RESEARCH NOTES
AND STATISTICS

Women's Role in the Livestock Economy

Madhura Swaminathan* and Yoshifumi Usami†

The two objectives of this paper are (i) to highlight the importance of animal rearing in the economy of rural households, and (ii) to describe the role played by women's work in animal rearing.[1] Women's economic activity in rural areas, including work in animal rearing, is underestimated and, more importantly, often unrecognised. The findings of this article also have a bearing on the phenomenon of low and falling work participation rates among women in rural India.

To illustrate the role of animal rearing in rural livelihoods as well as women's work in animal rearing, we have drawn upon the archive of village census survey data created by the Foundation for Agrarian Studies (FAS) as part of its Project on Agrarian Relations in India (PARI). The PARI archive has data on 22 villages across 10 states surveyed between 2006 and 2015 (for details, see www.fas.org.in/category/research).[2] In this paper, we have used data from the PARI archive on two villages (one each in Rajasthan and Karnataka) to illustrate the first point, and on three villages in West Bengal to illustrate the second point.[3] The data for all five villages are from census-type surveys of the villages concerned. The villages are located in different agro-ecological regions (see Appendix Table 1).[4]

Significance of Animal Rearing in Village Household Economies

Animal rearing is an important component of the rural economy, especially at the household level. Practically no information exists on the contribution of the animal

* Economic Analysis Unit, Indian Statistical Institute, Bangalore Centre, madhura@isibang.ac.in
† Research Fellow, University of Tokyo, yoshiusami@gmail.com

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[2] Three more villages are being studied in Tripura in 2016, bringing the total number of villages to 25.

[3] We plan work at a later stage on a study that draws on the entire PARI archive of 22 villages.

[4] For descriptions of the villages, we have drawn on the Foundation for Agrarian Studies (FAS) website, http://fas.org.in/category/research/project-on-agrarian-relations-in-india-pari/

rearing sector to household incomes other than from two Situation Assessment Surveys conducted in 2003 and 2013 by the National Sample Survey Organisation (NSSO). The Situation Assessment Surveys, however, cover only farmer households and not all rural households.

We begin with two simple indicators of the importance of animal rearing in rural livelihoods: (i) the proportion of households receiving (reporting) incomes from animal rearing; (ii) the share of income from animal rearing in total household income. Data on these two indicators from some of the PARI villages, as calculated by Aparajita Bakshi, are shown in Table 1.

The first striking finding from these data is that a large majority of households across villages in different agro-ecological zones obtains incomes from animal rearing. In three villages – Siresandra in Kolar district, Rewasi in Sikar district, and Kalmandasguri in Koch Bihar district – over 90 per cent of households reported incomes from animal rearing, implying that large sections of rural households (across economic and social categories; see below) are engaged in animal rearing. The share of income from animal rearing in total household income was in the range of 3 to 20 per cent, and the highest contribution was in Siresandra and Rewasi villages (we focus on these two villages below).

Table 1 *Proportion of households reporting income from animal rearing, and share of income from animal rearing in total household income* in per cent

Village	District	State	Percentage of households reporting income from animal rearing	Average share of income from animal rearing in total household income
Alabujanahalli	Mandya	Karnataka	78.0	7.0
Siresandra	Kolar	Karnataka	90.0	20.2
Zhapur	Gulbarga	Karnataka	68.0	6.0
Warwat Khanderao	Buldhana	Maharashtra	59.0	6.7
Nimshirgaon	Kolhapur	Maharashtra	77.0	11.7
Harevli	Bijnor	Uttar Pradesh	79.0	10.1
Mahatwar	Ballia	Uttar Pradesh	82.0	10.7
Gulabewala	Ganganagar	Rajasthan	80.0	6.0
Rewasi	Sikar	Rajasthan	98.6	16.1
Gharsondi	Gwalior	Madhya Pradesh	75.3	9.0
Panahar	Bankura	West Bengal	73.0	3.2
Amarsinghi	Malda	West Bengal	80.3	7.4
Kalmandasguri	Koch Bihar	West Bengal	91.2	11.8

Source: Bakshi, Das, and Swaminathan (2014); Bakshi (2015).

Secondly, animal rearing is an economic activity and a source of income for households across castes and socio-economic classes, including landless households and manual worker households, although its importance is particularly high for certain groups. The composition of animal resources also varies across households. While cultivator households and households with access to land are more likely to own livestock (say, cattle), a sizeable proportion of landless worker households may also own livestock (including cattle).

