RESEARCH ARTICLE

Women's Ownership of Livestock Assets: Evidence from Karnataka

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Abstract: Livestock contributes significantly to India's agricultural sector, and rural women supply the bulk of labour to the household livestock economy. There is, however, scarce information on women's ownership of livestock assets. This paper examines problems of collecting data on ownership of livestock assets. It studies patterns of livestock ownership by gender, using data from the Karnataka Household Asset Survey (KHAS) 2010–11 and primary data collected from two villages of Karnataka in 2020. Women owned animals of lower value than animals owned by men. Women owned animals that were raised in the homestead and whose care could be interspersed with routine household work. Animals owned by men were generally grazed outside the compound and brought higher economic returns to the household than livestock owned by women.

Keywords: Livestock, women, ownership, assets, Karnataka, India.

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Introduction

Livestock is a fast-growing sector of the rural Indian economy (Birthal and Negi 2012; Kaur and Singla 2018). The share of livestock in gross value added of the agricultural and allied sectors rose from 19 per cent in 1980–81 to 29 per cent in 2018–19 (Birthal and Negi 2012; National Accounts Statistics [NAS] 2020). India is a leading producer of milk in the world. Of the 843 million tonnes of milk produced globally in 2018, India produced 187 million tonnes.

Women dominate the labour force in the livestock sector of India (Government of India [GOI] 2013; Swaminathan and Usami 2016; Institute of Rural Management Anand

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[IRMA] 2019).[1] Official statistics indicate that 12 million rural women engaged in livestock rearing in 2012 (National Sample Survey Office [NSSO] 2014). Scholars have argued that, owing to conceptual and data errors, official numbers underestimate the part played by women in economic activities undertaken in the homestead, particularly livestock rearing (Swaminathan and Usami 2016; Usami *et al.* 2020). Using an augmented definition of work participation, 50 million women or half of the rural female workforce were found to be engaged in livestock rearing in 2012 (Vijayamba 2020).

There are no official data on women's ownership of livestock or on women's participation in decisions about livestock raising. Women face constraints in making decisions about animals (Govil and Rana 2017). A consequence of the lack of data on ownership of assets and decision-making is that it is difficult to formulate gender-sensitive livestock policy (GOI 2013; GOI 2022).[2]

This paper discusses, first, the conceptual and data issues involved in collecting data on ownership of livestock assets by gender. Secondly, it explores data on patterns of livestock ownership by men and women. Thirdly, it examines factors that influence women's ownership of livestock assets.

Review of Literature

Data and Conceptual Issues

Collecting data on the ownership of animals disaggregated by gender is a complex and challenging task (Oboler 1996; Doss *et al.* 2008; Doss *et al.* 2011; Swaminathan *et al.* 2012; Hillesland *et al.* 2021). First, unlike land, there is no documentation of transaction of livestock resources, so livestock holdings rarely have records.[3] Secondly, in a rural household, more than one person may raise animals, and assigning ownership rights to specific persons can be difficult. Most commonly, when livestock are owned by a family, it implies owned by all members of the household.

In a study in Tanzania by Galie *et al.* (2015), multiple understandings of ownership were observed depending on the benefits from livestock, the way it was sourced, decision-making, care of livestock, knowledge of resources, full authority over

[1] National Livestock Policy, 2013 (Government of India [GOI] 2013) mentioned that around 70 per cent of the labour contribution to the livestock sector comes from women.

[2] National Livestock Policy, 2013 does not discuss ownership of livestock assets (GOI 2013).

