

Empirical Study of Livestock Population Growth and Dairy Farming in Sindh, Pakistan

Shah Pisand Chandio¹, Dr. G.H Talpur², Dr. M. Ilyas Rajput³

Department of Statistics University Of Sindh Jamshoro, Pakistan

Received: December 12, 2017

Accepted: March 6, 2018

ABSTRACT

Pakistan is an agricultural country with large scale Livestock sector Population, though there is lack of awareness about the importance of livestock and dairy farming .The purpose of this study is to find the Trend and Rate of Growth of livestock population and also find out the milk production and problems of dairy farmers in Sindh. The study of livestock population was based upon the livestock Census 2006 and livestock population up to 2016. Method of linear regression and descriptive statistical methods are used. Livestock population of Sindh has steadily increased. Compound Annual Growth Rate (CAGR) of livestock population in Sindh for years 2006-2016 is as under: Cattle 2.397%, Buffaloes 2.715%, Sheep 0.65%, Goats 2.591% and Camels 2.182%. Buffaloes and Goats showed relatively high growth rate. Percentage distribution of livestock population from the years 2006 to 2016 recorded: Goats increased 40.46% to 41.49%, Buffaloes 23.62% to 24.52%, Cattle 22.29% to 22.43%, Sheep decreased to 10.65% from 12.74% and Camels decreased to 0.88% from 0.89%. Average milk production of dairy farms per Buffalo per day is 9.84 liter, average milk price /liter is 61.9 rupees, average milk revenue per month is 17597 rupees, average cost of milk per month is 13087 rupees and average net profit per month is 4507 rupees. By the result of primary data with respect to better farm management and problems of dairy farmers it is concluded that only a few dairy farmers keep record of dairy farm, they don't use modern dairy techniques and they have constraints in milk marketing. Dairy farmers face many problems like no veterinary or loan facility and subsidy is given. Workers have need of training, Due to high cost of milk production shortage of fodder also occurs. Livestock in Sindh can be developed by financing & providing treatment, Vaccination facilities and proper education to the dairy farmers.

KEYWORDS: Compound Growth Rate, Empirical study, Livestock Population, Percentage Distribution and Trend line.

INTRODUCTION

Pakistan is an agricultural country with an extensive livestock sector, it is widely practiced by poor people of the country and keeping livestock is the way of life rather than a commercial activity. Unlike the big land owning crop farmers, the livestock farmers are neither vocal nor active and thus they are perhaps the most influential disadvantaged group in the country. Domestication of the livestock is one of the oldest achievements of human beings it has made their lives more formative easy and secures [13]. In Pakistan there are big farms for keeping livestock. Livestock provides essential items of food in the form of milk, meat and eggs. Livestock contributes 11.3% GDP of Pakistan. Total number of livestock population in 2008 was 154.3million [11]. There are seven popular type of livestock found in Pakistan including Buffaloes, Cow, Sheep, Goats, Camels, Equine (Horse, Donkey, and Mules) and poultry [15]. They are kept for multiple purposes. Pakistani Cows are generally used for drought purpose, Goats and Sheep are domesticated for meat production with hair/wool and for milk as by-products. Camels are kept for many purposes in the desert, aired areas and mountains regions of the country [13]. In Pakistan there are big farms for livestock.

Pakistan is world's third largest milk producer country but the total milk production is not sufficient for domestic need. There is a steady increase in milk production from the last several years, dry milk products of value about 1.1 billion dollars are imported which are burden on the economy of Pakistan [6]. Human population of the country has exceeded up to 70 million recently, which was predicted to reach 76 million by 2020. According to current population increase in Pakistan demand for food has created the need to produce more milk [6]. Majority of the population of Sindh is engaged directly or indirectly in livestock farming and agriculture. Landless farmers particularly depend livestock farms for the completion of their basic needs such as milk, butter, ghee etc. where more than 75%of rural population practices livestock farming [2]. Livestock population of Sindh can be studied for multiple reasons [18]:

- 1) In agricultural after Punjab Sindh is major province, production of most of the crops in Sindh is higher and population of livestock has also increased to high Rate of growth as compared to KPK and Baluchistan [18].
- 2) In Sindh there is sufficient number of small and medium farmers and a large number of these farmers are poor so they keep their livestock for drought and milk purposes [18].

The population of all major species of livestock cattle, Buffaloes, Sheep and Goats has constantly increasing over the years. However growth rate is different for various species. Growth rate of Buffalo is higher than cattle. In fact, in 1955 when the first livestock census carried out, cattle population was much high then of buffaloes [18]. Cattle in Pakistan have mainly been used as drought animal in addition to milk production. In contrast, the buffalo is the main dairy animal of Pakistan, and its population continued to grow at almost 1.75 times the growth rate of cattle. Thus, where population of cattle in 1955 was 172 percent more than that buffaloes, the buffalo-population is currently higher than cattle [2]. Present study has recorded Trends and Percentage Distribution of Livestock Population, compared data of livestock population and analyzed compound growth rate of livestock population in Sindh from year 2006 to 2016.

Aims and Objectives of the study

1. To analysis the growth trend and percentage distribution of five kinds of livestock population in Sindh from the year (2006-2016).
2. To compare the different livestock population with total Population in Sindh from year (2006-2015).

*Corresponding Author: Shah Pisand Chandio, Department of Statistics University Of Sindh Jamshoro, Pakistan.
Email address: shahpasand77@gmail.com

3. To study the annual compound growth rate of livestock population in Sindh from year (2006-2016).
4. To analysis the milk production factors in rural areas of Sind (Case study of Dadu district).

