

## Existing dairy farming practices followed by farmers in drought affected Bundelkhand region of Uttar Pradesh

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**Abstract:** A study was conducted in Bundelkhand region of Uttar Pradesh to study the existing dairy farming practices followed by farmers. Data were collected through personal interview and focus group discussion from the total 160 respondents. The findings of present investigation show that majority (71.87%) of cases it was reported to be 36 to 42 months followed by in 23.13 per cent. In case of method of feeding, that majority (64.37%) of the respondents preferred stall feeding along with grazing, followed by 35.63 per cent preferred only stall feeding to their animals. It was observed in the study area that most (77.50%) of the respondents were providing homemade concentrate for their animals followed by 16.25 per cent provided both homemade and purchased concentrate. few respondents (22.50%) follow castration practice. It was reported by the respondents that those male cow calves which would be reared for bullock purpose, were castrated by indigenous (*Desi*) method, which is a crude method in which some time full efficiency cannot be achieved.

**Key-words:** Bundelkhand; Dairy farming; Farmer and Uttar Pradesh

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### 1. Introduction

Livestock plays vital role in sustaining the livelihood of resource poor farmers in rainfed areas as they absorb shocks due to droughts. Livestock sector provides employment to 11 million people as principal status and 8 million as subsidiary status, which is 5 per cent of the total working population in India. Income from livestock production accounts for 15-40 per cent of total farm household earnings in India (World Bank, 1999). Hence farmers' dependence on livestock to complement their agricultural farming, as an alternative source of income, is very encouraging (Singh *et al.*, 2004).

The climate of Uttar Pradesh, the selected state for the study is tropical, but variations exist because of difference in altitudes. Shortage of rain during the highly variable monsoon season can cause droughts

leading to severe loss to man and property. In the years 2002 and 2004 drought related financial loss estimates have been reported to be Rs. 75.40 billion and 72.92 billion (Anonymous 2013). Bundelkhand region of the state is drought prone and it also faces enormous problems of low rainfall, low agricultural and animal productivity, water crisis, soil erosion, degradation of water resources, fodder crisis, high rate of mortality in cattle, unsustainable sources of livelihood, etc. On an average 96.00 per cent of the farmers' income is being earned from the crop and livestock enterprise alone indicating the magnitude of dependency on these sectors. Regeneration of the degraded forest (50-64%) and restoring carrying capacity of the grazing land has tremendous possibility to support better livestock production and supply of the minor products (Anonymous 2008). Dairy production is an important component in the entire region with greater focus on buffalo rearing for

milk over cattle rearing. This is also corroborated by the last two livestock census, data indicating increase in buffalo population and decrease in cattle population (livestock Census 2012). Under the circumstances discussed above, it arises a need for a study which focus on the existing dairy farming practices followed by farmers in drought affected Bundelkhand region of Uttar Pradesh

## 2. Materials and Methods

### *Locale of the study*

Uttar Pradesh is fourth largest state in the country covering about 7% of India's total area. It is the most populous state in the country as well as the most populous country subdivision in the world. Among the four regions, the Bundelkhand region is one of the least developed (Anonymous 2013).

### *Sampling plan*

In the region, livestock occupies a prominent position contributing significantly to the livelihood security. Out of seven districts in this region, Banda and Chitrakoot districts were selected purposively based on the component indices and priority rank of rainfed area given by National Rainfed Area Authority. From each district, 2 blocks and two villages from each block were selected randomly. Farmers were selected proportionately on basis of land holding. A total of 20 farmers were selected from each village representing each category of farmers, who had at least one milch animal (cattle/buffalo) at the time of investigation. The farmers were interviewed personally and focus group discussion. Before actual data collection, the main idea behind studying these practices was to have an in-depth understanding of the prevalent dairy farming practices in the study area. Keeping in mind the importance of studying the existing dairy farming practices, an exhaustive schedule covering all aspect of

dairy farming practices was prepared in consultation with experts and Scientists.

