

9.4 Landownership

As shown in Table 9-4-1, around 10.69 million acres of the farmland is managed by about one million farms in Sindh. The number of the owner farms is much larger than the tenant farms. The average farm area of the owner farm is nearly double that of the tenant farm. This tendency is more predominant in the upper Sindh than the lower Sindh. If the averages and the medians of the farm areas are compared, it is clear that the medians of all farm categories are smaller than the averages. It indicates that small number of the large scale farms uplifts the average size of the farms.

Table 9-4-1 Tenure Classification of Farms and Farm Area

		Total	Owner	Owner-cum-Tenant	Tenant
Number of Farms	Numbers	1,069,882	703,514	43,015	323,345
	%	100	66	4	30
Farm Area	Area (Acre)	10,686,552	8,112,569	736,132	1,837,854
	%	100	76	7	17
Average of Farm Area	Area (Acre)	9.98	11.53	17.11	5.68
Median of Farm Area	Area (Acre)	5.0 to 7.5	5.0 to 7.5	7.5 to 12.5	2.5 to 5.0

Source: Agricultural Census 2006, Sindh

Individuals who hold more than 25 acres account for only 2.3% of the farmers in Sindh. Nevertheless, they own about 22% of the agricultural land. By contrast, 28.4% of small holders, owning less than 5 acres, possess only about 7% of the total farming land². The landownership is therefore extremely skewed, favoring the limited people. It is said that the households at the lowest on the income ladder (lowest 20%) own only 5.3% of the land³.

Land is seldom sold in rural Sindh as it has been inherited within a family as the most valuable property. When a land is sold, transaction is usually made within the same Biradari group and same community. The price of farming land has been increasing recently particularly in the irrigated land. Price varies between Rs.500,000/acre and 1,500,000/acre depending on soil fertility, water sufficiency and accessibility to market. Average income of rural households is Rs.10,410.95/month and the average saving is Rs.835.68/ month⁴. For the landless farmers, purchasing a certain size of the farming land is difficult with the current income.

9.5 Landowners and Landlords

Under the traditional rural structure established over the long period, the tenant farmers heavily rely on their landowners for the use of not only farmland but also other production facilities such as tractor. They often borrow money from the landowners, and the crops cultivated by the tenants are considered as mortgage.

² Pakistan 2000 Agricultural Census Sindh, Agricultural Census Organization, 2000

³ Poverty Reduction Strategy Paper-II, Government of Pakistan (2009)

⁴ Household Integrated Economic Survey (HIES) 2007-08, Pakistan Federal Bureau of Statistics.

The relationship between landowners and tenants creates a social disparity among them. Table 9-5-1 shows that this tendency is more predominant in the irrigated areas than in the other areas. In the irrigated areas 75 % of sample households felt social disparity, while in the non-irrigated areas 52% of sample households replied there is no social disparity. Among the irrigated areas, it is indicated that in Sukkur, Larkana, Sanghar, and Tand Allahyar around 80-90% of the respondents feel the disparity. In Badin, however, only 20% of the respondents feel such disparity. It may imply that the social disparity is stronger in the upper and middle Sindh.

Table 9-5-1 Difference in Perception of Social Status between Landholders and Others

*Answers to a question: Do you feel a disparity of social status between landholders and others? (Ratio to Sample households)

Areas	No. of sample households	Yes, very much	Yes, but not very much	No
Colony	45	38%	27%	36%
Irrigated	438	52%	23%	26%
Non-irrigated	346	21%	27%	52%

Districts	No. of sample households	Yes, very much	Yes, but not very much	No
Badin	90	11%	9%	80%
Jamshoro	90	14%	24%	61%
Karachi Colony	45	38%	27%	36%
Karachi Other Irrigated	14	43%	7%	50%
Karachi Other Non-irrigated	30	13%	50%	37%
Larkana	90	77%	11%	12%
Sanghar	89	63%	29%	8%
Sukkur	90	68%	24%	8%
Tando Allahyar	89	40%	42%	18%
Tharparkar	90	30%	21%	49%

Source: Household Survey

Among the landowners, those who own much larger land than the others, and consequently who are highly influential, are often regarded as landlords. A head of a community/area, called as Wadero, is also considered as a landlord in many cases. Landlords are in many aspects the core of rural communities. They are the key players for decision making in a community.

Because of their significance in decision making in a community, development activities are either accelerated or impeded depending on how they value the activities. Generally, they judge the value of development activities depending on whether the activities will be threat to their status or meet their economic interests or not. If the activities enhance their status and increase their income, they tend to cooperate with the activities. If not, they might become an obstacle though it depends on the personalities of each landlord. However, their other profiles such as academic background, Biradari group, etc. are not the determining factors to make them positive or negative to development activities⁵.

Their perception toward development projects is not always the same as the project initiators such

⁵ The information in this part and 9.2 Community Organizations was obtained by a local consultant through the interviews to the Department of livestock, Department of Agriculture, Sindh Irrigation and Drainage Authority, SAWFCO, SPO, and TRDP.

as government departments, NGOs, etc. In some cases they misunderstand the concept of a development project. Given their significance in their communities, if they oppose or even do not support a project, the success of the project will be seriously jeopardized. According to the survey on the projects implemented by government departments and NGOs⁶, 70-80% of the landlords have accepted development activities, but remaining 20-30% of them have not. In many cases, landlords do not oppose livestock projects since they have more or less livestock. However, they tend to place lower priority on livestock compared to agriculture since the latter is usually more important income source. It tends to happen in well irrigated and fertile areas.

9.6 Gender

9.6.1 Gender Status in Education and Health

According to the Education and Literacy Department of Sindh,⁷ the school enrolment rate of the whole Sindh Province is 54.0% (male 62.2%, female 44.6%), and the adult literacy rate is 51.5% (male 60.5%, female 42.5%). There has been a steady progress in the educational status of the people in Sindh, but some differences in the achievements can be seen between male and female. Table 9-6-1 shows district-wise educational statistics in 2009-2010. Except for Karachi City and Tharparkar district, the rate of boys' enrolment is better than that of the girls, and the difference is 19.6% (17.7% if Karachi and Tharparkar are included).

Considering that the dropout rates of male and female have the similar tendency, the gender gap in literacy rate can be attributed to the opportunity gap for enrolling the school. The districts with more than 30% school enrolment gap between boys and girls are Ghotki (33.4%), Kashmore (30.2%) and Mirpurkhas (29.9%).

⁶ They are the Department of Livestock, Department of Agriculture, Sindh Irrigation and Drainage Authority, SAWFCO, SPO and TRDP

⁷ Sindh Education Profile 2009-10, RSU-Education and Literacy Department, Government of Sindh

Table 9-6-1 District-wise Educational Statistics (2009-2010)

	Distirct	Boys Pop.	Girls Pop.	Total Pop.	Boys enrol	Girls enrol	Total enrol	Boy's participation rate	Girls participation rate	Total participation rate	gender difference
1	Badin	128,367	114,338	242,705	70,635	46,329	116,964	55.0%	40.5%	48.2%	14.5%
2	Dadu	126,555	109,714	236,269	92,360	52,197	144,557	73.0%	47.6%	61.2%	25.4%
3	Hyderabad	124,865	115,808	240,673	52,905	46,390	99,295	42.4%	40.1%	41.3%	2.3%
4	Thatta	131,975	113,576	245,551	82,892	62,235	145,127	62.8%	54.8%	59.1%	8.0%
5	Mirpur Khas	106,162	96,398	202,560	75,297	39,510	114,807	70.9%	41.0%	56.7%	29.9%
6	Tharparkar	125,611	97,357	222,968	96,905	76,573	173,478	77.1%	78.7%	77.8%	-1.5%
7	Sanghar	167,798	149,810	317,608	108,824	62,722	171,546	64.9%	41.9%	54.0%	23.0%
8	Karachi City	962,565	911,173	1,873,738	154,344	176,182	330,526	16.0%	19.3%	17.6%	-3.3%
9	Jacobabad	87,436	74,164	161,600	58,853	32,861	91,714	67.3%	44.3%	56.8%	23.0%
10	Larkana	121,914	110,076	231,990	86,186	63,139	149,325	70.7%	57.4%	64.4%	13.3%
11	Shikarpur	97,021	82,400	179,421	57,136	31,264	88,400	58.9%	37.9%	49.3%	20.9%
12	Khaipur Mirs	191,984	166,641	358,625	109,130	69,645	178,775	56.8%	41.8%	49.9%	15.0%
13	Naushero Fero	109,115	94,700	203,815	78,538	57,263	135,801	72.0%	60.5%	66.6%	11.5%
14	Shaheed Benazir	104,504	91,734	196,238	70,120	38,438	108,558	67.1%	41.9%	55.3%	25.2%
15	sukkur	98,959	88,879	187,838	65,214	42,581	107,795	65.9%	47.9%	57.4%	18.0%
16	Ghotki	123,403	108,413	231,816	92,147	44,706	136,853	74.7%	41.2%	59.0%	33.4%
17	Umerkot	82,736	73,422	156,158	58,195	35,171	93,366	70.3%	47.9%	59.8%	22.4%
18	Jamshoro	62,677	54,094	116,771	29,367	20,707	50,074	46.9%	38.3%	42.9%	8.6%
19	Matari	49,152	44,399	93,551	37,734	24,309	62,043	76.8%	54.8%	66.3%	22.0%
20	Tando Allah Yar	49,482	44,665	94,147	27,561	16,117	43,678	55.7%	36.1%	46.4%	19.6%
21	Tando Muhammad	42,143	37,139	79,282	26,469	14,279	40,748	62.8%	38.4%	51.4%	24.4%
22	Kashmore	82,312	64,978	147,290	48,038	18,271	66,309	58.4%	28.1%	45.0%	30.2%
23	Shahdadkot	119,498	104,570	224,068	77,588	46,397	123,985	64.9%	44.4%	55.3%	20.6%
	Total	3,296,234	2,948,448	6,244,682	1,656,438	1,117,286	2,773,724				

Source: RSU-Education and Literacy Department, Government of Sindh, "Sindh Education Profile 2009-2010"

Table 9-6-2 shows health indicators related to maternal and child health. The status of Sindh is worse than the national average in maternal mortality rate, child mortality rate under 5 years and infant mortality rate. Looking at the educational and health indicators, women in Sindh are disadvantaged in access to formal education and appropriate medical treatments as well as nutritious status.

Table 9-6-2 Health Indicators for Maternal and Child Health Targets (2009-2010)

	Maternal Mortality Rate	Child Mortality Rate Under 5 years	Infant Mortality Rate	Neonatal Mortality Rate	Proportion of Antenatal Care
Pakistan	276/100,000	94/1000	78/1000	54/1000	61%
Sindh	314/100,000	101/1000	81/1000	53/1000	70%
Average of the similar income countries	N/A	60/1000	N/A	45/1000	N/A

Source: The Department of Health, the Government of Sindh, UNDP, "Human Development Report 2006"

9.6.2 Daily Activities and Women in Rural Areas

Women's status and decision-making role (power) within the household depend largely on their access to and control of land, livestock and other income opportunities, and on the presence of social supports. The daily activities of rural women in Sindh can be categorized into 4 groups, namely; household chores, animal husbandry, agricultural work, and the other socio-economic activities. Household chores

include making tea, cooking, childcare including taking/bringing children to/from schools, cleaning, washing dish and cloth, fetching water, collecting firewood, etc. The Project Team surveyed, through informant interview at the villages and the household survey⁸, who and to what extent is responsible for the above-mentioned daily activities, and the results are shown below.

(1) Household Chores

In the informant interview, many said that spouse (wife) of household head was responsible for all activities (household chores, animal husbandry, agricultural work, and the other socio-economic activities). The spouse is stronger than the other female members of household as she can distribute the household duties among the female members and supervises them.

The results of the household survey indicate the similar tendency in household chores. In Figure 9-6-1, all household chores are mainly taken care by the spouse of the household head. Many women mentioned at informant interview when the spouse of household head got old and retired, the daughter-in-law would take over the role from the spouse of the household head. It is also revealed that elder daughters and/or elder daughters-in-law take responsibilities for household chores and younger daughters do not have heavy burden.

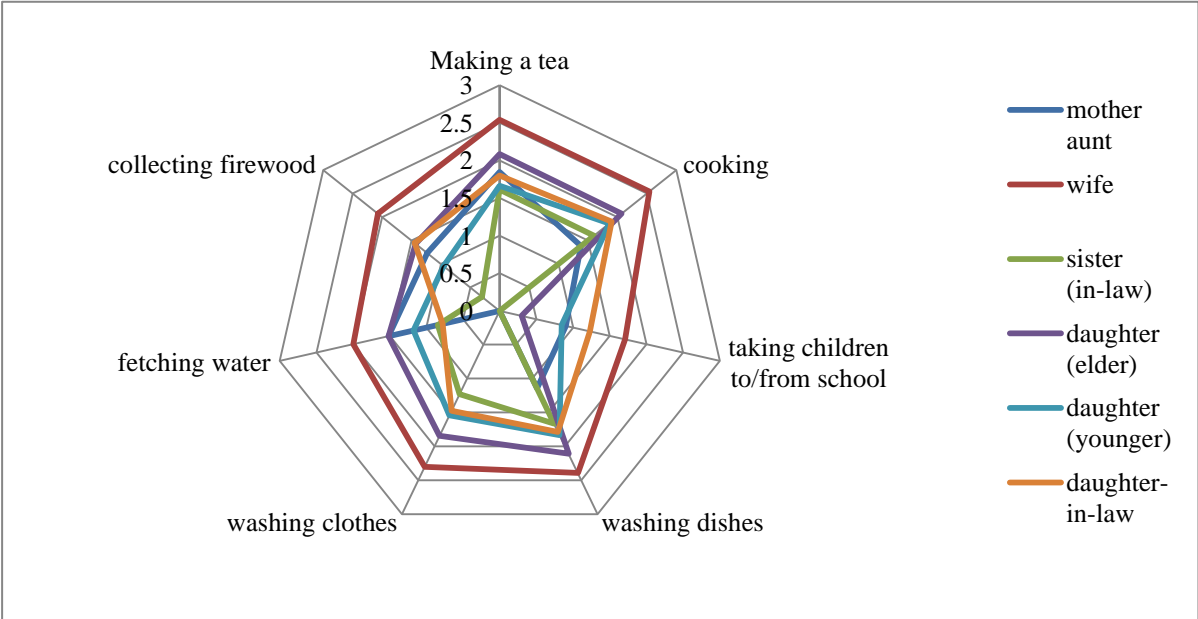


Figure 9-6-1 Work Allocation Among Female Household Members⁹

(2) Animal Rearing

Regarding the activities related to animal rearing, women are responsible mainly or partly for the activities such as milking, processing milk, making milk products, cleaning animals’ shed, cutting and carrying fodder, feeding and watering animals, grazing, selling/purchasing animals, etc. Table 9-6-3 is the result of the household survey regarding the work related to animal husbandry. It shows that women largely participate in processing and making milk products, cleaning livestock and shed, feeding animals, milking,

⁸ The results of household survey regarding gender issues are shown in Appendix J.
⁹ In the graph, logarithm is used for total number of the respective answers.

collecting dung, and storing dung cakes. However, women’s participation in grazing animals and cutting (and carrying) fodder is lower than men’s.

Table 9-6-3 Division of Work for Animal Husbandry

	Mother (elder female)	Wife	Sister (in-law)	Daughter (elder)	Daughter (younger)	Daughter-in-law	Other female members	Male member
Processing and making milk products	111	298	5	12	8	11	6	12
Cleaning livestock and shed	44	264	22	82	48	43	41	161
Cutting and bringing fodder	19	146	4	11	7	10	71	360
Grazing animals	5	39	2	4	-	1	108	451
Feeding animals	47	302	11	38	18	33	44	193
Milking	54	311	6	21	21	23	49	220
Dung collection and storing dung cakes	48	230	18	84	37	36	34	130

Source: Household Survey of the Project Team (2011)

It can be said that women are in charge of domestic part of animal husbandry because of cultural restriction on movement and interaction with men as well as security reasons. Figure 9-6-2 shows the range within which women are usually able to act without obtaining men’s acceptance. It can be seen particularly in animal rearing activities among small livestock holders/poor farmers. In the commercial farms, instead of women, men (labor) are engaged in all activities such as cleaning livestock and shed, treatment of animals, cutting and chopping fodder, grazing animals, feeding and watering animals, etc.

