



# Management Practices Followed by Indigenous Cattle Owners under Field Conditions in Western Maharashtra

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## ABSTRACT

The information regarding management practices followed by indigenous cattle owners under field conditions in western Maharashtra was collected from the cattle owners from the Kolhapur, Sangli, Satara, Solapur and Pune, who was rearing indigenous cattle mainly Sahiwal, Gir, Tharparkar, Red Sindhi and Rathi breeds which are mainly famous as milch purpose breeds during the year 2021-22. The 30 cattle owners from each district i.e., total 150 cattle owners were selected randomly. The study revealed that overall majority (63.33%) of cattle owners had permanent housing system. About (47.34%) owners preferred conventional housing system and (41.33%) loose housing system. About (71.33%) cattle's sheds were with pucca floor and (82.67%) had slope in floor. Majority (72.00%) of cattle owner had pucca manger for feeding in that (46.00%) had cement manger. Among the all cattle owners (37.33%, 28.00%, 32.00% and 28.67%) were used bedding material on the floor in winter season, rubber mat for floor, segregate cows before calving and provide bedding material to pregnant cows, respectively. Majority (81.33%) of cattle owners prefer stall feeding method. Group feeding was done by majority (94.00%) of cattle owners. About (69.33%) cattle owners fed their cattle with jowar kadabi + dry grass as a dry fodder and all of them did chopping of dry fodder while (92.00%) did chopping of green fodder before feeding. About (76.67%) cattle owners used ready made concentrate mixture and (72.67%) fed it at the time of milking. Among the all cattle owners 93.33%, 74.00% and 96.67% were fed concentrate mixture to pregnant cow, young calves and heifers, respectively. Majority (32.00%) cattle fed 2-3kg of concentrate mixture to lactating cow. Only 15.33 per cent cattle owners fed common salt while 78.67 % fed mineral mixture to their cattle.

**Key Words:** Cattle owners, breeding, feeding, frequency, housing, indigenous, management practices, percentage.

## INTRODUCTION

The reduction in production of indigenous cows is a major concern of their management. This study will be used to study which method can be used in future to increase the income. It will also help to increase the quantity of indigenous cows. In India there are a total 53 indigenous breeds that can survive in a variety of climates. At present due to various characteristics of native cows and increased demand for milk and dairy products, cow urine, cow dung a large number of farmers are being drawn

towards indigenous cattle rearing. Dairy farmers get income from selling of milk as well as dung used as manure for agriculture and in rural area as a fuel (Patbandha *et al*, 2015). In Maharashtra, Sahiwal and Gir cows are being reared on a large scale. For this scientific breeding, improvement and research of native cows is required. Guidance on fodder production, fodder processing, animal health, native cow's milk and dairy products, cow's urine, fermented and organic milk production etc. needs to be improved. Balanced nutrients, mineral

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supplements, vitamin supplements play important role in health and production performance of cattle. Well planned and adequate housing is one of the key features of dairy farming. Improper housing direct effect on animal health as well as additional labour charge. Clean and hygienic environmental condition in animal sheds can influence the animal health as well as performance and it can lead to optimize clean and healthy production (Madkar *et al*, 2020). If cattle rare scientifically, milk production will increase and at the same time it will contribute a lot to the economic growth of the cattle owners and national economy also. Majority indigenous cattle owners prefer natural breeding method instead of artificial insemination (Rathore *et al*, 2010). In the natural breeding if the breeding bull is not pure or non-descript then the grade and breed purity of future generation will be heavily affected in terms of production performance. The advantages of artificial insemination are more over natural services. Advanced technology like embryo transfer, sexed sorted semen technology have great importance in dairying to produce high quality future generations of animals. Our indigenous cattle's have many advantages over the exotic breeds. But at present the numbers of indigenous cows is going to vulnerable. On the other side, the production of these indigenous cows is getting a good price in the market and the demand is also increasing. Therefore, this study was conducted to determine the management has an effect on the yield reduction.

## MATERIALS AND METHODS

The data were collected from the different cattle owners from the Kolhapur, Sangli, Satara, Pune and Solapur districts of Maharashtra who was rearing indigenous cattle mainly Sahiwal, Gir, Tharparkar, Red Sindhi and Rathi breeds which are mainly famous as milch purpose breeds during the year 2021-22. A comprehensive questionnaire was prepared to collect data from the individual cattle owner through personal interview method. 30 cattle owners from each district i.e., total 150 cattle owners

were selected randomly. All 150 cattle owners were selected and grouped in 4 groups according to herd size in the herd size there was all groups of cattle were included i.e., calf, heifers, cow and bull also. In group I- less than 5 cattle, in group II- 5- 10 cattle, in group III- 10-20 cattle and in group IV -more than 20 cattle were there. The collected data were classified, and simple tabular analysis followed for analysing data, where the comparisons was redundant there only frequency and percentage were calculated (Panase and Sukhatme, 1967). To determine the significance of difference between carious independent groups with respect to some characteristics chi square test was applied to test the significance.