[3] Records exist only in government-funded schemes when an animal is registered in the beneficiary's name, usually the woman of the household. Local resource persons registered milch animals in the name of women when they used a laptop to record data in the Ration Balance Program (RBP) (IRMA 2019). In a scheme titled "Free Distribution of Milch Cows to the Poor Family in Rural Areas," the government of Tamil Nadu distributed milch cows to women in those households which did not have cows/buffaloes and did not own land more than an acre in 2015–16 (Tamil Nadu Government Portal 2016). In a scheme on the "Distribution of Poultry by Karnataka Cooperative Poultry Federation," 20 local poultry will be given to one woman farmer in 2024–25 (Government of Karnataka [GOK] 2024).

disposal of livestock, carrying the responsibility, and norms of ownership that favoured men. Oboler (1996), in a study of Kenya, found that a man claimed to be the owner of an animal because he inherited the animal from his father or gained it through his efforts or wage labour. A woman claimed ownership of the animal if gifted in marriage by her maternal family or if gained as bride wealth in a daughter's marriage (Basu *et al.* 2019). This was not so in Tanzania, where a married woman signed the ownership contract or paid for a cow, but the animal belonged to her husband, and she could not take the animal with her even if she got a divorce. Among the Nuer people of South Sudan, women grazed cattle and goats but could not own them. In Somalia, the ownership of camels was clan-based, and it was impossible to sell them without the clan's permission (Köhler-Rollefson 2012). But, in Oboler (1996), a man who owned an animal could not sell it without asking his wife.

These studies suggest that the informal nature of livestock ownership (because of a lack of records) makes the question of ownership ambiguous. Often, local factors determine the answer to the question of ownership (Oboler 1996; Galie *et al.* 2015; Basu *et al.* 2019).

There is also a distinction to be made between ownership and the exercise of rights. In their study in Uganda, Hillesland *et al.* (2021) claimed that "livestock ownership" does not always translate into rights and exercising rights does not mean ownership. They found similar responses from men and women on who held different types of animals but varied answers on livestock management, consumption, and market rights. Husbands who claimed cattle ownership were more likely to be managers than wives who claimed cattle ownership.

Reporting of livestock ownership is also sensitive to the respondent. In a study in Uganda, different approaches to respondent selection and questionnaire design for individual-level measurement of assets were used (Kilic and Moylan 2016). When asked individually, women identified themselves alone or with others as owners of livestock assets with a higher probability rate than when the most knowledgeable person in a household or the principal couple of a household was asked the same question.

Patterns of Ownership

Gender-disaggregated data on livestock ownership are rarely collected. Out of the 72 Living Standard Measurement Surveys (LSMS) conducted (80 surveys in 72 countries), only four countries have collected data on individual ownership of animals (Doss *et al.* 2008). Nicaragua collected information on gender-disaggregated ownership of assets in its LSMS survey of 2001. Mexico (2002) and Ghana (2005–06, 1998–99) collected individual data on livestock management but failed to ask about the ownership of animals. The Afghanistan (2007) survey asked about individual decisions to sell animals but not ownership.

In Nicaragua, the nationally representative LSMS of 2001 showed that in most households, cattle and work animals were owned by men and women owned poultry and pigs (Deere *et al.* 2012). The study of the household distribution of cattle found that around 72 per cent were owned by men, 13 per cent by women, and the remaining were owned by families, whereas in the case of poultry, 63 per cent were owned by women, 23 per cent by men, and the remaining by families.

A review of smaller surveys conducted between 2000 and 2010 revealed that men owned large ruminants and women owned small ruminants in Kenya, Uganda, and other parts of Africa (Köhler-Rollefson 2012; Food and Agriculture Organization [FAO] 2013). The term large ruminants broadly refers to cattle and buffaloes, and small ruminants include sheep and goats. A study by Njuki and Mburu (2013) in Tanzania, Kenya, and Mozambique found that women owned chicken in 33 per cent of households and goats in 32 per cent of households. The average number of animals owned by women was less than that of men. Basu *et al.* (2019) found that women did not own cattle because they could not carry on transactions in the market and did not have access to land in Kenya and Uganda. In Valdivia (2001) and Dumas *et al.* (2018), women reported that they owned small ruminants and had decision-making authority over them.

Ndungu (2014) found that women in Kenya who participated in formal milk markets held cattle. According to Lily (1987), in Bangladesh, along with small ruminants, cows were primarily held by women. In pastoral areas of Ethiopia, women purchased bullocks (Kristjanson *et al.* 2010).