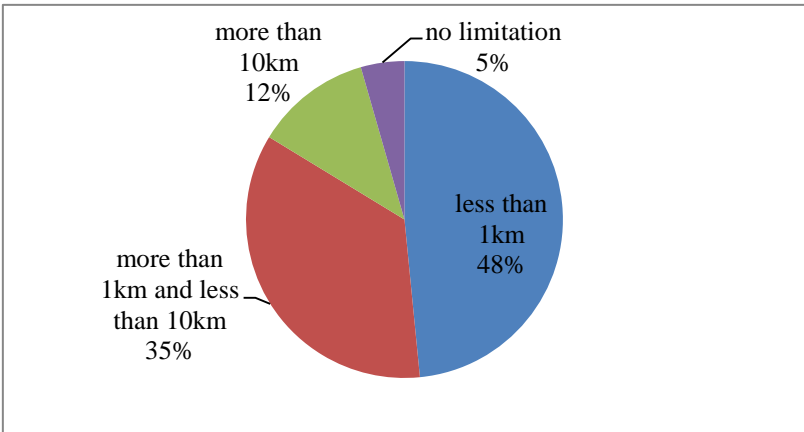


Figure 9-6-2 A Range of Women’s Acting Areas without (free from) Men’s Acceptance

The results of the household survey indicate that decision making in livestock management is dominated by males as Table 9-6-4 shows. However, some decisions are made by women as pointed out by the women in the key informant interview survey as follows:

- ✓ Women can sell milk products such as yogurt, ghee and butter to the neighbors without any consultation to men because women are responsible for the use of milk for household.

- ✓ There are a few women to sell milk products outside of their communities.
- ✓ Women participate into decision making for dealing of small ruminants.

Table 9-6-4 Decision Makers on Livestock Management

	Treatment of animals	Size of herds	Purchase of animals	Selling animals	Feeding animals	Breeding animals	Fodder	Shed construction
Female	7	6	3	4	184	4	16	73
Male	685	674	694	688	335	703	634	515
Both	25	37	20	25	198	10	67	128

Source: Household Survey of the Project Team (2011)

(3) Agricultural Work

Women's agricultural activities in the rural areas are summarized in Tables 9-6-5 and 9-6-6. In general, women are in charge of ground works like picking (harvesting) vegetables and cotton, hand weeding, thinning, binding harvested cereals, winnowing, cleaning seeds, grading/drying vegetables, etc., while men are responsible for works with machinery, lifting heavy loads, meeting (discussion) with other people, etc.

In Sindh, regardless of land size, main agricultural workers are men. While men work at field throughout year, women participate in it for special periods. Among the female members of household, the spouse of household head also plays the main role at agricultural work.

Table 9-6-5 Rural Women's Participation in Pre-harvest Agricultural Activities

High women's participation

1. Harvesting of vegetables
2. Hand weeding/hoeing
3. Harvesting of crops
4. Thinning
5. Sowing of vegetables
6. Transplanting of rice
7. Plant protection operation
8. Sowing of crops
9. Picking of cotton

Low women's participation

10. Broadcasting of seed/fertilizer
11. Threshing
12. Irrigation
13. Selection of variety
14. Land preparation

Table 9-6-6 Rural Women's Participation in Post-harvest Agricultural Activities

High women's participation

1. Storage of cereals (domestic parts like collection, packing etc.)
2. Winnowing
3. Cleaning of seeds
4. Drying of seeds
5. Grading and drying of vegetables
6. Storage of seeds (domestic parts like collection, packing etc.)
7. Grading of seeds
8. Husking of corn
9. Peeling of sugarcane
10. Clearing of cotton lint

(4) Other Socio-economic Activities

Women in the rural areas spend the time for social and economic activities if they can afford besides the above-mentioned daily activities; for example, many women are engaged in dress-making, embroidery, and other handy craft-making. Those dresses and crafts are made not only for domestic use, but also for marriage of their daughters, sales, etc. The most important social activity for them is to participate in marriage ceremonies, and funerals of relatives and neighbors. The results of the household survey show that about 75% of all female respondents make a long journey for marriage ceremonies and/or funerals.



Main NGOs in Sindh¹⁰ have been working for gender development in the rural areas. Their projects cover a wide range of development areas such as health and sanitation, literacy (education), skill's training for income generation, micro-finance, etc. They allocate female social organizers to the field activities. These main NGOs in Sindh do not implement gender development as such at the initial stage of the projects, but they start with formulating a “Community Organization”. All social organizers interviewed asserted that project operation related gender development in the rural areas is not much difficult because there are a few “pro-active women” to play a bridging role in each village.

9.6.3 Recommendations for Livestock Development from Gender’s Point of View

As many point out, women play an important role in taking care of livestock, feed collection, etc. in livestock management, processing, and marketing of the products. They are also the producers of yogurt, ghee, butter, etc. However, many of them do not participate much into decision making for dealing of animals and their products.

Table 9-6-7 is the aggregated number of the respondents for the question “what are the constraints of being female?”. Among 717, 458 respondents claim that lacking of power of decision making is the constraint. The power of decision making depends largely on the ownership of livestock and land. Women’s ownership on livestock and its products is quite limited and is not secured by law. Moreover, it is quite difficult for women to access capital.

Table 9-6-7 Number of Respondents for “what are the constraints of being female?”

Movement	Heavy workload	Education Training	Power of decision making	Others
339	250	511	458	14

Source: Household Survey of the Project Team (2011)

Many respondents complain of lacking opportunity in receiving education and training. Regarding the number (period) of farmers trained at the RTI, the number of the trainings for women are clearly smaller than that for men. This could be attributed to various cultural norms; for example, it is quite

¹⁰ “Main NGOs in Sindh” means National Rural Support Program (NRSP), Sindh Rural Support Organization (SRSO), Thradeep Rural Development Program (TRDP), and Sindh Agricultural and Forestry Workers Coordinating Organization (SAFWCO).

difficult to find appropriate women to work as master trainers (DVM) and/or field supervisors (DVM/SA). Female farmers are too busy with their duties to participate in the training. They are illiterate and hesitate to join the training. In the communities, there are strict cultural norms not allowing women to participate and travel.

The Community Empowerment through Livestock Development and Credit (CELDAC) Project conducted by the UNDP, Nestle (Punjab) and Engro Foods (Sindh) focused on women's empowerment, and raised the "Lady Livestock Worker (LLW)" and the "Lady Village Milk Collector (VMC)". The CELDAC disseminated needed information via trained LLW to the female farmers. The LLW reside in community and provide vaccination, deworming, basic medication, and awareness trainings for the community people. As a result, women were able to obtain some opportunities to participate in trainings and consult trained persons how to treat the problems on their livestock.

Engro Food staff said that at the beginning of the CELDAC Project, the cultural norms were high barrier for the implementation. The LLWs needed some official certification and supports from the government organization/the project against the barrier. After the LLWs' activities became smooth, the necessity of outside interventions got smaller. Thus, it is strongly suggested that project interventions should ensure that the LLW become able to sustain their roles by themselves and the community allows them to act as the LLW. Otherwise, the barrier would appear again immediately after the termination of the project, i.e. the pressure from outside.

IFAD (2009)¹¹ reported some gender asymmetries between women and men as shown in the Box 9.1. Some of them have not seen in Sindh yet, but near future they would be appearing along with the progress of women's participation into livestock management.

Box 9.1. Substantial gender asymmetries in livestock management (IFAD)

- Access to market and distribution of risks and gains along different steps of livestock value chains varies according to the gender of:
 - (i) Producers (e.g. rights to income generated from livestock)
 - (ii) Processors (e.g. access to processing technologies and information)
 - (iii) Market agents (e.g. access to transportation, safe market spaces and overnight accommodation, risk of sexual harassment and abuse)
 - (iv) Economies of scale (e.g. bring women together to improve their market position)
- Risk and vulnerability: Women and men have different experiences and capacities to face:
 - (i) Livestock sector trends (e.g. policy biases and changes, "supermarketization", the lengthening of livestock value chains, vertical integration)
 - (ii) Regional shocks affecting livestock (e.g. climate/ecosystem change, drought, flooding, animal diseases, demographic changes, political upheaval, conflict, etc.)
 - (iii) Household shocks (e.g. illness or death of family member; "distress sales" of livestock to pay for medical treatment, property of asset grabbing, etc.)
- Access to information and organization, specifically to:
 - (i) Livestock extension and veterinary information and services; artificial insemination services; participation in developing livestock program and policies (e.g. vaccination, bulling and restocking program)
 - (ii) Emerging livestock-related technologies (e.g. fodder, breeding, disease prevention, livelihood decision-making tools)
 - (iii) Training and involvement as community animal health workers and para-veterinarians

¹¹ International Fund for Agriculture Development (IFAD). 2009. Gender and Livestock: tools for design. Rome: IFAD

9.7 Rural Finance

9.7.1 Debt Holdings

The result of the household survey reveals the current situation of debt holding among the livestock farmers. Table 9-7-1 shows the ratio of the indebted households to the total sample households and the ratio of the indebted households whose main borrowing purpose is household expenditures. One can see that the ratio of indebted households is high in the owner-cum-tenants and the tenants in the irrigated areas. In addition, it is frequently seen, except the colony, that the households borrow money mainly for the purpose of household expenditures.

Table 9-7-1 Debt Holding HH

	Yes	Purpose of borrowing - household expenditure
Colony	53%	4%
Colony	53%	4%
Irrigated	47%	43%
Landowner	44%	36%
OCT	60%	37%
Tenant	51%	60%
Non farm	28%	38%
Non-irrigated	49%	58%
Landowner	40%	67%
OCT	71%	50%
Tenant	76%	59%
Non farm	47%	48%
Total	48%	45%

Note: OCT is landowners who are also engaged in tenant farming. Non-farm is livestock holders who have no farmland and are not engaged in crop farming.

Source: Household Survey

As depicted in Table 9-7-2, households are grouped based on the scale of livestock holdings using animal unit. The ratios of the households who borrow money for the purpose of livestock become larger as the scale of livestock holdings becomes larger. Accordingly, the average amount of debt becomes larger.

Table 9-7-2 Ratio of Households Who Borrow Money for Livestock

Average Scale of Livestock Held (Animal Unit)	Ratio to HH who has debt	Ratio to Sample HH	Average amount of debt (Rs.)
<10.1	69%	19%	274,288
5.1-10.0	32%	12%	101,314
0.1-5.0	25%	10%	47,279
Total	35%	12%	110,925
Colonies	100%	49%	802,500

Source: Household Survey

9.7.2 Non-formal Lending

(1) Current Transactions

Livestock farmers often rely on non-formal lending when they have to borrow money. Table

9-7-3 is the result of the household survey regarding the organizations or people from whom they borrow money. It shows that non-formal lending accounts for 83%, and formal lending such as banks and microcredit is 17%, when farmers borrow money. The landowners and the owner-cum-tenants borrow money from middlemen and banks more than the tenants and the non-farm livestock holders. The tenants and the non-farm livestock holders borrow money from their relatives and friends more than the other groups. For the tenants, borrowing money from landowners is most common.

Table 9-7-3 Organizations or People from Whom Farmers Borrow Money

	Bank	Middleman agri-products	Middleman livestock products	Money lender	Micro-credit	Relatives	Friends	Landowner
Colony	0%	0%	100%	0%	0%	0%	0%	0%
Landowner	17%	21%	5%	12%	5%	14%	9%	8%
OCT	16%	31%	2%	9%	11%	11%	4%	16%
Tenant	5%	8%	1%	7%	9%	26%	13%	34%
Non farm	3%	14%	14%	0%	0%	26%	26%	9%
Total	11%	17%	11%	8%	6%	17%	10%	15%

Source: Household Survey

According to the interviews by the Project Team, as long as the tenant farmers keep good relationships with their landowners, they can borrow a small amount of cash, e.g. around Rs.500/time for the first time, and then the amount can be gradually increased up to Rs.60,000/season, usually without guarantee. The transaction is based on the mutual trust between the landowner and the tenant, which has been developed traditionally in rural communities. This sort of the borrowing takes place in case of emergency or unexpected needs for the borrowers such as medical treatment, disaster, shortage of food, wedding ceremony, etc. The amount the tenant borrows is to be deducted from the portion that the tenant is entitled to take from the total harvest. The crops the tenant cultivates are considered as an unwritten mortgage. The ceiling amount of a lending is therefore linked to the expected harvest, usually within 10-30% of net profit for the tenant incurred from the harvests. Likewise, farmers borrow money from middlemen of agricultural products with the same pattern. The middlemen usually do not demand farmers guarantee if they have long-time relationship.

However, such transactions are somewhat unclear since the deducted amounts and the interest rate are determined without exchanging written evidence. Among the non-formal sources, money lenders are the most exploitative because some of them require very high interest rates as high as 120%/year according to the interviews to several farmers.

As shown in Table 9-7-4, as the scale of livestock holding becomes larger, the farmers tend to borrow money more from bank and middlemen. For the farmers whose livestock holdings are less than 10, the borrowing from relatives is the highest, followed by landowners.

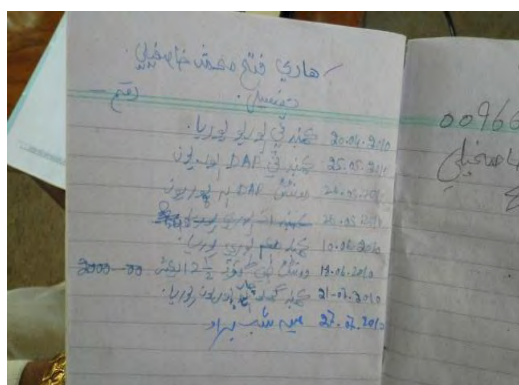
Table 9-7-4 Answers to “From Which Organization You Borrow Money?” (For Those Who Borrow Money for Livestock)

Average Scale of Livestock Held (Animal Unit)	Bank	Middleman agri-products	Middleman livestock products	Money lender	Micro-credit	NGOs	Relatives	Friends	Landowner
<10.1	15%	19%	22%				7%	19%	7%
5.1-10.0	4%	12%	12%	8%	8%		32%	4%	20%
0.1-5.0	3%	3%	3%	6%	16%	6%	29%	6%	26%
Total	7%	11%	12%	5%	8%	2%	23%	10%	18%
Colonies			100%						

Source: Household Survey

(2) Countermeasures

It is recommended that the lender and the borrower keep records on their transactions including the lent and repaid amounts, terms of payment, interest rates, etc.



An example of record kept between a landowner and a tenant.



An interview scene with villagers in Tharparkar.

9.7.3 Microfinance

(1) Current Operations

Institutions including NGOs and banks provide microfinance in various forms, commonly without requiring any mortgages but group collateral if any, for individuals and community groups including livestock farmers in the rural areas. According to the survey by the Project Team, their interest rates are around 15%/year to 29%/year.

There are at present 33 institutions providing microfinance in Sindh¹², with active borrowers of 496,000 persons and gross loan portfolio of Rs. 6,498,786,319¹³. The numbers are on the increase year by year. However, the number of farmers who utilize microfinance is still limited as it is only 3% who access to microfinance¹⁴. According to “2009 Pakistan Microfinance Review” of Pakistan Microfinance Network (PMN), the major loan purposes are agriculture (37.5%), micro enterprise (34.2%) and livestock (11.2%).