Siresandra is a revenue village in Huttur development block, Kolar taluk (sub-district), in Kolar district, Karnataka. It is a small village with a geographical area of 265 hectares according to the revenue records. At the Census of 2011, Siresandra had a population of 105 households and 514 persons. The FAS survey of 2009 covered 79 households in the village, of whom 50 were categorised as Backward Class (BC) households and 29 were Scheduled Caste (SC) households. Siresandra belongs to the semi-dry, rain-fed region of south-eastern Karnataka. Cultivation in the village was mainly rain-fed, supplemented by irrigation by means of bore wells and drip irrigation. The crops raised were finger millet, vegetables (potato, tomato, carrot, cauliflower, beetroot, and radish), fodder maize and fodder grass, condiments, and tree crops. Besides crop cultivation, sericulture and dairying were also important occupations.

The pattern of ownership of animal resources across socio-economic classes and castes in Siresandra is shown in Tables 2 and 3.

In Karnataka draught animals are still used for agriculture, and so ownership of draught animals is widespread among peasant households. The proportion of households owning cattle was highest among rich peasants and lowest among poor peasants. The average value per milch animal also varied across classes, with the lowest value (representing poorer quality) to be found among Peasant 3 or poor peasant households.

Table 2 *Proportion of households owning animals, and average value per animal, Siresandra, Karnataka, 2009* in per cent and rupees

Class	Draught animals		Milch animals	
	Proportion of households (%)	Average value (Rs)	Proportion of households (%)	Average value (Rs)
Peasant 1	50	10,625	100	17,500
Peasant 2	70	14,028	71	18,272
Peasant 3	25	10,312	65	15,428

Note: Peasants were categorised into three classes, with Peasant 1 representing peasants with relatively large asset holdings and Peasant 3 those with relatively small asset holdings. The criteria used to categorise peasant households were ownership of means of production, extent of family labour in relation to hired labour, and level of incomes (see Ramachandran 2016 on the methodology adopted).
Source: Swaminathan and Das (2016).

Table 3 *Proportion of households owning animals, by caste groups, Siresandra, Karnataka, 2009* in per cent

Caste group	Draught animals	Milch animals	Goat/Sheep	Poultry
Backward Class	50.0	74.0	34.0	46.0
Scheduled Caste	10.3	41.4	13.8	62.0

Source: Swaminathan and Das (2016).

In the case of draught animals and milch cattle, the proportion of households owning animals was much lower among Scheduled Caste households than among Backward Class households. The situation was reversed in the case of poultry. Nevertheless animal rearing contributed, on average, around 10 per cent of household income among Scheduled Caste households; the corresponding proportion among Backward Class households was 23 per cent (Bakshi and Das 2016).

Let us take another example, that of Rewasi village (Swaminathan and Rawal 2015). Rewasi is located in Sikar block of Sikar district, in the western dry agro-climatic region of Rajasthan. The year of our survey, 2010, was a drought year, with recorded rainfall 28 per cent below normal for Sikar district. The survey covered 219 resident households. Jats were the economically and politically dominant group in the village, having gained land from the erstwhile Rajput landlords. Pearl millet is the main kharif crop in Rewasi, and the crop, which is monsoon-dependent, had failed in our survey year.

As noted in Swaminathan and Rawal (2015):

> Animals had an extremely critical role to play in the household economy of Rewasi. Animals, especially goats, provide a means of economic and nutritional security in periods of drought. Goats and camels can survive on leaves of *khejri* and *aadu* trees, available even in the harshest of drought years. These animals provided an economic cushion in years of crop failure. Milch cattle, by contrast, require fodder from field crops like wheat and pearl millet (*bajra*). So in years of crop failure, it became difficult and expensive to maintain cattle.

There were clear variations in the composition of animals owned across socio-economic classes (Table 4). The proportion of households owning goats was high among all classes. Among landlords and richer sections of the peasantry, a quarter owned camels and almost all households owned milch cattle.

Turning to income from animal resources, Table 5 shows the average gross value of output and net income from animal rearing. Incomes from animal rearing were substantial, with an annual average of Rs 23,114 per household. Gross and net incomes were higher for richer households than for poor peasant households and hired worker households.