## RESULTS AND DISCUSSION

### Housing management practices

It was revealed that overall majority 63.33 per cent of cattle owners had permanent housing system, 28.00 per cent had temporary shed for cattle while from group IV cattle owners had well established dairy farm i.e. about 90.32 per cent had permanent shed for their cattle and from group I majority of cattle owners were new in dairy farming that's why they had less permanent housing system i.e., only 15.38 per cent (Atakare *et al.*, 2016). About 47.34 per cent cattle owners preferred conventional housing system and 41.33 per cent prefer loose housing system remaining only 11.33 per cent tied their cattle under the trees. About 71.33 per cent cattle's sheds were with pucca floor these results were in line with Rathva and Sorathiya, 2020, 82.67 per cent had slope in floor among the four groups, group IV 90.32 per cent cattle sheds had slope on the floor and from group I only 61.53 per cent had slope on the floor (Patel *et al.*, 2018). For proper drainage 84.00 per cent cattle shed had drainage channel/pit. Majority 66.00 per cent of cattle owners used bricks + cement for construction of side wall 10.67 per cent cattle owner's shed had side wall of bricks and mud. About 12.00 per cent cattle shed had used thatching material for side wall and 11.33 per cent cattle shed had no side wall for their cattle shed

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**Table 1. Housing management practices**

Response		Group I (13)		Group II (47)		Group III (59)		Group IV (31)		Overall (150)	
		No.	%	No.	%	No.	%	No.	%	No.	%
Housing system		Chi-square = 47.44* (P<0.05)									
Loose housing	Head-to-Head	3	23.08	6	12.77	25	42.37	11	35.48	45	30
	Tail to Tail	1	7.69	4	8.51	8	13.56	4	12.9	17	11.33
	Total	4	30.77	10	21.28	33	55.93	15	48.39	62	41.33
Conventional housing	Head-to-head	0	0	0	0	4	6.78	5	16.13	9	6
	Tail to tail	0	0	0	0	3	5.09	2	6.45	5	3.34
	Single row	2	15.38	27	57.45	19	32.2	9	29.03	57	38
	Total	2	15.38	27	57.45	26	44.07	16	51.61	71	47.34
Under the tree		7	53.85	10	21.28	0	0	0	0	17	11.33
Type of floor		Chi-square = 4.45									
Kuccha		7	53.85	12	25.53	16	27.12	8	25.81	43	28.67
Pucca	Cement	4	30.77	25	53.19	31	52.54	17	54.84	77	51.33
	Bricks	1	7.69	3	6.39	3	5.09	4	12.9	11	7.33
	Shahabadi tiles	1	7.69	7	14.89	9	15.25	2	6.45	19	12.67
Slope in floor		Chi-square = 5.58									
Yes		8	61.53	40	85.1	48	81.35	28	90.32	124	82.67
No		5	38.46	7	14.89	11	18.64	3	9.68	26	17.33
Drainage channel/pit		Chi-square = 0.06									
Yes		11	84.62	39	82.98	50	84.75	26	83.87	126	84
No		2	15.38	8	17.02	9	15.25	5	16.13	24	16
Material used in walls		Chi-square = 45.77* (P<0.05)									
Thatch		3	23.08	8	17.02	7	11.86	0	0	18	12
Brick+ cement		2	15.38	25	53.19	41	69.5	31	100	99	66
Brick in mud		2	15.38	5	10.64	9	15.25	0	0	16	10.67
No		6	46.16	9	19.15	2	3.39	0	0	17	11.33
Sufficient light+ ventilation		Chi-square = 5.88									
Yes		10	76.92	32	68.09	51	86.44	26	83.87	119	79.33
No		3	23.08	15	31.91	8	13.56	5	16.13	31	20.67
Manger available		Chi-square = 19.40* (P<0.05)									
Kuccha		4	30.77	10	21.27	11	18.64	4	12.9	29	19.33
Pucca	Cement	1	7.69	19	40.43	27	45.76	22	70.97	69	46
	Steel	4	30.77	11	23.4	19	32.21	5	16.13	39	26
	Total	5	38.46	30	63.83	46	77.98	27	87.1	108	72
No manger		4	30.77	7	14.89	2	3.39	0	0	13	8.67
Bedding material used on the floor in winter season		Chi-square = 0.43									
Yes		5	38.46	18	38.29	23	38.98	10	32.25	56	37.33
No		8	61.53	29	61.71	36	61.01	21	67.74	94	62.67
Use rubber mat for floor		Chi-square = 0.14									
Yes		4	30.77	13	27.66	17	28.81	8	25.81	42	28
No		9	69.23	34	72.34	42	71.19	23	74.19	108	72
Segregate cows before calving		Chi-square = 0.01									
Yes		4	30.77	15	31.92	19	32.2	10	32.26	48	32
No		9	69.23	32	68.08	40	67.8	21	67.74	102	68
Provide bedding material to pregnant cow		Chi-square = 0.18									
Yes		4	30.77	14	29.79	17	28.82	8	25.81	43	28.67
No		9	69.23	33	70.21	42	71.18	23	74.19	107	71.33

