recorded as 85, 95, 110 and
90 kgs during 2015 with mean value of twelve farmers as 111.66 ± 32.27 with range of max:170 and min:85 kgs, as appear in table No.02.

- e. Tomatoes .The production of tomatoes was recorded as 160, 165, 175 and 145 kgs in Jalala village, with mean value of 161.25± in the year 2015 and in PirSaddi these values of each farmers were 140, 165, 145 and 180 kgs with mean value of 175.5±50.72 while the tomatoes produced by the Khan Qala were recorded as 110, 190, 215 and 140 kgs with mean value of 188.75±54.55 .The range of production was max: 240 in Khan Qala and min: 140 kgs in Jalala Village, as presented in table No.02.
- f. Turnips. Turnips were recorded in the three study villages by 12 farmers as 120, 180, 190, and 165 in Jalala and 135, 140, 125 and 185 in PirSaddi while the production of Turnips were recorded as 190, 185, 195 and 180 kgs in Khan Qala during 2015 of this study. The mean production of Jalala village was 163.75kgs ± 47.32 with the range of max:190 and min:120 kgs while the mean production of turnips in PirSaddi village was 146.25±42.26 with the range of max:185 and min:125 kgs, respectively. The mean production of turnips in khan Qala village was recorded as 187.5±54.19 with the range of max: 195 and min:180kgs as presented in table No.02.

G. Individual vegetables produced by four village farmers in each of three villages, during 2016.

- a. Carrots .Carrots produced during 2016 gave the mean value of 316.66 kgs±91.52 with the range of max:450 kgs in Khan Qala and min:185 kgspirSaddi village, respectively presented in table No02 and 06.
- E/Raddish. English Radish was produced during 2016 with mean value of 553.33±159.92 with the range of max: 780 kgs in Khan Qala village and min:410kgs of village PirSaddi, as laid down in table No. 02 and 06.
- c. Radish .Radish was collectively produced by 12 farmers during 2016 with mean value of 741.66±214.35 with the range of max: 1050kgs from Jalala village and min:570 kgs respectively form PirSaddi village, detailed in table No 02 and 06.

- d. Spinach .Spinach was produced by 12 farmers in 2016 with mean value of 320±92.48 kgs with the range of max:650 kgs from Jalalavillage while min: 260kgs from Khan Qala presented in table No-02 and 06.
- e. Tomatoes .Tomatoes were produced by the three village farmers gave mean value of 915±264.45 kgs during 2016 with the range max: 1490 from Jalala and min:515 kg from PirSaddi village respectively as laid down in table No 02 and 06.
- f. Turnips. Turnips produced during 2016 were recorded giving mean value of 665 ± 192.19 kgs with the range of max: 870 kgs from Jalala while min: 485 kgs from Khan Qala villages, respectively as presented in table No.02 and 06.
- H. Individual Vegetables produced by the three villages during 2017.
- (a) Carrots. Carrot produced by the Jalala, Pir Saddi and Khan Qala villages during 2014 was recorded as 460, 350 and 515 kgs, respectively as laid down in table No.04.
- (b) E/Radish.EnglishRaddish produced by the three villages during 2017, as recorded were 500, 365 and 820 kgs in Jalala, PirSaddi and Khan Qala, respectively as shown in table No.04.
- (c) Raddish. Raddish produced in the three study villages namely Jalala, PirSaddi and Khan Qala during 2017 were recorded to the tune of 915, 685 and 1035 kgs respectively as presented in table No.04.
- (d) Spanich. Spanich produced in the three study villages were recorded as 740, 815 and 1195 during the year 2017 as detailed in table No.04.
- (e) Tomatoes. Tomatoes produced were recorded in the study villages as an effort by the village as 675, 785 and 829 kgs as appears in table No-04.
- (f) **Turnips.** Turnips produced by the three villages farmers during 2017 were recorded as 700, 725 and 780 kgs respectively as laid down in table No.04.

