



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2021; SP-10(2): 194-197
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www.thepharmajournal.com
Received: 01-12-2020
Accepted: 03-01-2021

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Sustainable livestock production on local resources: Experiences of the *Kuruma* tribal keepers of the Wayanad dwarf cattle

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Abstract

A study was conducted among the traditional keepers of the Wayanad dwarf cattle, the Kuruma tribal folk to describe the sustainable livestock production system adopted by this community as per established guidelines. Data were collected by personal interviews of 30 keepers of the Wayanad dwarf cattle after a prior pilot study to identify descriptors of the system. The results of the study indicated that full day grazing of animals was resorted to by the Kuruma tribes people for meeting the major feeding requirement of the Wayanad dwarf cattle. Straw was fed to the Wayanad dwarf cows by just over three fourth of the respondents. None of the respondents fed their animals market made concentrate feed mixtures. Very few tribal keepers fed their animal's rice gruel and other home made locally available concentrates like rice and wheat bran. None of the cattle keepers provided separate watering facilities for their animals in the cattle barns. Traditional water sources within and adjoining the forests such as rivers, ponds and paddy fields were a major source of drinking water for the grazing Wayanad dwarf cattle as reported by over eighty six per cent of respondents.

Keywords: Wayanad dwarf cattle, Kuruma tribes people, native cattle rearing systems

Introduction

The Wayanad dwarf cattle have been reported from the tribal settlements of the Kurichiat Range of the Wayanad Wildlife and Muthanga Wildlife sanctuaries as well as from the Periya area of Manathavady block in Wayanad district and from the catchment areas of the Karapuzha Dam (Kerala Biodiversity Board, 2016) [3]. There is of date, however no study on the various aspects of the local resources utilised and practices followed with respect to the feeding systems that characterise this livestock production system. It was with a view to understand this aspect of the keeping system of the Wayanad Dwarf Cattle that the present study was undertaken.

Materials and Methods

Wayanad district of Kerala state was purposively selected for this study based on reports that indicated that the Wayanad Dwarf cattle were native to this district of the state (Dinesh, 2008; Kerala Biodiversity Board, 2016; Anilkumar, 2018) [3, 1]. The Wayanad Dwarf cattle keeping system is described both quantitatively and qualitatively in terms of feed and livestock resources as per the criteria delineated for the description of livestock production systems by Steinfeld and Maki-Hokkonen (1995) [8]. Feed resources referred to the feed resources of the Wayanad Dwarf cattle keeping system that were used by the respondents of the study for sustaining these animals. Livestock resources referred to the numbers of different species of animals maintained by them on these systems.

The panchayats of Wayanad district with a significant population of the Wayanad Dwarf cattle were then identified from identified Key Informant officials of the Department of Animal Husbandry, Government of Kerala. These panchayats were Noolpuzha, Amabalavayal, Thirunelly and Thavinhal. Snowball sampling was then used to select 30 respondents from these panchayats. Data were collected using pretested interview guides using personal interviews. The respondents selected for the study were natives of Noolpuzha (13), Amabalavayal (7), Thirunelly (4) and Thavinhal (6) panchayats of Wayanad district. The study began with pre pilot study preparations that focused on gaining an understanding of the broad subject areas to be covered in the first phase of the study.

Accordingly, key informants were used to purposively identify two respondents in Noolpuzha, Amabalavayal, Thirunelly and Thavinhal Panchayats were selected with whom extensive personal interviews were conducted to arrive at criteria to be included under the description of the Wayanad Dwarf cattle keeping system. Based on the information generated through the pre pilot study preparations criteria to be included under the descriptors of feed and livestock resources of the Wayanad Dwarf cattle system were arrived at and the semi structured interview schedule (Interview Guide) was prepared. This was pilot tested among two non-sample

respondents from Noolpuzha, Amabalavayal, Thirunelly and Thavinhal Panchayats for refinement and use in the final study.

Results

Feed and Livestock Resources

The results of the study indicated that grazing of animals from 7 am to 6 pm was the predominant feeding strategy adopted by the *Kuruma* tribes people for meeting the demands of their animals.

Table 1: Distribution of respondents based on various feed resource parameters and feeding practices

Sl. No.	Parameter	Frequency (f)	Percentage (%)	
1.	Main feeding practices adopted	Grazing	30	100
		Other practices like stall feeding, tethering, cut and carry system etc.	0	0
2.	Time and duration of grazing	Morning only (7 am to 12 pm)	2	6.66
		Afternoon only (2 pm to 6 pm)	1	3.33
		Whole day (7 am to 6 pm)	27	90
3.	Area of grazing	Forest grazing and with accompanying caretaker farmer	16	53.33
		Grazing around agriculture land, dam reservoir site and surroundings the home	14	46.66
4.	Fodder cultivation	Yes	1	3.33
		No	29	96.66
5.	Straw feeding	Yes	23	76.66
		No	7	23.33
6.	Storage of paddy straw for lean season (n=23)	Yes	18	78.26
		No	5	21.73
7.	Source of paddy straw (n=23)	From self-owned paddy cultivation	17	73.91
		Purchasing from others	6	26.08
8.	Feeding of concentrate cattle feed available in local markets	Yes	0	0
		No	30	100
9.	Feeding of homemade and locally available concentrate substitutes e.g. rice gruel, rice and wheat bran, de-oiled coconut cake	Yes	2	6.66
		No	25	83.33
10.	Quantity of home made substitutes fed per adult animal	Once in a while	3	10
		0.25 – 0.5 Kg	3	10
		0.5 – 1 Kg	1	3.33
		1 – 1.5 Kg	1	3.33
		>1.5 Kg	0	0
		None	25	83.33
11.	Feeding of Mineral mixture	Yes	0	0
		No	30	100
12.	Provision for drinking water	Provide water before and after grazing in buckets	5	16.66
		Separate watering facilities in shed	0	0
		Watering during grazing from rivers, pond and paddy fields	25	83.33

