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# Role of Malnad Gidda Cattle in Livelihood Security of Livestock Farmers in Malnad Region of Karnataka

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## Abstract

*Malnad Gidda cattle are native to Western Ghat region of Karnataka. They play a crucial role in the livelihoods of farmers. In the context of recent socio-cultural changes in the society, an exploratory research was conducted with the objective of studying the role of Malnad Gidda cattle in livelihoods of various categories of farmers. Data was collected using a structured interview schedule from 216 farmers rearing Malnad Gidda cattle who were selected using multi-stage random sampling, spanning three districts, six talukas and 12 villages of Western Ghat region of Karnataka. Majority of the respondents practiced both agriculture and animal husbandry. Each respondent household had 7.92 Malnad Gidda cattle with an average daily milk yield of 1.61 litres per animal and 3.98 litres per household. Majority of the families had an annual income of less than rupees one lakh from animal husbandry and the average being Rs 1,33,890. Average household annual income from Malnad Gidda cattle alone was Rs. 95,235, which, included Rs. 56,990 (59.84%) from manure, Rs. 37,783 (39.67%) from milk and Rs. 463(0.49%) from sale of animals. Contribution of Malnad Gidda cattle to the overall animal husbandry income was significantly high among small farmers (90.74%) and medium farmers (85.90%) as against 61.59 per cent in case of large farmers. Likewise, animal husbandry income out of the combined animal husbandry and agriculture income was significantly high among small farmers (54%) as against medium (36.8%) and large farmers (35.8%). With regard to purpose of rearing Malnad Gidda cattle, obtaining manure and milk was the major intension. Thus, the results were indicative that Malnad Gidda cattle still formed an integral part of the agricultural milieu of Western Ghat region of Karnataka, especially contributing significantly to the livelihoods of all categories of farmers, especially, small farmers.*

**Keywords:** Livelihood Security, Malnad Gidda Cattle, Malnad region

## Introduction

Malnad Gidda cattle, native to the heavy rainfall areas of Western Ghat region in Karnataka are recognized as a distinct breed (Veerendra, 2020). Malnad, meaning hilly region and Gidda meaning dwarf and thus Malnad Gidda meaning dwarf cattle of hilly areas of Western Ghat of Karnataka. Phenotypically they have small body size and weigh about 120-180 kgs. They are distributed across Shivamogga, Uttara Kannada, Chikkamagaluru, Dakshina Kannada, Udupi, Hassan, Kodagu, Belagavi, Chamarajanagara, Davanagere, Dharawad, Haveri and Mysore districts of Karnataka. An open and kuccha type but a separate housing is provided for these cattle. Feeding system varies with seasons; they are let for grazing in forest during rainy and winter whereas, during summer they are fed with dry paddy and maize straws in addition to grazing. Most of the farmers practice natural service as breeding method within the herd itself and artificial insemination is less common. They are well adapted to the agro-ecological systems of Western Ghats. Almost every agricultural household in the region rears these cattle. These households look at it from the point of view of manure and milk production for home consumption (Ramesha *et al.*, 2015).

Thus, Malnad Gidda cattle play a major role in the rural economy of this region by providing manure and milk with negligible inputs. However, in the present circumstances of mechanization, urbanization, changing family structure, decline in interest among youth towards agriculture, etc., could have impacted the role of Malnad Gidda cattle in livelihoods of livestock farmers. Likewise, information on the role of Malnad Gidda cattle among different categories of farmers is scanty. Keeping the above facts in consideration a study was conducted to understand the role of Malnad Gidda cattle in livelihood security of livestock farmers in Malnad region of Karnataka.

## Materials and Methods

Shivamogga, Chikkamagaluru and Uttara Kannada districts falling in the hilly zone of Karnataka were purposively selected for the study. From these three districts two taluks each having highest Malnad Gidda cattle population, namely, Thirthahalli and Sagara taluks from Shivamogga district, Koppa and Sringeri taluks from Chikkamagaluru district and Siddapura and Sirsi taluks from Uttara Kannada district were selected. From the six taluks of the selected districts two villages each having highest Malnad Gidda cattle were selected making a total of 12 villages. From these 12 villages, six respondents each belonging to small, medium and large farmers were selected randomly constituting 216 respondents. Respondents possessing up to five acres of land were classified as small farmers; those possessing five acres to 12.5 acres of land were classified as medium farmers and all those possessing above 12.5 acres of land were classified as large farmers. Thus, a multistage stratified random sampling method was used for collection of data.