¹² Source: SAFWCO, Micro Financing Low Income Businesses, Annual Report Year 2008-2009

¹³ Source: Pakistan Microfinance Network (PMN). The number of 496,000 is equal to 24 % of national total active borrowers which is 2,072,311. PMN estimates the potential market in Sindh is Rs. 6,357,795. Among these microfinance institutions, 16 institutions organize “Sindh Microfinance Network” (SMN)/

¹⁴ The household survey

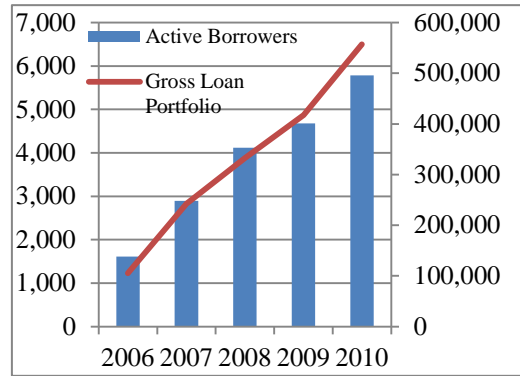


Figure 9-7-1 Active Borrowers and Loan Portfolio of Microfinance in Sindh

Source: PMN

In general, microfinance schemes have two different methods of repayment for the livestock farmers. One is one-year bullet repayment which suits livestock trading after one-year rearing as seen in the scheme of National Rural Support Programme (NRSP). This method is likely to be linked to the festival of Eid-ul-Azha. Another method is monthly or quarterly installment repayment in which installment period can be selected flexibly depending on the borrowers' financial situations. SAFWCO (Sindh Agricultural and Forestry Workers Coordinating Organization), one of the microfinance providers, considers this installment repayment method as less risky, especially for daily business by female farmers. Nevertheless, the Project Team found that small-scale livestock farmers including landless farmers usually face difficulties in the repayment even though the amount of each repayment is just around Rs. 1,000 per month.

Among the formal lending sources, however, microfinance would be one of the most accessible and useful financial sources for farmers who have difficulties in access to commercialized financial services since they do not possess enough mortgage. If compared with non-formal lenders, NGOs and other microfinance providers have established better-defined financing regulations.

When NGOs provide farmers with microfinance, groups are usually formed. The groups are given important roles for not only securing the loans for the members but also receiving services such as trainings or medical services from the providers. For example, Thardeep Rural Development Programme (TRDP) has various training programs for its group members on group management, livestock management, primary health care, education, vocational skills, etc. Through those trainings, livestock farmers can be empowered.

(2) Issues to be Concerned

Regarding the current microfinance schemes, the ceiling amounts are only around Rs.10,000 to 30,000. The amounts are not quite sufficient for the livestock farmers as the market prices of livestock continue to rise; for example, Rs.50,000 for a dry buffalo, and Rs.80,000 for a milking buffalo.

It is usually observed that small-scale livestock farmers are unable to repay loans with livestock incomes, and therefore should rely on non-livestock incomes, such as husband's or son's labor wages. In addition, the current microfinance schemes do not cover the risk of loss like accidental death of livestock. Some NGOs such as TRDP provide microfinance with health insurance coverage or borrowers' death

coverage, but those are not related to death of livestock.

Furthermore, as microfinance scheme is operated basically when a community group is established in a village by NGOs, livestock farmers cannot access to such services if their villages have no such groups or have difficulty to form the groups.

(3) Countermeasures

It is important to re-design the current schemes especially on the ceiling amount of credit for meeting the requirements of livestock business. In general, microfinance does not require mortgage but group collateral instead; however, it might be possible to increase the ceiling amount by using purchased livestock as a mortgage. It is also important to diversify microfinance schemes to meet the demands from various livestock business. For example, SAFWCO has 3 different lending modes for livestock purpose as follows: 1) for the trading of livestock especially at the time of Eid-ul-Azha, 2) for the trading of livestock at normal time, and 3) for the sales of milk. Each mode has different ceiling amounts, period, repayment methods and targeted gender. This would be one of the good examples how to design credit schemes for livestock business.

To raise profits from livestock business, farmers should be trained on the calculation of costs and benefits, business and livestock management planning including the selection of livestock breeds, breeding periods, timing of sales according to the market situation, etc. As for accidental deaths of livestock, the services that combine microfinance and livestock insurance should be considered to lower the risk for farmers.

9.8 Household Economy

This section examines the major characteristics of household economy and its economic activities in Rural Sindh. The analysis of this section is mainly based on the two household surveys the Project Team conducted¹⁵. The total numbers of the households surveyed are 720 and 250, respectively.

(1) Classification of Household

The analysis of this section is conducted mainly through the comparison among the social strata, and the household classification used in Census of Agriculture of Pakistan was referred to categorize the households as shown in Table 9-8-1. Landowners are grouped into Large, Medium, Small, and Marginal Landowners depending on their agricultural landholdings. Those who are neither landowners nor tenants are grouped into Non-farm households. Among the group of Non-farm, those who hold one or more cattle/buffalo, or 5 or more goats/sheep are grouped into Non-farm Livestock Holders, and those who do not meet these conditions are grouped into Other Non-farm¹⁶.

¹⁵ The survey method and contents of the two household surveys are depicted in Appendix C and Appendix D.

¹⁶ Other Non-farm households are out of our scope in the first household survey, and therefore they are not shown in its results.

Table 9-8-1 Household Classification by Census of Agriculture

Category		Condition
Landowner	Large	Owns more than 100 acres
	Medium	Owns 25-89 acres
	Small	Owns 5-24 acres
	Marginal	Holds less than 5 acres
Tenants		
Non-farm	Livestock holder	Holds one or more cattle/buffalo, or 5 or more goats/sheep
	Other	

(2) Living Standards

Table 9-8-2 shows the results of average annual cash income, consumption, and saving for each group of the households, which are obtained from the first household survey. Figure 9-8-1 is the graphic representation of average per capita cash consumption among the households groups. From the table and figure, one can see that the living standards (indicated by cash income and consumption expenditure) of the large landowners in the irrigated area is prominently high compared to the other groups.

Figure 9-8-2 shows per capita cash consumption expenditure excluding the large landowners in the irrigated area. From Table 9-8-2 and Figure 9-8-1, it is clear that the income and consumption levels differ significantly depending on the landholding status where larger landowners enjoy higher income and consumption. The cash consumption and income levels among the marginal landowners, tenants, and non-farm livestock holders are not significantly different within the irrigated or non-irrigated area. Also, consumption and income levels of the farmers in the non-irrigated area are generally lower than the irrigated area, regardless of the landownership status.

Table 9-8-2 Annual Cash Income, Consumption Expenditure, and Saving (Rs.)

	Number of Sample HH	HH Cash Consumption Expenditure	Per Capita Consumption Expenditure	HH Cash Income	Per Capita Cash Income
Irrigated	460	193,775	17,803	314,710	30,143
Large Landowner	10	1,105,200	81,987	3,658,953	363,807
Medium Landowner	30	428,036	31,995	659,359	48,582
Small Landowner	128	209,678	17,224	329,284	27,927
Marginal Landowner	140	146,099	15,274	157,767	16,976
Tenant	124	121,241	13,831	168,079	19,659
Non Farm Livestock	28	104,182	12,555	118,525	13,611
Non-irrigated	208	80,273	8,875	176,996	19,003
Large Landowner	3	259,333	25,340	2,428,333	245,047
Medium Landowner	9	157,833	14,016	354,117	35,213
Small Landowner	69	93,533	10,169	131,306	15,654
Marginal Landowner	42	62,433	7,168	91,857	10,123
Tenant	28	70,090	7,825	128,809	13,159
Non Farm Livestock	57	60,696	7,403	172,253	18,015
Total	668	158,433	15,023	271,829	26,674

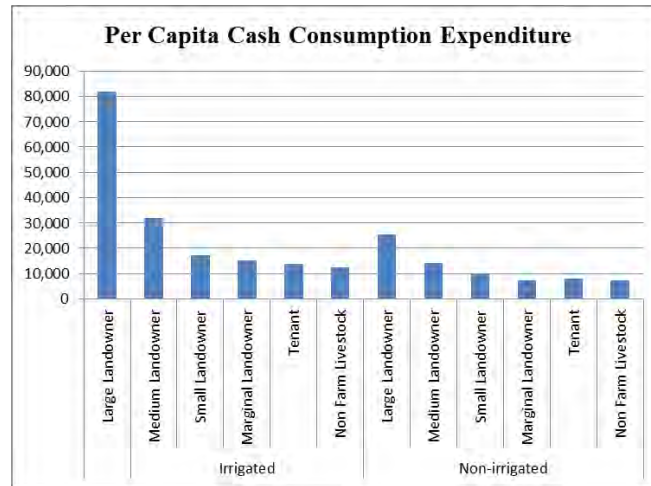


Figure 9-8-1 Per Capita Annual Cash Consumption Expenditure (Rs.)

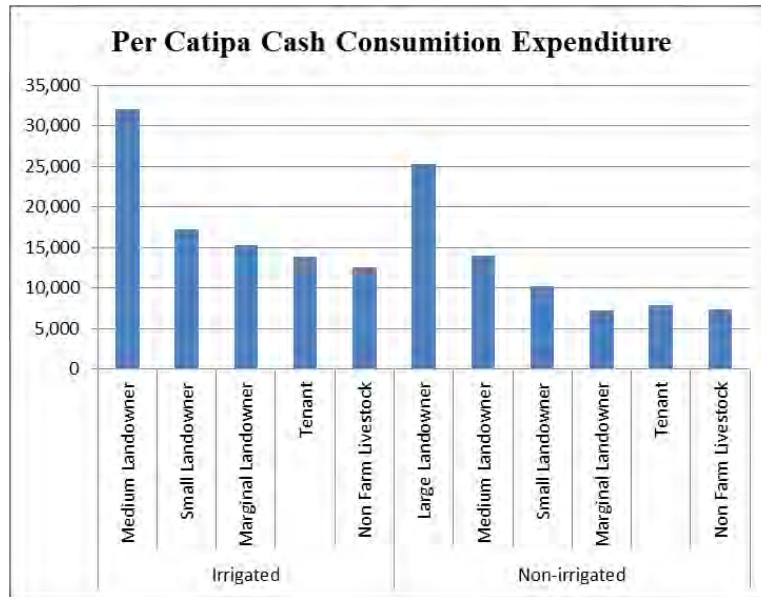


Figure 9-8-2 Per Capita Annual Cash Consumption Expenditure: Excluding Large Landowner in Irrigated Area (Rs.)

Table 9-8-3 shows the average total income, consumption expenditure, and saving for each household group in Muhammad Soomar Samejo (M.S.S) village in Badin (irrigated area) and Pabuhar in Tarparker (non-irrigated area), which are drawn from the second household survey¹⁷. The total income and expenditure of household include the self-consumption of food produced at home, wages and payments in kind, and gifts in kinds as well as cash component of them. Looking at Figure 9-8-3 which depicts the per capita total consumption expenditure and Table 9-8-3, one can see the similar trends of living standards drawn from the first household survey where the consumption and income levels differ depending on the landholding status¹⁸.

¹⁷ There is no large landowner in M.S.S village, and there is no non-farm household in Pabuhar. Therefore, the figures for these groups are not shown.

¹⁸ One can however observe that the living standards of Pabuhar are relatively high for the irrigated area. It is mainly due to its unique characteristic of high education levels of the villagers. See Appendix D for more detail.

Table 9-8-3 Annual Total Income, Consumption Expenditure, and Saving (Rs.)

	Number of Sample HH	HH Total Consumption Expenditure	Per Capita Total Consumption Expenditure	HH Total Income	Per Capita Total Income
M.S.S	126	212,565	25,425	297,493	35,660
Medium Landowner	2	1,002,210	81,309	1,760,418	142,459
Small Landowner	18	474,948	42,989	612,615	53,611
Marginal Landowner	13	171,821	21,397	208,987	26,079
Tenant	31	152,998	22,249	226,220	32,744
Non Farm Livestock	39	155,287	22,198	218,681	33,894
Non Farm Other	23	138,998	18,852	203,393	24,667
Pabuhar	124	180,151	23,133	262,715	35,350
Large Landowner	3	755,836	76,036	1,031,608	99,547
Medium Landowner	9	358,307	39,163	380,671	37,635
Small Landowner	29	192,221	26,140	272,710	37,083
Marginal Landowner	21	172,501	17,343	239,229	23,726
Tenant	62	123,380	18,801	211,669	35,038
Total	250	196,488	24,288	280,244	35,506

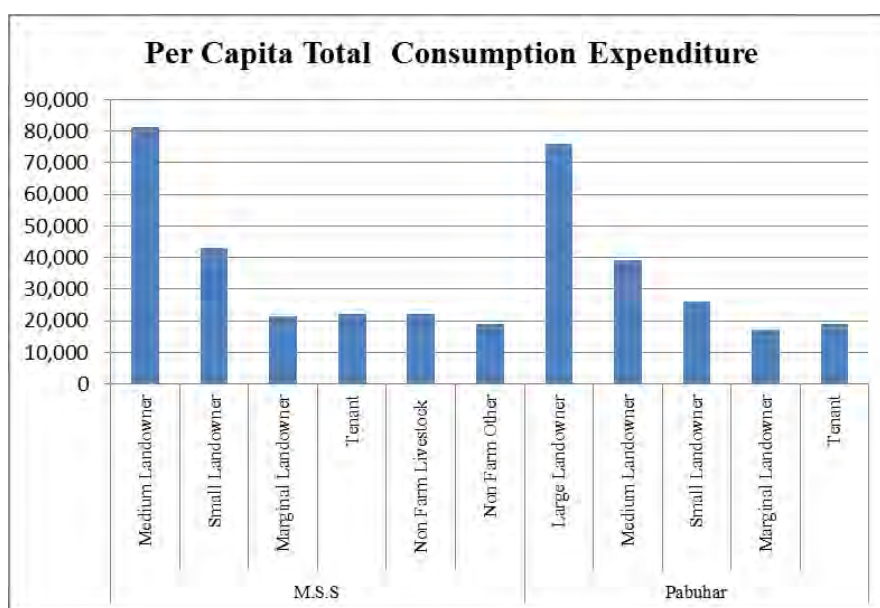


Figure 9-8-3 Per Capita Annual Total Consumption Expenditure (Rs.)

Table 9-8-4 and 9-8-5 depict the average livestock holdings among the household groups which are resulted from the first and second household surveys respectively. Both results show that, among the landowners, the larger the agricultural land holdings, the larger the number of livestock holdings; there appear to be positive relation between the area of land holding and the number of livestock holdings.

Table 9-8-4 Average Livestock Holdings (Result from the First Household Survey)

	Cattle	Buffalo	Sheep	Goat	Camel	Animal Unit
Irrigated	3.2	6.1	1.8	7.5	0.2	9.0
Large Landowner	44.2	38.7	22.6	54.7	0.0	70.0
Medium Landowner	8.0	11.9	4.1	8.6	0.2	18.0
Small Landowner	2.6	7.3	1.6	10.5	0.1	10.0
Marginal Landowner	1.9	4.6	0.4	4.8	0.1	6.0
Tenant	1.3	3.1	0.1	3.1	0.4	4.0
Non Farm Livestock	1.4	3.8	7.1	8.4	0.0	6.0
Non-irrigated	5.0	5.2	5.2	24.5	0.4	12.6
Large Landowner	65.3	159.2	73.7	144.0	0.3	233.5
Medium Landowner	8.9	11.9	7.9	12.8	0.9	22.1
Small Landowner	7.2	3.3	6.3	23.4	0.4	12.5
Marginal Landowner	1.9	1.6	2.5	19.7	0.6	6.0
Tenant	1.7	0.7	1.8	24.2	0.3	5.0
Non Farm Livestock	3.5	3.1	3.5	25.1	0.2	9.0
Total	3.8	5.8	2.8	12.8	0.2	10.6

Table 9-8-5 Average Livestock Holdings (Result from the Second Household Survey)

	Cattle	Buffalo	Sheep	Goat	Camel	Animal Unit
M.S.S	0.6	2.7	1.2	0.4	0.2	3.5
Medium Landowner	0.0	5.5	6.0	0.0	3.5	10.0
Small Landowner	0.3	4.8	2.2	0.2	0.2	5.5
Marginal Landowner	0.5	1.6	1.0	0.0	0.0	2.1
Tenant	0.5	1.8	0.9	0.1	0.1	2.5
Non Farm Livestock	1.4	4.2	1.4	0.9	0.2	5.7
Non Farm Other	0.0	0.0	0.2	0.2	0.0	0.0
Pabuhar	2.8	0.3	16.7	3.7	0.9	5.6
Large Landowner	16.0	6.3	100.7	57.0	7.3	43.0
Medium Landowner	5.1	0.7	34.9	5.0	3.2	12.3
Small Landowner	2.8	0.4	20.4	4.0	1.1	6.3
Marginal Landowner	2.1	0.0	12.1	1.5	0.8	3.9
Tenant	2.0	0.0	9.7	1.6	0.2	3.0
Total	1.7	1.5	8.9	2.0	0.5	4.6

(3) Consumption Expenditure

Figure 9-8-4 and Table 9-8-6 show the consumption expenditure patterns of household in each category. As indicated in the right side column of Table 9-8-6, the percentage of expenditure of food (self-produced plus purchased) tends to be bigger for the landless or smaller landowner. Also, one can see that for all the household groups except for the other non-farm in M.S.S, self-produced food constitute about 25 to 40% of the total consumption expenditure.