So also, fodder cultivation was not practiced by the majority of farmers (96.66 %). Straw was fed to the Wayanad dwarf cows by just over three fourths (76.66%) of the respondents and a similar number of them (78.26 %) resorted to the practice of storing of paddy straw for the lean season. Feeding of market made concentrate cattle feed was not practiced by any of the keepers of the Wayanad cattle. These findings were quite similar to those of Singh *et al.* (2012) [5] who observed that the *Pulikulam cattle* of Tamil Nadu were also sent for grazing in forest and harvested agricultural fields from the nine in the morning till six in the evening and were rarely fed supplements to these animals except for the fact that bullocks, used for agricultural purposes, were offered dry and green fodder by the farmers and that calves up to 3 months of age were not sent for grazing. Similar findings were also made by Pundir *et al.* (2015) [5] among the native cattle of Manipur. The findings of the present study were also similar to those of

Patel (2016) [4] among the *Kankrej* cattle where grazing for nine hours was practiced.

Very few *Kuruma* farmers fed their animals rice gruel and other home made locally available concentrates like rice and wheat bran. This finding was consistent with the findings of Pudir *et al.* (2015) [5] who observed that during the cropping season the native cattle of Manipur were fed rice bran and rice waste as concentrate feed substitutes. The findings of the present study were however contrary to those reported by Patel (2016) [4] who observed that the *Kankrej* cattle of Banaskantha districts of the Gujarat were fed concentrates and cut unprocessed fodder. None of the farmers provided separate watering facilities within the cow shed. Majority of the farmers (83.33 %) are depended on traditional water sources within and adjoining the forests such as the rivers, ponds and paddy fields for watering their cattle during grazing. These findings were slightly different from those by

Patel *et al.* (2016)^[4] who observed that major watering points for the *Kankrej* animals were the water ponds and the village lake where animals were taken twice a day.

Livestock resources

Table 2: Distribution of respondents based on the profile of herds of Wayanad dwarf cattle

Sl. No.	Parameter	Frequency (f)	Percentage (%)	
1.	Herd size of Wayanad dwarf female cattle including cows, heifers and calves	1 - 10 animals	14	46.6
		11 - 20 animals	7	23.3
		20 - 30 animals	5	16.6
		30 - 40 animals	2	6.66
		>40 animals	2	6.66
2.	Herd size of Wayanad dwarf male cattle- Bulls and bull calves	No male animals	8	26.66
		1 - 2 animals	17	56.66
		3 - 5 bulls	3	10
		6 - 10 bulls	2	6.66

The results depicted in Table 2 indicated that majority of the farmers (46.6 %) maintained herd sizes of 1 to 10 in numbers of female Wayanad dwarf cattle that included cows, heifers and female calves. Only 6.66 per cent of farmers had herd sizes of more than 40 female cattle. The results indicated that

less than one third of the farmers (26.66 %) did not maintain any male animals in their herds. More than half of the farmers (56.66 %) had herds with up to two bulls/bull calves. Very few farmers maintained more than two bulls in their herds (16.66 %).

Table 3: Distribution of respondents based on ownership of other animal resources

Sl. No.	Parameter	Frequency (f)	Percentage (%)	
1.	Herd size of cross bred cattle	Not rearing cross bred cows	26	86.66
		One cow	2	6.66
		2- 5 cows	2	6.66
		> 5 cows	0	0
2.	Herd size of buffaloes	Not rearing buffaloes	27	90
		1 - 2 buffaloes	2	6.66
		3 - 5 buffaloes	1	3.33
		> 5 buffaloes	0	0
3.	Herd size of goats	Not rearing goats	13	43.33
		1 - 5 goats	7	23.33
		5 - 10 goats	9	30
		> 10 goats	1	3.33
4.	Flock size of poultry (Chicken, duck, quail etc.)	Not rearing poultry	0	0
		1- 5 birds	9	30
		6- 10 birds	16	53.33
		11- 20 birds	3	10
		>20 birds	2	6.66

Data in Table 3 indicated that tribal farmers also kept other animals along with their native cattle. Very few farmers (13.32 %) reared between one and five crossbred cows along with native cows. However, vast majority of the tribal farmers (86.66 %) reared only native cattle. About 10 percent of farmers reared buffaloes as well and just 17 percent reared more than ten birds on their home. These results are quite similar to the results reported by Egbal *et al.* (2013) who observed that though the majority of tribal dairy farmers in Lohardaga district of Chotanagpur region of Jharkhand state reared native cattle, just over ten per cent reared buffaloes as well and this could be due to a confluence of their thoughts on preservation of their heritage on one side and the need to increase their income on the other hand. The findings of the present study however differ from those by Somagond *et al.* (2020)^[7] who observed that among the *Soliga* tribesmen of the hilly forest areas of Bili Giri Rangana Hills and Mahadeshwara Hills of Chamarajanagar district of Karnataka, goats (41.9%) followed by poultry (17.14%) were the predominant species reared in the core zone whereas cattle (16.19%) were reared to a lesser extent while though in the buffer zone a greater preference was seen for cattle (40.93%) this was much less than that observed among the *Kuruma*

tribesmen of the present study and the *Soliga* did not even attempt to rear buffaloes due to prevailing beliefs among them.

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