There was a distinction between men and women's ownership in terms of the value of the animals. In Kenya, the value of cattle held by women was not as high as of the cattle held by men or held jointly (Ndungu 2014). Men owned animals that reaped profits. In a study in Ethiopia by Kinati and Mulema (2019), men and women jointly owned animals. Men became the owners and controlled their sales when income from livestock rearing became large.

A few studies have examined ownership patterns of livestock in male- and female-headed households and found that women in female-headed households owned fewer and smaller animals than women in male-headed households (Machina and Lubungu 2018; Kristjanson *et al.* 2010; East Africa Dairy Development Project [EADD] 2009). In Taruvinga *et al.* (2022), male-headed households owned cattle and sheep and cultured species such as goats compared to female-headed households that owned more chicken in the Eastern Cape Province of South Africa. One possible explanation could be better access to resources such as land area, water, labour, and financial services for male-headed households (Debela 2017). On the other hand, Ransom *et al.* (2017) found no difference between the livestock owned by male and female household heads in Uganda.

There are very few studies of women's ownership of livestock in India. In 2010–11, an independent study, Karnataka Household Asset Survey (KHAS), conducted by the Indian Institute of Management Bangalore (IIMB), collected gender-disaggregated information on assets from around 4110 households. The study found that men owned high-value assets such as agricultural land and real estate. Low value assets including livestock were generally owned by "families." In the case of consumer durables such as vehicles and cell phones, ownership was predominantly by men. Only in the case of gold jewellery were women more likely to be reported as owners (Swaminathan *et al.* 2012).

IRMA (2019) collected data on ownership of milch animals from men and women to study women's empowerment in dairy households in six States (including Karnataka) in India. The published report does not give information on livestock assets by gender. Ravula *et al.* (2023) collected data from rural women on ownership of productive land, livestock, and dwellings in Andhra Pradesh and Maharashtra. They found that women in drought-prone areas had higher ownership of assets and participated more in decision-making than those in irrigated regions.

We thus know very little about women's ownership of livestock.

Data and Method

The main official source of data on livestock holdings in India is the Land and Livestock Holdings Survey (LLH) conducted every 10 years by the National Statistical Office (NSO): the most recent being the 77th round conducted in 2019. In these surveys, a household's ownership of livestock and poultry on the date of the survey was recorded but information was not collected on "who" owns the animals.

Another source is the All India Debt and Investment Survey (AIDS), also conducted every 10 years. Here, quantitative information on the incidence of indebtedness and the stock of assets, including livestock holdings at the household level, are collected. In the 77th round, ownership of land for each household member was recorded, allowing the estimation of gender-disaggregated patterns.[4] Data on livestock holdings unfortunately continues to be collected only at the household level.

KHAS was part of a multi-city project titled "In Her Name: Measuring the Gender Asset Gap in Ecuador, Ghana, and India." In India, the study conducted in Karnataka by IIMB in 2010–11 was a State representative survey that collected individual-level information on asset ownership and access to different types of assets (Doss *et al.*

[4] Using AIDS 2019, Mahato *et al.* (2023) found that of the total proportion of rural landowners in 2018, only 17 per cent were women.

2011; IIMB 2011; Swaminathan *et al.* 2012).[5] The study covered a total of 4110 households and 7185 individuals. In each household, two interviews were conducted. The primary respondent was someone who was at least 18 years of age and was most informed about the asset holdings of the household. The primary respondent did not need to be the head in the conventional sense and could be a man or a woman. If the primary respondent was married, the secondary respondent was their spouse. If the primary respondent was not married, then another adult member of the opposite sex who was best informed on asset holdings was the secondary respondent.

Field Site

I conducted fieldwork in two villages located in different agro-climatic regions of Karnataka in February–March 2020.[6] Siresandra, a dry village in Huttur block in Kolar district in eastern Karnataka, is 20 kms away from Kolar. It lies in the Eastern Dry Zone of Karnataka. Cultivation was primarily rainfed, and there were a few borewells as well. The major crops grown in this village were finger millet (ragi), tomato, broad bean, and other vegetables. The main occupations of households in Siresandra were crop production, livestock raising, and sericulture. Around 90 per cent of the households were engaged in raising animals in 2009 (Bakshi and Das 2017).