An *ex post facto* research design was used for the study considering the nature of the problem. Interview schedule was used as a tool to elicit responses from the respondents keeping in mind the objective of the study. Various variables enabling to understand the role of Malnad Gidda cattle in securing the livelihoods of farmers, such as occupation, Malnad Gidda cattle possession, income from livestock and agriculture and purpose of rearing Malnad Gidda cattle were studied. The data collected was tabulated and analysed using relevant statistical tools and methods.

## Results and Discussion

### Occupation of Malnad Gidda Cattle Farmers

Agriculture along with animal husbandry formed the major occupational activities of the majority respondents (88.43%) (Table 1). A significant difference between the three groups of farmers, viz. small, medium and large farmers, was noticed with respect to occupation. Interestingly, agriculture and animal husbandry was the only major occupation for both large farmers (98.61%) and medium farmers (94.44%). Whereas, among small farmers though majority were practicing agriculture and animal husbandry, about one-fifth of them (18.06%) were practicing agriculture, animal husbandry and daily wages and 8.33 *per cent* of them were solely dependent on animal husbandry and daily wages. Agrarian nature of Malnad regions where in majority of the farmers are involved in agriculture, could be the reason for such results. Similar findings are reported by Purnesh (2002); Chandran *et al.* (2014) and Yathiraj *et al.* (2016).

**Table 1:** Occupational details of Malnad Gidda cattle farmers

| Particulars | Small Farmer (n=72) | Medium Farmer (n=72) | Large Farmer (n=72) | Total (n=216) |
|---|---|---|---|---|
| Agri.& AH | 52(72.22) | 68(94.44) | 71(98.61) | 191(88.43) |
| Agri. AH & Daily wages | 13(18.06) | 1(1.39) | 0(0.00) | 14(6.48) |
| AH & Daily wages | 6(8.33) | 0(0.00) | 0(0.00) | 6(2.78) |
| Agri. AH & Outside job | 1(1.39) | 2(2.78) | 1(1.39) | 4(1.85) |
| Agri. AH & Business | 0(0.00) | 1(1.39) | 0(0.00) | 1(0.46) |
| *Chi-square* | 40.21** | | | |

*[#] Figures in parenthesis represent percentage; ** Significant at one per cent level*

**Livestock and Malnad Gidda Cattle Holding**

Table 2 shows that farmers of Malnad region on an average possessed 7.92 Malnad Gidda cattle of which, about two were milking, one draught animal and heifer each and three calves.

**Table 2:** Average livestock holding per household among Malnad Gidda cattle rearers

| Particulars | Small Farmer(n=72) | Medium Farmer(n=72) | Large Farmer(n=72) | Total (n=216) |
|---|---|---|---|---|
| **Malnad Gidda Cattle** | | | | |
| Milking | 1.68(121) | 2.01(145) | 2.83(204) | 2.18(470) |
| Draught | 0.47(34) | 1.05(76) | 1.82(131) | 1.16(241) |
| Heifer | 0.60(43) | 0.69(50) | 3.01(217) | 1.44(310) |
| Calves | 1.19(86) | 2.07(149) | 6.32(455) | 3.19(690) |
| **Total** | **3.94(284)** | **5.83(420)** | **13.99(1007)** | **7.92(1711)** |
| **Other Cattle (Buffalo / Cross Bred Cow/ Desi – Gir, Amrit mahal )** | | | | |
| Milking | 0.68(49) | 1.04(75) | 5.29(381) | 2.26(487) |
| Draught | 0 | 0 | 0.03(2) | 0.01(2) |
| Heifer | 0.01(1) | 0.06(4) | 0.13(9) | 0.07(14) |
| Calves | 0.10(7) | 0.32(23) | 0.75(54) | 0.39(84) |
| **Total** | **0.79(57)** | **1.42(102)** | **6.19(446)** | **2.72(587)** |
| **Total Cattle** | | | | |
| Milking | 2.36(170) | 3.06(220) | 8.13(585) | 4.43(957) |
| Draught | 0.47(34) | 1.06(76) | 1.85(133) | 1.13(243) |
| Heifer | 0.61(44) | 0.75(54) | 3.14(226) | 1.50(324) |
| Calves | 1.29(93) | 2.39(172) | 7.07(509) | 3.58(774) |
| **Total** | **4.74(341)** | **7.25(522)** | **20.18(1453)** | **10.64(2298)** |
| **Malnad Gidda : Other Cattle Ratio** | **05:01** | **4.1:1** | **2.3:1** | **6.9:1** |
| **Sheep** | 0 | 0 | 0.97(70) | 0.32(70) |
| **Goat** | 0.01(1) | 0 | 0 | 0.004(1) |
| **Poultry** | 0.69(50) | 0.03(2) | 0.33(24) | 3.13(76) |
| **Total** | **5.19(374)** | **7.28(524)** | **21.49(1547)** | **11.32(2445)** |
| Chi-square | 294.54** | | | |
| **Malnad Gidda cattle holding as per herd size** | | | | |
| <10 | 70(97.22) | 58(80.56) | 51(70.83) | 179(82.87) |
| Oct-50 | 2(2.78) | 13(18.06) | 17(23.61) | 32(14.81) |
| >50 | 0(0.00) | 1(1.38) | 4(5.56) | 5(2.32) |
| Chi-square | 19.61** | | | |