	District Mard	an Khyber PK.			
Sr.	Villago	Distance	Human	Small	Farmers
#	village	from Main Rd	Population	Farmers land	No.
01	Jalala	01 km	5000-6000	20 k each	30-35
02	Khan Qal1a	2 km	7000 plus	20k	40-45
03	PirSaddi	2km	3000-3500	20k	60-70

Table No.01 The status of Rural Agricultural farmers in three villages of District Mardan Khyber PK.

Tab	Table No.02 Vegetables Production (2015) in three study villages.										
Sr.#	Village	Farmers	Carrots	E/Radish	Radish	Spinach	Tomatoes	Turnips	Total		
		01	80	75	170	135	160	120	740		
		02	110	160	145	125	165	180	885		
	JALALA	03	95	170	160	120	175	190	910		
		04	105	115	180	170	145	165	880		
	Sub Total		390	520	655	550	645	655	3415		
		05	115	110	120	90	140	135	710		
п		06	85	125	155	110	165	140	780		
	FIR SADDI	07	110	125	120	115	145	125	740		
		08	-	120	155	95	180	185	735		
	Sub Total		310	480	550	410	650	585	2965		
		09	90	145	160	85	110	190	790		
		10	80	128	155	95	190	185	833		
		11	-	130	170	110	215	195	820		
		12	115	125	160	90	240	180	910		
	Sub Total		285	528	645	380	760	650	3343		
	Grand Total		975	1528	1850	1340	2060	1890	9623		

Table No.03 Production of three villages Kharif vegetables 2016.

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Sr.#	Village	Farmers	Carrots	E/Radish	Radish	Spinach	Tomatoes	Turnips	Total
		01	70	80	180	140	170	110	710
I		02	80	85	175	135	185	190	850
	JALALA	03	110	90	185	145	190	105	825
		04	130	115	180	160	130	195	710
	Sub Total		390	370	720	580	675	700	3295
		05	135	105	110	120	190	180	840
п		06	125	95	190	165	160	170	905
	FIR SADDI	07	-	160	150	115	165	180	770
		08	-	160	185	130	200	185	860
	Sub Total		260	220	635	530	705	715	3375
		09	85	120	155	115	140	175	790
ш	KHAN	10	90	140	180	170	210	170	960
	QALA	11	115	130	195	110	240	150	940
		12	120	135	110	160	230	185	940
	Sub Total		410	525	640	555	820	780	3630
	Grand Total		1060	1415	1995	1665	2210	2195	10300

Table No.04 Vegetables produced in three villages of Rural Area of Mardan District Khyber Pk 2017.

Sr.#	Village	Farme rs	E/Radish	Radish	Spinach	Tomatoes	Turnips	Total
		01	100	210	180	280	250	1020
		02	150	150	250	360	410	1150
I	JALALA	03	110	110	180	340	275	1115
		04	130	215	130	260	260	975
	Sub Total		490	715	740	1220	715	4260
		05	180	190	230	240	150	890
		06	110	170	180	210	170	860
	FIR SADDI	07	120	210	215	470	215	1070
		08	180	215	210	480	215	9408
	Sub Total		650	1290	1585	1900	645	8175
		09	150	480	340	430	360	1730
		10	170	420	370	380	340	1930
111		11	190	410	430	460	240	1380
		12	140	350	250	260	180	6820
	Sub Total		750	1660	139	1530	1190	6890
	Grand Total		2020	1660	890	1940	1490	21940

Sr.#	Village	Farmers	Carrots	E/ Radish	Radish	Spinach	Tomatoes	Turnips	Total
		01	70	80	240	140	280	210	1040
		02	80	100	180	140	190	210	1850
I	JALALA	03	75	140	200	150	180	215	1925
		04	90	150	160	210	140	115	895
	Sub Total		315	470	1050	650	1490	870	3775
		05	85	160	110	420	180	130	785
	PIR	06	110	140	150	140	190	120	805
	SADDI	07	-	150	150	410	160	180	770
		08	-	160	190	130	110	160	780
	Sub Total		195	610	2070	1500	1740	1640	3165
		09	120	110	160	115	115	170	820
	KHAN	10	130	150	110	130	160	180	860
	QALA	11	110	160	190	110	170	150	890
		12	90	130	145	115	170	185	835
	Sub Total		450	340	1605	1260	1515	1485	3405

Table No.05. Showing vegetables produced in three villages of Rural Area of MardanDistrict in 2016.