## 3. Results and Discussion

### Breeding practices

#### *Age at first service*

Results presented in Table 1 shows that in case age at first service of cow heifer, in majority (71.87%) of cases it was reported to be 36 to 42 months followed by in 23.13 per cent and 5 per cent cases it was 30 to 36 months and 42 to 48 months, respectively. In case of buffalo heifer, in majority (72.50%) of cases it was 48 to 54 months followed by in 27.50 per cent cases it was 42 to 48 months. It could be conclude that the age at first service is quite high resulted in less economic life span of animals. This can be attributed to the higher temperature prevailing in the region due to drought even in the monsoon months which is found to be the breeding period, it is further aggravated due to feeding of low quality feed and fodder resulted due to situation.

#### *Symptoms of heat in cattle/buffalo*

There were two types of heat observed in dairy animals viz. silent and estrus. Most (71.87%) of the respondents reported that they detect heat in animals by bellowing, restlessness, mounting on other animals and vaginal discharge, followed by 28.13 per cent were reported that they observe heat by restlessness, mounting and vaginal discharge (silent) of animals. It may be concluded that the farmers in the study area were more aware about detection of heat symptoms in their animals (Table 1).

#### *Type of service*

Table 1 showed that majority (67.50%) of the respondents' preferred natural service with pedigree bull followed by 32.50 per cent preferred natural service with pedigree bull along with artificial

insemination. These respondents reported that they follow A.I. in specific case when bull was not available for natural service.

#### Pregnancy diagnosis

It has been also observed that about 36.25 per cent of the respondents took the help of other experienced dairy farmers in village for diagnosis of pregnancy in their animals whereas, about 29.37 per cent of them were not prefer to diagnose the pregnancy while about 25.63 per cent diagnose themselves. Only 8.75 per cent of the respondents were diagnosing the pregnancy with the help of experienced dairy farmers and veterinarian. They reported that in specific cases when experienced dairy farmers were not able to diagnose the pregnancy, they would call to veterinarian. Farmers and experienced dairy farmers diagnose the pregnancy on their animals on the basis of fact that cattle/buffalo were not allowed milking, seeing increased size of belly and non-occurrence of heat after 21 days of service. This was knowledge based on their experiences in rearing the animals and passed from generation to generation (Table 1).

#### Preparation carries out before calving

Table 1 clearly depicts that most (82.50%) of the respondents were arrange dry materials as a bedding just before calving of the animals. For this they were using ash and crop residues. They also used to arrange locally available fuel such as dung cake, crop residues *etc.* for burning during winter season for protecting against cold to newly borne calves as well as her/his mother. While, 17.50 per cent of the respondents were not doing any preparation.

#### Disposal of placenta

Most (78.13%) of the respondents had disposed placenta by burial, while about 21.87 per cent of the respondents throw it away. It has been reported by the respondents that they burry the placenta in

manure pit and if placenta would eat by dogs, milk yield will reduce (Table 1).

Cleaning the body of newly born calf

Table 1 indicates that majority (68.12 %) of the respondents were cleaning the newly born calf body by using cloth or jute bag/gunny bag whereas, 31.88 per cent of the respondents were not cleaning. This might be said that one third of the respondents were not cleaning newly born calf because they were less educated, not aware about the impact of cleaning of body of newly borne calves and less knowledge about improved dairy farming practices.

#### Navel cord cutting

More than half (51.87%) of the respondents were not follow navel cord cutting, whereas, 48.13 per cent of the respondents practiced it. It may be said that more than half of the respondents were not preferred cord cutting; they preferred natural shedding of it. Those respondents, who followed this practice, they cut the navel cord after 2 to 4 inch remaining with body (Table 1).

#### Service after calving

It is clear from Table 1 that next service after calving of the dairy animals were provided as and when animal come in heat by majority (63.12%) of the respondents followed by 20.63 per cent respondents provided it in about three month after calving. Rest (16.25%) of the respondents provided service at six month after calving; it resulted in loss of economic life span of animals as well as prolongation of inter calving period. This reduces the income of the farm families.

#### Feeding practices

##### Method of feeding

Table 2 indicates that majority (64.37%) of the respondents preferred stall feeding along with grazing, followed by 35.63 per cent preferred only stall feeding to their animals. Animals were not allowed for grazing due to fear of theft and reduction in

milk yield. It is especially true for high milk producing animals.