Research Questions

- Did the population of livestock in Sindh decrease from 2006 to 2016 years?
- Did the population of goats and buffaloes increase more as compare to other livestock population?
- Did Annual Compound Growth rate of camel population decrease?
- Does the profit of milk depend on other milk production factors (production, cost, revenue & price)?

Problem statement

Livestock in Sindh play a significant role in the life of common man keeping livestock is the way of their life. In rural and urban areas of Sindh dairy farmers face too many difficulties in the production and sale of milk. Dairy farmers have neither vaccination and veterinary facilities are available. Dairy farmers have need of subsidy and loan facilities to develop their dairy farms. There is gap of communication between the stake holders of dairy farms and government. The problem statement of this paper is empirical study of the livestock population, to evaluate the problems of dairy farmers to the government and analysis the milk production factor in Sindh.

Significance of the study

This study will benefit the stakeholders of livestock, dairy farmers and common man in Sindh. The research work will be helpful for the government in solving the problems of dairy farmers. Furthermore problem of better farm management is also highlighted in this research which is necessary for the sufficient milk production and profit. This research will also helpful for increase in livestock population in Sindh.

REVIEW OF THE LITERATURE

H.M Spicer and L.A (1994) describe that poor management factor with reference to keeping record of the animal is an important aspect and can reduce or increase the profitability of a dairy farm. Furthermore the quality of feed is very considerable among farms. It can create a positive difference if farmers develop an understanding about different managerial practices and techniques of the dairy enterprise. In the connection to his research it was indicated that the age of milking cattle is one of the most important factor in dairy business [15].

Bernard L. Ervin (2006) describes the role of dairy farm human resource; he focuses human resource model or paradigms. He added that people are precious asset of dairy business, trained and honest human resource is a sign of success and profit, but at same place dishonest and untrained human resource can damaged the business and give huge economic loss. The nature of dairy business is complex; a lot of activities are performed by dairy farmers in every day dairy farming life, and each activity involves a lot of amount or capital so honest and trained human resource can save precious asset and capital. Bernard further surveyed that HRM of dairy farm management must require different trainings relating to farm management and build a battle environment on dairy farm [15].

Waheed Buriro (2005) indicates the component of external environment of dairy farming like price adjustment of milk, availability of labor, competition in milk market. He found that external environment plays a vital role in farm management and is essential ingredient in success of dairy enterprise, external environment of dairy farm deals with price adjustment, the pricing of milk is a complicated phenomenon in Sindh milk market as milk is sold in to open milk market where prices are fluctuated and according to the quality and demand and supply level of milk prices are adjusted every day [3]. One liter of milk is sold in an open market from Rs.35 to Rs.55; the other milk market is whole sale market where middle man or wholesaler buys milk from dairy farms. The open milk market is covered by small farmers whereas large and commercial dairy farmers sale their milk at wholesalers who buy milk on competitive rates from dairy farmers, the milk is bought on low rates and being sold to customers on high prices especially in city retail milk market the charges of milk are high. Buriro suggests that which pricing system should have been controlled by government where farmers receive reasonable price of milk and customer buy milk on reasonable price in this regard he suggested that government may provide subsidy [15].

Barbara Dart (2009) discusses the principle of integrated Dairy Farm Management IDFM she constructed a model for a successful dairy farming and suggested developing a full plan for running a dairy business successfully. The researcher emphasizes that all farms should develop a plan because farm is a kind of firms or enterprise that involve all kinds of business activities like investment, risk, loss and profit. The further findings were submitted regarding a plan that it starts with mission statement or primary plan, business vision admission, longer short terms goals, transitional farm a tactical to strategic mind set, she constructed a model of action of plan containing distribution of dairy tasks namely responsible for accomplishment of the dairy roll [15v].

RESEARCH METHODOLOGY

Research Design

This empirical study consists upon the five kinds of livestock population in Sindh including Cattle, Buffaloes, Sheep, Goats and Camels. Time sample of this data is 10 years this study is panel data. Sample size of dairy farms is 85 from Dadu district of Sindh and for the study of compound growth rate formula of annual compound growth rate is applied.

Research Methods

Quantitative research method is applied in both primary and secondary data. For the analysis of growth trend, linear trend method is used and separate trend lines are drawn for each kind of livestock from year (2006-2016).

Research Approach

This is deductive research approach, we check already the existing hypothesis examine the specific outcome of the enquiry by collection of quantitative data and use scientific principles.

Research Philosophy

Research philosophy of this study is positivism because the empirical methods are used for quantitative analysis and numbers can explain the relationship between the variables. Equation of trend line of livestock population in Sindh

is drawn from the year 2006 to 2016. Percentage distribution and annual compound growth rate of livestock population with total population is calculated from the year 2006 to 2016 and comparison of livestock population with total population is calculated from the year (2006-2010) and (2010-2015). Secondary data of livestock population was collected from livestock department of Sindh and other sources. Quantitative analysis and numbers can explain the relationship between the variables. To analysis the milk production, price, cost, revenue of milk, dairy farm management and problems of dairy farmers, our tool of data collection was self administered questionnaire which assessed basic knowledge about dairy farmers and dairy farming. Questionnaire was distributed among the 85 respondents (dairy farmers) of the selected area and they were asked to fill it according to their knowledge without guess, collected data was analyzed by statistical software. Reliability and validity of the data was also determined.

Research Tools

In this study our basic tool of research was self administered questionnaire and various statistical techniques were applied for analysis the data. Computer and Statistical software SPSS V-22, Microsoft Excel, EViews9.5v were applied for the description and interpretation of data required tables and graphs were constructed and result was displayed on graphs.

