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Evaluation of Management Practices and Its Impact on Days Open in Crossbred Cows of Bengaluru Rural District

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Abstract

Dairy farming provides sustainable income and reduces unemployment of a large number of the rural poor. The study on management practices (housing, breeding and healthcare practices) in crossbred cows was purposively conducted to associate relationship with days open in crossbred cows of Bengaluru rural district of Karnataka. A total of 120 respondents were randomly selected from the four taluks of the district for the study. An exploratory research design and multistage random sampling technique was applied for the study and data were collected using a structured interview schedule. The study on management practices by farmers revealed that majority (50.00 %) of dairy farmers had high score in adopting overall scientific housing practices. Among the respondents, 53 per cent and 77 per cent of the respondents had medium level of adoption of scientific breeding and health care practices related to days open of crossbred cows. The housing practices, breeding practices and health care practices followed by dairy farmers had negative and non-significant correlation with days open in crossbred cows. Still, there was a considerable gap existing between recommended scientific management practices and the existing management practices followed by farmers.

Keywords : Management impact, evaluation, crossbred cows, days open

India is predominantly an agrarian society where animal husbandry forms the backbone of agricultural economy. Animal Husbandry plays an important role in the socio-economic development of India. Dairying ensures millions of small and marginal farmers and landless labourers a major source of income. Hence, animal husbandry is carried out by all types of farmers regardless of their economic status and development of livestock sector would be more inclusive (Anon., 2012). India continues to be the largest producer of milk in the World. Dairying is rural land based servicing and gender neutral enterprise. Dairy farming plays an important role in the social and economic livelihood of the farmers. The reproductive efficiency of the cow plays a key role in determining the profitability of a dairy farm. As the main purpose of keeping dairy herd is to generate income and the profitability is an important benchmark for measuring the success of dairy farming.

Karnataka is one of the major agricultural states, where livestock production being an essential part of the rural economy. As per 19th livestock census (2012), Karnataka has 2.9 crore livestock and 5.3 crore poultry accounting for 5.41 per cent and 7.33 per cent of country's livestock and poultry populations, respectively. The share of animal husbandry in Gross State Domestic Product (GSDP) of agriculture and allied activities was 20.51 per cent during 2013-14 (Anon., 2015-16). Days open which is from calving to next conception is linked with profitability in dairy cows. The reduction in profitability is partly caused by factors such as increased breeding cost, increased risk of culling and replacement costs. In seasonal and non-seasonal dairy production systems the predictable production of milk and young stock is dependent on calving pattern and for this reason; reproductive performance is a key determinant of profitability (Farin *et al.,* 1994). Days open is routinely used to assess reproductive performance and to make economic decision in dairy herds (Arthur *et al.,* 2001). The total life span for milk production of dairy cow will be reduced due to longer calving interval which is caused by longer days open. Thus, days open in crossbred cows has been widely used as one of the measures of reproductive efficiency in dairy cows. With this background, the study was conducted with the objectives to assess the different management

practices followed by the farmers of Bengaluru rural district and its relationship with days open in crossbred cows.

Material and Methods

An exploratory study was conducted in Bengaluru Rural district of Karnataka and this district was purposively selected for the study since it has got predominant crossbred population and dairy based activities. A total of 120 farmers (thirty farmers from each taluk) from Devanahalli, Doddaballapur, Hoskote and Nelamangala taluks possessing crossbred cows were randomly selected for the study. The study adopted an exploratory research design and multistage random sampling technique. The interview schedule for the dairy farmers on management practices was developed and pre-tested before administering in the main sample area. The scientific management practices affecting days open of crossbred cow were categorized into housing practices (7 practices), breeding practices (17 practices) and health care management practices (9 practices). The responses for each practice ranged from 5 to 1 and were scored similarly from 5 to 1 and the scores for each practice were added. According to the scores, the range was calculated for each practice and categorized into low, medium and high score in adopting the scientific management practices. The range for the data on days open in crossbred cows followed by respondents was calculated and categorized into low, medium and high. The data collected were subjected to frequency and percentage analysis and the relationship of management practices with days open was assessed using simple correlation coefficient tests.

