Pattern of Pricing of Dairy Cattle and Buffaloes in Tamil Nadu, India

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ABSTRACT

Dairy cattle and buffalo marketing in India is highly unorganized and their market prices are negotiated with hidden secret codes in livestock markets. In this context, the present study was carried out with the objective of identifying the pattern of sales of dairy animals and to ascertain the pricing of dairy cattle and buffaloes based on their age, breed and yield. Primary data were collected from 525 dairy cattle and buffalo farmers from seven randomly selected districts in the state of Tamil Nadu located in Southern India. The data were analysed through frequency, arithmetic mean, percentages and standard deviation. Majority of the dairy farmers sold their animals through middlemen and the rest sold their animals equally at their farm gate and *shandies* (livestock markets). The major reason for selling of animal was to meet out family expenditure and about one-third of the dairy farmers sold because of culling. The prices of dairy animals differed between the species (cattle and buffaloes), age (number of calvings), presence of calf, sex of the calf, milk yield and health status of the animals. Scientific price fixation need to be implemented so as to regulate the dairy cattle and buffalo marketing.

Keywords : Marketing – Prices - Dairy breeds – Cattle – Buffalo

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1. INTRODUCTION (ARIAL, BOLD, 11 FONT, LEFT ALIGNED, CAPS)

Dairy cattle trade is a common phenomenon existing for centuries in India. Cattle are sold and bought at fairs, shandies, daily and weekly markets and even at farm gate. Animals are marketed directly by the owner to buyer or with the help of middlemen. The major share of animal value was reaped by the unauthorized middlemen (Kumar[1], 2012) The pricing of dairy cattle and buffaloes were not performed on scientific basis and found to be unorganized (Birthal[2], 2014, Das[3], 2016). There are no rules and regulations prevailing in price fixation of dairy animals. In general, the buyers and sellers, decide the value of a dairy animal based on breed, order and stage of lactation, lactation yield, udder size and morphology, teat structure and position, sex of the calf, colour, temperament, whirls, *etc.* (Selvakumar[4], 2003). Animal owners fix the price of dairy animals based on various traditional factors and use secret code words to define the market price in which bargaining is hidden, as the bargainers close their digits with towel and negotiate through finger palpation. Studies pertaining to pricing of dairy cattle and buffaloes are essential and need of the hour for giving proper guidelines in dairy animal price fixation and to minimize the interference of the intermediaries. Hence, the present study was carried out with the specific objectives *viz.,* to identify the pattern of sales of dairy animals and to ascertain the age, breed and yield-wise pricing of dairy cattle and buffaloes.

2. MATERIAL AND METHODS / EXPERIMENTAL DETAILS / METHODOLOGY (ARIAL, BOLD, 11 FONT, LEFT ALIGNED, CAPS)

For the present study, seven districts in Tamil Nadu *viz.,*Tiruvannamalai, Vellore, Namakkal, Salem, Tirunelveli, Madurai and Thiruchirapalli covering four agro-climatic zones of Tamil Nadu were selected based on the secondary data of dairy cattle and buffalo population and milk production. Among dairy cattle, three breeds namely Jersey cross, Holstein-Friesian (HF) cross and non-descript breeds were chosen. Among buffalo owners, data were collected from two breed owners *viz.,* Murrah graded and non-descript. Sample respondents of 75 dairy cattle and buffalo owners each from the seven districts were selected through stratified random sampling making the total sample size as 525. The data pertaining to the objectives of the study were collected using a pre-tested interview schedule between October 2010 and January 2011. The value of dairy cattle and buffaloes at various age groups with or without calf were ascertained from the respondents. The details on place of selling, purpose of selling with average value of animals were summarized and analysed through frequency, arithmetic mean, percentages and standard deviation.