Alabujanahalli, a wet village in Maddur taluk of Mandya district, is 25 kms away from Mandya town and belongs to the Cauvery-irrigated region of Karnataka. The village lies in the Southern Dry Zone. Canals from the Krishna Raja Sagar dam irrigate the village. Sugarcane, rice, and ragi were the major crops grown.

A random sample was selected in each village from households supplying milk to the village dairy (see Table 1 for distribution of sample households by extent of landholding). This strategy ensured that all households owned milk-producing animals, mainly cows or buffaloes. Women who identified as primarily engaged in raising animals were the respondents.[7] Data on disaggregated livestock ownership was collected from women respondents only. In Alabujanahalli, in a few households, men identified themselves as responsible for raising animals. Of 35 households, men were respondents in five cases.

[5] The survey followed a random sampling method stratified across rural and urban sectors with Census 2001 as the frame. Around 64 per cent of the sample was in rural areas, 27 per cent in urban areas, and 9 per cent in the metropolis of Bengaluru.

[6] These villages were part of the Project on Agrarian Relations in India (PARI) 2009 (Swaminathan and Das 2017). See https://fas.org.in/research/pari/karnataka-round/.

[7] Having visited many households a few times before this study, I was familiar with the household composition and the women who primarily raised animals in these households.

Table 1 *Number of households by size class of land holding, Siresandra (Kolar) and Alabujanahalli (Mandya), 2020* in number

Category	Size class (in hectares)	Siresandra	Alabujanahalli
Marginal	<1	6	21
Small	1<2	8	10
Semi-medium	2<4	7	3
Medium	4<10	2	1
Total		23	35

Source: Field survey, 2020.

In Siresandra, out of 23 households, seven households belonged to the Scheduled Castes and 16 households to the Vokkaliga caste (Other Backward Classes).[8] In Alabujanahalli, out of 35 households, 26 were Vokkaliga, six were Scheduled Castes, and three were Besthar.[9] In total, the field survey of 2020 covered 58 households and 63 respondents.

The questionnaire used for the study had three components. The first part collected demographic details on household members, current ownership holdings of land, and cropping pattern. The second component collected data on the ownership of animals and components of costs and income for livestock rearing. The third part collected information on decisions made in livestock raising.[10]

Results

Concept of Ownership

My first finding is that the meaning of "ownership" varies by source of data and context of the study.

Karnataka Household Asset Survey (KHAS) relied on self-reporting by the respondent. The question was structured as follows: "We understand animals may be owned individually or jointly. Can you tell me how these types of animals are owned in your household? 1. Individually 2. Jointly (male and female) 3. All household members 4. Do not know."[11]

[8] According to the village census in 2009, Other Backward Class households formed 85.2 per cent, Scheduled Caste households 14.4 per cent, and Scheduled Tribe households 0.4 per cent of all households in Alabujanahalli. In Siresandra, Scheduled Caste households formed 36.7 per cent and Other Backward Class households 63.3 per cent of all households (Swaminathan and Das 2017).

[9] The socio-economic status of Besthar was higher than Scheduled Caste and lower than the Other Backward Class in Alabujanahalli. They engaged in agricultural labouring, crop farming, and animal farming.

[10] In some households, in which more than one woman was identified to be raising animals (such as the mother-in-law and daughter-in-law), the responses of both women were recorded. In three households with more than one woman, one person (mostly the elder daughter-in-law) was better informed about the details of livestock raising because they had many years of experience in raising animals. So, canvassing information from one or two women in a household depended on the context of the particular household.

[11] In the KHAS data set, the terminology used for all members owning livestock is "all household members." In the village study, the term "family" is used to denote all household members owning livestock. For convenience, I use "family" to indicate livestock ownership by all household members across both sources.

