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Women's Role in Livestock Economy of Cholistan Desert, Pakistan

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Abstract- In contemporary world, women are playing a significant role in the economy of nations. Yet, in some parts of the world including Pakistan they are not counted as economically producing units. Women constitute almost one half of the population of Pakistan. Besides household duties they also remain involved in many field works like cotton picking, crop sowing and harvesting, livestock rearing and back yard poultry farming thus, contributing an appreciable part in rural economy. The study, focusing on to the role of women in livestock economy, was conducted in three villages of Cholistan, where except northern portion, most of the area is bare desert that cannot be utilized for crop production and people serve a nomadic life. They ought to adopt subsistence farming of livestock which predominantly consists of native breeds. Using primary as well as secondary data, the study revealed that the women of this region efficiently work side by side with the men to earn their livelihood. They are used to go with their herds of animals for grazing. They spend many hours in feeding, caring and milking of animal, waste disposal, collecting fire wood and bringing water from '*tobas*' as without these activities livestock raring would be incomplete. These working hours are not recognized and are unpaid. It was found that women of these areas remain involved in look after and product selling of livestock as a routine household work and are not appreciated while their contribution in promoting livestock production in this area is undoubtedly well significant. Spreading over three districts of Bahawalpur division Cholistan is a vast region where the livestock population comprised of *cholistani, sahiwal, nili ravi* buffalo, *beetle, teddy, dera den panah* and *nachi* goats, *buchi* and *lohi* sheep and local breeds of camel. Study reached the conclusion that rural areas of Cholistan are potential suppliers of animal products for growing future needs and the role of women may remain significant in this regard and need due consideration. Recognition of their role and improvement in their socio-economic status is dire need of the time.

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I. Introduction

It is usually said that man and woman are two wheels of a vehicle called life, if any of them is not functioning properly, this vehicle cannot run effectively (Sammo 1993). But unfortunately the cultural system existing in most of the rural areas of Pakistan does not realize this reality, although women of those areas are more efficient in doing not only the household work but also the field works like crop sowing and harvesting, rearing of livestock and back yard poultry farming (Kausar and Ahmed 2005). Almost half of our rural population consists of females (Government of Pakistan 2005) and they contribute about 74% in agricultural sector (Government of Pakistan 2009). Livestock farming is an important sub-sector of agricultural economy that offers remarkable options for increasing family earnings through female's contribution. However, this sector requires adequate institutional assistance for more profits and improvement of female's livestock farming abilities. Livestock farming contributes nearly 50% of the agricultural income and 10.6% of the GDP (Younus et al. 2007). It is obvious that in male dominating society of Pakistan, the role of females in rural economy has never been completely appreciated and regarding this side they have suffered a lot. Their socio-economic conditions can be improved immensely by increasing microcredit rural support programs, encouraging the involvement of private sector, and targeting female's role in livestock management. Several studies reveal that females carry out a great range of works at the home and at farms (Akhtar and Khan 2000; Javed, Sadaf and Luqman 2006; Arshad et al. 2010; Amin, Ali, Ahmad and Zafar 2010; Arshad, Muhammad, Randhawa, Ashraf and Ch. 2010; Nosheen, Ali, Anwar and Ahmad 2011; Munawar et al. 2013; Nazir, Khan, Shahbaz and Anjum 2013; Arshad, Muhammad and Ashraf 2013). Their participation in farm operations specifically in post-harvest work needs no mention. Their input in seed preparation, harvesting, weeding and farm-yard manure collection is vital. After crop harvesting, cleaning, drying and storage of grains is their sole responsibility. Likewise, livestock rearing is regard as the exclusive liability of females in rural areas of Pakistan like Cholistan (fig 1). It provides jobs not only to males but also to almost 50% of females of agricultural family. In rural areas of Punjab, they work about 15 hours a day spending most of their working time in livestock management (Younus et al. 2007). They are involved in a wide range livestock management activities including herding, looking after the health of herd, processing animal products, feeding, milking dairy animals, poultry look after and so on.