Table No.06 Village wise cumulative six vegetables (kgs) produced by Four farmer	rs
in the study period of 2015, 2016 and 2017.	

S.No	Village	year	1	2	3	4	5	6	Total
	JALALA		390	520	655	550	645	655	3415
			310	480	550	410	650	585	2965
I	FIR SADDI	2015	285	528	645	380	755	650	3343
	KHAN QALA								
	Sub Total		175	1528	1850	1340	2050	1890	9633
	JALALA		315	470	1050	650	1490	870	3750
			185	410	570	500	9740	640	3145
П		2016	450	780	605	260	9515	1485	3095
	KHAN QALA								
	Sub Total		950	1660	2225	960	2745	1995	9990
	JALALA		467	490	418	740	820	715	3650
			355	650	590	585	430	645	3155
III	FIR SADDI	2017	404	750	350	890	940	1090	3424
	KHAN QALA								
	Sub Total		1226	1890	1358	2215	2190	2450	10229

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BETTER EXPECTATIONS IN AGRICULTURE, LIVESTOCK AND FISHERIES PRODUCTION WITH GOVT. INTERVENTION

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ABSTRACT

The agricultural sector was on the positive growth rate up to the year 2017-18, but due to shortage of water supply, decreasing water reservoirs, specially in Barani areas inBalochistan and Khyber PK, the results in the year 2018-19 showed negative growth e.g. in crop sector (-4.43%) against targeted (3.6%) and crop sector (-6.55%), Sugar Cane (-19.4%) and cotton also (-17.5%) and rice (-3.3%). This astonishing situation, together with previous regimes noninterventions financially compelled the constitutions Task Force in Agriculture with its subsectors (i) wheat, (ii) Rice (iii) Sugarcane (iv) oilseeds (v) water conservations (towards lining of water courses and water ponds) (vi) Fisheries sector for projects of 05 years each and livestock for preparing project proposal for 04-05totalling of Agricultural sector to the tune of Rs. 297.602 Billions (Bns) with a split of (a) Agricultural crops (wheat, rice and sugarcane and oilseeds) to Rs.44.822 Bns, (b) conservation of water (through lining 50%, enhancing command area and conservation in Barani and Khyber Pk.) to the tune of Rs.220.425 Bns, (c) Fisheries sector (Shrimp farming, cage fish culture and Trout farming in Northern Areas-NAs) to Rs 13.991 Bns whereas Livestock poultry to Rs 18.364 Bns respectively. It is hoped to get better production and positive growth rate with such a huge financial intervention by the Federal Govt. under Prime Minister Agriculture Emergency Program (PMAEP) for the period 2018-19 to 2022-23.

Key Words:- Major Crops, Water conservations, Fisheries, Livestock, PMAEP

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INTRODUCTION:

Agriculture sector has been declared back bone of our country and this sector is contributing positively to the GDP, year after year, say during 2018-19 it contributed 18.5% while last year's contribution was 11.7% and each sub-sectors of agriculture namely crops, fertilizers, by-products, pulses, minor, crops, vegetables, fruits and condiments together with livestock, fisheries and value added during 2018-19 there appeared negative growth which was not only shocking for researchers the planners the farmers and the common man (as there had been price hike of various commodities). The farmers as well an Ex-Federal Minister for National Food Securities and Research (NFSR) GoP Islamabad was heared asking for exclusive budget for agriculture sector.

The present regime taking a serious view of the situation contributed task Force in various subsector Department Wings and Divisions and at Federal as well as Provincial Departments to come up with project proposals where govt.

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intervention was deemed necessary on emergency basis. This approach was given the name of Prime Minister Agriculture Emergency Program (PMAEP) in the country and priority areas were targeted with consensus namely (i) Productivity Enhancement of wheat, Rice and sugar cane, (ii) National oilseed production enhancement (iii) conservation of water through lining (50%) of 73078 water courses alongwith 13875 water shortage and command area of small and mini-dams in Barani areas, Fisheries sector comprising shrump farming, cage fish and trout farming in Northern Area (NAs) while livestock sector (for four year) save and Fatten calves and Backyard poultry program.