From the pilot study I undertook in both villages, it emerged that the way to ask ownership questions in order to get accurate responses on ownership patterns in terms of gender is to not ask about individual or family but ask about male, female, and family ownership. In my study, I asked the question, "Who owns this animal in the household? 1. Male 2. Female 3. Family." "Male" and "female" refer to individuals and "family" signifies all household members.

If respondents assigned male or female ownership, subsequent questions on the present value of the animal, means of acquisition, and reasons for owning livestock assets were asked and recorded. Livestock wealth was computed by taking the present market value reported by the respondents.

If the respondents said "family" ownership, follow-up probing questions were included in the next stage. Some of them were: "Does the animal belong to any one person in the household?", "Is there any reason that can be explained to say that the animal belongs to a person?", or "Is the mode of acquisition related to ownership of any person?" These probing questions did result often in a change in response from "family" to male or female ownership.

Patterns of Livestock Ownership by Gender

Analysis of unit-level KHAS data shows that family ownership was predominant for all types of livestock in rural Karnataka (Table 2). Families owned 6902 (83 per cent) of the total 8306 livestock reported. Only 9 per cent of total livestock was held by individuals. The individual form of ownership was highest for poultry (15 per cent), and joint ownership was highest for sheep (11.8 per cent).

Of the 9 per cent of livestock assets owned individually, about half were owned by women (Table 3). In value terms, women owned only 25 per cent of the total value of livestock resources. Men owned 48 per cent of the total number of animals and 75 per cent of the total value of animals. This difference between number and value arises from the type of animals owned. Men owned cows, buffaloes, and sheep, whereas women owned goats and poultry more than large ruminants.[12]

From KHAS data, I conclude that ownership by family predominated for all livestock types. In the small proportion of individually owned livestock, women owned about half of the livestock in number but only a quarter in value.

Findings from the two villages I studied are different. First, individual ownership predominated. In Siresandra, of 318 animals, 173 (54.4 per cent) were held individually. In Alabujanahalli, 128 out of 232 animals (55.2 per cent) were owned by individuals. Disaggregating individual ownership by gender, men owned more

[12] In this paper, large ruminants include milch animals (cattle, buffaloes) and bullocks; small ruminants include goat and sheep. Poultry do not belong to small ruminants.

Table 2 *Number and percentage of livestock owned by type of ownership, rural Karnataka, 2010–11* in number and per cent

Livestock	Family	Individual	Joint M-F	Grand total	Family	Individual	Joint M-F	Grand total
Cattle	2795	302	212	3309	84.5	9.1	6.4	100
Buffalo	603	38	45	686	87.9	5.5	6.6	100
Goat	590	20	57	667	88.5	3.0	8.5	100
Sheep	1137	36	157	1330	85.5	2.7	11.8	100
Poultry	1777	350	187	2314	76.8	15.1	8.1	100
Total	6902	746	658	8306	83.1	9.0	7.9	100

Note: F statistic for the number of animals owned by individual, joint, and family categories was significant at 10 per cent.
Source: Author's calculation based on KHAS (2010–11).

animals than women (Table 4). In Siresandra, men owned 119 of 173 animals (68.7 per cent). In Alabujanahalli, men owned 71 of 128 animals (55.4 per cent).

Men and women owned different types of animals. Women owned crossbred cows and goats. Of the cows owned individually, women owned 29 of 37 cows in Siresandra and 22 out of 37 cows in Alabujanahalli. Of the 34 goats in Alabujanahalli, 19 were owned by women. Men owned sheep in Siresandra and bullocks in Alabujanahalli. Men showed a sense of pride in owning bullocks in Alabujanahalli.[13] No women owned sheep or bullocks.

Turning to the value of livestock resources, first, individual ownership of animals predominated. Individually owned livestock accounted for 56 per cent of livestock assets in Siresandra village and 59 per cent in Alabujanahalli village. Secondly, women's share of livestock assets was lower than that of men in both villages. In Siresandra, women owned 46 per cent, and men owned 54 per cent of livestock assets. In Alabujanahalli, women owned only 35.8 per cent of livestock in value terms (Table 5). The higher share of men in value emanates from their ownership of

Table 3 *Distribution of individual livestock ownership by gender, rural Karnataka, 2010–11* in number and per cent

Individual type	In number	Per cent	Value (in Rs)	Per cent
Male	355	48.4	1517048	74.9
Female	379	51.6	508730	25.1

Note: For 12 individually owned animals, information on individual type was missing. Hence, this table mentions 734 animals, not 746 (as in Table 2).
Source: Author's calculation based on KHAS (2010–11).