#### *Feeding of special ration to induce heat in dairy animals*

Results in Table 2 depicts that more than two-third (67.50%) of the respondents were providing some special ration as per their traditional knowledge for inducing heat to their animals. when cattle/ buffalo were not coming in heat at proper time (2 month after the calving) then they feed special ration like Guggul (*Commiphora mukul*) + Jaiphal (*Myristica fragrans*) and mustard oil cake etc. whereas, 32.50 per cents of the respondents were not providing any special ration for inducing heat.

#### *Frequency of feeding*

Result presented in Table 2 indicate that in the study area, more than half (54.37%) of the respondents used to feed their animals twice day, while, 45.63 per cent of the respondents were feeding thrice a day. The variation in frequency of feeding may be attributed to the availability of feed and fodder resources with the farmers.

#### *Source of water*

Results in Table 2 shows that majority (59.37%) of the respondents were providing hand pump water to their animals. Whereas, about 13.75 per cent of the respondents providing both hand pump and tube well water followed by 11.25 per cent of the respondents were arranging hand pump along with river water for their livestock. Rest 10.00 per cent and 5.63 per cent of the respondents were providing well + pond + river/canal water and hand pump along with pond water; respectively, for their animals. It may be concluded that majority of the respondents provided hand pump water to their animals because this source was easily available in the village, some farmers who had their own tube well they take from this source.

#### *Frequency of watering*

Most (77.50%) of the respondents provided water to animals twice a day followed by 16.88 per cent provided thrice a day. Only 5.62 per cent of the respondents were providing *ad lib* water to their animals. It could be concluded that animals in majority of the cases were not getting the sufficient quantity of water. It might be due to the less availability of water compounded with lower water table results in requirement of more power for water lifting. It reduces animal's productivity adversely (Table 2).

#### *Concentrate feeding*

It was observed in the study area that most (77.50%) of the respondents were proving homemade concentrate for their animals followed by 16.25 per cent provided both homemade and purchased concentrate, whereas, 6.25 per cent the respondents were not providing concentrate to their animals. It was also observed that ingredients of homemade concentrate were oil cakes (like mustard cake, linseed cake), *Chunni* (remains of pulses), rice bran, crushed grains and flour of wheat, gram, etc. This may be due to the fact that these agro-ingredients were easily available at local level in low cost (Table 2).

#### *Feeding of mineral mixture/salt*

More than half (58.13%) of the respondents were feeding common salt, whereas, 41.87 per cent of the respondents were not providing it. It is surprise to note that none of the respondents provide mineral mixture to their livestock. The simple reason for not providing mineral mixture might be the lack of knowledge about importance of mineral mixture and cost involve.

#### *Feeding of concentrate to advance pregnant dairy animal*

Majority (67.50%) of the respondents not provided extra concentrate to pregnant animals, whereas, only 32.50 per cent of the respondents were providing the same. It is concluded that about two third of the respondents were not proving extra

concentrate to pregnant animals, this might be due to the lack of knowledge about the role of concentrate feeding at advance stage of pregnancy; it is increasing the milk productivity as well as increasing the strength of animals during parturition (Table 2).

#### *Colostrum feeding*

Cent percent of the respondents were practiced colostrum feeding to newly born calf. This might be said that the farmers know the importance of colostrum for neonates (Table 2).

Time of colostrum feeding to newly born calves

Regarding the timing of colostrum feeding, it was observed that most (79.37) of the respondents were practiced colostrum feeding to calf whenever the newly born is able to stand on his feet followed by 20.63 per cent were provided colostrum to calf after the expulsion of placenta. The farmers were feeding colostrum after expulsion of placenta because they believed that feeding of colostrum before expulsion of placenta might cause hindrance in expulsion of it (Table 2).

#### *Feeding of special ration for increasing milk yield*

Result indicates that majority (60.63%) of the respondents were not providing any special ration for increasing milk yield and rest (39.37%) of the respondents were providing special ration to their milking animals (Table 2).