The total allocation for this Agriculture Emergency despite budgetary constraints a hand sum amount of Rs. 297.602 Billions earmarked with yearly allocation of Rs.58.601 Bns for such programs. It is worth mentioning that livestock sector was given a boost towards increased production, way back in the year 2003-04 to the year 2010-12, under Federal Public Sector Development Projects (FPSDP) with a total financial assistance of Rs.9.01 Bns and was documented with data in the year 2013 by Muhammad Hafeez, Splited in Seven (07) mega projects namely (i) Strengthening Livestock Services in Pakistan (SLSP), (ii) Lives-stock Development for Meat Production (LDMP) (iii) Milk Collection for Dairy Production (MCDP), (iv) Prime Ministers Special Initiatives for Livestock (PMSIL), (v) National Program for Control and Eradication of Avian Influenza (NPCEAI), (vi) Integration and Registration of Corporate Based Slaughter Houses in Pakistan (IRECBSHP) and (vii)Up-Gradation and Extension of Animal Quarantine Stations of Pakistan (UEAQSP) respectively.

BRIEF REVIEW:

Ejaz Wasti (2015-16) (2016-17) and (2017-18) forwarded yearly update on agricultural production stated that major crops namely wheat, rice, sugar cane, maize and cotton accounted for 21.0% to the value added and 4.06% in GDP (with yearly details, documented in the Pak. Economic Survey Reports GoP, Islamabad. As per the document under reference the crops targeted under PMAEP, wheat showed production of 26.076 and 25.195 millions tons for 2017-18 and 2018-19 which fell short by 4.9%. The drop in production was attributed to mainly decreased water availability together with the negative growth of (-4.1%). It was suggested that in the coming years water conservation, if not given attention might

further decrease the production which has already resulted in the 1.1% production change during 2018-19. The second major crops, rice was also reported showing decreased production by (-0.2%) 72.02 millions tons against 74.50 million tons, the previous year) with three main reasons of (i) shrinkage of land in rice cultivation (by 3.1%) (ii) water shortage and (iii) dry weather hence the allocation of funds under PMAEP has been proved a timely support to all stake holders.

The third main crop, as documented above targeted under PMAEP the sugarcane which was dropped to 67.174 million tons, as compared to 83.333 million tons (in the previous year) and recorded (19.4%) which was also attributed to three main factors (i) squeezed area under cultivation, (ii) decreased water availability and supply together with (iii) dry weather. It was concluded that the three major crops as were adversely affected immediate intervention was required to address factors such as water supply and other relevant factors, as documented by farmers earlier demanded.

Bureau of Statistics (BOS) (2017-18 and 2018-19) documented the decreased agricultural production, based on the information regularly received from Provincial Crops Reporting Center (PCRC and incorporating updated production figers of all the three crops (a) wheat, (b) rice and (c) sugarcane reciprocating the data reported by the Pak.Economic Survey Reports of Finance Division GoP Islamabad referred and document lowered production of the three crops targeted for attention of govt. intervention and suggestively recommended in the Ministry of National Food Security and Research (NFSR) meetings of the National Task-Force, Constituted, for the purpose.

The Economic Wing (EW) of MNFSR (2018-19) also provided detailed documentation, in the light of previous yearly reports, the reduced production of wheat, rice and sugarcane crop and actively participated in the Task Force meetings, for allocation of funds, on the long term basis in the PMAEP, starting 2018-19.Oilseed crops on the other hand also showed retrogressive growth in both seed and oil produced as reported by Pakistan Oil Seed Development Board (PODB-2017-18 and 2018-19) to the tune of 3.465 million tons of seed and oil produced to the quantity of 0.508 million tons, in the year 2017-18 which was decreased to 3.246 million tone of seed and producing 0.500 million tons of oil,

during the year 2018-19 and suggestively recommended to include oil seeds in the PMAEP.