[13] The unit is a pair of bullocks.

Table 4 *Livestock resources owned by type of ownership and type of animal, Siresandra and Alabujanahalli, 2020* in number

Livestock type	Siresandra				Alabujanahalli			
	Male	Female	Family	Total	Male	Female	Family	Total
Buffalo	0	3	11	14	11	7	24	42
Crossbred cow	8	29	26	63	15	22	15	52
Bullock	2	0	0	2	12	0	8	20
Goat	5	0	0	5	15	19	5	39
Poultry	0	21	89	110	15	8	37	60
Sheep	104	1	19	124	3	1	15	19
All	119	54	145	318	71	57	104	232

Note: F statistic for the number of animals owned by men, women, and family categories were significant in Siresandra (10 per cent) and not significant in Alabujanahalli.
Source: Field survey, 2020.

sheep in Siresandra and bullocks in Alabujanahalli. In current prices, the unit value of a crossbred cow was Rs 35,000, and that of a buffalo was Rs 32,000 in Alabujanahalli. In Siresandra, a crossbred cow was worth Rs 39,000, a buffalo was worth Rs 30,000, and sheep cost Rs 8,000 each.[14] The highest unit value in both villages was for a pair of bullocks, at Rs 81,000.

The village data showed that individual type of ownership was more common than family ownership, and this may be on account of the probing questions asked.

There were also differences across caste. By choice of sample, all households surveyed owned animals. However, women's ownership was more likely among Scheduled

Table 5 *Gender distribution of individual livestock ownership, Siresandra and Alabujanahalli, 2020* in number and per cent

Individual type	In number	Per cent	Value (in Rs)	Per cent
		Siresandra		
Male	119	68.8	920000	54.0
Female	54	31.2	784500	46.0
		Alabujanahalli		
Male	71	55.5	1350900	64.2
Female	57	44.5	752400	35.8

Note: F statistic for gender difference in the value of animals was significant at 1 and 5 per cent in Siresandra and Alabujanahalli respectively.
Source: Field survey, 2020.

[14] A study was carried out by National Dairy Development Board (NDDB), Kalamkar *et al.* (2019) to understand the economics of milk production in four States, Punjab, Karnataka, Bihar, and Gujarat, in 2018–19. On the survey date, estimated present market value per unit animal in Karnataka was Rs 42,105 for a crossbred cow and Rs 41,916 for a buffalo. The average for the States was Rs 38,827 for a crossbred cow and Rs 48,300 for a buffalo.

Caste households. In Siresandra, in six out of seven Scheduled Caste households, and in Alabujanahalli, in all the six Scheduled Caste households, women said they owned animals. The proportion was lower among Other Backward Class households: five women in 16 Other Backward Class households and 10 women in 29 Other Backward Class households owned an animal in Siresandra and Alabujanahalli respectively.

The Scheduled Caste households in Siresandra were landless or owned tiny plots. They worked as agricultural labourers for different crop operations such as transplanting and harvesting. Scheduled Caste women raised animals as a source of additional income and insurance in times of crises. Ratnamma, a 45-year-old Scheduled Caste woman in Siresandra, said:

> I want milk for the household. I cannot wait for the men, and I have a cow for my expenses. My husband asks me not to work and stay happy. It is my decision to stay safe if something happens.

Nanjamma, a 48-year-old Scheduled Caste woman from Alabujanahalli, said:

> I own one animal. If I cannot pay the SHG [self-help group] loan or when in economic difficulty, I want to have something on my own for *dakshate* (respect).