3. RESULTS AND DISCUSSION

3.1 Pattern and purpose of sales of dairy cattle and buffaloes

It is evident from the Table 1 that out of 525 dairy cattle and buffalo owners, 45.33 per cent sold their animals through middlemen, 26.29 per cent at their farm gate and 24.00 per cent at shandies. It is clear from the table that the rest 4.38 per cent of respondents have not sold their cattle and buffaloes. Similar scenario was observed among 370 dairy cattle farmers and 155 dairy buffalo farmers. The breed-wise analysis on place of selling dairy animals indicated that half of HF cross-bred cattle were sold through middlemen and about 21 per cent each at farm gate and shandies. However, it was 45.29 per cent, 31.18 per cent and 22.35 per cent, respectively for Jersey cross cattle. It is peculiar to note that the non-descript cattle were sold to a tune of 37.14 per cent in shandies, followed by middlemen (34.29 per cent) and farm gate (25.71 per cent). More or less, same trend was seen in non-descript

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buffaloes. However, Murrah graded buffaloes followed the trend of HF cross cattle. Only one-fourth of the buffalo farmers sold their animals at their farm gate, which is in contrast to the findings of Jadoun *et al.*[5] (2014). The factors like lack of marketing information, unscientific price fixation, lack of awareness, absence of regulated livestock markets and forced selling of animals might be the reasons for the farmers to depend on middlemen for selling their animals.

Table 1. Pattern of sale of dairy cattle and buffaloes by the sample respondents

(in numbers)

S. No.	Particulars	Dairy Cattle				Dairy Buffalo			Overall dairy animal (n=525)
		Jersey cross (n=170)	HF cross (n=165)	Non-descript (n=35)	Overall cattle (n=370)	Murrah graded (n=75)	Non-descript (n=80)	Overall buffalo (n=155)	
1	Through Middlemen	77 (45.29)	81 (49.09)	12 (34.29)	170 (45.95)	42 (56.00)	26 (32.50)	68 (43.87)	**238 (45.33)**
2	Farm gate / House	53 (31.18)	36 (21.82)	9 (25.71)	98 (26.49)	20 (26.67)	20 (25.00)	40 (25.81)	**138 (26.29)**
3	Shandies	38 (22.35)	35 (21.21)	13 (37.14)	86 (23.24)	11 (14.67)	29 (36.25)	40 (25.81)	**126 (24.00)**
4	Not sold	2 (1.18)	13 (7.88)	1 (2.86)	16 (4.32)	2 (2.67)	5 (6.25)	7 (4.52)	**23 (4.38)**
Total		**170 (100.00)**	**165 (100.00)**	**35 (100.00)**	**370 (100.00)**	**75 (100.00)**	**80 (100.00)**	**155 (100.00)**	**525 (100.00)**

Figures in parentheses indicate percentage to the number of respondents

The purpose of selling of dairy cattle from the sample respondents is presented in Table 2 and it revealed that out of the total sample respondents, about 45 per cent sold their cattle and buffaloes to meet out their family expenditure, which concurs with findings of Senthilkumar *et al*[6]. (2012), Ramesh *et al*[7]. (2012) and Ekka[8] (2016). About 28 per cent for the farmers sold due to culling and about 23 per cent sold due to management difficulty. The present results contradicts with the findings of Bhattacharjya[9] (2017) who reported reasons for selling goats as urgent need for money, fodder scarcity, fear of sickness and natural calamities.

A more or less, similar trend was observed among overall dairy cattle farmers with the percentage of 42.43, 28.92 and 24.33, respectively for family expenditure, culling and management difficulty, respectively. However, about one-half of the dairy buffalo farmers sold their animals to meet out family expenditure, about one-fourth for culling and about one-fifth due to management difficulty. No sales were noticed among four per cent of dairy cattle and buffalo owners. The purpose of selling the Jersey cross cattle was similar with that of overall dairy cattle. However, in HF cross cattle, the reasons for selling was in the order of family expenditure (37.58 per cent), management difficulty (27.87 per cent) and culling (26.67 per cent). As HF cross cattle are high yielding animals, it has to be managed well, failing which milk production will be hampered thereby increasing the cost of production. In case of non-descript cows and buffaloes, remarkable percentage of farmers (about 57 to 61 per cent) sold their animals for meeting family expenditure. Indian farmers treat non-descript cattle and buffaloes as their mobile bank. Hence, as and when there is a need for family expenditure, they tend to sell their animals to meet out their expenditure. It was noticed that comparatively lesser percentage of animals were sold since they have to be culled (15 to 17 per cent) among non-descript cows and buffaloes. As the farmers maintained these animals traditionally, they do not follow scientific practice of culling and this might be the reasons for the above results.