(Pilaniya *et al.*, 2018). About 79.33 per cent cattle owners provide sufficient light and ventilation into the cattle shed for maintaining micro climate while remaining 20.67 per cent had no sufficient light and ventilation in the shed (Rathva and Sorathiya, 2020). It was revealed that overall, 72.00 per cent of cattle owners prefer pucca manger for feeding, 19.33 per cent use kuccha manger for feeding and remaining 08.67 per cent had no manger for feeding. In the pucca manger majority of i.e., 46.00 per cent use cement constructed manger for feeding and 26.00 per cent prefer steel manger (Kasondra *et al.*, 2022). From the above observation it was revealed that overall, about 62.67 per cent didn't used bedding material on the floor in winter season because wastage of fodder and only 37.33 per cent cattle owners used bedding material. It was further observed that overall majority of i.e., 72.00 per cent cattle owners not used rubber mat on the floor in cattle shed and only 28.00 per cent use it. Majority of cattle owners i.e., 68.00 per cent did not segregate cows before calving and only 32.00 per cent segregate cows before calving.

### Feeding management

From the observation overall 81.33 per cent cattle owners feed their cattle by stall feeding method, only 05.34 per cent depends on grazing and overall, 13.33 per cent cattle owners use both methods stall feeding as well as grazing (Kumar *et al.*, 2019). Total 94.00 per cent cattle owners feed their cattle by group feeding method while remaining only 6.00 per cent did individual feeding. From the group III and group IV all the feed their cattle by group feeding method (Rajadurai *et al.*, 2020). Overall majority of 69.33 per cent cattle owners used jowar kadabi and dry grasses as a dry fodder while remaining 30.67 per cent cattle owners were used jowar kadabi+ dry grass + wheat/paddy straw as a dry fodder (Roy *et al.*, 2020). Table 2 revealed that all cattle owners were chop dry fodder before feeding. It was concluded that feeding of whole dry fodder create a more wastage than that of chopped dry fodder. Chopping was done by using

chaff cutter machine or manual cutting (Kumar *et al.*, 2019). Further it was revealed that overall, 92.00 per cent cattle owners followed chopping of green fodder before feeding and overall, only 08.00 per cent were feed green fodder as whole. From group IV and III all cattle owners chop green fodder before feeding. Majority of cattle owners i.e., 90.67 per cent had availability of green fodder throughout the year while overall only 09.33 per cent cattle owners had not availability of green fodder throughout the year (Dhaiwal and Dhillon, 2017). It was concluded that overall, 54.00 per cent cattle owners prepared hay and silage while remaining 46.00 per cent cattle owners did not prepared hay and silage. This was due to lack of scientific knowledge about preparation of hay and silage. The study also revealed that overall, 76.67 per cent cattle owners were used readymade concentrate mixture, overall, 14.66 per cent were used homemade concentrate mixture. Remaining 08.67 per cent cattle owners were mixed homemade and readymade concentrate mixture. Majority of 72.67 per cent cattle owners fed concentrate mixture at the time of milking while remaining 27.33 per cent cattle owners were fed both times i.e., at milking time and mixed with fodder. Study concluded that overall majority 93.33 per cent fed concentrate feeding to advance pregnant cows while remaining only 06.67 per cent cattle owners did not feed concentrate to advance pregnant cows. Overall, 74.00 per cent cattle owners fed concentrate to young calves while remaining 26.00 per cent were did not fed concentrate to young calves (Rathore *et al.*, 2010). It was observed that overall majority of 96.67 per cent cattle owners fed while remaining only 03.33 per cent cattle owners did not feed concentrate to heifer. Present study also detected that overall, 32.00 per cent cattle owners fed 2-3 kg concentrate to lactating cow per day, 27.33 per cent fed 1-2 kg per day, 17.34 per cent fed 3-4 kg per day, 12 per cent cattle owners fed 4-5 kg while remaining 11.33 per cent cattle owners were fed below 1 kg of concentrate to lactating cow per day (Roy *et al.*, 2020). Overall, 84.67 per cent cattle owners did not feed common salt to their cattle