The distribution of livestock resources by social group shows that around 35 of the 37 animals (95 per cent) among Scheduled Caste households were owned by women (Table 6). In Alabujanahalli, Scheduled Caste women owned 34 out of 49 animals (69.4 per cent), and the Scheduled Caste men owned only 3 animals.[15] In Other Backward Class households, family ownership of animals predominated: 143 of 281 (50 per cent) animals in Siresandra and 92 of 168 (54 per cent) in Alabujanahalli were family owned. No women owned animals among Vokkaliga households that belonged to higher economic strata (semi-medium and medium farmer categories).[16]

Table 6 *Livestock resources owned by men, women, and family, by social group, Siresandra and Alabujanahalli, 2020* in number

Social groups	Siresandra				Alabujanahalli			
	Male	Female	Family	Total	Male	Female	Family	Total
SC	0	35	2	37	3	34	12	49
OBC	119	19	143	281	57	19	92	168
Besthar	0	0	0	0	11	4	0	15
All	119	54	145	318	71	57	104	232

Source: Field survey, 2020.

[15] Scheduled Caste women's ownership was higher than men and families by value too. In Siresandra, the value of Scheduled Caste women's ownership was 92.7 per cent. In Alabujanahalli, Scheduled Caste women owned 67.2 per cent and men owned 15.7 per cent of the value of animals. The remaining was owned by families.
[16] See Appendix Table 1.

While Scheduled Caste women were more likely to own livestock than Other Backward Class women, the unit value of animals owned by Scheduled Caste women was lower than that owned by Other Backward Class women. For example, in current prices, a crossbred cow owned by Parvatamma, a Scheduled Caste woman, was Rs 30,000. Lata, a Vokkaliga woman, owned a crossbred cow of Rs 45,000 in Siresandra. Scheduled Caste households often had a limited supply of land and labour. Scheduled Caste women kept poultry and goats, and a few owned crossbred cattle for income from milk. Vokkaliga women did not own poultry. They owned cows or buffaloes.

Factors Influencing Ownership Patterns by Gender

I turn now to some factors associated with observed patterns of ownership.

Method of feeding

One factor is whether animals were open-grazed or raised in and around the homestead. When animals were raised in the homestead, women were more likely to claim ownership. Buffaloes, for example, unlike cows, were not taken for grazing and reared within the homestead, usually for milk. This may explain why men did not own buffaloes in Siresandra, whereas they owned 12 per cent of crossbred cattle. In Alabujanahalli, although men owned buffaloes, they owned a higher share of crossbred cows.

Men owned bullocks and sheep in the two villages; both required labour for grazing. Women owned animals, such as goats and poultry whose care could be interspersed with household work. Poultry were kept around the homestead, and women often combined household and livestock work.[17] Goats could be fed in and around the homestead and did not require grazing every day. But the raising of sheep required open-grazing and separate labour.[18]

To illustrate, one household with 5 acres of land raised two crossbred cows, a buffalo, four calves, and sheep. The ownership of sheep was attributed to the man and buffaloes and cows to the woman of the household. The cows and buffaloes were raised in the homestead most of the time and were tended by the woman. On the reference day, she spent around six and a half hours on livestock labour (milking, washing animals, cleaning the shed and disposing of dung, depositing milk to the dairy, feeding, and harvesting fodder). The man spent eight hours grazing sheep from 11 am to 7 pm. He left home in the morning with around 60 sheep and

[17] The distribution of means of acquiring livestock resources in Siresandra showed that 76.4 per cent of the animals were home-produced, 16.4 per cent were purchased with family earnings, and the remaining were acquired through a gift or loan. In Alabujanahalli, 31.9 per cent of the animals were home-produced, 52.2 per cent were purchased with family earnings, 12.5 per cent through loans, and the remaining were gifted.

[18] On labour requirements of sheep grazing, see Gupta *et al.* (2007) and Suresh *et al.* (2008). Suresh *et al.* (2008) note that in Rajasthan, around 99 per cent of sheep raising was carried out by family labour and 80 per cent of that came from male family labour.

walked long distances to reach the field. He left the sheep to graze. After a while, based on the availability of pasture, he shifted fields and then returned home in the evening.