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Table 2. Purpose of selling dairy animal by the sample respondents (in numbers)

S. No.	Particulars	Dairy Cattle				Dairy Buffalo			Overall dairy animal (n=525)
		Jersey cross (n=170)	HF cross (n=165)	Non-descript (n=35)	Overall cattle (n=370)	Murrah graded (n=75)	Non-descript (n=80)	Overall buffalo (n=155)	
1	Family expenditure	75 (44.12)	62 (37.58)	20 (57.14)	157 (42.43)	29 (38.67)	49 (61.25)	78 (50.32)	**235 (44.75)**
2	Culling	57 (33.53)	44 (26.67)	6 (17.14)	107 (28.92)	28 (37.33)	12 (15.00)	40 (25.81)	**147 (28.00)**
3	Difficulty in management	36 (21.18)	46 (27.87)	8 (22.85)	90 (24.32)	16 (21.33)	14 (17.50)	30 (19.35)	**120 (22.87)**
4	No sales	2 (1.17)	13 (7.88)	1 (2.87)	16 (4.33)	2 (2.67)	5 (6.25)	7 (4.52)	**23 (4.38)**
Total		**170 (100.00)**	**165 (100.00)**	**35 (100.00)**	**370 (100.00)**	**75 (100.00)**	**80 (100.00)**	**155 (100.00)**	**525 (100.00)**

Figures in parentheses indicate percentage to the number of respondents

3.2 Pricing of dairy cattle breeds

On perusal of Table 3, it is clear that among different breeds of cattle, HF cross cattle fetched comparatively higher price followed by Jersey cross and non-descript cattle. Higher milk yield might be the reason for this scenario. The value of pregnant heifer of HF cross cattle was found to be Rs.19,793.94, followed by Jersey cross (Rs.17,264.71) and non-descript cattle(Rs.12,352.94). With female calf, the value of HF cross cow at first calving was found to be Rs.23,103.03, which further increased to Rs.21,896.97 upto fourth calving and there after decreased to Rs.15,012.20 for more than 5 calvings. The value of Jersey cross cow with male calf was at Rs.17,911.76 at first calving and increased to about Rs. 17500 upto third calving and thereafter decreased. It is peculiar to note that the value of non-descript cows decreased with increase in number of calving. With female calf, its value was found to decrease from Rs.14,705.88 (first calving) to Rs.7261.76 (more than 5 calvings). However with male calf, non-descript cow valued at Rs.14,617.67 (first calving) to Rs.7705.88 (more than 5 calvings). Without calf, they were sold at Rs.12,147.06 at its first calving and its value decreased to Rs.6882.35 at the stage of more than five calvings. The dry cows of different breeds of cattle were valued at Rs.7589.63 for HF cross, Rs.6716.77 for Jersey cross and Rs.5264.71 for non-descript breed. In case of sick animals, the values were at Rs.3206.49, Rs.2998.13 and Rs.2161.29, respectively for HF cross, Jersey cross and non-descript cattle, respectively.

Table 3. Valuation of dairy cattle breeds (in rupees)

S.No.	Particulars	Jersey cross (n=170)		HF cross (n=165)		Non-descript (n=35)	
		Value	S.D	Value	S.D	Value	S.D
1	Female calf (0 to 6 months age)	2204.71	1066.42	2643.03	1383.93	2617.65	1637.90
2	Female calf (7 to 12 months age)	4184.12	1877.34	5160.61	2644.02	3794.12	1528.11