RESULTS (STATISTICAL ANALYSIS OF LIVESTOCK POPULATION OF SINDH)

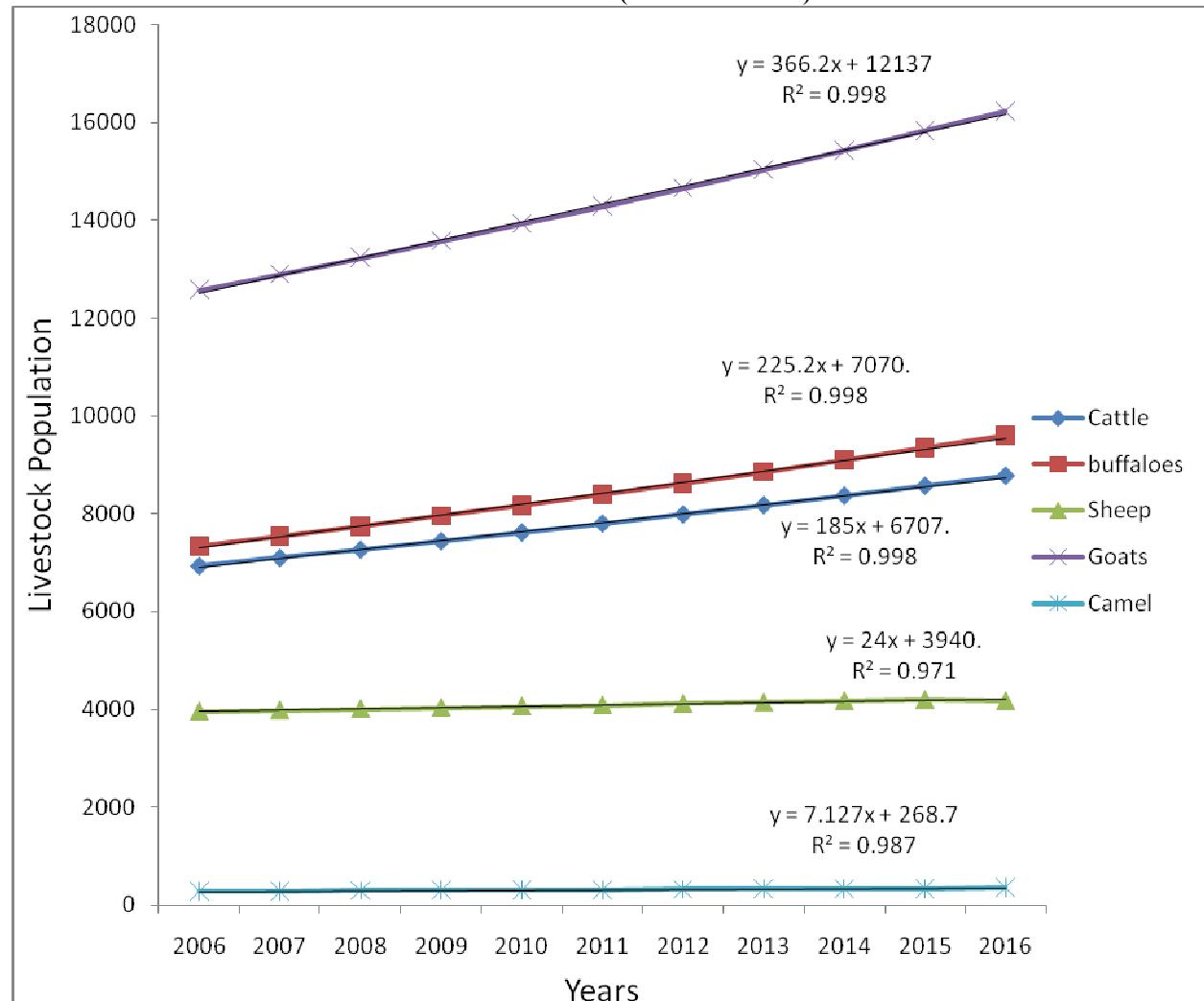
Table-i Livestock Population of Sindh from 2006 to 2016(In 000 Numbers).

SPECIES	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cattle*	6925	7091	7261	7435	7613	7796	7983	8174	8370	8571	8776
Buffaloes	7340	7539	7744	7954	8170	8392	8620	8854	9094	9341	9594
Sheep	3959	3984	4010	4036	4062	4089	4115	4142	4169	4196	4169
Goats	12572	12898	13232	13575	13927	14288	14658	15038	15428	15827	16237
Camels	278	284	291	297	303	310	317	324	331	338	345

Source: Livestock Census 2006 and Estimated Livestock Population of Sindh (2006-2016), Estimated figures are based on in the census growth rate of livestock census 1996 & 2006.

*= Includes Bullocks, Cows and young stock .

Graph-i Trend lines, showing the Growth of Cattle, Buffalo, Sheep, Goat and Camel Population in Sindh from 2006 To 2016 (In 000 Numbers).



Cattle population revealed an increasing trend, Equation of Linear Trend ($y = mx + b$; $Y= 185x + 6707$). Here $mx= 185x$ is Slope (Rate of Change times X) and $b=6707$ (Y-intercept Constant). Buffaloes population revealed an increasing trend, $Y= 225.2x+7070$ Here $185x$ is Slope, and 7070 Y-intercept. Sheep population revealed an increasing trend, $Y= 24x+3940$ Here $24x$ is Slope, and 3940 Y-intercept. Goats population revealed an increasing

trend, $Y = 366.2x + 12137$ Here 366.2x is Slope, and 12137 is Y-intercept. Camels population revealed an increasing trend, $Y = 7.127x + 268.7$, Here 7.127x is Slope and 268.7 is Y-intercept. R^2 Value indicates that all these variables have strong explanatory power.

Table-ii Percentage distribution of livestock Population in Sindh from 2006 to 2016.