Results and Discussion

Housing practices in crossbred cows

The distribution of dairy farmers based on different housing management practices was depicted in the Table I. It revealed that, cent per cent of the dairy farmers provided adequate space to their cow, made provision for feed and water in the shed, made provision for sufficient light and ventilation and were tying the animals in the shed (67.00 %) indicating better awareness among farmers regarding cattle housing. Thirty three per cent of the respondents did not provide shelter, 11 per cent of the respondents tied the animal on mud flooring and 7 per cent of the respondents did not provide drainage. These practices were identified as critical since the cows were exposed to inclement weather conditions and more exposed to unhygienic conditions which had an impact on the conception rate. Sabapara *et al.* (2010) reported similar findings related to provision of manger, adequate light and ventilation, and closed type of housing.

Table I

Distribution of dairy farmers based on housing management practices

(n=120)

Housing managementpractices	F	%
Where do you house the cow?		
a. Cattle shed	80	67.00
b. Adjacent to house (no shed)	24	20.00
c. Below trees	16	13.00
How much space is provided to your cow?		
a. 40 sq.ft. and more	120	100.00
b. Less than 40 sq.ft.	0	0.00
Are you providing feed manger?		
a. Yes	120	100.00
b. No	0	0.00
Are you providing water manger (buckets / tank)?		
a. Yes	120	100.00
b. No	0	0.00
Are you providing sufficient light and ventilation to the cattle shed?		
a. Yes	120	100.00
b. No	0	0.00
What is the Flooring material provided to your cow?		
a. Rubber mat	3	3.00
b. stone slabs	96	80.00
c. concrete flooring	7	6.00
d. mud flooring	14	11.00
Is your shed provided with proper drainage?		
a. Yes	112	93.00
b. No	8	7.00

Distribution of dairy farmers based on the adoption of scientific housing management practices : A perusal of the Table II indicated that, majority (50.00 %) of dairy farmers had high score in adopting overall scientific housing management practices followed by medium (43.00 %) and low (7.00 %), respectively.

TABLE II

Distribution of dairy farmers based on the adoption of scientific housing management practices (n=120)

Category	Frequency	Percentage (%)
Low (12-13)	8	7.00
Medium (14-15)	52	43.00
High (16-17)	60	50.00
Total	120	100.00

Breeding management practices in crossbred cows

The distribution of dairy farmers based on different breeding management practices is depicted in the Table III. It revealed that, all the respondents adopted artificial insemination to breed their cows (100.00 %), tying the animal in the shade after artificial insemination (100.00 %) and confirm pregnancy after

TABLE III

Distribution of dairy farmers based on breeding management practices (n=120)

Housing practices	F	%
1	2	3
Does the cow come to estrous 21 days after calving		
a. Yes	43	36.00
b. No	77	64.00
What is the voluntary waiting period followed after calving?		
a. 2 months	32	27.00
b. 3 months	54	45.00
c. 4 months	32	26.00
d. above 4 months	2	2.00
How are you detecting estrous in your cow?		
a. Mounting	0	0.00
b. By vaginal discharge	43	36.00
c. Bellowing	77	64.00
d. Frequent urination	0	0.00
In which season animal is presented for artificial insemination after calving		
a. Summer	55	46.00
b. Rainy	47	39.00
c. Winter	18	15.00
After detection of estrous when do you take the animal to Insemination?		
a. Follow AM-PM, PM-AM rule	25	21.00
b. Take the animal for in semination on the Next day	22	18.00
c. Immediately	73	61.00
Which method of breeding, are you following in your cows?		
a. Artificial insemination	120	100.00
b. Natural	0	0.00
Do you check the cows for estrous signs after 21 days of Artificial insemination or previous estrous?		
a. Yes	7	6.00
b. No	113	94.00
Does the inseminator sanitize the perineal area before performing artificial insemination		
a. Yes	49	41.00
b. No	71	59.00
After the artificial insemination is done, is the animal tied in shade?		
a. Yes	120	100.00
b. No	0	0.00
If the cow does not conceive after three consecutive AI? Do you get		
a. The animal treated	44	37.00
b. Again breed the animal	76	63.00
When are you getting your cows examined for pregnancy after breeding?		
a. After 60 days	0	0.00
b. After 90 days	120	100.00
c. Not at all	0	0.00
In which month of pregnancy, do you dry your cows?		
a. After 7 months	119	99.00
b. After 8 months	0	0.00
c. After drop in milk yield	1	1.00