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3	Male calf	1470.59	1513.63	1859.70	2385.89	3197.06	1629.93
4	Heifer	8348.52	4268.43	9429.70	3613.70	6720.59	2520.19
5	Pregnant heifer	17264.71	4163.16	19793.94	4913.27	12352.94	2901.23
6	Cow with male calf (1st calving)	17911.76	4123.59	20295.15	4486.44	14617.65	2498.66
7	Cow with female calf (1st calving)	19941.18	4419.84	23103.03	4615.22	14705.88	2552.83
8	Cow without calf (1st calving)	15747.65	4360.38	17945.45	4329.78	12147.06	2720.65
9	Cow with male calf(2nd calving)	19417.65	5003.46	21581.82	5328.33	14088.24	3008.75
10	Cow with female calf (2nd calving)	21808.82	5142.95	24775.76	5269.97	13205.88	4903.80
11	Cow without calf (2nd calving)	16923.53	5498.52	19230.30	5691.91	11411.76	3322.26
12	Cow with male calf(3rd calving)	19197.65	5990.98	21539.39	6419.53	13029.41	3588.58
13	Cow with female calf(3rd calving)	21488.24	6172.56	24612.12	5958.79	12852.94	4053.67
14	Cow without calf (3rd calving)	16941.18	6084.42	19018.18	6371.12	10029.41	3857.19
15	Cow with male calf(4th calving)	17588.24	6099.61	19100.00	6574.43	11558.82	3799.45
16	Cow with female calf(4th calving)	19657.65	5979.95	21896.97	6337.68	11441.18	3823.30
17	Cow without calf (4th calving)	15056.47	5689.56	16775.76	6230.68	8588.24	3340.46
18	Cow with male calf (5th calving)	14547.06	5077.58	16175.76	6286.80	9735.29	3776.39
19	Cow with female calf (5th calving)	16950.00	5193.49	18993.94	6309.59	9911.76	3800.86
20	Cow without calf (5th calving)	12435.29	4741.72	13370.91	5932.31	6882.35	3291.54
21	Cow with male calf (more than 5 calving)	11797.06	4469.65	13284.85	7523.79	7705.88	3614.19
22	Cow with female calf(more than 5 calving)	13438.24	4890.58	15012.20	5655.76	7261.76	3219.07
23	Cow without calf (more than 5 calving)	9500.00	3886.71	9936.59	4358.13	5544.12	2807.91
24	Dry cow	6716.77	2279.89	7589.63	2953.29	5264.71	2178.53
25	Sick animal	2998.13	1560.82	3206.49	1914.81	2161.29	1872.55

3.3 Pricing of dairy buffalo breeds

On perusal of Table 4, it is clear that the value of Murrah graded buffalo was found to be higher than non-descript buffalo. Higher milk yield among Murrah graded buffalo might be the reason for this result. The value of female calf of Murrah graded buffalo was Rs.2872.00 at the age of upto 6 months and Rs.4878.67 at the age of 7-12 months. However, its male calf was valued to a minimum at Rs.1801.33. The value of pregnancy in Murrah graded buffalo heifers was clearly evinced by its difference in value for about Rs.10,000. The value of Murrah graded buffalo cow with and without calves were found to be above Rs.20,000 upto four calvings except in Murrah graded buffalo without calf at first and fourth calving. The dry Murrah graded buffalo fetched a lesser price of Rs.7756.76 and that of sick animal at Rs.3245.59. Comparison of Table 3 and Table 4 indicated that non-descript buffaloes fetched a higher value when compared to non-descript cows. The value of non-descript buffalo with male calf was found to be increasing from first calving (Rs.18,600.00) to second calving (Rs.18,753.75). Further, it decreased to Rs.18,600.00 at third calving, Rs.17,893.75

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at fourth calving, Rs.15,612.50 at fifth calving. In case of non-descript buffaloes with female calf, the value stood at Rs.21,850 at first calving and increased to Rs.23,875 at third calving and thereafter deceased to Rs.14,772.50 at the stage of more than five calvings. The value of non-descript buffalo without calf followed similar pattern as that of non-descript buffalo with female calf. The dry non-descript buffalo fetched Rs.8298.73 and sick animal fetched the least (Rs.2314.04).