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**Table 2. Feeding management practices.**

Response	Group I (13)		Group II (47)		Group III (59)		Group IV (31)		Overall (150)	
	No.	%	No.	%	No.	%	No.	%	No.	%
Feeding of cattle Chi-square = 26.03* (P<0.05)										
Stall feeding	6	46.15	32	68.09	53	89.83	31	100	122	81.33
Grazing	2	15.39	4	8.51	2	3.39	0	0	8	5.34
Both	5	38.46	11	23.4	4	6.78	0	0	20	13.33
Method of feeding Chi-square = 16.28* (P<0.05)										
Group feeding	10	76.92	41	87.23	59	100	31	100	141	94
Individual feeding	3	23.08	6	12.77	0	0	0	0	9	6
Type of dry fodder Chi-square = 0.30										
Jowar kadabi + dry grass	9	69.23	34	72.34	40	67.8	21	67.74	104	69.33
Jowar kadabi + dry grass + wheat/ paddy straw	4	30.77	13	27.66	19	32.2	10	32.26	46	30.67
Chopping of dry fodder										
Yes	13	100	47	100	59	100	31	100	150	100
No	0	0	0	0	0	0	0	0	0	0
Chopping of green fodder Chi-square = 22.18* (P<0.05)										
Yes	9	69.23	39	82.98	59	100	31	100	138	92
No	4	30.77	8	17.02	0	0	0	0	12	8
Availability of green fodder throughout the year Chi-square = 20.41* (P<0.05)										
Yes	8	61.54	40	85.11	57	96.61	31	100	136	90.67
No	5	38.46	7	14.89	2	3.39	0	0	14	9.33
Preparation of hay and silage Chi-square = 26.45* (P<0.05)										
Yes	2	15.38	18	38.3	34	57.63	27	87.1	81	54
No	11	84.62	29	61.7	25	42.37	4	12.9	69	46
Type of concentrate mixture Chi-square = 5.98										
Home prepared	0	0	6	12.77	9	15.26	7	22.58	22	14.66
Readymade	13	100	37	78.72	44	74.58	21	67.74	115	76.67
Home prepared + readymade	0	0	4	8.51	6	10.16	3	9.68	13	8.67
Time of concentrate feeding to lactating cow Chi-square = 4.16										
At milking time	8	61.54	31	65.96	48	81.36	22	70.97	109	72.67
Both at milking time and mixed with fodder	5	38.46	16	34.04	11	18.64	9	29.03	41	27.33
Concentrate feeding to advance pregnant cows Chi-square = 0.03										
Yes	12	92.31	44	93.61	55	93.22	29	93.55	140	93.33
No	1	7.69	3	6.39	4	6.78	2	6.45	10	6.67
Concentrate feeding to young calf Chi-square = 10.86* (P<0.05)										
Yes	7	53.85	29	61.7	48	81.36	27	87.1	111	74
No	6	46.15	18	38.3	11	18.64	4	12.9	39	26
Concentrate feeding to heifer Chi-square = 0.98										
Yes	12	92.31	46	97.87	57	96.61	30	96.77	145	96.67
No	1	7.69	1	2.13	2	3.39	1	3.23	5	3.33
Quantity of concentrate fed to the lactating cow per day Chi-square = 3.77										
Below 1 kg	2	15.38	5	10.64	6	10.17	4	12.9	17	11.33
1-2 kg	3	23.09	14	29.79	16	27.12	8	25.81	41	27.33
2-3 kg	5	38.46	17	36.17	19	32.2	7	22.58	48	32
3-4 kg	2	15.38	7	14.89	10	16.95	7	22.58	26	17.34
4-5 kg	1	7.69	4	8.51	8	13.56	5	16.13	18	12
Feeding of common salt Chi-square = 0.02										
Yes	2	15.38	7	14.89	9	15.25	5	16.13	23	15.33
No	11	84.62	40	85.11	50	84.75	26	83.87	127	84.67
Feeding of mineral mixture Chi-square = 5.15										
Yes	10	76.92	32	68.09	49	83.05	27	87.09	118	78.67
No	3	23.08	15	31.91	10	16.95	4	12.91	32	21.33