1	2	3
Did you notice any difficulty in last calving (dystocia)?		
a. Yes	10	8.00
b. No	110	92.00
Did you notice retention of placenta in last calving?		
a. Yes	22	18.00
b. No	98	82.00
Was the cow affected with milk fever after calving ?		
a. Yes	6	5.00
b. No	114	95.00
Was the cow affected with ketosis after calvig?		
a. Yes	03	3.00
b. No	117	97.00
Was the cow affected with mastitis during breeding period?		
a. Yes	15	13.00
b. No	105	87.00
Was the cow affected with lameness during breeding period?		
a. Yes	2	2.00
b. No	118	98.00
Was the cow affected with any other condition due to which breeding was not done?		
a. Yes	0	0.00
b. No	120	100.00
Any other reason (personal, institutional) due to which breeding was not done?		
a. Yes	0	0.00
b. No	120	100.00
Are you maintaining the reproductive records of the cow (Artificial insemination done, calving date, date of estrous) ?		
a. Yes	5	4.00
b. No	115	96.00
Number of AI in relation to conception		
a. 1	20	16.67
b. 2	42	35.00
c. 3	38	31.67
d. 4	15	12.50
e. 5	5	4.16

90 days of AI (100.00 %), drying the cow at 7th month of pregnancy (99.00 %) and farmers waited for 2 to 3 months before insemination (72.00 %) indicating their awareness of scientific breeding practices. These results are in line with the findings of Mali *et al*. (2014) who reported cent per cent knowledge in dairy farmers about optimum time for Artificial Insemination, pregnancy testing and time of insemination after normal calving. On the contrary, Letha Devi (2013) reported 50 per cent adoption of AI by the respondents in their study area. It was also found that, 13 per cent of cows were affected with mastitis during breeding time, 8 per cent had calving difficulty, 18 per cent of the cows experienced retention of foetal membranes for which respondents sought assistance from the veterinarian. It is known that cows affected with mastitis and retained fetal membranes have low conception rate. These findings were well supported by the results of Malinowski and Gajewski (2010) and Agarwal *et al*. (2005).

From the results, it revealed that, more than half (64.00 %) of the respondents relied on the sign of bellowing for detection of estrous which is a secondary sign which would result in failure to breed at optimum time. Similar findings were reported by Sabapara *et al*. (2010) and Gami *et al*. (2013). It was also observed that, 63 per cent of the respondents did not opt for treating the animal after the animal failed to conceive even after 3 consecutive artificial inseminations, indicating relying on chance factors to inseminate the animal again and lack of awareness of the need to treat infertility resulting in possible increase in open days in crossbred cows.

The results also indicated that only 21 per cent of the respondents followed standard of AM-PM and PM-AM rule and rest of the 79 per cent of the respondents produced their cows for artificial insemination immediately or on the next day of observed estrous symptoms and only 16.67 per cent conceived in their first artificial insemination and rest (83.33%) got conceived after 2 or more artificial insemination. This indicated lack of proper awareness among farmers for appropriate time for artificial insemination which could result in increased days open. Mali *et al*. (2014) reported 61.1 per cent got their cows inseminated at appropriate time.

The results of Table III also revealed that 64 per cent of the respondents did not notice cow coming to

estrous within 21 days of calving, 41 per cent reported cleaning of perineal area during AI, 28 per cent followed voluntary waiting period of over 4 months, five per cent were affected with milk fever, three per cent reported ketosis and two per cent reported lameness at breeding time. The observations were identified as critical, since they can have negative influence on days open.

Distribution of dairy farmers based on the adoption of scientific breeding practices : The results in Table IV revealed that, 53 per cent of the respondents adopted medium level of the adoption of scientific breeding practices followed by low (27.00%) nd high (20.00%), respectively. It indicated awareness among respondents regarding breeding practices.

TABLE IV

Distribution of dairy farmers based on the adoption of scientific breeding practices

(n=120)

Category	Frequency	Percentage (%)
Low (41-49)	32	27.00
Medium (50-58)	64	53.00
High (59-67)	24	20.00
Total	120	100.00

Distribution of dairy farmers based on health care management practices : The distribution of health care management practices during days open is depicted in the Table V. It revealed that, cent per cent of the respondents provided adequate exercise to their cows and adopted the practice of daily washing and grooming of the animals. Similar findings were reported by Ahirwar *et al.* (2010). Majority (99.00%) of the respondents adopted the practice of sprinkling water on the animals to reduce the heat stress during summer, 79 per cent used disinfectant and insecticide spray to the cattle shed and 77 per cent followed separation of sick animals from healthy ones. Sabapara *et al.* (2010) and Aulakh and Rajbir (2012) reported similar findings in their study area. Mali *et al*. (2014) reported 94.44 per cent of the respondents segregated the diseased animals.