Table 4. Valuation of dairy buffalo breeds (in rupees)

S.No.	Particulars	Murrah graded (n=75)		Non-descript (n=80)	
		Value	S.D	Value	S.D
1	Female calf (0 to 6 months age)	2872.00	1599.29	1907.50	477.01
2	Female calf (7 to 12 months age)	4878.67	2796.05	3916.25	1167.65
3	Male calf	1801.33	1466.33	1320.00	1288.65
4	Heifer	8786.67	2986.65	8300.00	2111.75
5	Pregnant heifer	18386.67	4862.69	19375.00	4082.61
6	Cow with male calf (1st calving)	20266.67	4198.88	18600.00	3527.83
7	Cow with female calf (1st calving)	22666.67	4173.06	21850.00	3522.44
8	Cow without calf (1st calving)	16933.33	5484.83	15912.50	2904.36
9	Cow with male calf (2nd calving)	22277.33	5517.63	18753.75	4565.94
10	Cow with female calf (2nd calving)	25066.67	4924.66	23387.50	3541.77
11	Cow without calf (2nd calving)	20053.33	5826.07	16425.00	2980.00
12	Cow with male calf (3rd calving)	23280.00	6985.62	18600.00	5755.79
13	Cow with female calf (3rd calving)	25466.67	6562.25	23875.00	3879.11
14	Cow without calf (3rd calving)	20906.67	7188.91	16581.25	3524.28
15	Cow with male calf (4th calving)	21253.33	6971.16	17893.75	4343.40
16	Cow with female calf (4th calving)	24130.67	6675.85	20975.00	5419.08
17	Cow without calf (4th calving)	18146.67	6562.99	15175.00	3734.12
18	Cow with male calf (5th calving)	17173.33	6717.01	15612.50	4493.30
19	Cow with female calf (5th calving)	19400.00	6571.85	18137.50	5182.11
20	Cow without calf (5th calving)	14180.00	5830.16	12650.00	3077.48
21	Cow with male calf (more than 5 calving)	12933.33	5622.31	12181.25	5338.68
22	Cow with female calf (more than 5 calving)	15233.33	6026.03	14772.50	5330.95
23	Cow without calf (more than 5 calving)	10526.67	4790.12	9687.50	3429.56
24	Dry cow	7756.76	3377.24	8298.73	2144.49
25	Sick animal	3245.59	2356.92	2314.04	1731.58

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3.4 Pricing of overall dairy cattle and buffalo breeds

The valuation pattern of overall dairy cattle is shown in Table 5. The average value of male calf was found to be the least (Rs.1806.89) followed by female calf and heifers. The value of pregnant heifer (Rs.17,932.43) was found to be double when compared to non-pregnant heifers (Rs.8676.61). The value of cow with male calf at first calving was observed to be Rs.18,664.05 and it increased to Rs.19,881.08 at second calving. However, from third calving onwards, the value decreased to Rs.19,661.08, Rs.17,695.95, Rs.14,824.32, Rs.12,079.73 and so on. Similar trend was observed for the value of cows with female calves with a value of Rs.20,854.05 (first calving), Rs.22,320.27 (second calving), Rs.22,064.86 (third calving), Rs.19,880.54 (fourth calving), Rs.17,198.65 (fifth calving) and Rs.13,556.64 (more than 5 calvings). The value of dairy cattle without calf also had similar pattern of valuation. The value of cow without calf was found to be lesser than the value of cow with calf. It is obvious that the cow and calf fetched higher price than cow alone due to the calf value. Further, it was found that the cow with female calf had higher value than cow with male calf due to its utility value of female calves as dairy animals and male calves were exclusively sold for meat purpose only. The average value of dry cow was found to be Rs.6968.31. The value of sick animals was observed to be extremely low at Rs.3010.12, as cows were not slaughtered for meat.

The average value of male buffalo calf was found to be Rs.1552.90. The value of female calf (upto 6 months), female calf (7-12 months), heifer and pregnant heifers of overall buffalo was found to be Rs.2374.19, Rs.4381.94, Rs.8535.48 and Rs.18,896.77, respectively. The value of buffalo increased from first calving upto third calving and thereafter it was found to decrease. The scenario of buffalo value without calf were Rs.16,406.45, Rs.18,180.65, Rs.18,674.19, Rs.16,612.90, Rs.13,390.32 and Rs.10,093.55 at the stage of first to more than five calvings, respectively. With male calf, buffalo cow was valued at Rs.19,406.45 at first calving and increased to Rs.20,864.52 at third calving and there after decreased to Rs.12,545.16 at the stage of more than five calvings. The value of buffalo cow with female calf was observed to be maximum at the stage of third calving (Rs.24,645.16). At the first and second calving, their values were observed at Rs.22,245.16 and Rs.24,200.00, respectively. However, they were Rs.22,501.94, Rs.18,748.39 and Rs.14,995.48 at fourth, fifth and more than five calvings, respectively. The table clearly evinced that the value of buffalo with female calf was found to be more followed by with male calf and without calf. This might be due to the utility of female calf in terms of future milk production and male for beef production.