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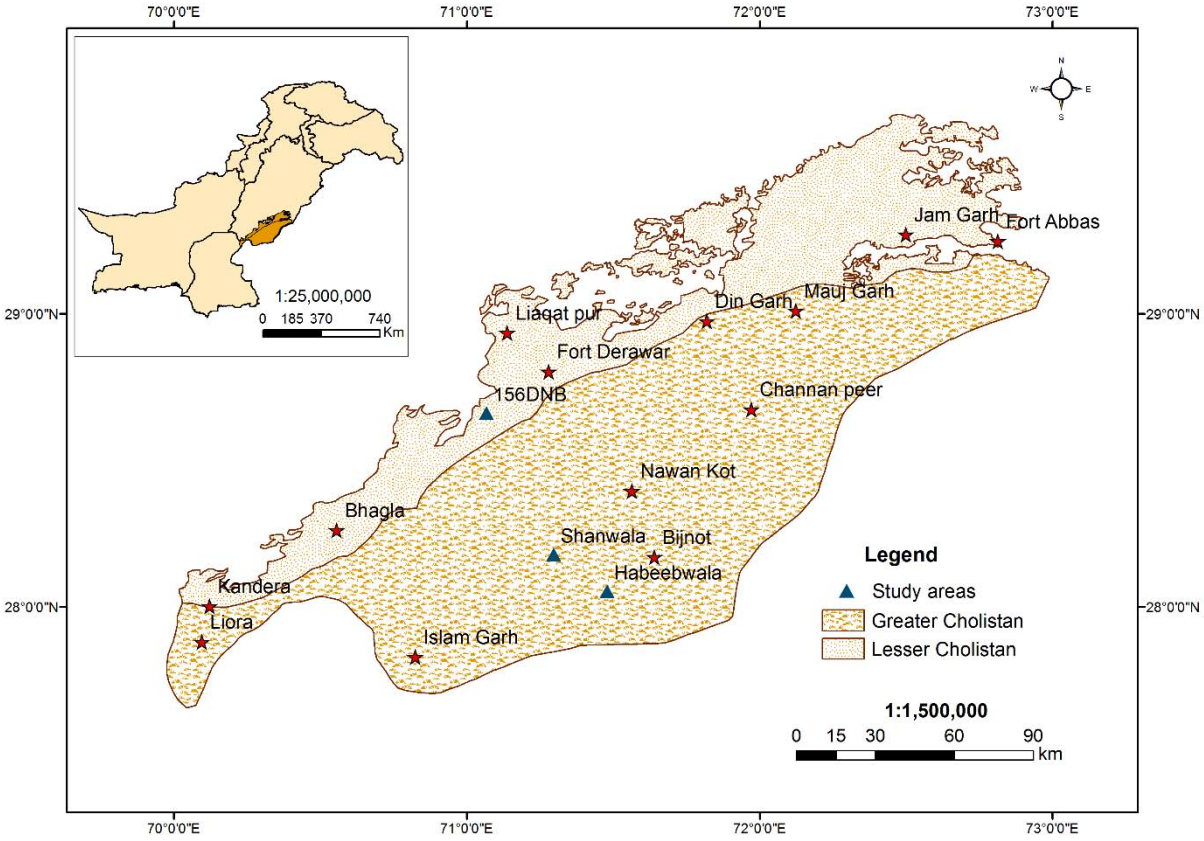


Figure 1 : Study Region (Cholistan)

The study area, Cholistan, lies in Bahawalpur division of Southern Punjab which is labeled as one of the poorest region of Pakistan (Alff, 1995) where most of the human population relies on livestock for their livelihood, women is mostly engaged to livestock management (Ashraf et al. 2013). Cholistan is an extension of Great Indian Desert (Khan et al. 2004), which occupies about 3.265% of the total area of Pakistan (Farooq et al. 2010) and formed by the desertification of old Hakra river bed (Raziq et al. 2011). It is situated between latitudes 27° 42′ and 29° North, and longitudes 69° 57′ 30" and 72° 52′ 30" East (Ali et al. 2009). Length of this desert is 298.3 miles, and breadth ranges from 20-119.30 miles (Akbar et al. 1996). Although, with the development of irrigation system much of its area is now cultivable but still most of the land is desert (Ahmad 2005). Cholistan is divided into two distinctive geographic zones by demarcation of old Hakra river bed. i.e. The Greater Cholistan, which is situated in the south to the Hakra river and the Lesser Cholistan which is on the northern side of Hakra river (Akhter et al. 2006). The greater Cholistan has relatively low vegetation and harsh environment as compared to lesser Cholistan due to lack of irrigation system while lesser Cholistan has somewhat better vegetation and most of its area is occupied by nearby cities (Khan et al. 2010). Annual rainfall in Cholistan is only 100-250 mm so this area suffers with scarcity of water, fodder shortage and sometimes famine (Khan et al. 2004). In desert most of the flora is halophytes (Naz et al. 2009; Weber 2009; Aziz et al 2011) and xerophytes (Khan et al. 2010) which can grow on brackish sub-soil aquifers (Khan and Khan 2010) and resist to water scarcity respectively like shrubs, grasses, forbs, sedge and scattered trees (Akhter 2006).

Table 1 : Geographic Profile of Cholistan

Sr. No.	Selected features	Area/Number	Observations and annotations
1	Total area of Cholistan	6655360 acres (26,000 sq. km)	At present carrying capacity is low but potential resource for future
2	Area located in Bahawalpur	4028217 acres	Constitute about 60.5% of the total area of Cholistan which is mostly located in tehsil Yazman
3	Area located in R. Y. Khan	1615965 acres	Comprise about 24.3% of the total area of Cholistan mostly less productive at present
4	Area located in Bahawalnagar	1011200 acres	Constitute about 15.2% of the total area of Cholistan generally characterized with low productivity
5	No. of inhabitants	0.155 million	Very low population density at present
6	No. of livestock	1.220 million	Production can be increased by managing water and forage resources
7	No. of Cholistani cattle	0.567 million	Potential for development exists
8	No. of camel	0.030 million	Potential for development exists
9	No. of goat	0.210 million	Potential for development exists
10	No. of sheep	0.450 million	Potential for development exists
11	No. of tobas	1100	Effective planning is needed
12	Average No. of families at a toba	30	Water is very precious and limiting factor in Cholistan provides base for nomads settlements
13	Average No. of cattle per family	5-10	Low at present but can be increased by facilitating the nomads
14	Livestock productivity	-	Low due to limitations of water, nutrition, non-domesticated system, marketing, animal health & production services