Table 4 *Proportion of households owning different types of animals, by selected socio-economic classes, Rewasi, 2009–10* in per cent

Socio-economic class	Camels	Milch cattle	Goats	Sheep
Landlords and rural rich	25	100	88	25
Upper peasants	25	98	98	10
Poor peasants	5	83	93	10
Hired workers	10	59	97	13

Note: For the exact classification, see Swaminathan and Rawal (2015). The methodology is based on Ramachandran (2001). Peasant households are those whose members work on their own fields. Peasants were categorised into four groups (Peasants 1, 2, 3, and 4), based on the ownership of assets. Peasants 1 and 2 have been grouped here as upper peasants; peasants 3 and 4 comprise poor peasants. Given the fact of a drought year, current incomes were not used for the classification.
Source: Swaminathan and Rawal (2015).

Having established the significance of livestock and other animal rearing in the livelihoods of rural households across castes and classes, we now turn to the role of women.

Women's Role in Animal Rearing

In this paper, we argue that women constitute the primary work force of the animal resource (AR) sector. While men are also engaged in animal rearing as an economic activity, the proportion of rural women engaged in AR activity is very large.

However, women's work in animal rearing activities is undercounted in standard labour force surveys. Despite changes in concepts and definitions over the years, the NSSO's Employment and Unemployment Surveys (EUS) do not adequately capture this economic activity undertaken by women. According to the 68th Round of the EUS, female labour force participation (usual principal plus subsidiary status) in rural India was only 25.3 per cent (for all ages) and 37.8 per cent (for those aged

Table 5 *Gross value of output and net income from animal resources, by selected socio-economic classes, Rewasi, 2009–10* in rupees per household

Socio-economic class	Gross value of output	Net income
Landlords and rural rich	141,877	74,661
Peasant 1	71,885	29,307
Peasant 2	89,831	48,126
Peasant 3	49,780	20,978
Peasant 4	34,881	16,472
Hired workers	23,859	11,298
All households	49,463	23,114

Note: See Table 4.
Source: Swaminathan and Rawal (2015).

15–59). Of all rural female workers, 59 per cent were self-employed and 75 per cent were employed in the agricultural sector.

An alternative view of the role of women in animal rearing work emerges from the PARI village survey data. In this section, we have drawn on data from three village surveys conducted in West Bengal. The three villages are Panahar in Bankura district, Amarsinghi in Malda district, and Kalmandasguri in Koch Bihar district. Census surveys of each village were undertaken in 2010, and sample re-surveys in 2015. The number of households at the survey of 2010 was 127 in Amarsinghi, 147 in Kalmandasguri, and 248 in Panahar.

In all three villages, the ownership of animal resources was widespread: the proportion of households owning any animal was 78 per cent in Amarsinghi, 86 per cent in Kalmandasguri, and 71 per cent in Panahar. Table 6 shows the proportion of households owning an adult milch animal. As in other villages, the proportion of peasant households owning milch animals was higher than the proportion of manual worker households owning milch animals.

Animal rearing in rural India is primarily a household-based activity, and involves family labour in the care of animals. To identify the role of women, we carried out the following exercise. In the household schedule of the survey, there is a question on self-reported occupation (not based on an income or time criterion), which asks for the primary, secondary, and other (up to six) occupation of each person. In the course of completing the questionnaire, these reported occupations may be modified by the investigators. Here, we have used the data on occupation reported by women (all females above the age of 15) in three villages, to identify their participation in animal rearing activities. Our findings are as follows.

If we looked at only the primary occupation or activity, a very small proportion of women were reported as workers in animal rearing. So we took all females who

Table 6 *Proportion of households owning milch animals by socio-economic class, three villages, West Bengal, 2010* in per cent

Socio-economic class	Proportion of households owning adult milch animals		
	Amarsinghi	Kalmandasguri	Panahar
Capitalist farmer	—		100
Peasant	78	74	75
Small peasant/semi-proletarian	53	34	42
Manual worker	35	27	30
All households	48	37	46

Note: For the basis of socio-economic classification, see Ramachandran (2015).

were reported as home workers (corresponding to code 92 of the NSSO) with respect to primary activity, and examined their secondary and tertiary activities. The following results were obtained.

- In Amarsinghi village, of 135 females with house work as primary activity, 55 were engaged in animal rearing as a secondary activity.
- In Kalmandasguri village, of 156 females with house work as primary activity, 40 were engaged in animal rearing as a secondary activity.
- In Panahar village, of 272 females with house work as primary activity, 64 were engaged in animal rearing as a secondary activity.