YEARS	Cattle	Buffaloes	Sheep	Goats	Camel
2006	22.29	23.62	12.74	40.46	0.89
2007	22.3	23.71	12.53	40.56	0.89
2008	22.32	23.8	12.32	40.67	0.89
2009	22.33	23.89	12.12	40.77	0.89
2010	22.34	23.98	11.92	40.87	0.89
2011	22.35	24.06	11.72	40.97	0.89
2012	22.37	24.15	11.53	41.07	0.89
2013	22.37	24.24	11.34	41.16	0.89
2014	22.38	24.32	11.15	41.26	0.89
2015	22.39	24.41	10.96	41.35	0.88
2016	22.43	24.52	10.65	41.49	0.88

Source: Livestock Census (2006), Estimated Livestock Population of Sindh (2006-2016).

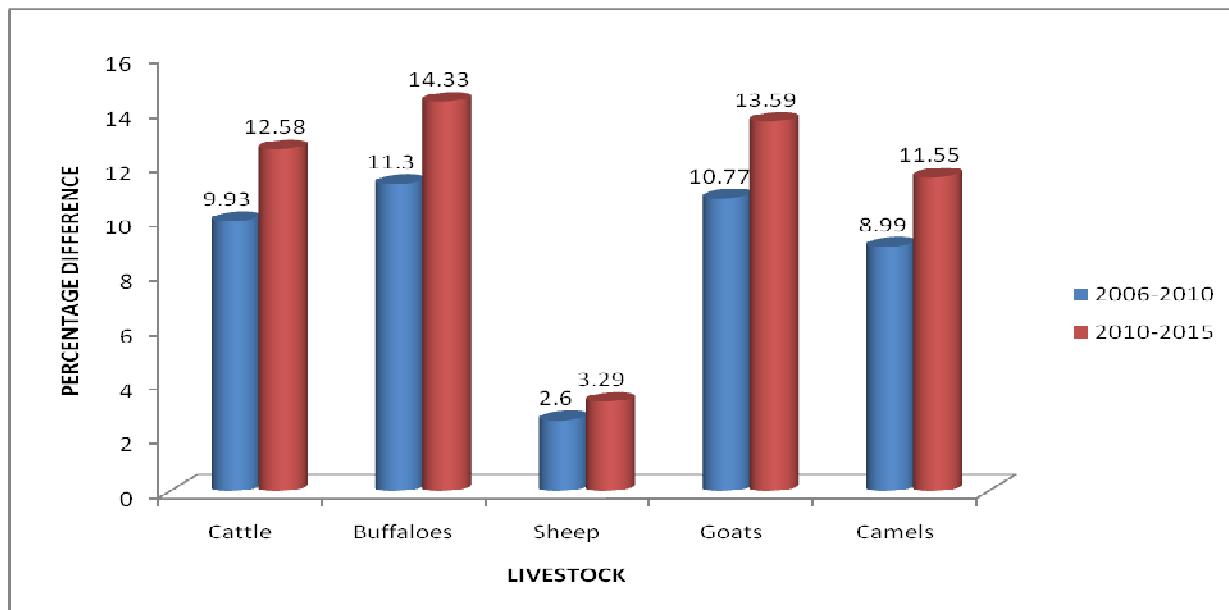
Percent distribution of Cattle population in the Census year 2006 was 22.29% which was increased to 22.43% in 2016, in the years 2012 and 2013. Percent distribution of Buffalo population in the Census year 2006 was 23.62% which was increased to 24.52 in 2016. Percent distribution of Sheep population in the Census year 2006 was 12.74% which was decreased to 10.65 in the year 2016 to total livestock population. Percent distribution of Goats population in the Census year 2006 was 40.46% which was increased 41.49% in the year 2016. Percent distribution of Camel population in the Census year 2006 was 0.89% which was decreased by 0.88%, in the year 2016 to the total livestock population percent.

Table-iii Comparison of Livestock Population in Sindh for the Years (2006 -2010) and (2010 -2015).

SPECIES	2006	2010	2015	% Diff: 2006 to 2010	% Diff: 2010 to 2015
Cattle	6925	7613	8571	9.93	12.58
Buffaloes	7340	8170	9341	11.3	14.33
Sheep	3959	4062	4196	2.6	3.29
Goats	12572	13927	15827	10.77	13.59
Camels	278	303	338	8.99	11.55

Source: Livestock Census (2006), Estimated Livestock Population of Sindh (2006-2015).

For the years (2006-2010) Percentage difference of Cattle population was 9.93% & for the years (2010-2015) was 12.58%. Percentage difference of Buffalo population b/w the years (2006-2010) was 11.3% & for the years (2010-2015) was 14.33%. Percentage difference of Sheep population b/w years (2006-2010) was 2.6% & b/w the years (2010-2015) was 3.29%. Percentage difference of Goats population b/w years (2006-2010) was 10.77% & b/w (2010-2015) % age difference was 13.59%. Percentage difference of Camel population b/w years (2006-2010) was 8.99% & b/w the years (2010-2015) % age difference was 11.55%

Graph-ii Comparison of Livestock Population in Sindh for the Years (2006 -2010) and (2010 -2015)

Source: Livestock Census (2006), Estimated Livestock Population of Sindh (2006-2015).

Table-iv Annual Compound Growth Rate (CAGR) of Livestock Population in Sindh for the Years (1996 -2006) and (2006 -2016).

SPECIES	Livestock Census 1996	Livestock Census 2006	Livestock Pop.2016	CAGR 1996-2006	CAGR 2006-2016
Cattle	5464	6925	8776	2.3978	2.3971
Buffaloes	5615	7340	9595	2.7151	2.7152
Sheep	3710	3959	4224	0.6517	0.65
Goats	9734	12572	16237	2.5914	2.5912
Camels	225	278	345	2.1377	2.1827

Source: Livestock Census (1996 & 2006), Estimated Livestock Population of Sindh 2016.