*[#] Figures inside parenthesis represent total number of animals; *Significant at five per cent level; ** Significant at one per cent level*

Likewise, they possessed about three other cattle and three poultry. Between the three categories of farmers, there was a significant difference with respect to livestock possession. In general, the large farmers had higher Malnad Gidda herd size (13.99) compared to medium (5.83) and small farmers (3.94). While the total cattle holding was

20.18, 7.25 and 4.49 respectively for the same categories. The overall ratio between Malnad Gidda cattle and other cattle was 6.9:1 for the pooled sample. However, this is low in case of large farmers category (2.3:1) indicating their livestock diversification to certain extent by adding a buffalo or crossbred cow or other desi cow to increase milk production. Small farmers had higher number of poultry (0.69) followed by large farmers (0.33) and medium farmers (0.03).

Further, majority of the respondent households (82.87%) had less than ten Malnad Gidda cattle. However, one-sixth of them (14.81%) had Malnad Gidda cattle ranging from 10-50 numbers. The rest had big herds above 50 animals. The herd size between the different categories of farmers was found to be significantly varying. Almost all of the small farmers (97.22%) had small Malnad Gidda cattle holdings with less than 10 cattle. Significantly, majority of middle (18.05%) and large farmers (23.61%) had 10-50 herd size. Malnad Gidda cattle herds exceeding 50 numbers were found with very few large farmers (5.56%) and medium farmers (1.38%). The herd size might be dependent on manure requirement of the farmers as the major purpose of rearing Malnad Gidda cattle was manure and milk production for household consumption. In contrast, Samjadar (2000) observed that buffaloes were preferred more than other livestock in Nainital region of Uttara Khand state of India.

**Milk Production in Malnad Gidda Cattle**

The average milk yield per Malnad Gidda cattle was 1.61 litres (Table 3). It was significantly high among large farmers (1.73 litres) as compared to medium (1.69 litres) and small farmers (1.29 litres). (Fcal 6.31>Fcrit. 3.015). Better management and availability of fodder and feed resources among medium and large farmers could be the reasons for such difference in average milk production. The findings are similar to those of Das *et al.* (2005); Reddy *et al.* (2004); Ramesha *et al*. (2015) and Sosamma *et al.* (2016) who have studied milk yield in dwarf cattle namely Malnad Gidda, Punganur and Kasargod cattle. Likewise, average milk yield per household was 3.98 litres. A significant difference between the categories was also noticed with respect to household milk yield. It was less (2.17 litres) among small farmers and more in medium (4.19 litres) and large farmers (5.57 litres) and this could be because of difference in herd size of the Malnad Gidda cows.