These data suggest, as do earlier studies, that female participation in animal rearing work is largely unpaid, and it continues to be devalued and reported as secondary activity. Hence, we need to examine activities other than the primary activity to identify persons engaged in animal care.[5]

If we count women engaged in animal rearing, whether as primary, secondary, or tertiary activity, as shown in Table 7, in Amarsinghi and Kalmandasguri villages, over 40 per cent of females were engaged in animal rearing activities; the proportion was lower, at 30 per cent, in Panahar village. This is a very high level of participation in animal rearing work.

If we count primary, secondary, tertiary, as well as fourth, fifth, and sixth occupation (if any) as reported in the data, then, the number and proportion of women engaged in animal rearing activities rise further. Table 8 shows these data for females and males.

Our data show that a very high proportion of females in rural areas were engaged in animal care. Further, while men were also engaged in animal rearing activities, the participation of women was invariably higher.

Table 7 *Female workers engaged in animal rearing as primary, secondary, or tertiary occupation, three villages, West Bengal, 2010*

Village	Primary occupation	Secondary occupation	Tertiary occupation	All female workers	All female workers as per cent of persons aged 15 and above
Amarsinghi	1	61	20	82	45.0
Kalmandasguri	1	44	43	88	42.3
Panahar	3	68	35	106	30.2

[5] In NSS Report 559, for females aged 5 and above engaged in domestic duties (codes 92 and 93), the proportion reporting animal rearing activity was 37.5 (with subsidiary activity) and 28.5 (without subsidiary activity) in rural West Bengal.

Table 8 *Female and male workers engaged in animal rearing as primary, secondary, tertiary, or any other occupation, three villages, West Bengal, 2010*

Village	Number of female workers	Number of females	Female workers as per cent of females	Number of male workers	Number of males	Male workers as per cent of males
Amarsinghi	103	182	56.6	49	179	27.3
Kalmandasguri	107	208	51.4	43	223	19.2
Panahar	128	350	36.6	69	197	35.0
All	338	740	45.7	161	750	21.5

Next, for all women reported to be engaged in some animal rearing activity in Table 8, we examined the primary occupation (Table 9). In all three villages, the large majority of women actually engaged in animal care had reported their primary activity as house work. The proportions were 85.4 per cent in Amarsinghi village, 78.5 per cent in Kalmandasguri village and 75.8 per cent in Panahar village. The remaining were engaged in own cultivation or as wage workers or were students. Very few reported self-employment in animal rearing as their primary occupation.

Lastly, in households that owned an animal (any animal resource), women invariably participated in animal rearing activities. Cross-tabulation showed that the number of households with own animal resources but where women from the family did not participate in animal care was very small: one in Kalmandasguri, two in Amarsinghi, and five in Panahar.

Thus, if we may generalise, women sustain the livestock economy of rural India (we refer here not to large-scale enterprises but to household production).

Some Features of Animal Rearing Activity

Except for the pilot time-use survey conducted by the NSSO, we have practically no other information on the time spent by women in animal rearing activities or other

Table 9 *Primary occupation of females engaged in animal rearing at any level of occupation (primary, secondary, tertiary, or any other), three villages, West Bengal, 2010*

Primary occupation	Amarsinghi	Kalmandasguri	Panahar
Household work	88	84	97
Student	5	3	5
Self-employed in agriculture (including tenant)	4	11	9
Self-employed in animal rearing	1	1	3
Casual worker	3	7	10
Regular worker	2	1	2
National Rural Employment Guarantee Scheme	0	0	2
All	103	107	128

features of animal rearing work performed by women. The Indian Agricultural Statistics Research Institute (IASRI) collected data on rural women's participation in animal rearing as a part of studies it conducted on the economics of livestock. Although these studies date back to before 1980, they have some useful information (Raut 2004).

In this section of our paper, based on data, interviews, and observations from village surveys across India, and in three villages of West Bengal in June 2015, we identify some characteristics of women's work in animal rearing.