Economic returns

Ownership by men tended to be higher for animals that produced higher economic returns. Receipts from the sale of sheep in Siresandra and rental incomes from bullocks in Alabujanahalli were higher than those from the sale of milk. Let me illustrate. A household in Siresandra earned Rs 6,000 a month from the sale of milk to the dairy, which was used for household expenses by the woman.[19] From the sale of two sheep, they earned Rs 25,000 the same month, and sheep sales were controlled by men of the household. They reared and sold sheep two to three times a year which brought good economic returns. In Alabujanahalli, peasant households which owned bullocks rented them out to poorer households for sugarcane crop operations. Bullocks were mostly used to transport sugarcane to Chamundeshwari Sugar Factory in the nearby town of KM Doddi. In 2020, the daily rent for a pair of bullocks was Rs 800. If the animals were rented for seven to eight days a month during harvesting, they earned around Rs 6,500 a month. The receipt from the sale of buffalo milk in the household was around Rs 1,500 a month and was used by the woman for her expenses.

Conclusion

Livestock is a fast-growing component of the agricultural sector in India. Women supply a large share of labour and are central to the rural household livestock economy (GOI 2013; IRMA 2019). Given the lack of data disaggregated by gender, there is limited information on women's ownership of livestock assets.

It is difficult to identify who "owns" livestock in a family as one rarely finds records of ownership of animals. Records may be there if an animal is registered under a beneficiary's name (usually a woman) as part of a government scheme.[20] This identification problem can partly be resolved by probing questions (such as how the asset was acquired or how much time was spent by a person in raising an animal). If the animal was acquired by natal residence of a woman, it may be easier to assign ownership.

Unit data from a study of 4,110 households in Karnataka in 2010–11 (KHAS) showed that more than 80 per cent of livestock assets were owned by "families" and only 9 per cent were owned individually. Of the livestock assets owned by individuals, women owned more than half in number but only a quarter in value.

[19] The receipts from milk were low during the non-lactating months of the cow.
[20] There was no acquisition through government programmes in both villages.

My own field study in two villages of southern Karnataka showed, first, that individual ownership predominated in number and value. More than half the animals were owned individually. In my view, the KHAS finding is probably an underestimate; my detailed questioning may have shown up a higher share of individually owned assets.

Of the livestock assets owned individually, women's ownership was less than that of men in number and value. In the dry village, livestock assets owned by women were 31 per cent in number and 46 per cent in value. In the irrigated village, women owned 44 per cent of heads of livestock and 35 per cent of the total value of livestock.

There was variation in livestock ownership by caste. Among Scheduled Caste households (typically landless agricultural labour households), women's ownership exceeded that of men with respect to the number and value of livestock owned. In land-owning Vokkaliga households, family ownership of livestock assets was more common. In the richest households, livestock assets were mostly owned by the men or the family as a whole. Men reported ownership of high value animals (crossbred cows, bullocks, buffaloes) or those that brought higher economic returns (sheep).

Men and women owned different types of livestock. Men owned sheep and bullocks, and women owned crossbred cows, goats, and poultry. These differences in composition of animals owned by men and women can be partly explained by the value, method of livestock raising, and economic returns. Women owned animals of lower value and those that could be reared in the homestead where economic activity could be interspersed with daily care activities. Men owned animals that brought in higher economic returns.

Official agencies must begin collecting data on the ownership of livestock resources disaggregated by gender in a regular way so as to better understand women's roles in livestock rearing and design gender-sensitive policies.

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Appendix

Appendix Table 1 *Livestock resources owned by men, women, and family by land holding size, Siresandra and Alabujanahalli, 2020* in number

Land holding class	Siresandra				Alabujanahalli			
	Male	Female	Family	Total	Male	Female	Family	Total
Marginal	0	24	2	26	34	34	60	128
Small	0	18	55	73	10	23	18	51
Semi medium	109	12	65	186	21	0	14	35
Medium	10	0	23	33	6	0	12	18
All	119	54	145	318	71	57	104	232

Source: Field survey, 2020.

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