The report further elaborated that during 2018-19 (July-2018 to March-2019) a total of 2.421 million tons of edible oil was imported with a cost of Rs. 192.203 Bns (equalent to US Dollars 1.455 Billions) while the local (Pakistan) production of edible oil was Five Times less water shortage as reciprocal to crop production was continuously being documented by Indus River System Authority (ISRA) 2017-18 and 2018-19 with percent change in Kharif (2018) over kharif (2017) as (-18%) (-12%), (-18%), (-3%) and (-15%) for Punjab, Sindh, Balochistan and Khyber PK. with a total quantily of 69.97 Million Area Feet (M.A.F) in kharif 2017 to 59.62 MAF in kharif 2018 while Rabi seasons picture was 24.15 MAF (2017-18) and 24.76 MAF (2018-19) which clearly drew the attention of administration and planners both at Federal as well as provincial ministers of agriculture, recommending appropriate govt. intervention avoiding a drought situation and measures identified for water supply, conservation and for increased storagebut the allocation remained limited.

In farmers conferences (Kisan Conference-1997) this issue was also raised and debated by Agri- progressive farmers. The Minister for Agriculture Sartaj Aziz was appointed the chairman, Agriculture commission of Pakistan, this issue was discussed at length and again budget required of few hundred millions year after year but this issue was issue of soil erosion by floods by both sides of 220.425 Bns and was included in PMAEP for five years, splitted over 05 yearly amounts of Rs.44.085 Bns, in a positive timely approach by the PMAEP.

The water availability conservation and supply together with the command areas needed attention as the actual surface water availability in both kharif and Rabi season was 67.1 and 36.4 MAF with % decrease was2009-10, 2010-11, 2011-12, 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18 and 2018-19.

Fisheries and Livestock sectors were also in need sectors of shrimp farming (in brakish water of coastal areas), cage fish culture (in big reservoirs and sea) together with trout farming in Northern Areas, meat production enhancement (save and fatten calves) as well as Back yard Poultry program by PMAEP.

MATERIAL AND METHODS:

Data collected was based on the following sources, towards presenting the information, scrutinized and relevant portion, taken for This write-up:-

- Agricultural statistics, (Agri-stat) and the Agriculture Year Book of 2017-18 and 2018-19.
- Pakistan Bureau of Statistics (PBS) reports for the relevant years; GoP Islamabad.
- Pak. Economic Survey Reports (2016-17), (2017-18) and (2018-19) Finance Division, GoP Islamabad.
- Indus River System Authority (IRSA) Reports for the years 2017-18 and 2018-19.
- 12th Five Year Plan (2018-23), Govt. of Pakistan, Ministry of Planning and Development Islamabad.
- National Water Policy (NWP-2018).
- Livestock-Wing MNFSR updates 2017-18 and 2018-19.

REUSLTS AND DISCUSSION: RESULTS:

In going through miner details filtered for this study, the findings on the collected data it was recorded that a total of Rs 297.602 Bns were allocated for a period of 05 years in productivity Enhancement of three targeted crops (i) wheat, (ii) rice and (iii) sugarcane, together with (iv) oilseed crops Rs.(44.822 Bns) while for conservation of water, through lining (50%) enhancing command areas of small and mini-dams Rs.220.425 Bns. The Fisheries sector was provided allocation of Rs. 13.991 Bns for Shrimp farming cage Fish culture and trout farming in NAs while livestock sector was earmarked with the amount of Rs 18.364 Bns towards (i) save and fatten calves for more meat production as (ii) Back yard poultry program (for four years duration, as presented in table No.01. The percent distribution of total allocation for all the four sectors of Agriculture, has also been detailed in table No.02, with overall percentage allocation for each sector (for 05 years) but for livestock sub sector (for 04 years) as detailed in table No.03.