1. *Self-employment.* Women take care of animals owned (or leased in) by the household. Occasionally, we have wage-work in animal rearing, such as where women work as domestic employees or long-term workers for large landowner households and take care of animals as part of their tasks (this was found in Gulabewala village in Rajasthan).
2. *Manual work.* The care of animals involves manual work. The activities undertaken include washing, cleaning and bathing, taking animals to graze, feeding, collecting dung, cleaning sheds, milking animals, and so on. None of these tasks is mechanised. The tasks are characterised by physical drudgery. A woman in Panahar village reported that she wakes up at 4 a.m., leads the cow out of the shed, cleans the floor of the shed, collects the cow dung, feeds the cow with straw, then milks the cow, and finally, takes it out to graze. Similar tasks have to be performed at the end of the day as well. For many women, animal rearing is an important constituent part of the drudgery of the work that they do.
3. *Time use.* Animals have to be cared for every day of the year, so the labour input is daily. Based on data collected on labour inputs through the cost accounting approach, Raut (2004) estimated for rural Haryana and West Bengal that in each household, a woman spends about two hours a day on animal rearing activities. This corresponds to the description by a respondent in Panahar village (although she could not specify the exact time spent).
   On an assumption of two hours a day, the total female labour input is 730 hours a year. Assuming a seven-hour working day (the norm for weeding and similar daily paid wage activities in agriculture was seven hours for women in Panahar village), women's work in animal care corresponds to 104 days a year. If a woman reported over 100 days of labour, she would definitely be counted as a usual status principal worker.
4. *Unpaid family labour.* Family labour is more important than hired labour in the care of animals. Raut (2004) found that more than 95 per cent of female labour in animal rearing was unpaid. In the case of unpaid family labour, income from the sale of output contributes to the family income (or to nutrition, when the products are consumed at home), but may or may not go directly into the hands of the woman worker.

Since the tasks are everyday, often in and around the household, and the income is not necessarily received by the worker, the woman engaged in animal rearing activities often has no self-recognition of her activities as that of a worker. This could be an explanation for the earlier observation that animal rearing is not reported as a primary occupation by the majority of women.

Interestingly, in Panahar village, the average days of employment available to a female agricultural labourer was 50 to 60 days, and the number of days of employment under the National Rural Employment Guarantee Scheme (NREGS) was less than 30. In other words, the self-perception of women as workers does not apply to animal rearing even though the total labour input (say, 104 days) exceeds the wage employment obtained by a woman worker.

The nature of work involved in animal care – in many ways similar to child care – is such as to lead to undervaluation of women's work, both in terms of employment (and being counted as a worker) and in terms of contribution to household income. Women's own self-perception as non-workers also needs to be highlighted.

Concluding Remarks

Income from animal rearing and the livestock sector is an important component of household incomes for a large section of rural households, including landless households and manual labour households, and households from different social groups. In this paper, we have drawn on an archive of village-level data to capture the contribution of animal rearing to household incomes across classes and castes.

We have argued that women have the primary responsibility for animal care. If we count all females engaged in animal rearing (be it as a primary or secondary or tertiary or other occupation), then, 33 to 47 per cent of females in three villages of West Bengal were so engaged. The nature of the livestock economy is crucially linked to women's work and welfare.

This paper is an attempt to delineate the role of women workers in the animal resources sector of rural India using detailed village-level data and interviews. Extrapolating from data on three villages, we argue that women are regularly engaged in livestock and animal care. In one village, we found that if the total number of hours that a woman worked at tasks involving household animal resources were converted into work days, she worked for the equivalent of 104 days a year at animal rearing. However, national data systems not only underestimate the economic contribution of women to this sector, but are also not conceptually equipped to deal with situations where women take up activities that are crucial for the survival of the household but are intertwined so closely with household work and responsibilities that they are not counted as workers either by the investigators or by the women themselves. We require large-scale survey data to identify features

of women's work in animal rearing, including the extent of work participation, the hours of work, and the contribution to family incomes.

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Appendix Table 1 *Features of selected villages*

Village	District	State	Agro-ecological region	Survey year	Survey type	Total number of households
Siresandra	Kolar	Karnataka	Eastern dry region	2009	Census	79
Rewasi	Sikar	Rajasthan	Western dry region	2010	Census	219
Panahar	Bankura	West Bengal	Old Vindhyan alluvian region	2010	Census	250
Amarsinghi	Maldah	West Bengal	New alluvial plains region	2010	Census	107
Kalmandasguri	Koch Bihar	West Bengal	Terai Teesta region	2010	Census	148

Source: http://fas.org.in/category/research/project-on-agrarian-relations-in-india-pari/