**Table 3:** Details of average daily milk yield per animal and per household

| Groups | Milking animals | Daily milk yield in litres | Average milk yield per animal | | Average milk yield per house hold (Litres) | |
|---|---|---|---|---|---|---|
| | | | Mean ± SE | Standard deviation | Mean±SE | Standard deviation |
| Small (n=72) | 121 | 156.23 | 1.29±0.10 | 1.17 | 2.17 ±0.18 | 1.53 |
| Medium (n=72) | 145 | 246.17 | 1.69±0.09 | 1.16 | 4.19±0.55 | 4.68 |
| Large (n=72) | 204 | 353.21 | 1.73±0.07 | 1.09 | 5.57 ±0.67 | 5.7 |
| Overall (n=216) | **470** | **755.61** | **1.61±0.05** | **1.15** | **3.98 ±0.31** | **4.56** |
| *Fcal* | | | 6.31**>3.015 | | | |

*** Significant at one per cent level*

**Gross Annual income from Malnad Gidda cattle**

The average household annual income from Malnad Gidda cattle (Table 4) was Rs.95,235 out of which, Rs.56,990 was from manure, while Rs. 37,782 was from milk and Rs. 463 was from sale of animals. Thus, manure contributed to the maximum (59.80 %) followed by milk (39.71%) and sale of animals (0.49 %) to the overall annual income per household from Malnad Gidda cattle. Among small and medium farmers, the contribution from milk was significantly high and was about three-fifth of the total income from Malnad Gidda cattle while the rest was contributed by manure. Whereas, it was reverse in case of large farmers. Manure contributed to the extent of three-fifth and milk to the extent of two-fifth of the overall income from Malnad Gidda cattle. Income from sale of animals was meager (0.80%) and was limited to large farmer category only.

**Table 4:** Details of average household annual income from Malnad Gidda cattle

| Farmers Category | Milk (In Rs.) | Manure (In Rs.) | Sale of animals (In Rs.) | Per household (in Rs.) |
|---|---|---|---|---|
| Small (n=72) | 20594.62±1703.18 (60.08%) | 13686.56 ±1103.77 (39.92%) | - | 34281.18±2345.57 (100%) |
| Medium (n=72) | 39805.28±5250.57 (65.65%) | 20833.33±2189.88 (34.35%) | - | 60638.61±6070.95 (100%) |
| Large (n=72) | 52946.29±6385.56 (29.30%) | 126319.4±34728.69 (69.90%) | 1388.9±265.32 (0.80%) | 180654.58±35099.68 (100%) |
| **Total (n=216)** | **37782.06±2947.36** (39.71%) | **56990.74±12080.31** (59.80%) | **462.96±98.82** (0.49%) | **95235.76±12470.83** (100%) |
| F value | 6.34**>3.03 | 9.36**>3.03 | 27.3**>3.03 | 11.21**>3.03 |

*#Figures in parenthesis indicate the percentage contribution from different outputs, viz, milk, manure and sale of animals to the total household annual income from Malnad Gidda cattle; ** Significant at one per cent level*

**Gross Annual Animal Husbandry Income**

Malnad Gidda cattle contributed to an extent of 71.12 per cent to the overall animal husbandry income (Table 5). It was significantly high among small farmers (90.74%) and medium farmers (85.90%) when compared to large farmers (61.59%). Thus, indicating that economic importance of Malnad Gidda cattle to the famers, especially the small and medium farmers.

**Table 5:** Contribution of Malnad Gidda cattle to total annual animal husbandry income

| Categories of Farmers (n=72 each) | Gross annual AH income per house hold (Rs.) | Gross annual Malnad Gidda income per house hold (Rs.) | Contribution of Malnad Gidda cattle (%) |
|---|---|---|---|
| Small farmers | 37778.67 | 34281.18 | 90.74 |
| Medium farmers | 70587.78 | 60638.61 | 85.9 |
| Large farmers | 2,93,332.57 | 1,80,654.58 | 61.59 |
| **Total (n=216)** | **1,33,899.67** | **95235.76** | **71.12** |
| F value | 7.14**>3.03 | 11.21**>3.03 | |

*** Significant at one per cent level*

**Combined Annual Agriculture and Animal Husbandry Income**

The animal husbandry income formed about one-third (37%) of the combined animal husbandry and agriculture income for the pooled sample respondents (Table 6). Among small farmers, animal husbandry formed the major source of income (54%) out of the combined animal husbandry and agriculture income. Whereas in medium (36.8%) and large farmers (35.8%) it was of about one-third of the combined income. This again reiterates the importance of animal husbandry among small farmers. Waldie and Ramkumar (2002) also reports that, the contribution of livestock rearing particularly dairying to the total income of landless women in all the southern states of India, approximately ranged from 50 to 80 *per cent*.