**Table 3. Breeding management practices.**

Response		Group I		Group II		Group III		Group IV		Overall	
		No.	%	No.	%	No.	%	No.	%	No.	%
<b>Method of breeding</b> Chi-square = 6.17											
Natural	Indi-genous (pure-bred)	5	38.46	17	36.17	16	27.11	9	29.03	47	31.33
	Non-descript	4	30.77	4	8.51	4	6.78	2	6.46	14	9.34
Total		9	69.23	21	44.68	20	33.9	11	35.49	<b>61</b>	<b>40.67</b>
AI		4	30.77	26	55.32	39	66.1	20	64.51	89	59.33
<b>Heat detection</b> Chi-square = NA											
Yes		13	100	47	100	59	100	31	100	150	100
No		0	0	0	0	0	0	0	0	0	0
<b>Stage at which cows allowed for A.I./service</b> Chi-square = 4.18											
Early heat		4	30.77	9	19.15	11	18.64	10	32.26	34	22.67
Mid heat		7	53.85	32	68.09	36	61.02	17	54.84	92	61.33
Later heat		2	15.38	6	12.76	12	20.34	4	12.9	24	16
<b>Know about embryo transfe</b> Chi-square = 8.62* (P<0.05)											
Yes		4	30.77	27	57.45	40	67.8	23	74.19	94	62.67
No		9	69.23	20	42.55	19	32.2	8	25.81	56	37.33
<b>Use of embryo transfer technology</b> Chi-square = 9.28* (P<0.05)											
Yes		0	0	1	2.13	2	3.39	5	16.13	8	5.33
No		13	100	46	97.87	57	96.61	26	83.87	142	94.67
<b>Know about sexed sorted semen technology</b> Chi-square = 36.93* (P<0.05)											
Yes		2	15.38	8	17.02	19	32.2	25	80.65	54	36
No		11	84.62	39	82.98	40	67.8	6	19.35	96	64

while remaining only 15.33 per cent cattle owners were fed common salt to their cattle (Pata *et al*, 2018). From the study it was revealed that overall, 78.67 per cent cattle owners fed mineral mixture to their cattle while remaining only 21.33 per cent not fed (Kumar *et al*, 2017).

### Breeding management practices

The study also revealed that majority of cattle owners i.e., 59.33 per cent prefer artificial insemination method for breeding purpose and remaining 40.67 per cent cattle owners prefer natural breeding. In natural breeding most of the i.e., 31.33 per cent cattle owners used indigenous pure breed of bulls those who were maintained only for breeding purpose or nearby cattle owners

who had pure breeding bull while remaining only 09.34 per cent cattle owners used nondescript bulls for breeding purpose (Akila and Senthilvel, 2012). It was also observed that all the cattle owners performed the heat detection process for successful conception in cows (Roy *et al.*, 2020). From the findings it was observed that overall majority of cattle owners i.e., 61.33 per cent were allowed their cows for A.I./service at mid heat stage, 22.67 per cent cattle owners were allowed at early heat stage while remaining 16.00 per cent cattle owners at later heat stage (Kumar *et al.*, 2019). From the present investigations it was observed that majority of cattle owners i.e., 62.67 per cent aware about benefits of embryo transfer technology and 37.33 per cent were not aware about this technology. From

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the study it was concluded that this technology is very costly and not affordable to all cattle owners and due to this reason overall only 05.33 per cent used this technology and 94.67 per cent not used this technology up to now. From the above table it was observed that about 36.00 per cent cattle owners were know about sexed sorted semen technology and 64 per cent cattle owners don't know about this technology.

### CONCLUSION

In the housing system most of cattle owners had permanent and conventional housing system with pucca cement floor with slope. The cattle owners were not used bedding material on floor in winter season as well as for pregnant cow, only few cattle owners were used rubber mat on the floor. Most of the cattle owners were preferred stall feeding with chopping of jowar kadabi + dry grass as a dry fodder, majority of cattle owners had availability of green fodder throughout the year. Cattle owners used readymade concentrate mixture feeding at the time of milking and it fed to the advanced pregnant cow, young calve and heifers also. For breeding purpose most of the cattle owners were preferred AI method for breeding at mid heat stage.

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