Source: Agriculture Census of Pakistan 2006 and personal observations

As the land of this area is unfit for agricultural activities so the livestock rising on natural herbs and flora of this land becomes the need for the native human population which compels them to lead a pastoral life (Ahmad 2005). During severe hot months of the year the pastoralists move along with their animals towards irrigated areas and river sides where ample amount of water and fodder for their animals are available (Khan et al 2004). As the winter begins, they move back to the desert. In the desert, their main source of water are "tobas" which are formed for the collection of rain water in a pond and used for drinking purpose both for human and livestock (Ahmad 1999). Table 1 depicts some of the significant geographic features of Cholistan specifically regarding livestock activity.

Thus, in the prevalence of such hard geographic conditions women of this region have to work hard equally to their men in care of their livestock, their handling, grazing, milking, cleaning and adopting the precautionary measures according to the season and in disease conditions. Along with these tasks they also look after their household work regarding their families. In this regard their duties are more than those of men but overall credit of home maintenance goes to men as they are heads of their families and remain dominant (Khan et al 1996). But above all, role of women cannot be ignored at any cost. Thus the main objective of this study is to draw attention towards the role of Cholistani women in livestock economy and to probe the constraints faced by the women of this comparatively ignored region. Besides this, study also intends to bring out the intention of government to plan for incentives for Cholistani women as well as to bring out the intention of government as well as private sector to do extension work for social wellbeing of nomads and their livestock resources to get maximum benefit from this area.

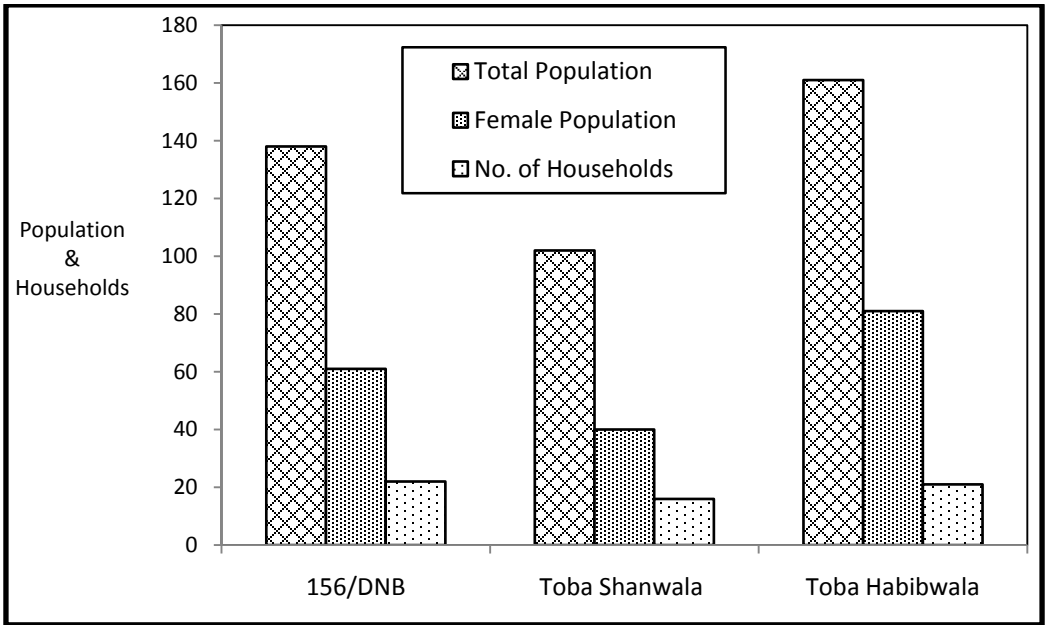
II. Material and Method

The research design is largely descriptive, based on the visits to the Cholistan region specifically its tobas and villages. A cross sectional survey of three small sized sample settlements/tobas of Cholistan located in tehsil yazman was conducted through questioner during the month of December 2013 (table 2 and fig 2).

Table 2 : Surveyed settlements of Cholistan

Settlements	Location Tehsil	Total Population	Female Population	No. of Households	Average Household size	Housing Structure
156/DNB	Yazman	138	61	22	6.3	Kacha & Semi-pacca
Toba Shanwala	Yazman	102	40	16	6.4	Kacha
Toba Habibwala	Yazman	161	81	21	7.8	Kacha

About half of the area of Cholistan is located in Yazman which is area wise biggest tehsil of Bahawalpur as well as of the Punjab. Besides visual observations quantitative data was collected from the 50% randomly selected those pastoral families of these settlements where most of the women were engaged with livestock management activities. Then averages of the parameters measured were calculated for each settlement and compared to each other. Then a comparison of this firsthand information was made with the data collected from other secondary sources like various reports, articles and unpublished research work of the students of geography, economics and social sciences. Finally the results regarding this information were drawn and interpreted.