Table 5 showed that the value of male calf of overall dairy cattle and buffalo was found to be Rs.1731.90 and that of female calf was at Rs.2417.90 (upto 6 month of age) and Rs.4520.95 (7-12 months of age). The value of heifer was observed to be Rs.8634.16 and pregnancy increased the value of heifer by Rs.9582.98. On perusal of table, it is evident that the overall dairy cattle and buffalo with male calf valued Rs.18,883.24, Rs.20,051.62, Rs.20,016.38, Rs.18,234.29 and Rs.15,280.00 at the stage of first to five calvings, respectively. However, it was Rs.21,264.76, Rs.22,875.24, Rs.22,826.67, Rs.20,654.48 and Rs.17,656.19, respectively for overall dairy cattle and buffalo with female calf. However, in case of dairy animal without calf, the overall dairy cattle and buffalo fetched lower price at Rs.16,392.57 at first calving stage and Rs.9552.67 at more than 5 calvings stage. The average value of dry cow was found to be at Rs.7283.24 and about Rs.3000 for sick animals.

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217 **Table 5. Valuation of overall dairy cattle and buffalo** (in rupees)

S.No.	Particulars	Overall cattle (n=370)		Overall buffalo (n=155)		Overall dairy animal (n=525)	
		Value	S.D	Value	S.D	Value	S.D
1	Female calf (0 to 6 months age)	2436.22	1288.89	2374.19	1256.82	2417.90	1278.62
2	Female calf (7 to 12 months age)	4579.19	2285.08	4381.94	2165.39	4520.95	2250.15
3	Male calf	1806.89	2013.00	1552.90	1394.02	1731.90	1854.21
4	Heifer	8675.61	3922.18	8535.48	2575.55	8634.16	3575.15
5	Pregnant heifer	17932.43	4907.63	18896.77	4489.78	18217.14	4804.03
6	Cow with male calf (1st calving)	18664.05	4504.15	19406.45	3943.92	18883.24	4355.75
7	Cow with female calf (1st calving)	20854.05	5025.17	22245.16	3860.12	21264.76	4750.29
8	Cow without calf (1st calving)	16386.76	4548.05	16406.45	4364.03	16392.57	4490.36
9	Cow with male calf (2nd calving)	19881.08	5426.09	20458.71	5333.34	20051.62	5400.24
10	Cow with female calf (2nd calving)	22320.27	6104.62	24200.00	4335.60	22875.24	5701.22
11	Cow without calf (2nd calving)	17432.43	5849.58	18180.65	4916.80	17653.33	5596.21
12	Cow with male calf (3rd calving)	19661.08	6459.20	20864.52	6778.57	20016.38	6571.61
13	Cow with female calf (3rd calving)	22064.86	6767.32	24645.16	5389.67	22826.67	6494.23
14	Cow without calf (3rd calving)	17216.22	6532.74	18674.19	5992.31	17646.67	6406.95
15	Cow with male calf (4th calving)	17695.95	6477.51	19519.35	5988.87	18234.29	6385.99
16	Cow with female calf (4th calving)	19880.54	6641.43	22501.94	6243.64	20654.48	6629.52
17	Cow without calf (4th calving)	15215.14	6188.58	16612.90	5483.61	15627.81	6017.84
18	Cow with male calf (5th calving)	14824.32	5823.18	16367.74	5713.98	15280.00	5828.47
19	Cow with female calf (5th calving)	17198.65	6148.60	18748.39	5910.14	17656.19	6114.63
20	Cow without calf (5th calving)	12332.97	5491.95	13390.32	4666.92	12645.14	5279.57
21	Cow with male calf (more than 5 calving)	12079.73	6159.33	12545.16	5472.89	12217.14	5963.51
22	Cow with female calf (more than 5 calving)	13556.64	5545.25	14995.48	5664.02	13982.25	5613.83
23	Cow without calf (more than 5 calving)	9325.47	4190.90	10093.55	4151.66	9552.67	4190.08
24	Dry cow	6968.31	2677.95	8036.60	2812.75	7283.24	2759.07
25	Sick animal	3010.12	1774.09	2820.80	2138.37	2959.87	1877.16
26	Value per litre of milk (with calf)	2269.16	2447.83	2619.44	787.34	2357.34	2158.25
27	Value per litre of milk (with out calf)	1904.05	2741.38	2347.52	2883.07	2010.19	2778.94