Table 9-8-6 Percentage Distribution of Each Component to Total Consumption Expenditure

	Self-produced food	Purchased Food	Apparel, textile, and footwear	Expense for ceremony	Medial care	Education	Loan Repayments	Other Expenses	Lending loan	Purchasing Asset	Self-produced and Purchased Food
M.S.S	26%	38%	4%	3%	4%	1%	3%	11%	2%	8%	64%
Medium Landowner	30%	9%	2%	3%	1%	1%	5%	19%	10%	20%	39%
Small Landowner	30%	26%	3%	2%	5%	1%	3%	7%	3%	19%	56%
Marginal Landowner	31%	37%	4%	2%	4%	1%	5%	13%	0%	2%	69%
Tenant	32%	41%	5%	5%	3%	0%	1%	12%	2%	0%	73%
Non Farm Livestock	24%	48%	5%	3%	4%	1%	3%	11%	0%	0%	73%
Non Farm Other	2%	63%	5%	5%	5%	0%	4%	13%	1%	1%	65%
Pabuhar	30%	39%	4%	8%	3%	4%	1%	9%	0%	1%	69%
Large Landowner	41%	21%	3%	5%	3%	5%	2%	13%	0%	8%	62%
Medium Landowner	34%	32%	3%	8%	4%	6%	0%	13%	0%	0%	66%
Small Landowner	32%	39%	4%	6%	4%	3%	2%	9%	0%	1%	71%
Marginal Landowner	24%	46%	4%	14%	3%	1%	1%	7%	1%	0%	70%
Tenant	25%	46%	5%	6%	3%	4%	2%	7%	1%	1%	71%
Total	28%	38%	4%	5%	4%	2%	2%	10%	1%	5%	66%

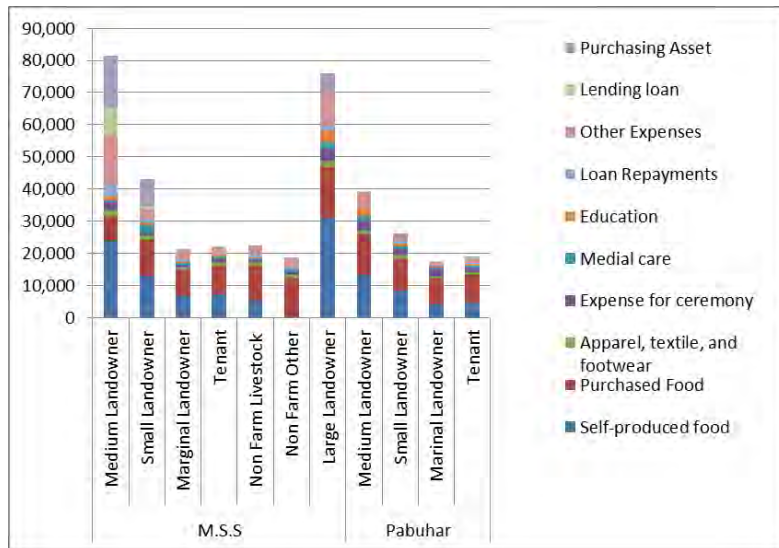


Figure 9-8-4 Annual Consumption Expenditure by Component (Rs.)

(4) Sources of Income

The amounts and their contribution to total income from different sources, found in the second household survey, are presented in Tables 9-8-7 and 9-8-8 and Figure 9-8-5. One can see the contribution of agricultural income is larger for M.S.S (irrigated area) than Pabuhar (non-irrigated area), and it tends to be larger for larger landholders. For M.S.S as a whole, livestock activity consists of 14% of total income, and the contribution of livestock activity to household is biggest for the non-farm livestock holders. On the other hand, labor work makes a significant contribution to household economy of the other non-farm households.

For Pabuhar, the amount of agriculture income is much smaller than in M.S.S. Livestock activities, on the other hand, play a significant role in their household economies even for large and medium landowners. One can notice that the contribution of income from office work is significant. However, this is one unique characteristic of this village and cannot be generalized to the non-irrigated area or the province¹⁹.

Tables 9-8-7 and 9-8-8 also show the value of the fodder produced and used at home, which represents the value transferred from agricultural to livestock sector. This component is significant only for the medium landowners in M.S.S, which indicates that they are able to supply self-produced fodder in their land partly for their livestock.

¹⁹ See Appendix D for more detail.

Table 9-8-7 Sources of Income by Household Group (Rs.)

	HH Total Income	Agriculture Income	Livestock Income	Labor Work	Office Work	Shop, Service	Remittance	Pension	Other	Borrowing	Selling Asset	Fodder Produced at Home
M.S.S	297,493	94,598	41,802	97,868	4,952	22,902	9,198	857	2,823	19,595	2,897	2,962
Medium Landowner	1,760,418	1,187,358	149,760	58,800	0	0	0	0	2,000	200,000	162,500	116,868
Small Landowner	612,615	315,910	81,595	101,167	18,000	50,833	0	3,333	4,278	37,500	0	3,805
Marginal Landowner	208,987	96,792	21,241	60,338	12,923	10,385	0	0	1,154	6,154	0	960
Tenant	226,220	83,871	27,003	92,013	0	7,758	8,516	0	2,929	4,129	0	1,887
Non Farm Livestock	218,681	0	60,805	86,020	0	37,121	13,333	1,231	2,762	17,410	0	0
Non Farm Other	203,393	0	619	147,878	5,739	6,409	16,304	0	2,661	22,043	1,739	0
Pabuhar	262,715	19,435	65,072	32,151	78,613	23,451	19,871	4,613	3,357	16,065	0	1,453
Large Landowner	1,031,608	279,235	228,373	0	259,333	200,000	0	42,667	5,333	16,667	0	4,680
Medium Landowner	380,671	20,956	61,049	0	146,667	66,667	62,222	12,000	0	11,111	0	2,800
Small Landowner	272,710	23,831	60,336	21,069	98,112	25,086	16,552	8,193	1,255	18,276	0	2,618
Marginal Landowner	239,229	10,847	59,849	46,000	62,800	19,686	21,048	0	4,953	14,048	0	1,952
Tenant	211,669	7,496	61,739	38,867	56,226	9,145	15,839	1,587	4,192	16,403	0	387
Total	280,244	57,317	53,344	65,273	41,488	23,174	14,492	2,720	2,968	17,844	1,460	2,214

Table 9-8-8 Sources of Income (Percentage Distribution against Total Income)

	HH Total Income	Agriculture Income	Livestock Income	Labor Work	Office Work	Shop, Service	Remittance	Pension	Other	Borrowing	Selling Asset	Fodder Produced at Home
M.S.S	297,493	32%	14%	33%	2%	8%	3%	0%	1%	7%	1%	1%
Medium Landowner	1,760,418	67%	9%	3%	0%	0%	0%	0%	0%	11%	9%	7%
Small Landowner	612,615	52%	13%	17%	3%	8%	0%	1%	1%	6%	0%	1%
Marginal Landowner	208,987	46%	10%	29%	6%	5%	0%	0%	1%	3%	0%	0%
Tenant	226,220	37%	12%	41%	0%	3%	4%	0%	1%	2%	0%	1%
Non Farm Livestock	218,681	0%	28%	39%	0%	17%	6%	1%	1%	8%	0%	0%
Non Farm Other	203,393	0%	0%	73%	3%	3%	8%	0%	1%	11%	1%	0%
Pabuhar	262,687	7%	25%	12%	30%	9%	8%	2%	1%	6%	0%	1%
Large Landowner	1,031,608	27%	22%	0%	25%	19%	0%	4%	1%	2%	0%	0%
Medium Landowner	380,671	6%	16%	0%	39%	18%	16%	3%	0%	3%	0%	1%
Small Landowner	272,710	9%	22%	8%	36%	9%	6%	3%	0%	7%	0%	1%
Marginal Landowner	239,229	5%	25%	19%	26%	8%	9%	0%	2%	6%	0%	1%
Tenant	211,613	4%	29%	18%	27%	4%	7%	1%	2%	8%	0%	0%
Total	280,230	20%	19%	23%	15%	8%	5%	1%	1%	6%	1%	1%

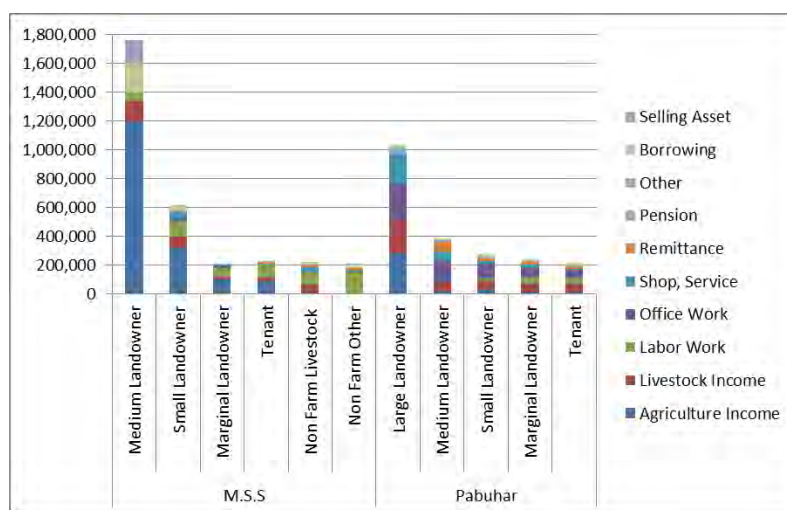


Figure 9-8-5 Sources of Income by Household Group (Rs.)

(5) Assets and Liabilities

Tables 9-8-9, 9-8-10 and Figure 9-8-6 represent the asset holding position of household for each group. In M.S.S, one can observe that there is a huge gap in the value of asset holding among the groups, and landholding status play the dominant role in differentiating the values of their asset holding. It is mainly

due to the fact that the village is located in the irrigated area, and their agricultural lands are highly valued. Livestock constitutes a significant portion of net worth for the tenants and the non-farm livestock holders.

For the Pabuhar village in the non-irrigated area where the agricultural lands are not highly valued, the value of agricultural lands does not play as much significant role as in M.S.S. It should however be noted that the asset holding position of large landowners is considerably higher than the other groups in the village, and the value of agricultural land constitutes 62% of their net worth. Livestock is the most important asset, which constitute 37% of total net worth, for the households in the village.

It should also be noted that the lands, livestock, house and other building constitute almost all of the values of their asset holdings; 97% for M.S.S and 98% for Pabuhar. As the lands and buildings are fixed assets, livestock is the only source of liquid assets where securities and cash savings are not popular means of liquid assets.

Table 9-8-9 Value of Assets and Liabilities of Households by Different Type (Rs.)

	Total Asset	Agricultural Land	Other Land (House etc)	Livestock	House and Other Buildings	Agricultural Machinery	Vehicles	Saving	Outstanding Loan	Crop Preserve	Total Liabilities (Outstanding Debt)	Net Worth (Assets-Liabilities)
M.S.S	2,196,324	1,617,976	237,861	93,234	185,230	25,167	24,791	5,905	5,421	739	-12,095	2,184,229
Medium Landowner	24,569,600	22,250,000	560,000	405,800	347,000	669,250	231,000	50,000	10,000	46,550	0	24,569,600
Small Landowner	9,427,939	8,186,944	497,778	133,500	352,278	74,306	137,856	26,944	18,333	0	-34,000	9,393,939
Marginal Landowner	1,448,592	923,077	214,538	44,746	219,692	38,077	0	769	7,692	0	-4,385	1,444,208
Tenant	372,558	0	155,968	74,526	136,774	0	0	2,903	2,387	0	-5,968	366,590
Non Farm Livestock	529,323	0	210,808	143,695	171,462	0	2,487	641	231	0	-13,333	515,990
Non Farm Other	298,700	0	175,870	1,600	109,609	0	3,622	1,478	6,522	0	-6,522	292,178
Pabuhar	581,997	163,496	21,841	210,251	169,645	4,462	4,596	6,637	1,069	0	-12,718	569,279
Large Landowner	8,014,767	4,951,167	91,667	1,545,667	1,167,667	183,333	25,267	50,000	0	0	0	8,014,767
Medium Landowner	1,179,636	232,000	33,000	515,722	366,556	80	16,722	14,444	1,111	0	-11,111	1,168,524
Small Landowner	601,492	100,310	49,207	233,934	203,621	54	8,210	5,379	776	0	-10,517	590,975
Marginal Landowner	302,156	20,143	4,476	148,595	120,762	13	2,167	3,619	2,381	0	-13,476	288,680
Tenant	221,259	0	9,924	111,097	93,435	12	968	5,016	806	0	-14,339	206,920
Total	1,395,618	896,554	130,715	151,274	177,500	14,897	14,774	6,268	3,262	372	-12,404	1,383,214

Table 9-8-10 Percentage Distribution of Values in the Net Worth of Households

	Agricultural Land	Other Land (House etc)	Livestock	House and Other Buildings	Agricultural Machinery	Vehicles	Saving	Outstanding Loan	Crop Preserve	Outstanding Debt	Net Worth (Assets-Liabilities)
M.S.S	74%	11%	4%	8%	1%	1%	0%	0%	0%	-1%	100%
Medium Landowner	91%	2%	2%	1%	3%	1%	0%	0%	0%	0%	100%
Small Landowner	87%	5%	1%	4%	1%	1%	0%	0%	0%	0%	100%
Marginal Landowner	64%	15%	3%	15%	3%	0%	0%	1%	0%	0%	100%
Tenant	0%	43%	20%	37%	0%	0%	1%	1%	0%	-2%	100%
Non Farm Livestock	0%	41%	28%	33%	0%	0%	0%	0%	0%	-3%	100%
Non Farm Other	0%	60%	1%	38%	0%	1%	1%	2%	0%	-2%	100%
Pabuhar	29%	4%	37%	30%	1%	1%	1%	0%	0%	-2%	100%
Large Landowner	62%	1%	19%	15%	2%	0%	1%	0%	0%	0%	100%
Medium Landowner	20%	3%	44%	31%	0%	1%	1%	0%	0%	-1%	100%
Small Landowner	17%	8%	40%	34%	0%	1%	1%	0%	0%	-2%	100%
Marginal Landowner	7%	2%	51%	42%	0%	1%	1%	1%	0%	-5%	100%
Tenant	0%	5%	54%	45%	0%	0%	2%	0%	0%	-7%	100%
Total	65%	9%	11%	13%	1%	1%	0%	0%	0%	-1%	100%

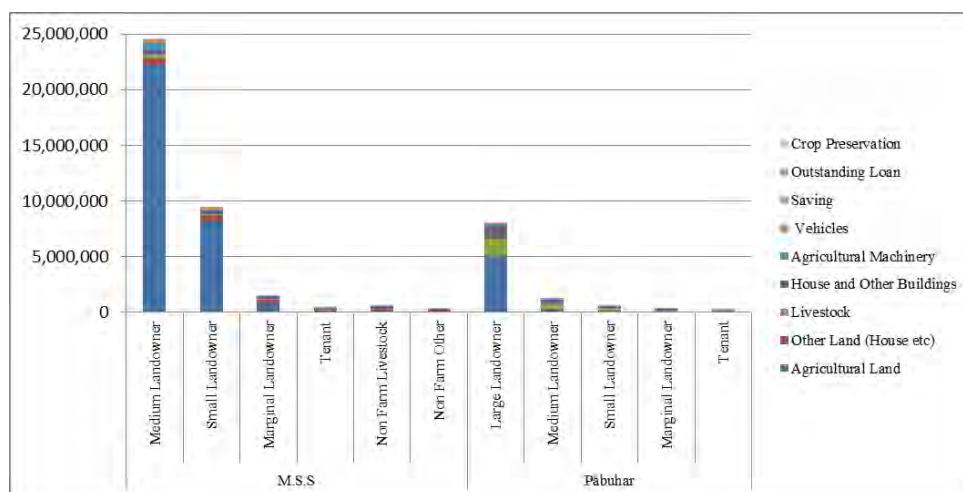


Figure 9-8-6 Value of Asset Holdings by Different Type (Rs.)