Source: District Census Report of Bahawalpur 1998 & Field Survey 2013.

Figure 2 : Women population in research area

III. Results and Discussion

a) Livestock Breeds and their Population in Cholistan

A population of about 118,000 herders (Population Census Organization 1998) depends exclusively upon livestock for their livelihood. They lead a pastoral nomadic life with replenished only by rains. The only profession of this community is livestock rearing consisting mainly of sheep, goat, cattle, camel and rarely donkeys (Afzal and Naqvi 2004). The livestock population and significant breeds of the region are given in table 3 and elaborated by figure 3.

Table 3 : Livestock population and breeds in Cholistan

Sr. No.	Livestock Species and Poultry	No. of Heads	Breeds
1	Cattle	567510	Cholistani and Hasari
2	Buffalo	9923	Nili Ravi
3	Sheep	356024	Buchi, Khadali, sipli
4	Goat	257285	Jattal, DDP, Nachi
5	Camel	11328	Marecha, Brella
6	Horse	922	Balochi, Thorough bred
7	Mule	106	-----
8	Ass	6429	-----
9	Poultry	85935	Fayoumi, RIR, leghorn

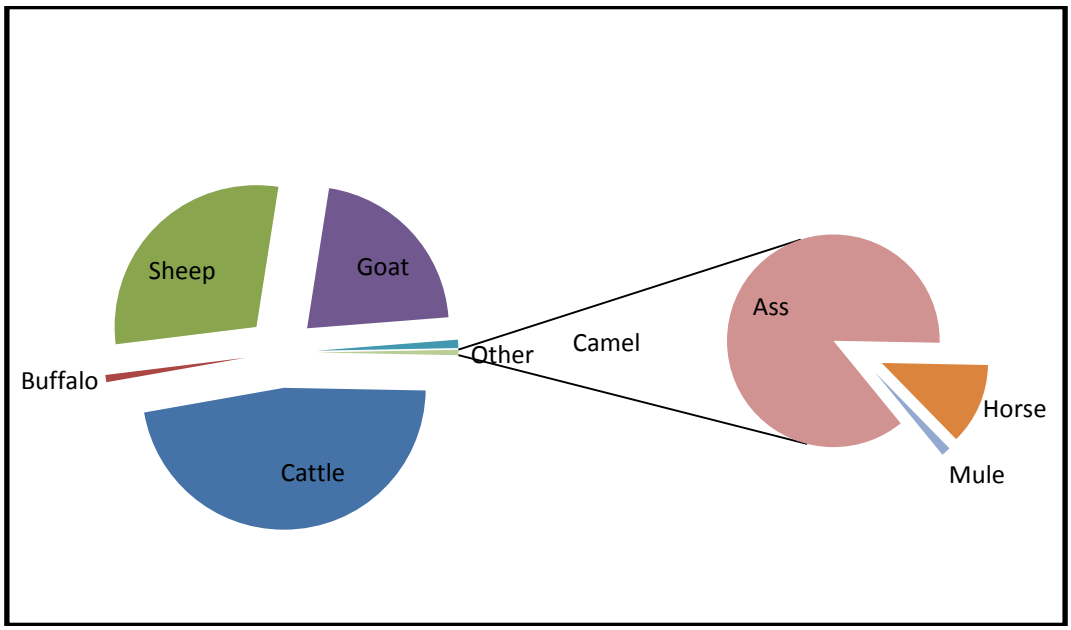


Figure 3 : Composition of livestock population in Cholistan

Source: Anonymous, 2006; Akhtar et al 2006; Ghaffar 2011; Author's own visit

b) Consumable Flora of Cholistan by Livestock

Grasses are mostly efficiently grazed by cattle, sheep and goats due to their grazing habits and anatomical structure suitable for grazing while camel also consumes some grasses when trees are unavailable (Aziz 2010). Table 4 presents the picture consumable grasses of Cholistan and consumer species of livestock