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3.5 Pricing of dairy cattle and buffalo based on milk yield

The valuation of dairy cattle and buffalo based on milk yield is presented in Table 6. From the table, it is clear that each litre of milk produced increased value of dairy cattle and buffalo by Rs.2357.34 for animals with calf and Rs.1924.88 for animals without calf. Among cattle and buffaloes with calf, buffalo milk had more influence on the animal value (Rs.2619.44) than cow (Rs.2269.16). The trend was similar for dairy cattle and buffalo without calf but with lesser value averaging Rs.300 when compared to the animals with calf. As fat percentage in buffalo milk is higher than the cow milk, it fetched higher market price, which reflected in animal valuation also. Among different breeds of cattle with calf, the value of HF cross cattle increased by Rs.2698.55 per litre of milk. However, it was Rs.2095.39 for Jersey cross cattle and Rs.1216.67 for non-descript cattle. Among buffalo breeds, Murrah graded buffalo with calf fetched the rate of Rs.2842.22 per litre of milk and for that of non-descript buffalo it was Rs.2460.32. Similar trend was observed among different breeds of cattle and buffalo without calf, however at the value lesser than the respective breeds of cattle and buffalo with calf.

Table 6. Valuation of dairy cattle and buffalo based on per litre of milk yield

(in rupees)

S.No.	Particulars	Sample size	With calf		Without calf	
			Value	S.D	Value	S.D
1	Jersey cross cow	170	2095.39	2248.25	1728.95	2449.80
2	HF cross cow	165	2698.55	2802.45	2333.33	3227.62
3	Non-descript cow	35	1216.67	677.77	853.33	491.12
A	**Overall cow**	**370**	**2269.16**	**2447.83**	**1904.05**	**2741.38**
1	Murrah graded	75	2842.22	1010.29	2082.05	1864.33
2	Non descript	80	2460.32	532.66	1933.87	466.92
B	**Overall buffalo**	**155**	**2619.44**	**787.34**	**1991.09**	**1207.90**
C	**Overall dairy animal**	**525**	**2357.34**	**2158.25**	**1924.88**	**2461.75**

4. CONCLUSION

It could be concluded from the study that about one-half of the dairy farmers depend on middlemen for their animals' sale and purchase. Only one-third of the dairy farmers followed the scientific practice of culling. The prices of dairy animals differed between the species (cattle and buffaloes), age (number of calvings), presence of calf, sex of the calf, milk yield and health status of the animals. Among various species, dairy buffalo fetched more price than dairy cattle. Among various cattle breeds, HF cross fetched more price and likewise Murrah graded fetched more price among dairy buffaloes. The value of dairy animal was found to increase upto three calving and there after found to decrease. Each litre of milk was found to increase the value of dairy cattle and dairy buffalo with calf by Rs.2269 and Rs. 2619, respectively.Thus, efforts might be taken to educate the farmers about scientific price fixation so as to avoid malpractices and intervention of middlemen.

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COMPETING INTERESTS

Authors have declared that no competing interests exist

AUTHORS' CONTRIBUTIONS

Author 1 designed the study, wrote the protocol, and wrote the first draft of the manuscript, edited and finalized the draft, Author 2 and Author 3 involved in data collection and data entry and and Author 4,,' performed the statistical analysis, managed the literature searches and wrote the draft. All authors read and approved the final manuscript.

CONSENT (WHERE EVER APPLICABLE)

Not applicable

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

Not applicable

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