#### *Feeding of special ration for increasing fat content in milk*

It was also observed that most (86.88%) of the respondents were not providing any specific ration for increasing fat content to their animals, whereas, only 13.12 per cent of the respondents provided special ration like Cotton seed, Gram *etc.* to their milking animals for increasing fat content in milk. It could be concluded that most of the respondents did not provide any

special ration for increasing fat content in milk and this might be due to high cost involved in the feeding of these items (Table 2).

#### *Sources of green fodder*

It was found that about 40.00 per cent respondents were providing green fodder as mixture of all green fodder available in the season followed by 28.13 per cent as grasses available in cultivated field, whereas, 25.62 and 6.25 per cent of the respondents provided cultivated green fodder (Berseem, Sorghum, Maize, Bajra *etc.*) and leaves of fodder trees (Gular, Neem *etc.*), respectively. It could be concluded that only one fourth of the respondents cultivate fodder. It might be due to the fact that less availability of land for growing fodder, non-availability of irrigation facilities *etc* (Table 2).

#### *Source of dry fodder*

Result in Table 2 indicated that wheat straw was the main source of dry fodder for more than half (52.50%) of the respondents followed by 23.12, 15.63 and 8.75 per cent of the respondents provided wheat straw + paddy straw, wheat straw + gram/lentil straw and wheat straw + paddy straw + maize /jowar straw (Stover), respectively. These crop residues were fed by the farmers to the animals as these were the commonly and easily available.

## **4. Healthcare practices**

#### *Castration*

Result indicates that few respondents (22.50%) follow castration practice. It was reported by the respondents that those male cow calves which would be reared for bullock purpose, were castrated by indigenous (*Desi*) method, which is a crude method in which some time full efficiency cannot be achieved. The respondents believed that castration improve draft performance and simultaneously making animal docile (Table 3).

### *Dehorning*

Result indicates that most (98.13%) of the respondents were not following dehorning practice whereas, only 1.87 per cent of the respondents follow this practices. It was observed in the study area that dehorning practice were not following in the non-descript as well as in indigenous breeds of cattle/ buffaloes, this practice was followed only in case of cross breed cattle which were very less in number in the study area (Table 3).

### *Vaccination*

Majority (78.75%) of the respondents get vaccinated their animals during vaccination programme against FMD, HS, BQ organized by State Animal Husbandry Department. Further, it was observed that 21.25 per cent farmers did not vaccinated their animals. This may be attributed to the ignorance among the farmers (Table 3).

### *Deworming*

Majority (67.50%) of the respondents were providing dewormers to newly born calves and it was observed that respondents in the study area know the drugs name. In the study area, it was also observed that Neem leaves were used as a dewormer. The adult animals were not dewormed as farmers believed that these did not require deworming (Table 3).

### *Disposal of dead animals*

Majority (71.87%) of the respondents disposed off animal carcass outside of village in open places, whereas, 28.13 per cent of respondents disposed off the carcass at community land. This practice of carcasses disposal is not hygienic (Table 3).

### *Person consulted when animal is sick*

When disease encountered in herd, about 43.13 per cent of the respondents practiced self-medication with indigenous traditional materials whereas, 31.87 per cent respondents initially consulted with progressive farmer and then consulted to village quack followed by 13.13 per cent

respondents were practicing self-medication with the help of fellow farmers with the use of indigenous traditional materials and only 11.87 per cent respondents consulted with veterinary doctor as well as para-vets. Knowledge about identification and use of medicinal plants for curing diseases, transferred from generation to generation vertically and within society horizontally. In most of cases, it was found effective so respondents prefer initially self medication with this traditional knowledge for treatment of diseased animals (Table 3).

## **5. Management practices**

### *Time of drying the milking cattle/buffaloes*

Result presented in Table 4 revealed that majority (64.37%) of the respondents were drying their milking animals at natural cessation of milking, followed by 31.25 per cent and 4.38 per cent dried their milking animals two months and three months before succeeding calving, respectively.

### *Type of shed flooring*

Majority (74.37%) of respondent's have Kachcha floor of animal shed, while 25.63 per cent respondents were having semi-pucca floor. It might be due to that majority of the respondents were having very poor affordability to make pucca/ semi-pucca floor on their animal shed (Table 4).