(6) Lorenz Curve for Consumption Expenditure and Asset Holdings

In the previous sections, the household economy was assessed by comparing among the households of various social strata. It was found that there are significant disparity in consumption, income, and asset holding among them and the regions. Focus was then placed on the disparity among households rather than the category of households. In order to do this, the Lorenz curves was used to represent the cumulative distribution function of wealth using the data collected from the second household survey

Figures 9-8-7 and 9-8-8 depict the Lorenz curves of consumption expenditure and asset values for M.S.S and Pabuhar village respectively. The curves show what percentage of total expenditure or assets are owned by any given percentage of households. The percentage of households is plotted on the x-axis, the percentage of expenditure or assets on the y-axis. The more convex curve represents the more inequality in the distribution of wealth.

One can see that the Lorenz curve for the value of asset is much more convex than that for consumption expenditure for both villages. This indicates that the inequality is more profound in asset holdings than consumption expenditure. The disparity is even more serious in the agricultural land holding status as the curve for the agricultural land is extremely convex for the both villages.

The disparity in the livestock holding, however, is not as much severe as agricultural land holdings for the both villages. This may be reflected by the relative easiness to purchase livestock since its unit cost is much smaller than the agricultural land. As livestock holding is relatively easy for the households in the broad range of social groups, increase in income and asset holdings through livestock activities appears to be an effective strategy in the context of rural Sindh.

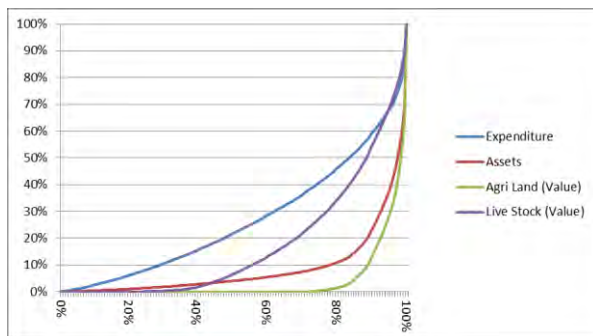


Figure 9-8-7 Lorenz Curves for M.S.S

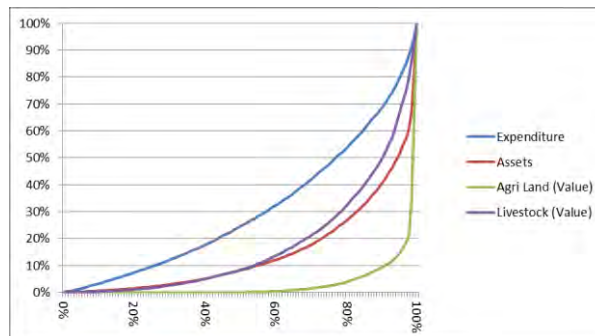


Figure 9-8-8 Lorenz Curves for Pabuhar

(7) Acquisition of Land

The analysis of this section so far has indicated that the land holding status is a key factor for the wealth and living standard of households. It is thus important to investigate the state of new acquisition of or the frequency of trades of agricultural lands, as it indicates the level of mobilization among the social strata. In order to do it, the land holding status of fathers of the household heads was assessed.

Tables 9-8-11 and 9-8-12 show the land holding status of the father of household head for each household group in the villages of M.S.S and Pabuhar. One can see that, for most of the landowners, their fathers are also landowners since the land is usually inherited to every son equally. Also, among the two sample villages, only two households do not own agricultural land even though their fathers owned lands. The reason for it is the family problem at the time of the death of their fathers.

There are however 10 households, among 250 households surveyed in the village, who own agricultural land even though their fathers are landless. Three of these households came to own land because the spouses of households head were inherited it (2 households in M.S.S and 1 household in Pabuhar), and 7 of them newly acquired agricultural land by purchasing it.

It is clear that, even though purchasing agricultural lands by landless households is not impossible, newly acquiring agricultural land is extremely difficult for landless households. As the average annual cash income for the landless household in the irrigated areas is about Rs.150,000, and the average price of agricultural land in M.S.S is Rs.1 million per acre, it is supposed to be quite difficult for many of them to purchase certain size of lands. Also, landowners are hardly willing to sell their lands as indicated from the responses in the field survey, which state that “sale and purchase of land is not frequently observed, they sale land in case of critical time like drought or disease, otherwise they consider land as their mother.”

Table 9-8-11 Landholding Status of Household Head's Father

Househead's Father Category of Househead	Landowner	Landless
M.S.S		
Medium Landowner	2	
Small Landowner	17	1
Marginal Landowner	8	5
Tenant	2	29
Non Farm Livestock		39
Non Farm Other		23
Pabuhar		
Large Landowner	3	
Medium Landowner	9	
Small Landowner	27	2
Marginal Landowner	19	2
Tenant		62

Table 9-8-12 Landholding Status of Household Head's Father (percentage)

Househead's Father Category of Househead	Landowner	Landless
M.S.S		
Medium Landowner	100%	0%
Small Landowner	94%	6%
Marginal Landowner	62%	38%
Tenant	6%	94%
Non Farm Livestock	0%	100%
Non Farm Other	0%	100%
Pabuhar		
Large Landowner	100%	0%
Medium Landowner	100%	0%
Small Landowner	93%	7%
Marginal Landowner	90%	10%
Tenant	0%	100%

(8) Major Characteristics of Each Category of Farmers

This section describes the major characteristics of each category of household, in terms of income, expenditure, and land and livestock holdings, based on the above analysis.

(i) Irrigated Area

- (a) Large landowners: They usually hold a large number of animals, and the consumption and income levels are exceptionally high. The major source of their income is agricultural production and sales. The values of their assets are supposed to be enormous, and much bigger than the other categories of households, due to their holding of large area of irrigated land.
- (b) Medium landowners: Their consumption and income levels are significantly higher than any other categories of household except for the large landowners in the irrigated area. The size of their livestock holdings is much higher than the medium and small landowners. Most of their incomes come from agricultural production and sales.
- (c) Small landowners: Their consumption and income levels are slightly higher than those of marginal landowners in the irrigated area. Many of them are medium size livestock holders, and own more livestock than marginal landowners. On average, agricultural production and sales is the major source of income, but sizable part of their incomes comes from livestock activities and labor work
- (d) Marginal landowners: Their consumption and income levels are not significantly different from the tenants and non-farmers in the irrigated area; these categories constitute the lowest income group in the irrigated area. Agriculture is still the biggest source of income, but also the contribution of labor wage to household economy is significant. Many of them are medium size livestock holders.
- (e) Tenants: The size of livestock holdings tends to be smaller than the landowners in the irrigated area. Agricultural production and sales are the main source of their income. More than half of this group in

the sample own debt, and many of them borrow money in the form of non-formal credit from relatives, friends, and landowners.

- (f) Non-farm livestock holders: Livestock and labor work are the main sources of their income. For their livestock activities, many of them use purchased fodder to feed their animals probably because their access to natural fodder is limited.
- (g) Other non-farm households: The major source of their income is labor work. As they are not engaged in agriculture, most of the foods they take are purchased ones including milk.

(ii) Non-irrigated Area

- (a) Large landowner: Their average consumption and income levels are significantly lower than the large landowners in the irrigated area, but are still higher than those of any other categories of households. The size of their livestock holdings is usually very large. Most of their incomes come from agricultural activities, and part of them comes from livestock activities.
- (b) Medium, Small, and Marginal landowners: Their consumption and income levels are generally lower than most of the households in the irrigated land, and are not significantly different from those of tenants and non-farm livestock holders in the non-irrigated land. Most of them are medium or small livestock holders. Within this group, however, the size of livestock holdings tends to be larger as the size of their land holdings becomes larger. The major sources of their incomes are agriculture, livestock, and wage and salaries.
- (c) Tenants: Their income and consumption levels and the breakdown of income sources show similar patterns to those of the landowners in the non-irrigated area. Most farmers in this group in the sample own debt, and more than half of them borrow money for the household expenditures. Many of them borrow money in the form of non-formal credit from relatives, friends, and landowners.
- (d) Non-farm livestock holders: Their consumption and income levels are similar to those of landowners and tenants in the non-irrigated area. The major source of their income is livestock activities and part of it comes from labor work. Many of them use purchased fodder to feed their animals probably because their access to natural fodder is limited.

(9) Role of Livestock in Rural Sindh

From the analysis in this section, it is clear that there is significant disparity in the living standard of households (measured by consumption expenditure and income) depending on their landholding status. The disparity among households is more severe in the value of assets due mainly to the difference in the value of land that the households own. The land is, however, mostly inherited, and it is quite difficult to purchase agricultural lands especially for subsistence farmers.

Livestock, on the other hand, constitutes the most important liquid asset for the households in rural Sindh. Livestock is relatively easy to be acquired for many households in the province as its unit cost is smaller, and thus the disparity in the value of livestock holdings is less significant than that of land. As a liquid asset, livestock plays an important role as the insurance in case of crop failure. In the field survey of the Project Team, many villagers claim that they cope with famine and drought by selling their animals.

Thus, holding livestock can be seen as an important safety net for the households of many strata in rural society, and this can be a reason for a large number of households in the province holds various kinds of livestock.

Also, livestock is a means of production and a source of income for the livestock holders. In rural Sindh where many households have other sources of income, typically agriculture or labor works, it is important to see livestock holding in a view point of diversification of income sources. In the field survey, many farmers claim the benefit of doing both crop production and livestock rearing, i.e. mixed farming, because even if one of them fails, the production of the other can substitute to make a living. That is, engaging both crop and livestock production is a way to diversify risks of agricultural activities which are dependent on weather and thus have an intrinsic risk. The benefit of risk diversification by holding livestock can be gained by the labors who rely on the rural economy where main industry is agriculture production.

(10) Sales of Milk

Figure 9-8-9 shows the relationship between the total production of milk and propensity to sell milk for households in the irrigated area with each landholding status of households. The data are drawn from the results of the first household survey. The vertical axis of the table indicates the total production of milk per day for each household and the horizontal axis shows the percentage of milk sold to total production. From the figure, one can see that, except for the households who do not sell milk at all, there is a positive relation between the two variables. It indicates that the households sell the milk which is surplus to the self-consuming portion.

Also, except for the households who do not sell milk at all, the number of households in the quadrant 2 is very small, whereas that in quadrant 1 is quite large. This suggests that households who produce more than 10 liters a day tend to sell large portion of milk they produced. If one applies the average milking cattle ratio to total cattle (50%) and the average milk production per head/day (4 litter) in this region, those who produce more than 10 liters a day (households in quadrant 1 and 2) are almost equivalent to medium and large livestock holders who own more than 5 cattle and/or buffaloes.

Furthermore, all the large landowners in the sample are concentrated in the far left in the table, indicating that they do not sell milk at all regardless of the scale of their milk production.

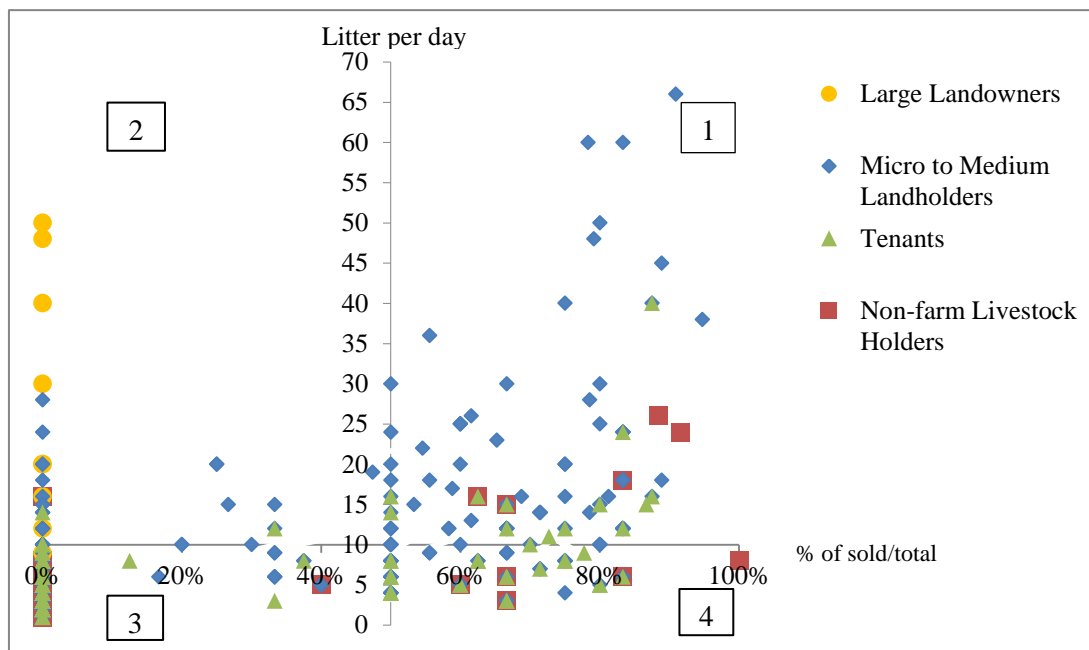


Figure 9-8-9 Relation between Scale of Milk Production and Propensity to Sell

Source: The First Household Survey

Table 9-8-13 depicts the distribution of each landholding group of households in terms of total milk production and the percentage of milk sold to total production. One can see that most of the tenants and non-farm households are in the category of producing less than 10 liters a day. Also, the ratio of households who produce more than 10 liters a day tends to be larger for larger landowners.

Table 9-8-13 Distribution of Households in Total Milk Production and Propensity to Sell

	0-50 %	51-100%	Total
More than 10 liter a day	43	81	124
Large Landowner	10		10
Medium Landowner	6	12	18
Small Landowner	16	28	44
Marginal Landowner	7	27	34
Tenant	4	11	15
Non Farm Livestock		3	3
Less than 10 liter a day	220	56	276
Large Landowner	1		1
Medium Landowner	7	3	10
Small Landowner	67	11	78
Marginal Landowner	68	17	85
Tenant	70	19	89
Non Farm Livestock	7	6	13
Total	263	137	400

Source: The First Household Survey

Figure 9-8-10 shows the percentage of households by propensity to sell their milk for each range of the scale of milk production. From the figure, it is clear that most of those who produce less than 5 liters a day do not sell their milk at all, suggesting that this amount is an indicator for those who have surplus milk for sale. This is consistent to the finding of the field survey by the Project Team; for the family of 8-9 members, average consumption of milk is 5 liters a day. Furthermore, with regard to those who produce more than 10 liters a day, which is equivalent to medium and large livestock holders, more than half of them sell 50% or more of total produced milk.