For the years (1996-2006), Population of Buffaloes grew at an annual compound growth rate of 2.7151%, Goats 2.591%, Cattle at 2.3987%, Camel 2.137% and Sheep 0.6517%.

For the years (2006-2016), Population of Buffaloes grew more at an annual compound growth rate of 2.7152%, Goats 2.5912%, Cattle at 2.3971%, Camel 2.1827% and Sheep 0.65%.

RESULTS (STATISTICAL ANALYSIS OF DAIRY FARMING IN SINDH)

Table-v Result regarding the Production, Price, Milk Cost, Revenue and Profit per Buffalo data collected from 85 dairy farms of Dadu district of Sindh, Pakistan.

Category	Minimum Value	Maximum Value	Average Value
Milk in liters per day	8	12	9.84
Milk in liters per month	210	405	284
Price per liter	50	70	61.9
Milk revenue per month	12600	26325	17597
Cost per month	9076	18900	13087
Profit per month	575	13075	4507

Source: survey data May 2017.

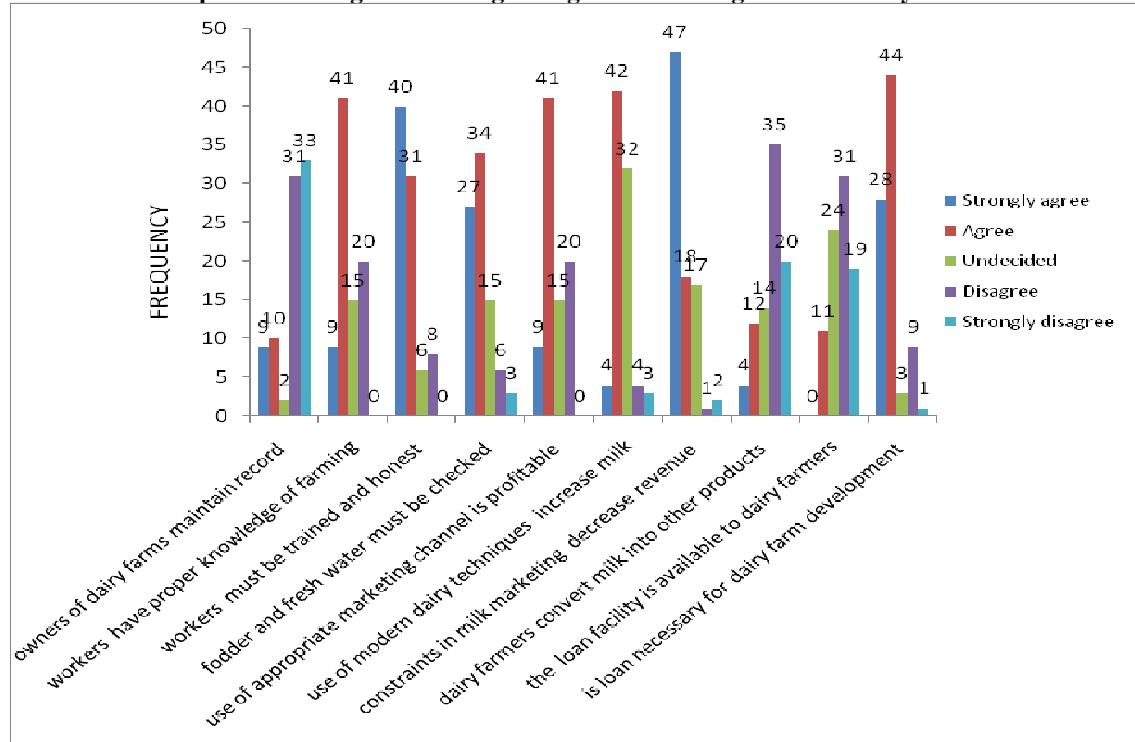
Average milk production of a dairy farm per Buffalo /day is 9.84 liter, average milk price /liter is 61.9 rupees, average milk revenue per month is 17597 rupees, average cost of milk per month is 13087 rupees and average net profit per month is 4507 rupees. By the analysis of primary data collected from dairy farmers it is concluded that the independent variables revenue per month and cost per month are significantly related to the dependent variable profit per month, these variables statistically explain the variability of net profit; P-values of the variables are < 0.05. But independent variables milk sold per month and milk price per liter are not significantly related to profit per month, these variables statistically don't explain the variability of net profit, P-values of the variables are > 0.05. R-squared value implies the explanatory power of the model, value 0.999 indicates that this model has strong explanatory power.

Table-vi Regression Analysis

Dependent Variable: PROFIT_MONTH				
Method: Least Squares				
Date: 02/10/18 Time: 16:17				
Sample: 1 85				
Included observations: 85				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-158.1940	203.1723	-0.778620	0.4385
MILK SOLD MONTH	0.513148	0.669774	0.766152	0.4458
PRICE_LITER	2.247481	3.283125	0.684555	0.4956
REV_MONTH	0.992733	0.010852	91.47676	0.0000
COST_MONTH	-1.000083	0.001203	-831.2813	0.0000
R-squared	0.999951	Mean dependent var	4507.529	
Adjusted R-squared	0.999949	S.D. dependent var	2370.965	
S.E. of regression	16.94980	Akaike info criterion	8.555412	
Sum squared reside	22983.67	Schwarz criterion	8.699097	
Log likelihood	-358.6050	Hannan-Quinn criter.	8.613206	
F-statistic	410884.0	Durbin-Watson stat	2.001464	
Prob (F-statistic)	0.000000			

Source: survey data may 2017

Graph-iii Showing Results Regarding Better Management of Dairy Farms.