TABLE V

Distribution of dairy farmers based on health care management practices

(n=120)

Health care management practices	F	%
Are you washing and grooming cows daily?		
a. Yes	120	100.00
b. No	0	0.00
Are you cleaning the shed daily?		
a. Yes	117	98.00
b. No	3	2.00
Is sprinkling of water on the cows done during summer (Hot conditions)?		
a. Yes	119	99.00
b. No	1	1.00
Are you providing exercise to cows?		
a. Yes	120	100.00
b. No	0	0.00
Do you spray disinfectants and insecticides in the cattleshed regularly?		
a. Yes	95	79.00
b. No	25	21.00
Do you separate sick animals from healthy ones?		
a. Yes	93	77.00
b. No	27	23.00
How often are you deworming your cow?		
a. Every 3 months	2	1.00
b. Every 6 months	81	68.00
c. Every year	37	31.00
d. None	0	0.00
Are you vaccinating your animals against FMD?		
a. Yes	120	100.00
b. No	0	0.00
Was any surgery done previously to the cow (from last calving to till date)?		
a. Yes	1	1.00
b. No	119	99.00

Sixty eight per cent of the respondents adopted the practice of deworming every 6 months. This indicated that farmers did not give much importance to deworming of their cattle every 3 months unless they suspected digestive disturbance or when

suggested and offered by Veterinarian. The findings of Tiwari *et al.* (2007), Gupta *et al. (*2008), Vijay *et al.*(2008) and Sabapara *et al*. (2015) were in agreement with the findings of present study, who reported that, majority of the farmers did not practice deworming.

Distribution of dairy farmers based on adoption of the overall scientific health care management practices : The Table VI revealed that, 67 per cent of respondents adopted medium level of scientific health care management practices followed by low (20.00%) and high (13.00 %), respectively. It indicated better awareness and information seeking behaviour regarding health care management practices. Critical practice of lack of regular deworming of the cattle could lead to reduction in conception. Kaltungo and Munsa (2013) reported parasites as a major cause of infertility in dairy cattle.

TABLE VI

Distribution of dairy farmers based on adoption of the overall scientific health care management practices

(n=120)

Category	Frequency	Percentage (%)
Low (12-24)	24	20.00
Medium (15-17)	80	67.00
High (18-20)	16	13.00
Total	120	100.00

Distribution of crossbred cows based on days open : The results of Table VII revealed that, majority (52.00 %) of the crossbred cows had medium days open (147-207) followed by low (28.00 %) and high (20.00 %) days open in crossbred cows.

TABLE VII

Distribution of crossbred cows based on days open

(n=120)

Category	Frequency	Percentage (%)
Low (86-146)	34	28.00
Medium (147-207)	62	52.00
High (208-268)	24	20.00
Total	120	100.00

Relationship of management factors with days open in crossbred cows : The relationship of management practices with days open in crossbred cows was depicted in Table VIII. The housing practices (-0.00321), breeding practices (-0.3503) and health care management practices (-0.01802) followed by dairy farmers had negative and non-significant correlation to days open in crossbred cows.

TABLE VIII

Relationship of management factors with days open in crossbred cows

Variables	Pearson's r value
Housing practices	-0.00321^{ns}
Breeding practices	-0.3503^{ns}
Health care management practices	-0.001802^{ns}

ns = Non significant

The present study revealed that the housing practices, breeding practices and health care management practices followed by dairy farmers had negative and non-significant correlation with days open in crossbred cows. Majority of dairy farmers had high score in adopting overall scientific housing practices whereas, in case of breeding and health care practices, most of them had medium score in adopting overall scientific practices. Still, there was a considerable gap existing between recommended scientific management practices and the existing management practices. So, there is a need to sensitize the dairy farmers about the modern technologies and scientific interventions in different management practces, in order to enhance milk yield and reproductive performance of dairy animals. Training programmes on improved management practices will help the farmers to overcome the certain management problems like heat stress, repeat breeding, long calving interval, infections and infestations. Adoption of suitable and scientific management strategies for animals in dairy farming will substantially help in increase of production as well as income generation.

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