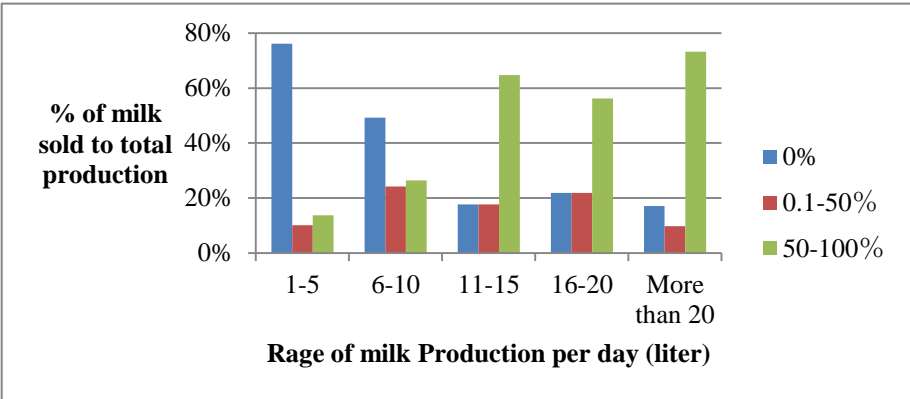


Figure 9-8-10 Percentage of households by propensity to sell for scale of milk production
 Source: The First Household Survey

The amount of milk consumed at home and the propensity to sell may be affected by the number of family members. However, in case for the sample households of this survey, their propensities to sell are not influenced by the number of family members. Table 9-8-14 shows the average number of family member for each category of milk production and ratio of milk sold to total production. One cannot find a clear relation between the number of family members and the propensity to sell milk. The findings above appear to be relevant regardless of the number of family members as long as it is within the range of around 8 to 15, as indicated in the table.

Table 9-8-14 Number of Family Member for Each Category of Milk Production and Propensity to Sell

Milk production a day (Range, liter)	% of milk sold		Total
	0-50 %	51-100%	
1-5	10.3	8.4	9.1
6-10	12.8	13.3	11.3
11-15	15.3	12.7	13.1
16-20	12.9	14.0	12.2
More than 20	15.0	13.8	13.6

Source: The First Household Survey

(11) Production of Beef

As half of the new born cattle or buffaloes are male, all the cattle/buffalo holding farmers can earn incomes from the natural fattening of male cattle/buffalo. All the cattle/buffalo holders can be the targets for the increase in beef production and the improvement of income level by fattening male cattle/buffalo.

It is, however, important to note that fattening male cattle/buffalo is not thought to be an object of the production activity or business for many of the farmers. Rather, they are often considered as liquid assets when the farmers need cash. Accordingly, male calves are often sold for meat before maturity, and this appears to be a loss of livestock resources. Based on the field survey in Badin by the Project Team, the average selling price of 3-4 month old buffalo calf who weigh around 60kg is Rs.5,000 to 6,000, whereas that for 1 year old male who weigh around 180kg is Rs.12,000 to 15,000. Also, the results of the second household survey show the costs of fodder for calf under 1 year of age is about Rs.2,000 at most. Thus, fattening male cattle/buffalo at least until 1 year old appears to be good investment, and selling young calves immediately after birth appear to be a loss of an opportunity to generate income.

One important characteristics of fattening male cattle/buffalo is, however, relatively low turnover ratio. That, the period of investment until earning cash by selling it, is quite long, whereas, for the dairy production, farmers can earn cash day by day within the milking period of cattle/buffalo. This makes it hard for resource-less farmers to fat male cattle/buffalo for a long time, even if its rate of return is high.

Thus, the problem of fattening male cattle/buffalo with low turnover ratio involves its difficulty of cash flow management during the period of production. For those who have large amount of income from various sources, it would be relatively easy to make their ends during the fattening period. It is, however, difficult for those who have limited amount of income or assets to manage cash flow of the household during the fattening period. According to Table 9-8-2 above, these households who have difficulty in cash flow management corresponds to marginal landowners, tenants, and non-farm households, who have small or no agricultural income.

Table 9-8-15 Household Cash Flow in Livestock Sector

	# of Sample HH	Annual Milk Selling Revenue minus Purchased Feed (Rs.)	Milk Production a day (liter)	Milk Sold a day (liter)	% of milk sold
Medium Landowner	1	-75,000	19.5	0.0	0%
Small Landowner	5	-17,577	6.5	0.9	14%
Marginal Landowner	4	-5,564	2.3	0.3	14%
Tenant	13	11,721	4.1	1.9	46%
Non Farm Livestock	22	11,186	4.7	2.6	56%
Total	45	4,741	5	2	41%

Source: The Second Household Survey

Table 9-8-15 depicts the status of household cash flow in livestock sector by landholding status. The data of table are drawn from the dairy farmers in M.S.S villages in Badin. The third column of the table shows the annual cash revenue from selling milk minus the amount of purchased feed for livestock. As the feed constitute most of the variable costs for livestock rearing, this figure indicates the annual cash balance

for the dairy farmers. One can see that this figure is negative for landowners and the amount of loss is bigger for larger landowners whereas that for landless is positive. This indicates that larger landowners can endure the condition of negative cash flow in the livestock activities while they consume at home or give out to others most of milk produced, probably because they have enough cash income from cropping. Among the categories of landowners, however, marginal landowners appear not to have much capacity to do this, as their cash balances are slightly less than zero. On the other hand, these figures for landless households are positive, indicating that these household appear to have to manage the costs of purchasing feed within the amount of their cash income of milk, as they cannot substitute the negative cash balance by other income sources. The table also shows that they tend to sell large portion of milk they produced and thus the amount of self-consumed at home are lower. They appear to be required to sell their milk to balance the cash flow of their livestock activities.

As indicated above, marginal landowners and landless households appear to have difficulty in conducting planned investment in fattening male cattle/buffalo as they may be required to sell their livestock in the middle of fattening period when they face the urgent need of cash.

9.9 Livestock Sharing

(1) Types of Livestock Sharing Agreement

Livestock sharing is a form of sharefarming applied to the livestock sector, where share owner entrusts his livestock to the sharefarmer, and the sharefarmer gets some profit in return by taking care of the livestock. Livestock sharing can be widely seen in rural Sindh, and there are various types of sharing agreements.

Table 9-9-1 depicts the list of the types of livestock sharing agreements in the sample villages of the second household survey. Each type of sharing agreement varies in the sharing rate, however, in many cases, the sharefarmer can claim one-fourth or the half of the ownership of the animal he rears and the revenue generated from it. Also, the sharefarmer can get the share of ownership for the offspring of the animals he rears. Milk is usually given to the sharefarmer. As female animals generate more revenue (milk) and assets (offspring), the farmers generally rear female animals for sharing based on the research of the second household survey.

Contract period is usually set for sharing, and the sharefarmer is obliged to take care of the animals during the period. In most cases, costs of the day-to-day care are born by the sharefarmer, whereas medical care costs are paid by the owner.

Table 9-9-1 List of Different Types of Sharing Agreement

Name of sharing (local name)	Share of sharefarmer	Period	Cost (day-to-day care)	Cost (medical care)	Default
1/4 (Paguoon)	- 1/4 of the livestock reared by sharefarmer or 1/4 of revenue after the reared livestock and calves are sold - 100% of milk	5 years, can be extend or shortened, if the both sides agree	100% born by sharefarmer	An owner pays if his sharer cannot bear it.	If a sharefarmer cannot fulfill his responsibility, he will lose his share.

Name of sharing (local name)	Share of sharefarmer	Period	Cost (day-to-day care)	Cost (medical care)	Default
1/2 (Aaadhyaro)	- 1/4 of the livestock reared by sharefarmer or specified amount of money set in agreement. - Calves are equally divided. - If owner is willing to get milk, then his sharer can give milk to owner.	5 years, may be extend to 7 years if the both sides agree	100% born by sharefarmer	An owner pays if his sharer cannot bear it.	If a sharefarmer cannot fulfill his responsibility, he will lose his share.
1/2 of profit (Adhyaro)	- 1/2 of revenue after the reared livestock and calves sold - 100% of milk	5 years	100% born by sharefarmer	If pregnant cow is given to sharer then owner is supposed to bear the expenses	If a sharefarmer cannot fulfill his responsibility, he will lose his share.
1/4 of livestock (Paguoon)	- 1/4 of reared livestock's value as of expiry date of contract - 1/4 of female calves - 1/2 of male calves - 100% of milk	5 years	100% born by owner	100% born by owner	If a sharefarmer cannot fulfill his responsibility, he will lose his share.
1/2 of livestock (Neemiatoo)	- 1/2 of the livestock reared by sharefarmer, if a sharefarmer can pay specified amount of money to owner by selling male calves - 100% of milk	5 years	100% born by sharefarmer	100% born by sharefarmer	If a sharefarmer cannot fulfill his responsibility, he will lose his share.
Milking Purpose (Doojho)	- Sharefarmer shares livestock for milking purpose. - 100 % of milk	Time period is not fixed; it depends upon the lactation period of animal.	100% born by sharefarmer	100% born by sharefarmer	Sharefarmer is supposed to return animal to owner when animal becomes dry.

(2) Nature of the Livestock Sharing Agreement

As livestock sharing involves entrusting of assets (livestock), the owner is doomed to face the risk of the nonfulfillment of contract; for example, a sharefarmer may not take care of the livestock properly or he may sell the animals and claim that it was dead. There are also the monitoring costs incurred by the owner to make sure that the animal is reared properly. Indeed, one prominent feature of the livestock sharing agreement is the involvement of third party in the agreement of livestock sharing for endorsing the agreement and arbitration. Having a third party in the agreement can be seen as a way to make sure the contract is made, and also reduce the risk of its nonfulfillment.

Another way to reduce these risks and costs is to share their livestock with the people who are socially close or who have the credit of abiding by the agreement. In the filed survey, it was found that a key criterion for livestock owners to choose sharefarmer is honesty, indicating that the owner tends to share their livestock with those who have credibility. However, the practice of livestock sharing is not usually

confined within those who are socially close. There are many cases of sharing livestock with the people in other Biradari groups or in other villages. The relationship between those who share their livestock and sharefarmers is discussed more in detail in 9.10.

(3) State of Livestock Sharing

The rest of this section discusses the actual state of livestock sharing which are found in the second household survey.

(a) General View

Figure 9-9-1 is a graphical representation of the distribution of households by livestock sharing status in the sample villages. In Muhammad Soomar Samejo (M.S.S) village in Badin (irrigated area), there are 8 households who share their animals with sharefarmers (owner (share)), out of 96 households who own livestock²⁰. There are 15 households who own livestock and are also livestock sharefarmers (owner-cum-sharefarmer). There are 3 households who are livestock sharefarmers and do not own livestock (pure sharefarmer). In total, 26 households are involved in livestock sharing among the 126 sample households in M.S.S.

In Pabuhar village in Tharparker (non-irrigated area), all the households own livestock. As shown in Figure 9-9-2, 13 households of them are owners who share their livestock with sharefarmers (owner-cum-sharing), and 7 households are livestock sharefarmers while they also own their livestock (owner-cum-sharefarmer). In total, 20 households are engaged in the livestock sharing among the 124 sample households in this village.

²⁰ The definition of those who own livestock here is to own any of cattle, buffalo, sheep, goat, or camel. Note that this definition is different from the one of the Census of Agriculture uses.

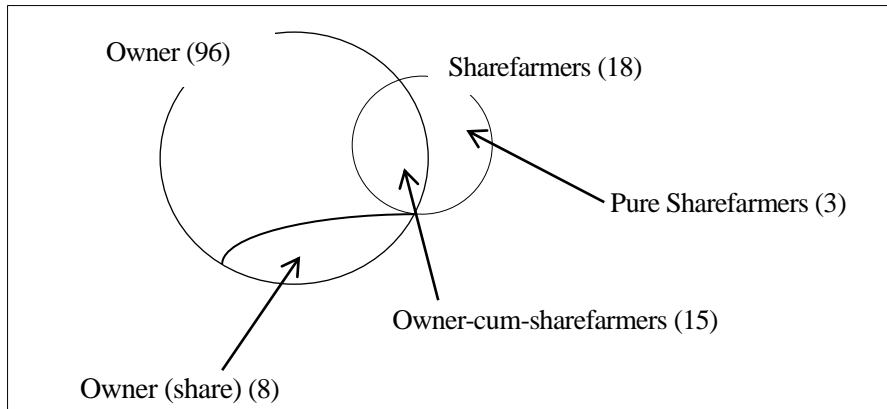


Figure 9-9-1 Number of Households Engage in Livestock Sharing (M.S.S)

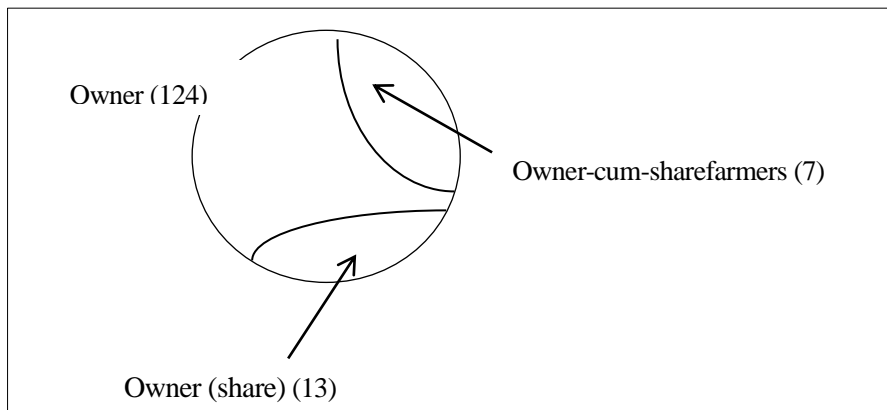


Figure 9-9-2 Number of Households Engage in Livestock Sharing (Pabuhar)

(b) Profile of Those Who are Engaged in Livestock Sharing

Table 9-9-2 depicts the average number of livestock owned and the number of livestock reared by sharing status. The number of livestock reared is calculated by the number of livestock owned minus shared livestock for share owner, and the number of livestock owned plus shared livestock for sharefarmer. On the right hand side of table, the columns of AU shows the animal units of owned and reared livestock as a measure of the size of total livestock owned and reared. The right end column shows the animal unit of livestock owned minus animal unit of livestock reared. It shows the net size of livestock shared in to the households, and the negative number indicates that the households share their livestock out to other households on the net.

One can see that the animal unit of livestock owned by owner (share) is much bigger than owner-cum-sharefarmer, and pure sharefarmer are smaller than other groups. Thus, the number of livestock owned appears to be a factor for practicing livestock sharing where those who entrust their livestock tend to be large scale livestock owner and sharefarmers tend to be small scale livestock owner.