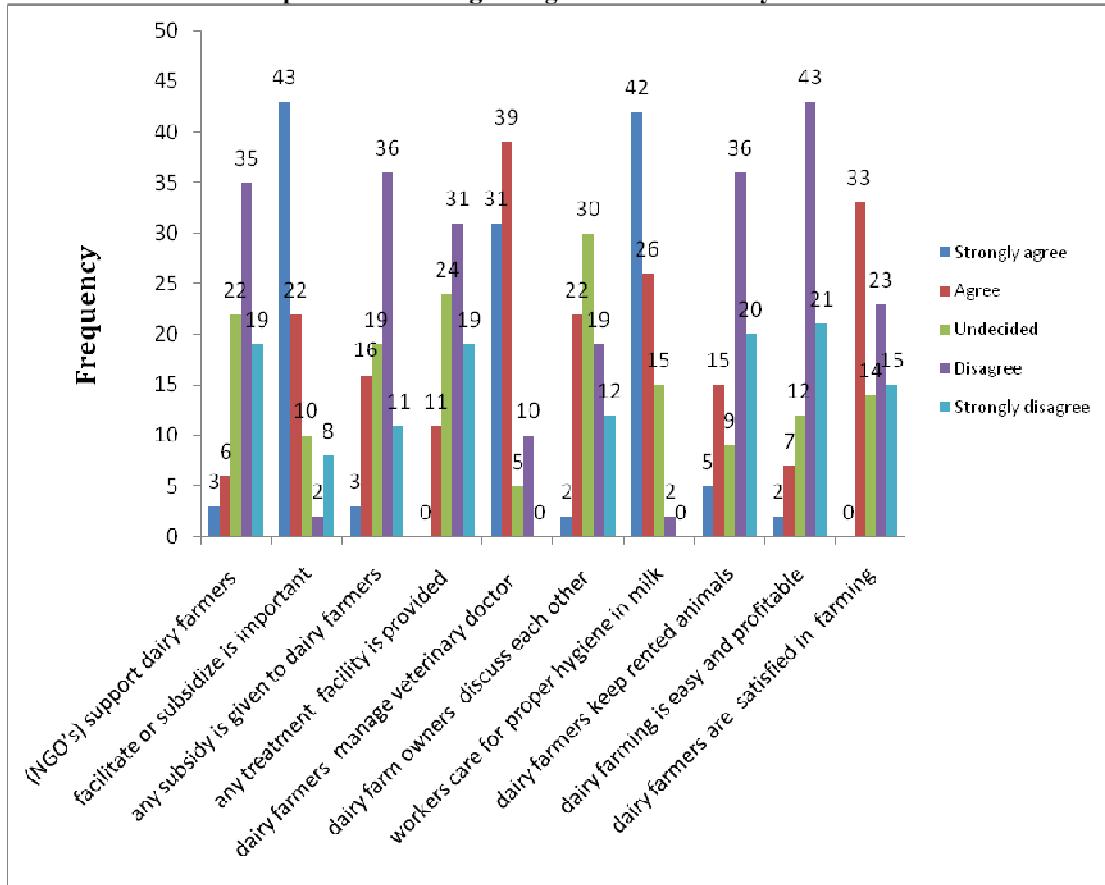


Source: survey data may 2017

Analysis of the data collected from Dairy Farmers Regarding Better Farm Management

By the analysis of primary data collected from respondents (dairy farmers) it has analyzed that 75% dairy farmers don't keep record of income and expenditure, 59% workers have knowledge about dairy farming, 84% owners agreed that workers must be honest & trained, 71% agreed that fodder and fresh water tanks must be checked regularly, 59% respondents agreed for use appropriate marketing channel is profitable, 54% respondents agreed for use of modern dairy techniques but not use, 77% respondents agreed that constraints in milk marketing is major problem which decreases milk revenue, 65% respondents disagreed for convert of milk into other products, 50% respondents strongly refused if they have any loan facility available, 85% farmers strongly demanded for the availability of loan (Graph-iii).

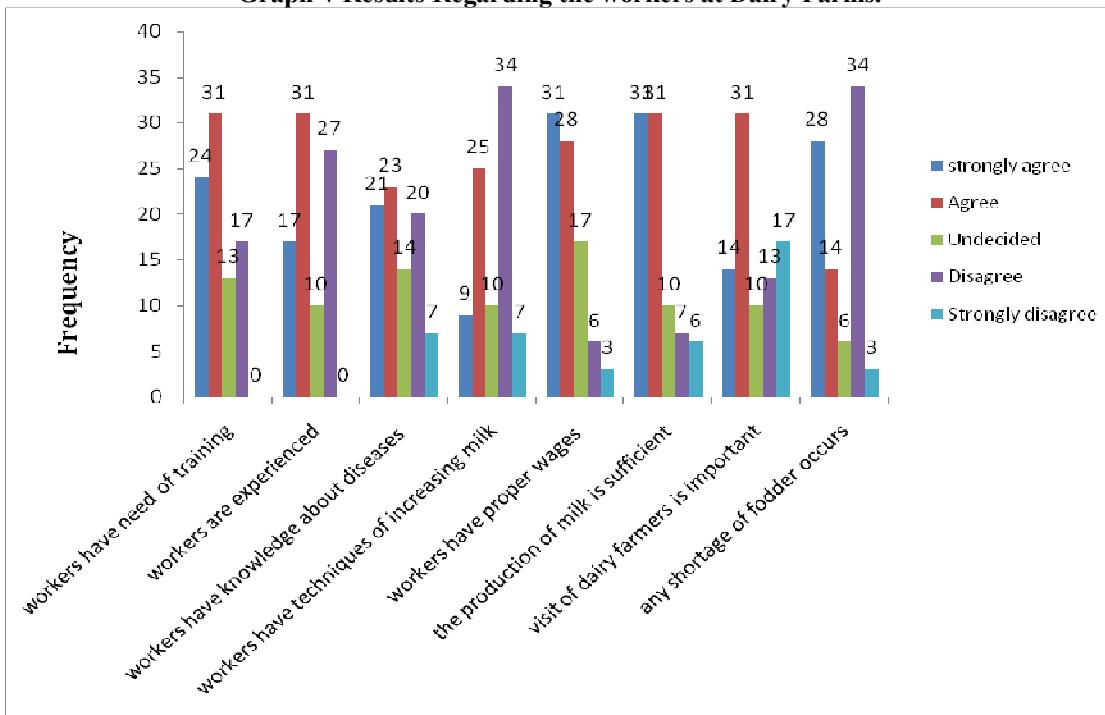
Graph-iv Results Regarding Problems of Dairy Farmers.