Table 4 : Consumable flora and consumer species of livestock

Sr. No.	Perineal and Annual Grasses	Consumer Species
1	*Stipagrostis plumosa*	Cattle, Sheep, Goat
2	*Cenchrus ciliaris*	Cattle, Sheep, Goat
3	*Cymbopogon jwarancusa*	Sheep, Cattle
4	*Ochthochloa compressa*	Cattle, Sheep, Goat
5	*Lasiurus scindicus*	Cattle, Sheep, Goat
6	*Panicum antidotale*	Cattle, Sheep Goat, Camel
7	*Panicum turgidum*	Cattle, Sheep Goat, Camel
8	*Sporobolus iocladus*	Cattle, Sheep Goat, Camel
9	*Aeluropus lagopoides*	Cattle, Sheep Goat, Camel
10	*Aristida adscensionis*	Sheep, Goat
11	*Aristida mutabilis*	Sheep, Goat
12	*Aristida funiculata*	Sheep, Goat
13	*Aristida hystricula*	Sheep, Goat
14	*Cenchrus biflorus*	Cattle, Sheep, Goat
15	*Cenchrus prieurii*	Cattle, Sheep, Goat
16	*Enneapogon desvauxii*	Sheep, Goat
17	*Eragrostis barrelieri*	Sheep, Goat
18	*Leptothrium senegalense*	Cattle, Sheep, Goat
19	*Tragus racemosus*	Cattle, Sheep, Goat

Source: Akhtar et al 2006.

Shrubs are equally consumed by almost all types of livestock in Cholistan. However, some of these are much liked by animals specifically by camel and goat (table 5).

Table 5 : Shrubs of Cholistan and consumer species of livestock

Sr. No.	Shrubs	Consumer Species
1	*Crotalaria burhia*	Camel
2	*Aerva persica*	Camel
3	*Calotropis procera*	Cattle, Sheep, Goat
4	*Pulicaria rajputanae*	Camel
5	*Calligonum polygonoides*	Camel, Cattle, Goat
6	*Acacia jacquemontii*	Sheep, Goat, Camel
7	*Haloxylon recurvum*	Camel
8	*Haloxylon salicornicum*	Camel
9	*Salsola baryosma*	Camel
10	*Suaeda fruticosa*	Camel
11	*Capparis decidua*	Camel, Cattle
12	*Zizyphus nummularia*	Sheep, Goat, Cattle, Camel
13	*Leptadenia pyrotechnica*	Camel

Source: Akhtar et al 2006.

Trees are also consumed by all types of livestock but preferably by camel due to their long height and by goats due to their browsing nature. While sheep and cattle can also consume them if the branches are cut and offered to them by their owner (table 6).

Table 6 : Trees of Cholistan and consumer species of livestock

Sr. No.	Trees	Consumer Species
1	*Prosopis cineraria*	Sheep, Goat, Cattle, Camel
2	*Acacia nilotica*	Sheep, Goat, Cattle, Camel
3	*Prosopis juliflora*	Sheep, Goat, Camel
4	*Zizyphus spina christi*	Sheep, Goat, Cattle, Camel
5	*Tamarix aphylla*	Camel
6	*Salvadora oleoides*	Sheep, Goat, Cattle, Camel

Source: Akhtar et al 2006.

c) Importance of Pastoral System in Cholistan

Basically there are two types of pastoral system i.e. Transhumant and nomadic systems. Both of these exist in Cholistan, but nomadic system is more common as Cholistan is a desert area with sparse vegetation and very limited resources and it is not possible to make this land to use for cultivation without a continuous irrigation system (Ashraf et al. 2013). So both human and livestock populations cannot survive if they remain at same place in desert during the whole parts of a year. For their survival they remain in continuous shifting from less green area to more green area in search of food and water resources, this is called transhumant system (Ahmad 2005). They utilize the natural resources of the area and earn their livelihood by selling their animal products e.g. milk, meat, eggs, wool and hides in nearby human population or market. Hence, it is considered as a best system for their survival as well as for utilization of native flora and livestock conservation at subsistence level (Khan et al 2004). While in nomadic system, pastoralists remain in desert throughout the year along with their animals and some of their family members move along with their animals in transhumant system (Ahmad, 2005). During the course of their journey they earn their livelihood by selling animal products. However, it is mentionable that prices of their animal products are not too reasonable and as compared to hard work and efforts they put their earnings are not too much (fig 4).

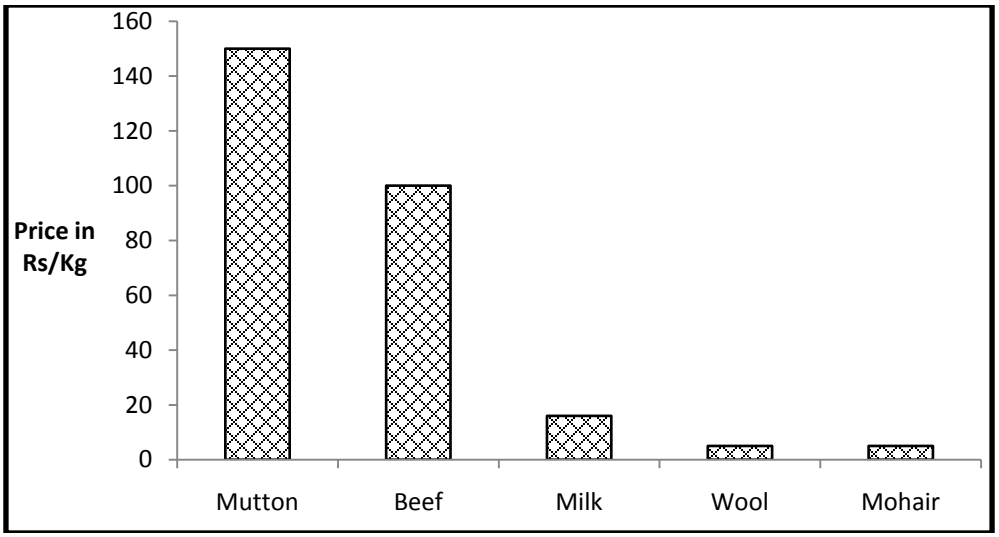


Figure 4 : Prices of livestock products in Cholistan desert

Source: Soharwardi et al 2011.