### *Cleaning of animal shed*

Cent per cent of the respondents practiced regular cleaning of animal shed. It was observed that hygienic cleaning was not done by the respondents. This increases parasitic load in the milk as well as it also enhances problems of actoparasites in the animals along with providing conducive atmosphere for various contagious diseases (Table 4).

### *Cleaning of animals*

Table 4 revealed that about 46.25 per cent of the respondents were cleaning animals (grooming to cattle and washing

with water to buffalo) weekly followed by 36.25 per cent and per cent 17.50 clean their animals at alternate day and every days, respectively. It could be concluded that majority of the respondents did not clean their animals regularly as they are not being aware about the advantages of regular cleaning in enhancing milk production and clean milk production.

#### *Provide litter to the animals during cold*

Most (82.50 %) of the respondents were providing litter for protecting the animals from cold. Whereas, 17.50 per cent of the respondents did not provide any litter for animal shed. It was observed in the study area that most of the farmers were using ash, remaining fodder, paddy straw, etc. as a litter bed (Table 4).

#### *Method of milking*

Result indicates in Table 4 that majority of the respondents (55.63%) were using knuckling method of milking, followed by 28.13 per cent and 10.62 per cent of the respondents were following knuckling + stripping methods and stripping method, respectively for milking of animals. These practices are not good and cause damage to teats and milk producing tissues. Very few (5.62%) respondents were following full hand milking method. It might be due to lack of awareness about full hand milking method and poor extension contact in the study area.

#### *Cleaning of udder before milking*

Majority (65%) of the respondents were cleaning the udder before milking with water, whereas, 35 per cent of respondents were removing dust, hair *etc.* by hand or cloth. It was also observed in the study area

that, in the case of buffalo most of the farmer's clean udder with water and this practice was followed by few farmers in case of milking of cow (Table 4).

#### *Cleaning of milking utensils*

Result indicates that 80.63 per cent of the respondents were cleaning the milking utensils by water and ash followed by 19.37 per cent by water and detergent. This might be due to easily availability of ash and they believe that ash is sterilized and free from any micro-organisms. It was also observed that only 21.25 per cent of the respondents were drying the milking utensils after washing (Table 4).

## **6. Conclusions**

It can be concluded from the study that majority of the cattle were non-descript and majority of the respondents identified heat in animals by bellowing, restlessness, mounting on other animals and vaginal discharge. They followed natural service, disposed placenta by burial method and used to clean newly borne calve body. Cent percent of the respondents were feeding colostrum to newly borne calve and regularly cleaning animal shed.

**Table 1. Distribution of respondents based on the breeding practices****(n=160)**

Sl. No.	Practices	Frequency	Percentage	
1.	Age at first service ( Months)			
	Cow	30 to 36	37	23.13
		36 to 42	115	71.87
		42 to 48	8	5.00
	Buffalo	42 to 48	44	27.50
		48 to 54	116	72.50
2.	Symptoms of heat in dairy animals			
	Restlessness + mounting + vaginal discharge	45	28.13	
	Bellowing + restlessness + mounting on other animals + vaginal discharge	115	71.87	
3.	Type of service			
	Natural service with pedigree bull	108	67.50	
	Natural and A.I.	52	32.50	
4.	Pregnancy diagnosis			
	With the help of experienced dairy farmers + veterinarian	14	8.75	
	By the respondent	41	25.63	
	With the help of experienced dairy farmers	58	36.25	
	Not diagnosed	47	29.37	
5.	Preparation carried out before calving			
	Arrange dry materials	132	82.50	
	Do nothing	28	17.50	
6.	Disposal of placenta			
	Buried	125	78.13	
	Throw away	35	21.87	
7.	Cleaning the body of newly born calf			
	Yes	109	68.12	
	No	51	31.88	
8.	Navel cord cutting			
	Yes	77	48.13	
	No	83	51.87	
9.	Service after calving			
	After 3 month	33	20.63	
	After 6 month	26	16.25	
	As and when animal come in heat	101	63.12	