Table 9-9-2 Average Number of Livestock Owned and Reared by Sharing Status

	# of Sample HH	Number of Livestock Owned					Number of Livestock Reared					AU		AU Reared-AU Owned
		Cattle	Buffalo	Sheep	Goat	Camel	Cattle	Buffalo	Sheep	Goat	Camel	Owned	Reared	
M.S.S	126	0.6	2.7	0.4	1.2	0.2	0.7	2.7	0.4	1.2	0.5	3.5	4.0	
Owner (share)	8	1.3	5.4	0.0	2.4	1.6	0.8	2.3	0.0	0.9	1.6	8.4	4.7	-3.7
Owner (self-rearing only)	73	0.8	3.6	0.6	1.4	0.1	0.8	3.6	0.6	1.4	0.1	4.5	4.5	0.0
Owner-cum-sharefarmer	15	0.6	2.3	0.3	2.1	0.3	1.1	3.6	0.8	2.4	1.6	3.3	6.5	3.3
Pure Sharefarmer	3	0.0	0.0	0.0	0.0	0.0	0.7	2.7	0.0	0.0	7.0	0.0	10.9	10.9
Other	27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pabuhar	124	2.8	0.3	3.7	16.7	0.9	2.5	0.2	2.9	14.1	0.5	5.6	4.5	
Owner (share)	13	12.7	2.2	11.2	32.9	3.2	11.0	1.3	3.3	10.6	0.8	20.3	12.4	-7.8
Owner (self-rearing only)	104	1.7	0.1	2.6	15.0	0.7	1.5	0.1	2.4	14.2	0.5	3.9	3.9	0.0
Owner-cum-sharefarmer	7	0.4	0.0	7.3	10.6	0.6	0.6	0.0	9.4	19.6	0.6	2.8	4.0	1.2
Total	250	1.7	1.5	2.0	8.9	0.5	1.6	1.5	1.6	7.6	0.5	4.6	4.2	

Tables 9-9-3 and 9-9-4 show the distribution of households by sharing and landholding status for M.S.S and Pabuhar respectively²¹. One can see that those who own and share livestock tend to be extended to various landholding strata, and one cannot find the relation between landholding status and sharing (out) of their livestock. On the other hand, livestock sharefarmers tend to be concentrated on smaller landholding and landless households. As shown in Table 9-9-5, income from non-livestock activities tend to be smaller for those smaller landholding and landless households. This may indicate that the livestock sharing works as an income source particularly for the smaller landholding and landless households who have less opportunity for earning income from other means of production.

Table 9-9-3 Distribution of Households by Sharing Status (M.S.S)

M.S.S	Owner (share)	Owner (self-rearing only)	Owner-cum-sharefarmer	Pure Share-farmer	Other	Total
Medium Landowner	1	1				2
Small Landowner	1	14	2		1	18
Micro Landowner		11			2	13
Tenant	3	15	5	2	6	31
Non Farm Livestock holder	3	31	5			39
Non Farm Other		1	3	1	18	23
Total	8	73	15	3	27	126

Table 9-9-4 Distribution of Households by Sharing Status (Pabuhar)

Pabuhar	Owner (share)	Owner (self-rearing only)	Owner-cum-sharefarmer	Total
Large Landowner	2	1		3
Medium Landowner	3	6		9
Small Landowner	4	23	2	29
Micro Landowner	1	19	1	21
Tenant	3	55	4	62
Total	13	104	7	124

²¹ See the section.9.8 for the definition of the classification based on the landholding status.

Table 9-9-5 Annual Non- Livestock Income

	Annual Total Income Other Than Livestock (Rs.)
M.S.S	255,691
Medium Landowner	1,610,658
Small Landowner	531,021
Marginal Landowner	187,746
Tenant	199,216
Non Farm Livestock	157,876
Non Farm Other	202,774
Pabuhar	197,643
Large Landowner	803,235
Medium Landowner	319,622
Small Landowner	212,374
Marginal Landowner	179,381
Tenant	149,930
Total	226,899

Table 9-9-6 shows the average number of livestock owned and reared by landholding status. The right end column of the table shows the animal units of owned and reared livestock. In M.S.S, medium and small landowners as groups share out their livestock. On the other hand, landless households share them in. In Pabuhar, all the household groups share out their livestock because they might be engaged in livestock sharing with farmers in the other villages. However, the number of livestock shared out is larger for the landowners who own larger areas of land. Thus, livestock sharing tend to be practiced in the way to shift the livestock from upper to lower strata of rural society.

Table 9-9-6 Average Number of Livestock Owned and Reared by Landholding Status

	# of Sample HH	Number of Livestock Owned					Number of Livestock Reared					AU		AU Reared-AU Owned
		Cattle	Buffalo	Sheep	Goat	Camel	Cattle	Buffalo	Sheep	Goat	Camel	Owned	Reared	
M.S.S	126	0.6	2.7	0.4	1.2	0.2	0.7	2.7	0.4	1.2	0.5	3.5	4.0	
Medium Landowner	2	0.0	5.5	0.0	6.0	3.5	0.0	5.5	0.0	0.0	3.5	10.0	9.4	-0.6
Small Landowner	18	0.3	4.8	0.2	2.2	0.2	0.3	4.6	0.2	1.7	0.2	5.5	5.3	-0.2
Micro Landowner	13	0.5	1.6	0.0	1.0	0.0	0.5	1.6	0.0	1.0	0.0	2.1	2.1	0.0
Tenant	31	0.5	1.8	0.1	0.9	0.1	0.6	1.9	0.4	1.3	0.8	2.5	3.4	0.9
Non Farm Livestock	39	1.4	4.2	0.9	1.4	0.2	1.4	4.1	0.9	1.4	0.7	5.7	6.1	0.4
Non Farm Other	23	0.0	0.0	0.2	0.2	0.0	0.1	0.5	0.2	0.2	0.0	0.0	0.6	0.6
Pabuhar	124	2.8	0.3	3.7	16.7	0.9	2.5	0.2	2.9	14.1	0.5	5.6	4.5	
Large Landowner	3	16.0	6.3	57.0	100.7	7.3	12.7	2.7	25.0	60.7	3.3	43.0	25.0	-17.9
Medium Landowner	9	5.1	0.7	5.0	34.9	3.2	4.0	0.7	5.0	24.1	1.8	12.3	8.7	-3.6
Small Landowner	29	2.8	0.4	4.0	20.4	1.1	2.5	0.3	3.8	18.2	0.7	6.3	5.3	-1.0
Micro Landowner	21	2.1	0.0	1.5	12.1	0.8	2.0	0.0	1.7	11.9	0.4	3.9	3.4	-0.5
Tenant	62	2.0	0.0	1.6	9.7	0.2	1.9	0.0	1.5	9.3	0.2	3.0	2.8	-0.2
Total	250	1.7	1.5	2.0	8.9	0.5	1.6	1.5	1.6	7.6	0.5	4.6	4.2	

(c) Incomes from Livestock Sharing

Table 9-9-7 depicts the average annual total income and livestock income by sharing status. It shows that those who do not own livestock but share livestock (pure sharfarmer) are earning incomes from

their livestock activities.

Table 9-9-7 Total Income and Livestock Income by Sharing Status

	Annual Total Income (Rs.)	Annual Livestock Total Income
M.S.S	297,493	43,218
Owner (Share)	475,137	71,576
Owner (self-rearing only)	328,183	57,743
Owner-cum-sharefarmer	299,684	32,319
Pure Sharefarmer	309,672	57,578
Other	160,773	1
Pabuhar	262,687	78,064
Shareowner	596,415	297,026
Owner (self-rearing only)	220,263	54,143
Owner-cum-sharefarmer	156,654	26,821
Total	280,230	60,501

(4) Summary

It has been seen that, in Sindh, there is a sophisticated system of agreement and practice of livestock sharing, which are mutually beneficial to both the owners and the sharefarmers. For the owners who own large number of livestock and do not have enough labor and land resources for their livestock, it is a way to utilize their livestock asset while sparing their management tasks. For the sharefarmers who own no or small number of livestock, it is an alternative way to utilize their rearing skills on livestock and earn extra income. Also, livestock sharing gives opportunities to those who are not afford to purchase livestock. They could purchase livestock by the incomes earned from sharing or directly from sharing practice as some of the sharing agreement allow the ownership for a part of offspring of the shared animals. In the field survey, several livestock farmers who practiced livestock sharing in past stated that they did livestock sharing because they did not own livestock at the beginning or have sold out their livestock, but they do not do sharing now because they now own a certain number of their livestock.

Also, the results of the second household survey indicate that the scale of livestock sharing is not insignificant. Thus, it is important to look at not only who own livestock but also who actually take care of them. Failure to do so may lead to ignore the non-livestock holder but at the same time the livestock sharefarmers. It may also underestimate the importance of lower strata among the social groups in rural society for livestock activities since the lower strata tends to rear more animals than they own by sharing livestock.

9.10 Social Relationships among Stakeholders

In this section, main livestock related activities and stakeholders are described, and then relationships among the stakeholders are analyzed. The target areas for this analysis are the irrigated areas, non-irrigated areas, and cattle colonies. The analysis was made mainly based on the field survey and the second household survey. One village/colony was selected for the field survey from each area, Muhammad

Soomar Samejo village (M.S.S village) in Badin, Pabuhar village in Tharparkar, and Landhi cattle colony in Karachi respectively. M.S.S village and Pabuhar village were selected for the second household survey. For the analysis, the households are classified as mentioned in Table 9-8-1.

9.10.1 Livestock Related Activities and Stakeholders in the Irrigated and Non-irrigated Areas

(1) Trade of Milk

(a) Irrigated Area

As shown in Table 9-10-1, non-farm livestock holders are the predominant milk sellers in this village. Figure 9-10-1 indicates that surplus milk is basically sold within the same sub- Biradari group and neighborhood in the village. Consumers are mainly tenants who do not have sufficient milking animals.

Milk transaction between different Biradari groups is only occasionally seen where they reside in the neighborhood. The major two Biradari groups in the village, Sameja and Jatt, do not trade milk between them. They would rather buy milk from the town if marketable milk is not available within the same Biradari group.

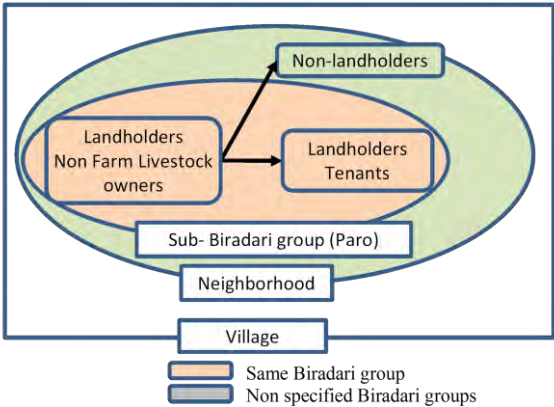


Figure 9-10-1 Flow of Milk Transaction in M.S.S Village

Table 9-10-1 Number and Percentage of Households selling Milk in M.S.S village

Categories of Households		Number of sample HH	% of sellers to total sample HH in each category	% of HH to total sellers
Landholder	Medium Landowner	0	0%	0%
	Small Landowner	7	39%	15%
	Micro Landowner	3	23%	6%
Non Landholder	Tenant	8	26%	17%
	Non Farm Livestock Holder	29	74%	60%
	Non Farm Other	1	4%	2%
Total		48	38%	100%

Source: The Second Household Survey

(b) Non-irrigated Area

Since all households in Pabuhar village have more or less animals, milk transaction within the village during the monsoon season is very low, it however becomes active during the dry season. As shown in Table 9-10-2, majority of milk sellers in the village are landholders. Figure 9-10-2 shows that landholders sell milk to mostly tenants in the same sub-Biradari group. If the milk supply within the same group is not sufficient, milk will be purchased either from landholders in other groups or shops in the nearest town, Mithi.

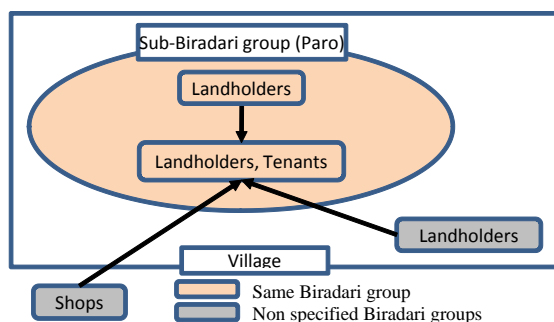


Figure 9-10-2 Flow of Milk Transaction in Pabuhar Village

Table 9-10-2 Number and Percentage of Households selling Milk in Pabuhar village

Categories of Households		Number of sample HH	% of sellers to total sample HH in each category	% of HH to total sellers
Landholder	Large Landowner	2	67%	9%
	Medium Landowner	5	56%	22%
	Small Landowner	9	31%	39%
	Micro Landowner	2	10%	9%
Non Landholder	Tenant	5	8%	22%
Total		23	19%	100%

Source: The Second Household Survey

(2) Trade of Live Animals

(a) Irrigated Area

Trading live animals is a popular activity in M.S.S village. Table 9-10-3 reveals that 42% of the sample households sold animals in the last year. As illustrated in Figure 9-10-3, buyers are the relatives of sellers and livestock traders from outside of the village. The traders are the most popular buyers since the traders buy animals whenever owners want to sell. By this way, the owners can save sales tax, time, and cost for traveling to livestock market.

People who purchase livestock are mostly landholders and non-farm livestock holders. They prefer to purchase milking animals mainly in the livestock market held in Golarch town since there are a variety of animals.

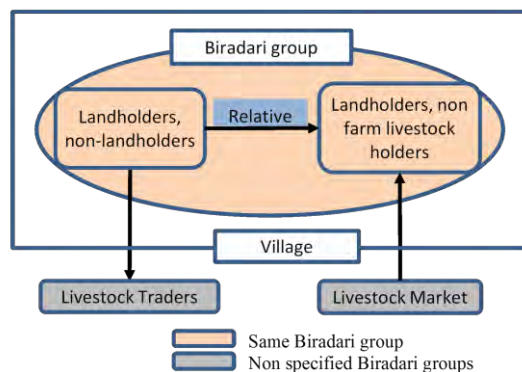


Figure 9-10-3 Flow of Live Animal Transaction in M.S.S Village

Table 9-10-3 Number and Percentage of Households selling Live Animals in M.S.S village

Categories of Households		Number of sample HH	% of sellers to total sample HH in each category	% of HH to total sellers
Landholder	Medium Landowner	2	100%	4%
	Small Landowner	9	50%	17%
	Micro Landowner	4	31%	8%
Non Landholder	Tenant	13	42%	25%
	Non Farm Livestock Holder	24	62%	45%
	Non Farm Other	1	4%	2%
Total		53	42%	100%

Source: The Second Household Survey

(b) Non-irrigated Area

Animal trading is very active in Pabuhar village. Table 9-10-4 indicates that both landholders and tenants sold animals in the last year, accounting for 73% of the total samples.

As depicted in Figure 9-10-4, livestock holders in the village trade their livestock with people outside and inside of the village. It is different from M.S.S village that trading animals among the villagers is the most favorable method since buyers prefer trust relationship in animal trading for fair dealings.

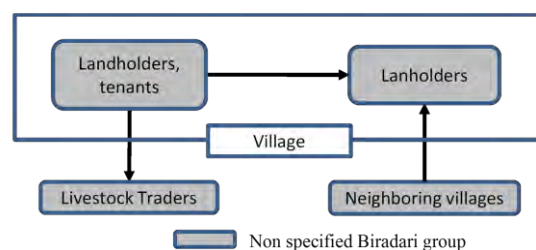


Figure 9-10-4 Flow of Live Animal Transaction in Pabuhar Village

Table 9-10-4 Number and Percentage of Households selling Live Animals in Pabuhar village

Categories of Households		Number of sample HH	% of sellers to total sample HH in each category	% of HH to total sellers
Landholder	Large Landowner	3	100%	3%
	Medium Landowner	9	100%	10%
	Small Landowner	26	90%	29%
	Micro Landowner	15	71%	17%
Non Landholder	Tenant	37	60%	41%
Total		90	73%	100%

Source: The Second Household Survey

(3) Livestock Sharing

(a) Irrigated Area

As illustrated in Figure 9-10-5, both landholders and non-landholders are sharing out their animals for livestock sharing in M.S.S village. Those owners share livestock with residents in the same village and neighboring villages. Livestock sharefarmers in the village are mostly non-landholders those

related to the owners.

Livestock sharing between M.S.S village and its neighboring villages is popularly observed. In this case, an owner and his sharefarmer are related by blood or trust. In the latter case, they neither belong to the same Biradari group nor have landholder-tenant relationship. It is often seen that their cropping fields are located side-by-side, so that the owner may observe how the sharefarmer work, and also the sharefarmer may know the owner's personality. Through this way, they have established a trust relationship.