S No	Itemized area	Individual items	BillionRs
5.140		Wheet	
		wheat	19.301
1	Productivity Enhancement of wheat,	Rice	11.433
•	Rice and Sugarcane	Sugarcane	39.12
		Sub total	44.822
2	National Oil Seeds Enhancement	Oil Seeds	10.176
	Conservations of water through lining	Water courses	
3	(50%) of 73078 water courses and	And storage	179.705
	13875 water storage tanks	tanks	
4	Enhancing areas of small and Mini-	Water storage	37 700
4	dams in Barani Areas	command area	27.700
		Water	
_	Water conservations of Barani area in	conservation	13.020
5	Khyber Pk.	Khyber P.K	
)	Sub total	220 425
6	Shrimp farming	Shrimp	1 8/2
-			4.042
1	Cage fish culture	Cage Fish	6.856
8	Trout farming NAs	Trout Farming	2.291
0		Sub total	13.991
	Source and Eattring of column (04 year)	Save/ Fatten	E 044
	Save and Fattring of calves (04 year)	Calves	5.344
	Backyard poultry program (four years)	Poultry	13.020
	Total	•	297.602

Table No-01 Prime Ministers Emergency Program for the 05 year starting 2018-19, for the country

Table No.02 Percentage allocation of PMs Agr-Emergency program for various four sectors for 05 years.

		•.					
S.No	Items	l Year	ll Year	III Year	IV Year	V Year	Total
01	Agri-Crop enhancement	8.964	8.964	8.964	8.964	8.964	44.812
02	Water conservation	44.085	44.085	44.085	44.085	44.085	220.425
03	Fisheries sector	2.798	2.798	2.798	2.798	2.798	13.991
04	Livestock Production	4.591	4.591	4.591	4.591	4.591	18.364
	Total	58.601	58.601	58.601	58.601	55.847	297.602

Table No-03 Percentage allocation of funds for Four sub sectors of Agriculture for a period of 05 years starting 2018-19.

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S.No	Sub Sector	lst	2 nd	3 rd	4 th	5 th
		2018-19	2019-20	2020-21	2021-22	2022-23
01	Agricultural Crops and oil-seeds	15.296	15.296	15.296	15.296	15.296
02	Water conservation lining of courses and storage	75.229	75.229	75.229	75.229	75.229
03	Fisheries	8.020	8.020	8.020	8.020	8.020
04	Livestock sector	7.83	7.83	7.83	7.83	7.83

DISCUSSION:

While not going into lengthy discussion the PMAEP targeting three agricultural crops (i) wheat , (ii) rice and (iii) sugar cane as are directly the staple food grains of wheat and rice while sugarcane also of everyday used food item were badly needed attention of the govt. specially the provinces were looking towards Federal Govt. for financial allocation of funds, as an additional support for productivity enhancement really shows the 12th Five Year Plan (2018-2023), despite Financial constraints, allocation of Rs.44.822 Bns for Agricultural crop enhanced production as well as oil seed crops production together with increased edible oil needed for our people, reducing the import bill of edible oil, in the country, as pointed out and documented by Ejaz Wasti (2017-18 and 2018-19) and supported with the data obtained from Agri-Stat: of M/o NFSAR, GoP Islamabad.

Conservation of water through lining of water courses in Barani areas had been issue long discussed since way back but the allocation remained limited. In farmers conferences (Kisan Conference-1997) this issue was also raised and debated by Agri- progressive farmers. The Minister for Agriculture Sartaj Aziz was appointed the chairman, Agriculture commission of Pakistan, this issue was discussed at length and again budget required of few hundred millions year after year but this issue was issue of soil erosion by floods by both sides of 220.425 Bns, for five years, splitted over 05 yearly amounts of Rs.44.085 Bns, in a positive timely approach by the PMAEP.

The water availability conservation and supply together with the command areas needed attention as the actual surface water availability in both kharif and Rabi season was 67.1 and 36.4 MAF with % decrease was noted during 2009-10 through 2018-19.

Fisheries and Livestock sectors were also in need sectors of shrimp farming (in brakish water of coastal areas), cage fish culture (in big reservoirs and sea) together with trout farming in Northern Areas, meat production enhancement (save and fatten calves) as well as Back yard Poultry program by Muhammad Hafeez (2008), (2011) and increased livestock and poultry production to the year 2030 by Mashook Ali Bhutto and Muhammad Hafeez (2015) and (2017) respectively. This



financial intervention of Rs. 13.991 Bns for Fisheries and Rs 18.364 Bns for Livestock and Poultry sub-sectors will prove a timely support to all stake holders.

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