**Table 2. Distribution of respondents on the basis of feeding practices****(n=160)**

Sl. No.	Practices	Frequency	Percentage
1.	Feeding method		
	Stall feeding	57	35.63
	Stall feeding + grazing	103	64.37
2.	Feeding of special ration to induce heat in dairy animals		
	Feeding	108	67.50
	Not feeding	52	32.50
3.	Frequency of feeding		
	Twice a day	87	54.37
	Thrice a day	73	45.63
4.	Source of water		
	Hand pump	95	59.37
	Hand pump + pond	9	5.63
	Hand pump + river/canal	18	11.25
	Hand pump + tube well	22	13.75
	Well + pond + river/canal	16	10.00
5.	Frequency of watering		
	Twice a day	124	77.50
	Thrice a day	27	16.88
	<i>Ad lib</i> water	9	05.62
6.	Concentrate feeding		
	Homemade	124	77.50
	Both homemade and purchased	26	16.25
	No concentrate feeding	10	6.25
7.	Feeding of mineral mixture/salt		
	Feeding (Salt)	93	58.13
	Not feeding (Salt/mineral mixture)	67	41.87
8.	Concentrate feeding to advance pregnant dairy animal		
	Feeding	52	32.50
	Not feeding	108	67.50
9.	Colostrum feeding	160	100
10.	Time of colostrum feeding to newly born calves		
	Whenever the newly born is able to stand on his feet	127	79.37
	After expulsion of placenta	33	20.63
11.	Feeding special ration to milking animals for increasing milk yield		
	Feeding	63	39.37
	Not feeding	97	60.63
12.	Feeding special ration to milking animals for increasing fat content in milk		
	Feeding	21	13.12
	Not feeding	139	86.88
13.	Sources of green fodder		

	Grasses available in cultivated field	45	28.13
	Cultivated green fodder (Berseem, Sorghum, Maize, Bajra <i>etc.</i> )	41	25.62
	Leaves of fodder trees	10	6.25
	Mixture of all green fodder available in the season	64	40.00
14.	Source of dry fodder		
	Wheat straw/bhusa	84	52.50
	Wheat straw + Gram/Lentil straw	25	15.63
	Wheat straw + Paddy straw	37	23.12
	Wheat straw + Paddy straw + Maize /Jowar straw (Stover)	14	8.75

**Table 3. Distribution of respondents according to health care practices**

(n=160)

Sl. No.	Practices	Frequency	Percentage
1.	Castration practice		
	Followed	36	22.50
	Not followed	124	77.50
2.	Dehorning practice		
	Followed	3	1.87
	Not followed	157	98.13
3.	Vaccination		
	Vaccinating (FMD/HS/BQ)	126	78.75
	Not vaccinating	34	21.25
4.	Deworming		
	Following	108	67.50
	Not following	52	32.50
5.	Disposal of dead animals		
	Dead body disposed at outside of village in open places	115	71.87
	Dead body disposed at community land	45	28.13
6.	Person consulted when animal is sick		
	Veterinary doctor and para-vets	19	11.87
	Self-medication and fellow farmer	21	13.13
	Progressive farmer and village quack	51	31.87
	Self-medication by traditional method	69	43.13

**Table 4. Distribution of respondents according to management practices****(n=160)**

<b>Sl. No.</b>	<b>Practices</b>	<b>Frequency</b>	<b>Percentage</b>
1.	Time of drying the milking cow/buffalo		
	Two months before calving	50	31.25
	Three months before calving	7	4.38
	Natural cessation milking	103	64.37
2.	Type of shed flooring		
	Kachcha	119	74.37
	Semi-pucca	41	25.63
3.	Cleaning of animal shed every day	160	100
4.	Cleaning of animals		
	Every day	28	17.50
	Alternate day	58	36.25
	Weekly	74	46.25
5.	Provide litter to the animals during cold		
	Yes	132	82.50
	No	28	17.50
<b>6.</b>	<b>Method of milking</b>		
	Knuckling	89	55.63
	Stripping	17	10.62
	Full hand	9	5.62
	Knuckling + stripping	45	28.13
7.	Cleaning of udder before milking		
	By water	104	65.00
	By cloth/hand	56	35.00
8.	Cleaning of milking utensils		
	By water and ash	129	80.63
	By water and detergent	31	19.37
9.	Drying of milking utensils after cleaning		
	Yes	34	21.25
	No	126	78.75

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