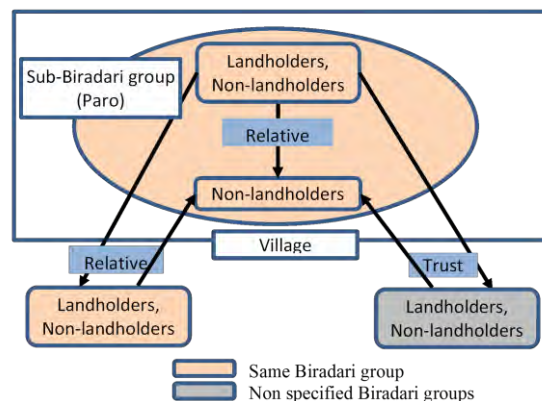


Figure 9-10-5 Flow of Animal in Livestock Sharing in M.S.S Village

(b) Non-irrigated Area

As depicted in Figure 9-10-6, both landholders and tenants act as owners of livestock sharing in Pabuhar village. The landholders in the village generally find their sharefarmers from the neighboring villages. The sharefarmers are likely to be owners' relatives, tenants, or people of other Biradari groups. On the contrary, livestock sharing within the same group is seen between tenants who are related by blood.

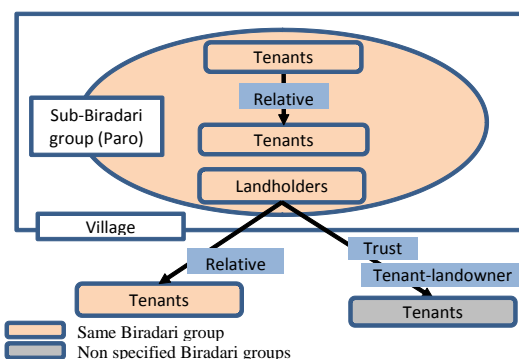


Figure 9-10-6 Flow of Animal in Livestock Sharing in Pabuhar Village

Table 9-10-5 shows that Biradari groups of the owners in livestock sharing are diverse, but the sharefarmers are found only in Menghwar in Pabuhar Village.

Table 9-10-5 Ratio of Sharing Livestock Households in Pabuhar Village by Biradari group

Biradari group	Share-owner		Sharefarmer				No. of sample HH
	No.	%	Owner-cum-sharefarmer (No.)	Pure Share-farmer (No.)	Total (No.)	Total (%)	
Thakur	5	38%	-	-	0	0%	19
Charan	2	15%	-	-	0	0%	4
Menghwar	5	38%	7	-	7	100%	92
Udheja	1	8%	-	-	0	0%	9
Total	13	100%	7	-	7	100%	124

Source: The Second Household Survey

9.10.2 Relationships between Different Social Strata in the Irrigated and Non-irrigated Areas

(1) Landownership

(a) Between Landholders

The relationship between landholders in livestock related activities is weak in the both villages. Almost all the landholders have their own livestock and only occasionally purchase milk from other landholders. Transaction of live animals among landholders may occur to some extent as shown in Figure 9-10-7. With regard to livestock sharing, it is not frequently practiced between landholders.



Figure 9-10-7 Relationship between Landholders

(b) Landholders and Non-landholders

Figure 9-10-8 indicates that the relationship between landholders and non-landholders can be seen in various activities in the two villages. Regarding milk supply, it is commonly observed that tenants purchase milk from landholders. Transaction of milk within the villages is convenient for both suppliers and consumers since they can save time and cost for traveling to towns for selling and buying milk. In addition, consumers can enjoy less expensive milk in the village.

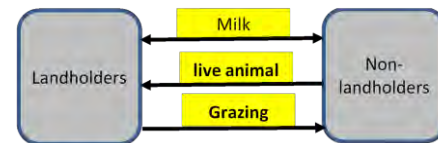


Figure 9-10-8 Relationship between Landholders and Non-landholders

In animal trading, landholders purchase animals occasionally from non-landholders in the same villages. It is more frequently seen in Pabuhar village than M.S.S village. Both buyers and sellers enjoy the same merits as the case of milk transaction within the village.

As for livestock sharing, landholders find their sharefarmers mostly outside the villages. As a result, the relationship between landholders and non-landholders within the same village are weak in livestock sharing.

(c) Between Non-landholders

The relationship between non-landholders is limited in the two villages, as shown in Figure 9-10-9. In milk transaction, non-landholders buy milk mainly from landholders and partly from other non-landholders.



Figure 9-10-9 Relationship between Non-landholders

Livestock trading is seldom seen between tenants. With regard to livestock sharing, the sharing non-landholders

tend to choose other non-landholders as sharefarmers. However, livestock sharing within the village is not popularly practiced, and therefore the relationship between non-landholders is limited.

(2) Biradari group

(a) Within the Same Biradari group

As depicted in Figure 9-10-10, the relationship between people in the same Biradari group is seen in various

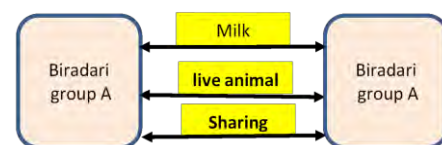


Figure 9-10-10 Relationship between households in the same Biradari group

forms and tight in the two villages. Milk is primarily marketed to neighbors, i.e. households in the same sub-Biradari group. It is partly owing to the past custom that an owner used to distribute surplus milk to neighboring relatives for free. When animals are traded within the village, M.S.S villagers prefer trading within the same group. In livestock sharing, when it is practiced between the people in the same village, they are often related each other and belong to the same group.

Households in the same Biradari group in the same village stay closely, know well and often related each other. It leads to fair dealing and therefore can reduce transaction cost, thus trading within the same group is reasonable choice for both seller and buyer sides.

(b) Between Different Biradari groups

Figure 9-10-11 reveals that the relationship between people in different Biradari groups is not much close in the two villages. In milk transaction, as long as surplus milk and demand exist, farmers sell milk to anybody regardless of his group. In Pabuhar village, tenants of Meghwar group commonly purchase milk from a dairy farmer of Thakur group. However, people of Thakur group do not buy milk from Meghwar group, but rather purchase from shops in Mithi town. This is due to disparity of social strata between the two groups.

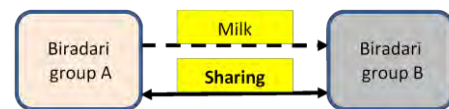


Figure 9-10-11 Relationship between households in different Biradari groups

Livestock sharing between different Biradari groups is as popular as sharing within the same group. This might be attributed to that the selection of sharefarmers is primarily based on their skills, knowledge, and attitude to work. This is reasonable, because livestock is precious asset for owners, and it is quite important for the owners to make sure that his sharefarmer maintains animals in good condition for 5 years²². Livestock sharing is supposed to be a mutually beneficial system, but a few unfair livestock sharing agreements are seen in Pabuhar village between different Biradari groups. This seems to be also due to social disparity of the groups.

9.10.3 Livestock Related Activities and Stakeholders in the Cattle Colony

The stakeholders for the dairy farms in Landhi cattle colony are shown in Figure 9-10-12. The stakeholder here means those with whom the dairy farms have business transactions. Those stakeholders are delineated below with reference to this figure.

²² 5 years is the common for livestock sharing in the two villages.

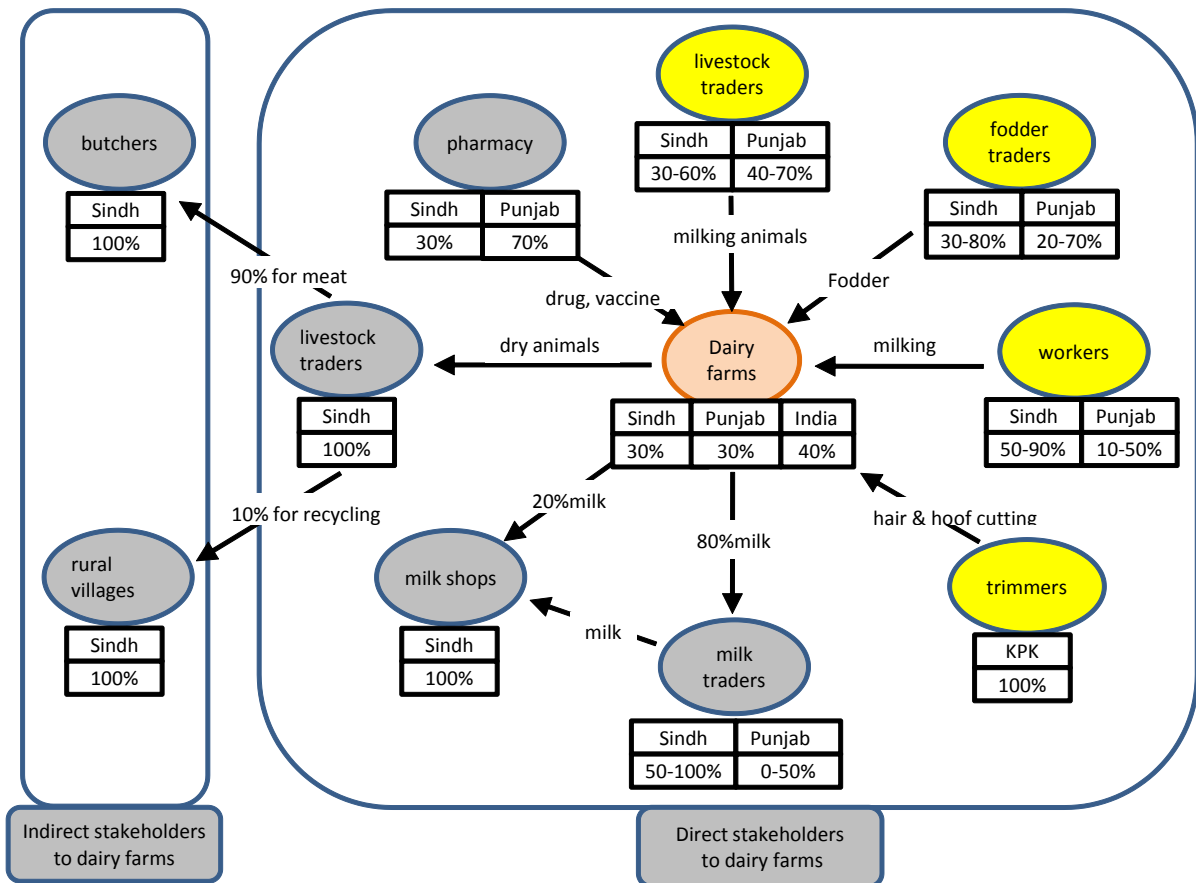


Figure 9-10-12 Stakeholders of Dairy Farms in Landhi Cattle Colony

(1) Stakeholders

(a) Farm Owners

In 1962, Landhi cattle colony was established at 35km away from Karachi to evacuate daily farms from urban area. Prior to its establishment, people originated from India²³ were operating their dairy farms in Karachi, and consequently the cattle colony was occupied by these farmers. Later on, Punjabi²⁴ came to this cattle colony attracted by the huge demand of milk. Recently, Sindhi²⁵ owners have been entering to this colony. As a result, the proportion of owners by their origin is approximately 40% (India), 30% (Punjab), and 30% (Sindh). According to the Punjabi owners, business circumstances in Punjab are as favorable as Karachi now. It could therefore be assumed that the portion of Punjabi owners will be decreased and replaced by Sindhi owners in future.

(b) Livestock Traders

As the dairy farm owners in the cattle colony seldom have their land for rearing livestock in the rural areas, they have to purchase milking animals from livestock traders. Owners originated from India and Punjab have 70% of their transactions with Punjabi traders who deal with Niri and Ravi buffalo breeds, and

²³ They are Gujar, Gadi, Qureshi, Nagori groups

²⁴ They are Nagori, Gujar, Malik, Qureshi, Gabol, Mehar, Jatoi, Labana, Sheikh groups

²⁵ They are Rind, Seethar Mehar, Jatoi, Sheikh, Tanwari, Kalhora, Leghari, Chansia, Jat, Soomra, Mehsar, Indarr groups

30% with Sindhi traders who deal with Kundi buffalo breed. On the contrary, Sindhi owners are engaged in 60% of business with Sindhi traders and 40% with Punjabi traders. However, most of the owners admit that Niri, Ravi, and Kundi buffalo breeds have both pros and cons, and therefore one does not have clear advantage to the others. All the owners also remarked that the supply of quality Kundi buffaloes does not meet their demand, and consequently they have to rely more or less on Punjabi traders to secure the necessary number of buffaloes.

(c) Fodder Shops

The farms in the colony rely fully on purchased feed. Fodder traders are also comprised of Sindhi and Punjabi. Owners from India and Punjab purchase 70% of fodder from Punjabi traders and 30% from Sindhi traders, while Sindhi owners buy 80% of fodder from Sindhi traders. Insufficient fodder supply within Sindh is also mentioned by many owners.

(d) Workers

Workers hired in the dairy farms in the colony are composed of Sindhi and Punjabi, but their working styles are different. Sindhi workers work throughout the year at the same farm having 2 to 3 day holiday per month, while Punjabi workers work for 10 months a year and rest for the remaining 2 months in Punjab. During the two months, their jobs in the farm are often taken by other workers. As a result, Punjabi workers change the working places almost every year.

Owners originated from India and Punjab hire Sindhi and Punjabi worker around 50% each, but Sindhi owners hire Sindhi at about 90% of total workers. In general workers seek better terms and conditions, and owners want reliable workers. Basically, the same origin is not the determining factor for the both sides to choose workers or farms, but workers expressed that they would rather choose owners originated from the same province if the work conditions are the same. Common language and custom will facilitate better understanding between owners and workers, and it would lead to better performances of workers and better working conditions offered by owners.

The owners mentioned that it is difficult to maintain the necessary number of appropriate workers. On the other hand, workers expressed that the earning from this job is relatively better than that from other labor work, and it is easy to take this job because no skills and knowledge are needed. Nevertheless, workers in general do not like the job at the colony since it is generally looked down. Half of the workers mention that they would not recommend their children to take this job.

(e) Dry Animal Traders

Once the lactation period is over, milking animals are immediately sold to 2 kinds of Sindhi animal traders. One is those who purchase dry animals for meat production. They slaughter dry animals in Karachi and wholesale the meat to the retailers. Another kind is those who trade dry animals for recycling. They rear and mate the dry animals in the rural areas and then resale to the dairy farms once the next lactation period starts. Portion of the recycled dry animals is estimated at about 10% at maximum. This is simply resulted from that the price of dry animals for slaughtering is higher than that for recycling.

Traders who buy dry animals carefully check and evaluate the conditions and milk yield of animals before they purchase animals. If a price is better for animals to be recycled than slaughtered, more animals are kept alive. It is important for those traders to keep supplying high performing milking animals to markets so that his customers may trust him. At this moment, there is no official entity which certifies the ability of an individual animal, and therefore credibility is crucial for the recycling traders.

(2) Relationships

(a) Between Owners and Stakeholders

As depicted in Figure 9-10-12, the dairy farms in the cattle colony operate their business with a number of stakeholders. According to the owners, the same Biradari group, blood relationship, etc. are not much concerned, but price, quality, and honesty are the key factors for selecting stakeholders. As they are profit oriented commercial dairy farms, their operations must be carried out efficiently. In fact, regardless of their origin, all owners have business relations with both Sindhi and Punjabi stakeholders.

(b) Among Owners and Among Workers

In contrast to the above, the social connection is clearly seen among owners as well as among workers. In general, new entrants to this business are relatives or friends of the existing dairy farm owners since the newcomers can easily utilize the network of reliable stakeholders established by the owners. Since there is high demand on milk and milk prices are fixed, there is no severe competition among the dairy farms. Therefore, the existing farm owners encourage their friends or relatives to join this business. These owners support each other in a way that if one cannot fulfill the quota of milk for his milk middleman, he can ask the closely related owners to support for the deficit of milk.

As for the workers, they prefer working with people from the same village or the same Biradari group. Therefore, when a worker finds a job vacancy in his farm, he recommends those socially related people to the post. This is beneficial also for owners since this assists them for the recruitment of new workers and facilitates the new workers to accustom themselves to work.