Source: survey data may 2017.

By the results shown on (Graph-iv) 64% respondents disagreed if they have any support of NGO's 25% were unknown, 76% farmers demand for subsidy or facility to increase milk production, 54% dairy farmers stated that there is not any subsidy given by government, 59% disagreed for having any treatment or vaccination facility, 82% farmers manage own veterinary doctor, 72% farmer were undecided & disagreed if they meet each other to discuss farm issues, 80% farmers agreed that workers care for proper hygiene in milk processing, 66% respondents refused for keeping rented animals, 75% dairy farmers disagreed that business of dairy farm is easy and profitable and only 39% respondents were satisfied in this business.

Graph-v Results Regarding the workers at Dairy Farms.



Source: Survey Data, May 2017.

By the result of (Graph-v) this is analyzed that 65% workers agreed they have need of training, only 36% workers were experienced, only 27% workers have knowledge about the diseases, only 29% workers were known about the techniques of increasing milk, only 36% workers were satisfied for their wages, 61% workers agreed that production of milk is sufficient, 53% workers were agreed that regular visit of owner is important and 40% workers agreed for shortage of fodder occurs at the dairy farms.

DISCUSSION

Present study recorded increasing Trend and Percentage Distribution of Livestock Population in Sindh during the years 2006 to 2016. The Cattle population revealed an increasing trend, Percent distribution of Cattle population in the Census year 2006 was 22.29% which was increased to 22.43% in year 2016, in the years 2012 and 2013 percent distribution remained same 22.37 (Table-ii). The Buffalo population displayed an increasing trend from year 2006 to 2016; Percent distribution of Buffalo population in the Census year 2006 was 23.62% which was increased to 24.52 in the year 2016. The Sheep population displayed an increasing trend from year 2006 to 2016, Percent distribution of Sheep population in the Census year 2006 was 12.74% which was decreased in the year 2016 percent distribution of Sheep population was 10.65% to the total Livestock Population in Sindh. The Goats population revealed an increasing trend from year 2006 to 2016; Percent distribution of Goats population in the Census year 2006 was 40.46% which was increased 41.49% in the year 2016 to the total Livestock Population in Sindh. Camel population also explained an increasing trend from year 2006 to 2015; Percent distribution of Camel population in the Census year 2006 was 0.89% which was increased to 0.90%, in the year 2016 to the total livestock Population in Sindh. The comparative study shows fluctuation in livestock population in Sindh from the years (2006-2010) and (2010-2015). For the years (2006-2010) Percentage difference of Cattle population was 9.93% & for the years (2010-2015) was 12.58%. Percentage difference of Buffalo population b/w the years (2006-2010) was 11.3% & for the years (2010-2015) was 14.33%. Percentage difference of Sheep population b/w years (2006-2010) was 2.6% & b/w the years (2010-2015) was 3.29%. Percentage difference of Goats population b/w years (2006-2010) was 10.77% & b/w (2010-2015) % age difference was 13.59%. Percentage difference of Camel population b/w years (2006-2010) was 8.99% & b/w the years (2010-2015) % age difference was 11.55% (Table-iii).

The change is noticed in compound growth rate of livestock population in Sindh from year (2006-2016). The change in composition of livestock population in Sindh was due to much high growth rate of dairy animals particularly Buffaloes as compared to that of Sheep. For the years (2006-2016), Population of Buffaloes grew more at an annual compound growth rate of 2.715%, Goats 2.5912%, Cattle at 2.3971%, Camel 2.1827% and Sheep 0.65%. Livestock animals Cattle, Buffaloes and Camels displayed different growth rates while animals of small ruminants Goats and Sheep have also different rates of growth. Thus Buffaloes and Goats revealed comparatively high growth rates over the 10 years period from (2006-2016), growth rate of cattle population is also satisfactory while Sheep and Camels recorded having relatively low growth rate. In the livestock population of above said period of 10 years sheep recorded very low growth rate but don't show the negative growth rate. Growth rate of camels is not satisfactory in large ruminants, however the growth rate of Sheep and Camels are expected to be recovered fast.