d) Role of Cholistani women in livestock management

In such harsh climatic conditions, it is not possible for men to struggle for their wellbeing alone so, the women role becomes very important. It is observed with our survey that these women not only efficiently work along with their men in managing the herds of their livestock but also do their house hold works side by side. Starting from early morning, they fetch the water from nearby toba, for their family and animals, milking of animals, do the household work and go for herd grazing along with their men, then return back in evening to their colony along with their animals. Some of the females remain at home and do the household work. In the evening they also do milking of animals. Some amount of milk at both times is consumed by their families and remaining is sold to the nearby city. In water shortage season, milk is used in place of water by their families by making its yoghurt, cheese and whey specially the camel milk is used for kneading the dough because of its salty taste.

The survey data reveals that 77.7% women of 156/DNB, 78.9% of Toba Shanwala and 85% of Toba Habibwala are engaged in livestock rearing. They spend almost 8 to 13 hours a day in livestock management and other alike activities. During summer season lasting from the months of April to September, on an average, women of 156/DNB spend 11.4 hours, women of Toba Shanwala spend 9.5 hours, and women of Toba Habibwala spend 12.6 hours in managing livestock and other alike activities. During winter season extending over the months of October to March they spend 9.3, 7.9 and 10.4 hours respectively in such activities (table 7 and fig 5). Therefore, the role women of this region appear to be vital in the earnings from livestock rearing activities. Various organizations and agencies like Cholistan Development Authority (CDA), Pakistan Council for Research in Water Resources (PCRWR), Cholistan Institute of Desert Studies (CIDS) of the Islamia University of Bahawalpur etc. working on the issue also confess that women of this region as manager of livestock bear immense potential as units of change in economic conditions of the herding communities. If appropriately trained, they have the talent to boost up animal production. In order to enhance per animal production, it is obligatory that women of this region should be guided to opt best techniques for animal health and production particularly for housing, feeding, breeding, and disease control dealings. It is evident that any poverty eradication campaign cannot be made successful without active participation of rural women. Except they are permitted to make full use of their potential, the condition of Cholistan might stay unchanged. Even though, females are vital component of the economy of the region, their share in financial benefits, and right to use resources and opportunities is not in proportionate to their hard work.

If Cholistani women are given opportunities of easy access to trainings concerning livestock rearing and micro-credit schemes through Rural Support Program (RSP), Agricultural Development Bank of Pakistan, Pakistan Poverty Alleviation Fund (PPAF), First Women Bank, and Khushali Bank etc., they can play very effective part not only to the progress of Cholistan but also to the prosperity of Pakistan. RSP have been initiated by the government with the prime objective of promoting the extremely wanted linkage between the livestock rearing and rural women. The females of this region have either no or very little access to credit services. Offering such facilities can enable them to enhance their earnings through better utilization of their labour inputs. By collective efforts, females of this region can dragged out from poverty trap. The government

should also arrange on-site training programs to increase their skills for the management of livestock. The areas that should be addressed more efficiently are animal feeding, watering and vaccination, and processing and marketing of animal products. The livestock and dairy development department of the government of Punjab should instigate new development projects focusing on to the socio-economic improvement of women folk. The females of this region trained in livestock production activities can be helpful in raising household incomes and in increasing meat, milk and wool production at national level.