**Table 6:** Details of animal husbandry and agriculture income

| Categories of farmers | Animal husbandry income (in Rs.) | Agriculture income (in Rs.) | Combined income (in Rs.) |
|---|---|---|---|
| Small farmer (n=72) | 37778.67 (54%) | 32215.28 (46%) | 69993.95 (100%) |
| Medium farmer (n=72) | 70587.78 (36.8%) | 121444.4 (63.2%) | 192032.18 (100%) |
| Large farmer (n=72) | 2,93,332.6 (35.8%) | 525388.9 (64.2%) | 818721.5 (100%) |
| **Overall (n=216)** | **401699.05 (37%)** | **679048.58 (63%)** | **1080747.63 (100%)** |
| F value | 7.14**>3.04 | 24.3**>3.03 | |

*# Figures in parenthesis indicate percentage of income out of the total combined income; ** Significant at one per cent level*

**Purpose of Rearing Malnad Gidda Cattle**

All the famers reared Malnad Gidda cattle for manure and milk. Majority of the respondents (68.52%) reared Malnad Gidda cattle with an intension of obtaining manure and milk alone (Table 7). While, one-sixth of them (18.07%) had additional purpose of social status and religious intension. About one-tenth of them (8.79%) aimed at utilizing the draught capacity of the animals along with benefits of milk and manure. The rest of the respondents (4.62%) had intension of collecting urine for preparation of arka, and in other combinations of purposes in addition to the purpose of milk and manure.

**Table 7:** Details of purpose of rearing Malnad Gidda cattle

| Particulars | Small farmer (n=72) | Medium farmer (n=72) | Large farmer (n=72) | Total (n=216) |
|---|---|---|---|---|
| Manure, Milk | 56(77.78) | 53(73.61) | 39(54.17) | 148(68.52) |
| Manure, Milk, Social status, Religious significance | 3(4.16) | 12(16.67) | 24(33.33) | 39(18.07) |
| Manure, Milk, Draught | 11(15.28) | 4(5.55) | 4(5.56) | 19(8.79) |
| Manure, Milk, *Arka*, Religious significance | 2(2.78) | 3(4.17) | 5(6.94) | 10(4.62) |
| *Chi-square* | 26.97** | | | |

*Arka=Liquid used for medicinal purpose in Ayurvedic Treatment; # Figures in parenthesis represent percentage; ** Significant at one per cent level*

Significantly, more number of small farmers (77.78%) and medium farmers (73.61%) reared Malnad Gidda cattle for the purpose of getting milk and manure when compared to large farmers (54.17%). However, more number of large farmers (33.33%) reared Malnad Gidda cattle for the additional purpose of maintaining social status and for religious intension along with obtaining milk and manure. Likewise, the high number of small farmers had an additional purpose of obtaining draught utility from Malnad Gidda cattle (15.28%). The purpose of rearing cattle is further dictated by the agro-ecological and situational factors. Das (2005) reported that, in Sundarbans area of Orissa, the primary purpose of cattle and buffalo rearing was to perform the agricultural operations while, Rushton *et al*. (1996) reported that, milk was the main output from cattle in the mixed farming systems around Bangalore.

## Conclusion

The majority of the Malnad Gidda cattle farmers practiced both agriculture and animal husbandry. Each respondent household had an average eight number of Malnad Gidda cattle with average daily milk yield of 1.61 liters per animal and per household daily milk yield of 3.98 liters. The average annual animal husbandry income was Rs 1,33,890. Further, average household annual income from Malnad Gidda cattle alone was Rs. 95,235 which included Rs.56,990 from manure, Rs. 37,783 from milk and Rs. 463 from sale of animals. Among small farmers, animal husbandry formed the major source of income (54%) out of the combined animal husbandry and agriculture income as compared to medium (36.8%) and large farmers (35.8%). Obtaining manure and milk was the main purpose of rearing Malnad Gidda cattle. Thus, the results clearly indicated that Malnad Gidda Cattle still formed the integral component of the mixed farming system and livelihood security of all categories of farmers, especially the small farmers, depicting a predominant agricultural milieu of Malnad region of Karnataka.

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## Conflict of Interests

There is no conflict of interest.

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