Conclusion

The main purpose of this study is to find out the Trend and Rate of Growth of Livestock population in Sindh from year 2006 to 2016. On the basis of empirical study it is concluded that the population of Livestock had become stably more important in the economy of Sindh and have a positive impact on rural household food security and decreasing poverty levels during the last ten year. It is concluded that Population of Buffaloes and Goats recorded positive Trend during years 2006 to 2016, Goats population has showed high trend of growth in all the five kinds of livestock. Percentage distribution of Buffaloes, Cattle and Goats has increased but Sheep and Camels decreased. The change in growth rate was due to high growth rate in the population of Goats as compared to Buffaloes. The Population of Buffaloes Cattle and Camels have displayed different growth rates. For the years (2006-2016) Buffaloes and Goats showed high growth rate, growth rate of Cattle population is satisfactory, Sheep and camel recorded low growth rate which is expected to recover fast. The reason for Sheep having low growth rate than Goats in Sindh is Sheep survive in dry zones hot or cold, while goats can survive in differing climatic conditions. The greater profitability of Goats than Sheep is mainly due to two reasons: Number of kids born by goats is double as number kids born by sheep; value of output per goat from milk is higher than value of wool per sheep. Goats keeping are expanding steadily with poorer households in Sindh and sheep keeping is to small number of households belonging to traditional shepherd class.

In Sindh there is large number of households who keep more Buffaloes and Cattles as compared to Goats and Sheep. Average house hold farmers keeping large number of buffaloes and goats as compared to Cattle, Sheep and camels for milk and meat production purpose. Percentage of Cattle house hold keeping by large farmers is low due to use of modern technology in agriculture, peoples have sufficient income from their agriculture therefore they do not have need to keep milch animals.

There are many reasons behind the poor management of dairy farmers; in the rural areas of Sindh dairy farmers have not channel of increasing their profitability. Only a few dairy farmers keep record of income and expenditure. Dairy farmers have not approach to modern dairy techniques and they face many constraints in milk marketing. Dairy farmers have neither any loan facility nor any subsidy or treatment and vaccination facility is available, most of the dairy farmers are not satisfied by this business and according to them dairy farming is very difficult business. Most of the workers were not trained they have a little experience of and they do not take proper wages. Due to high cost of milk production shortage of fodder also occurs which is main cause of decrease in milk production and increase in milk price. Most of the dairy farmers are uneducated or less educated which is also a main cause of non-development of dairy sector in Sindh. Due to not having proper education dairy farmers can't understand the importance of keeping record of income and expenditure which is necessary for dairy farm management. There is a gap of communication between government and dairy farm management stake holders.

Recommendations

- Livestock of Sindh can be developed by financing & providing proper education to the farmers.
- Dairy farmers have need of treatment and vaccination facilities for their livestock.
- Dairy farmers have need of loan facility for the developing the dairy farms.

- Dairy farmers have need of subsidy in the cost of milk production.
- Dairy farmers have need of training to improve dairy farm management.

REFERENCES

1. Ahmed S. G. Hinch, J. Prior, P. Thomas and D. Burrell (2012), "The Role of Extension in changing the dairy Industry in Pakistan: A Review", *The Journal of Animal and Plant Sciences*22 (2 Suppl.): page 113-116.
2. Afzal M. and A.N Naqvi Vol.9 no.1-2 (July-Dec, 2003) and 3-4 (Jan-June 2004), "Livestock resources of Pakistan: present status and future trends", Animal Science Division, Pakistan Research Council Islamabad.
3. Afzal M. (2003); "Livestock Its Role in Poverty Alleviation", Pp6-8 Farming out look January-March.
4. Burki A.A, M.A. Khan (2016); "ECONOMIC IMPACT OF DAIRY SECTOR IN PAKISTAN" Department of Economics, LUMS, First Edition.
5. Bureau of Statistics Planning and Development Department Government of Sindh (2009);" Agriculture Statistics of Sindh", www.sindhdpnd.gov.pk
6. Chandio A. A., A. Rehman, Y. S. Jiang, S. Noonari (2017); " Importance of Dairy Industry and Economic Growth in Pakistan; An Empirical study" *J. Appl. Environ. Biol. Sci.*.. 7(4) 13-20-
7. Dr. Iqbal Md.A. (2013);" Livestock Husbandry and Environmental Problems", International Journal of Scientific and Research Publications, Volume 3, Issue 5.
8. Johanson E., K. Persson (2015); Feed Strategies in Dairy Production" SLU.
9. Elahi M., E. Flaming and R. Villano (2012);" Spatiotemporal Growth in Livestock Productivity In Marleen Felius Pakistan", *Sarhad J. Agric.* Vol.28 No.2
10. Government of Pakistan (2010)," Agriculture Statistics OF Pakistan", Ministry of Food, Agriculture and Livestock, Economic Wing, Islamabad, Pakistan.
11. Government of Pakistan (G.O.P) (2008), "Economic survey": Econadvisers wing finance division, ministry of finance Islamabad.
12. Hasnain H.U, R.H. Usmani (2006);" Livestock of Pakistan", Livestock Foundation Islamabad.
13. Isani G.B, (2002); "Marketing of Livestock in Sindh". IUCN-The world conservation Union-2004, " Sindh State of Environment and Development," IUCN Pakistan, Sindh Programme.
14. Khan U.N, J.A. Lund, S. Javaid and Zia-ul-Hassan (2008),"Economic Analysis of Milk Production in Different cattle Colonies of Karachi", *Pak.j.Agric.Sci.*Vol.45 (2).
15. Maher Q., K. Jamali (2012); "Impact of Dairy Industry on Milk Market Value and Production: A Comparative Study of Dairy Industrial and Non Industrial Region of Sindh", *Pakistan vision* Vol.14 No.2
16. Pakistan WWF (2014);" Disaster Management Plan for Livestock and Fisheries Sectors of Sindh", Climate And Development Knowledge Network (CDKN).
17. Sarwar M., M.A Khan Mahr-un-Nisa and Zafar Iqbal (2002),"Dairy Industry In Pakistan: A Scenario," *Int.J. Agri. Bio.*, Vol.4, No.3
18. Waseem M.P, (Spring 2007);"Trends and Growth in Livestock Population in Sindh. A comparison of different Census", *Indus Journal of management and social sciences* Vol.1.N.1:53-69.