Table 7 : Contribution of women in economy of Cholistan

Sr. No. of Animal Holder	V 1	V 2	V 3	V 4	V 5	V 6	V 7		V 8	V 9	V 10	V 11
							Sum	Win				
Sample settlement No. 1 (156/DNB)												
1.	2	8	0	0	4	4	14	12	100	12,000	15,000	80
2.	0	10	1	5	3	3	12	10	100	15,000	17,000	88.2
3.	2	5	0	0	5	3	13	12	60	6,600	8,000	82.5
4.	0	10	0	0	7	5	8	5	71.4	10,000	10,000	100
5.	15	2	2	0	5	4	13	10	80	13,000	15,000	86.7
6.	10	7	5	0	7	6	14	11	85.7	17,500	17,500	100
7.	10	5	1	16	2	2	13	11	100	13,000	14,000	92.8
8.	3	6	0	2	3	2	10	9	66.6	10,000	20,000	50
9.	7	4	0	8	4	3	9	8	75	12,000	16,000	75
10.	1	6	0	10	4	2	11	8	50	11,500	19,000	60.5
11.	0	8	0	12	3	2	8	6	66.6	12,500	21,000	59.5
Average	4.5	6.4	0.8	4.8	4.3	3.3	11.4	9.3	77.7	12,100	15682	79.6
Sample settlement No. 2 (Toba Shanwala)												
1.	22	12	3	0	4	2	7	5	50	11,000	12,000	91.7
2.	36	10	0	0	5	3	5	4	60	10,000	10,000	100
3.	40	13	0	0	3	3	6	5	100	15,500	15,500	100
4.	35	14	0	3	7	7	10	8	100	16,500	16,500	100
5.	31	13	2	3	3	2	7	6	66.7	17,000	17,000	100
6.	41	17	0	0	3	3	12	10	100	16,000	16,000	100
7.	29	10	4	0	4	3	15	13	75	18,000	19,000	94.7
8.	30	14	3	0	5	4	14	12	80	14,500	14,500	100
Average	33	12.9	1.5	0.7	4.2	3.4	9.5	7.9	78.9	14812.5	15062.5	98.3
Sample settlement No. 3 (Toba Habibwala)												
1.	16	14	5	0	5	4	16	13	80	20,000	20,000	100
2.	31	13	4	1	1	1	9	7	100	12,000	13,000	92.3
3.	80	11	4	0	4	4	15	11	100	22,000	24,000	91.7
4.	47	4	2	2	3	3	13	11	100	18,000	20,000	90
5.	59	10	1	5	3	3	13	12	100	19,500	20,000	97.5
6.	40	11	0	5	5	3	11	9	60	14,500	15,000	96.7
7.	16	18	2	0	4	3	12	10	75	20,000	24,000	83.3
8.	44	12	4	0	5	3	12	9	60	16,000	16,000	100
9.	38	11	0	0	4	3	13	11	75	15,000	15,000	100
10.	28	13	0	0	3	3	12	11	100	13,000	13,000	100
Average	39.9	11.7	2.2	1.3	3.7	3	12.6	10.4	85	17,000	18,000	95.1

Source: Field Survey (December, 2013).

V 1= No. of sheep and goats, V 2= No. of cattle and buffalo, V 3= No. of camels, V 4= No. of poultry, V 5= Total women in family, V 6= Women participate in managing livestock, V 7= Time spent by each women for livestock/day (hrs), V 8= Percentage of women in family engaged in livestock rearing, V 9= Total earnings form livestock/month (Rs.), V 10= Total income of family/month (Rs.), V 11= % share of livestock in total income, Sum= Summer season, Win= Winter season.

Figure 6 shows the comparison of total income and share of livestock income in it, which clearly reveals that major portion in total average income in each village of study area, is contributed by livestock production.

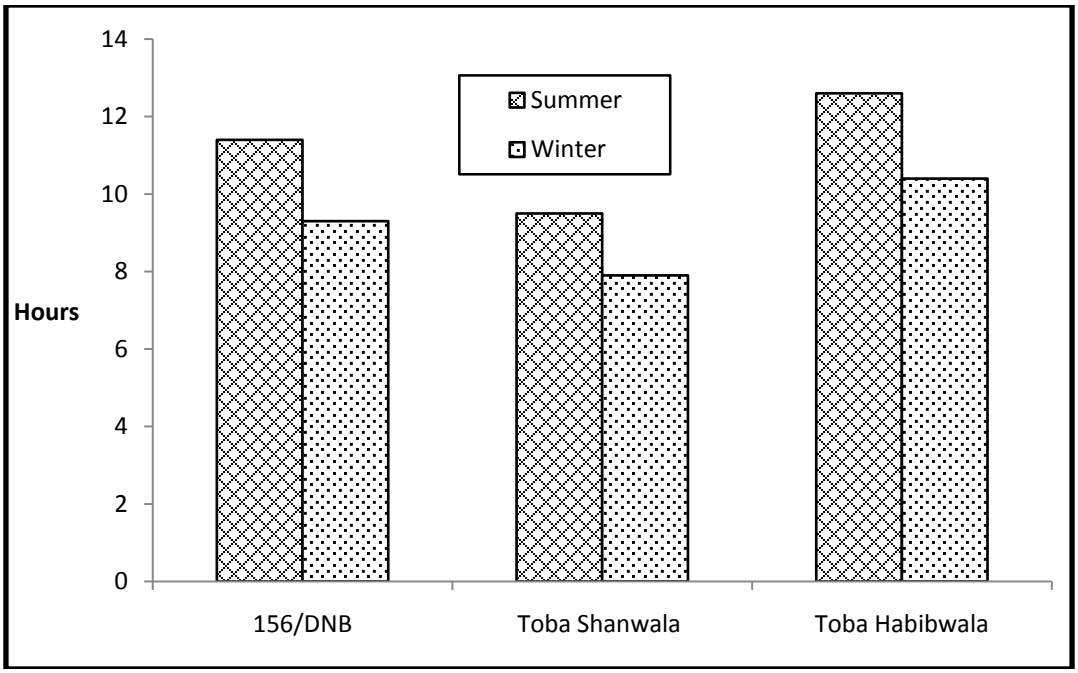


Figure 5 : Time spent by Cholistani females on livestock management

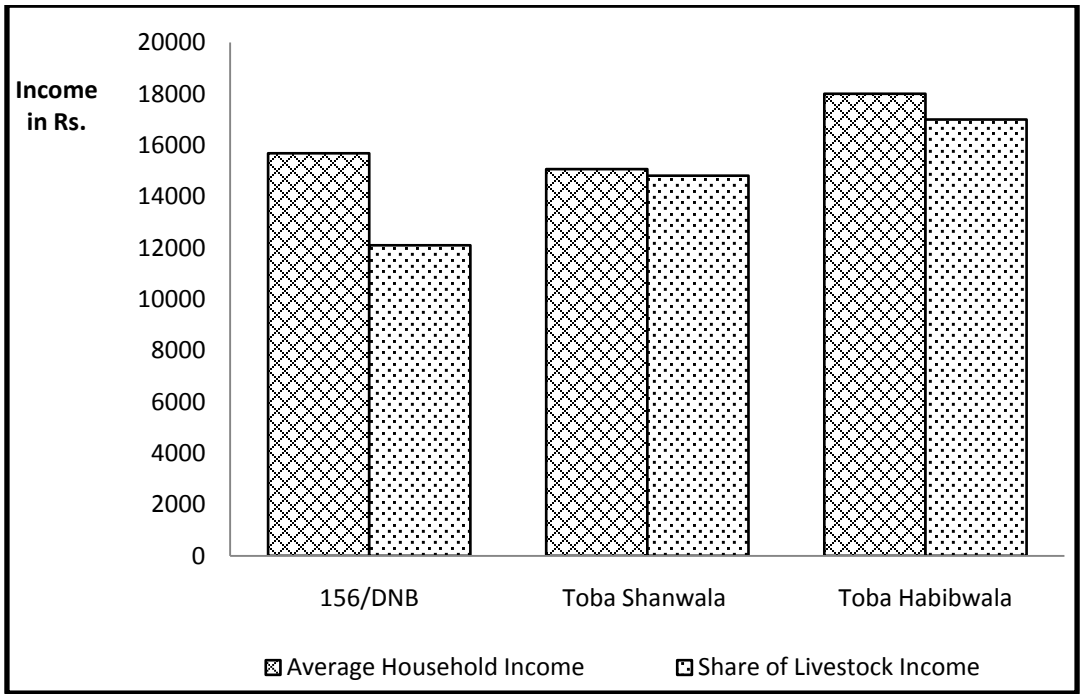


Figure 6 : Share of Livestock Income in Total Household Income of Study Areas

IV. Constraints Faced by Cholistani Women

Besides the lack of water facility which is the most major constraint of this area, the foremost challenges confronted by the women folk of Cholistan are exceedingly low literacy rate, load of multiple responsibilities, un-compatible tools and techniques to manage livestock activities, and poor dietary and health conditions. There is a lack of health care facilities for the women at their door step and they suffer with nutritional deficiencies. According to their climate and food pattern, they should be supplied with mineral, vitamins and amino acid supplements by LHV (lady health visitor) and LHW (lady health worker) of the respective area.

Due to almost zilch literacy rate, the Cholistani women are not able to understand and communicate effusively with the extension workers for livestock trainings. The traditional boundaries also hinder and do

not allow these ladies to communicate and learn the tips and new technologies for better livestock rising.

Lack of proper vaccination, treatment and other herd health care facilities is another big problem. No veterinary doctor is available in these areas and they have to travel a long distance to consult a veterinary doctor.

The families of these ladies are not getting the actual price of their livestock products which they deserve because of unawareness of market prices and due to interference of middle man which purchase their products at a very low price and sale it on high rates.

V. Conclusion and Suggestions

The present study reveals that like other women of the country, Cholistani women are playing a vital role in economy of their area, conservation of native livestock breeds by taking care of them like their family members. The women are rather more devoted and sincere to their work as they have only this single aim of their lives, so if they would be educated and guided through extension services, they can better perform their role in development of this region and earn their livelihoods in a prosperous way. In spite of their significant contribution in productive activities, at present they are suffering from lot of problems as has been mentioned in the foregoing discussion. To lessen their sufferings and to make them further supportive, appropriately designed research based development efforts are urgent need of the time. On the basis of our present study following suggestions for the development of region are put forth;

1. There should be some steps taken by the government for the irrigation and development of greater Cholistan.
2. Proper health care services should be provided both for the herders' population and also for their animals' health.
3. There is a need of a lot of work to be done by the researchers in this region regarding breed improvement and culling of low producers and for this purpose farmers have to be educated in order to introduce high yielder animals in their herds to improve their return both for their hardworking as well as their economics.
4. Role of middle man should be eliminated and a direct link between the pastoralists and the industrialists should be created to improve the income of these native people.

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