

# **Nutritional Status of Dairy Cattle and Buffaloes in Pratapgarh District of Rajasthan**

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**ANKIT KUMAR**

**THESIS**

**Master of Science in Agriculture**  
**Livestock Production Management**



**2020**

**DEPARTMENT OF ANIMAL PRODUCTION  
RAJASTHAN COLLEGE OF AGRICULTURE  
MAHARANA PRATAP UNIVERSITY OF AGRICULTURE AND  
TECHNOLOGY UDAIPUR-313001 (RAJ.)**

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**MAHARANA PRATAP UNIVERSITY OF AGRICULTURE AND**  
**TECHNOLOGY UDAIPUR-313001 (RAJ.)**

## **CERTIFICATE – I**

### **CERTIFICATE OF ORIGINALITY**

The research work embodied in this thesis titled “**Nutritional Status of Dairy Cattle and Buffaloes in Pratapgarh District of Rajasthan**” submitted for the award of degree of **Master of Science in Agriculture** in Agriculture in the subject of Animal Production, to Maharana Pratap University of Agriculture and Technology, Udaipur (Raj.) is original and bona fide record of research work carried out by me under the supervision of **Dr. J.L. Choudhary**, Professor & Director Planning & Monitoring MPUAT Udaipur. The content of the thesis, either partially or fully, have not been submitted or will not be submitted to any other institute or University for the award of any degree or diploma.

The work embodied in the thesis represents my ideas in my words and where others’ ideas have been included; I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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**CERTIFICATE - II**

Dated:     /     / 2020

This is to certify that the thesis entitled “**Nutritional Status of Dairy Cattle and Buffaloes in Pratapgarh District of Rajasthan**” submitted for the degree of **Master of Science** in Agriculture in the subject of Livestock Production and Management, embodies bona fide research work carried out by **Mr. Ankit kumar** under my guidance and supervision and that no part of this thesis has been submitted for any other degree. The assistance and help received during the course of investigation have been fully acknowledged. The draft of this thesis was also approved by the advisory committee on     /     /2019.

The manuscript has been subjected to plagiarism check by software Urkund. It is certified that as per the check, the similarity index of the content is ....and is within permissible limit as per the MPUAT guideline on checking Plagiarism.

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**CERTIFICATE - III**

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This is to certify that the thesis entitled “**Nutritional Status of Dairy Cattle and Buffaloes in Pratapgarh District of Rajasthan**” submitted by **Mr. Ankit kumar** to the Maharana Pratap University of Agriculture and Technology, Udaipur in partial fulfillment of the requirements for the degree of **Master of Science** of Agriculture in the subject of **Livestock Production and Management** after recommendation by the external examiner was defended by the candidate before the following members of the examination committee. The performance of the candidate in the oral examination held on     /     /2020 was found satisfactory; we therefore, recommend that the thesis be approved.

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This is to certify that **Mr. Ankit kumar** student of **Master of Science in Agriculture, Department of Animal Production**, Rajasthan College of Agriculture, Udaipur has made all corrections/ modifications in the thesis entitled “**Nutritional Status of Dairy Cattle and Buffaloes in Pratapgarh District of Rajasthan**” which were suggested by the external examiner and the advisory committee in the oral examination held on     /     /2020. The final copies of the thesis duly bound and corrected were submitted on     /     /2020 are enclosed here with for approval.

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**Date:**

**Place: Udaipur**

**Ankit kumar**



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# 1. INTRODUCTION

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India is an agriculture based country and livestock sector is a major part of it. Agriculture is the basis of village life in India. In India, keeping milch animals has been never a separate occupation from agriculture. India occupies the foremost position among the countries of the world in respect of livestock. Livestock plays major role in the rural economy of the state. Livestock plays a central role in the natural resource based livelihood of the vast majority of the population especially in developing countries. Livestock in these countries are the poor people's ATM. In good times people build up their herds and in bad time they sell livestock to generate cash.

The livestock species play very important economic and socio-cultural roles for the wellbeing of rural households, such as food supply, source of income, asset saving, source of employment, soil fertility, livelihoods, transport, agriculture traction, agriculture diversification and sustainable agriculture production.

Cattle and Buffalo hold the greatest promise for food security and sustainable development in the 21st century as these animals form an integral part of the typical farming system in India. In India, cattle and buffalo has been the backbone of rural economy. It is the mainstay in the production of butter and ghee. Not only this, buffalo is also considered more useful for reasons of higher fat content in milk, ability to utilize agricultural by-products more efficiently and requires less amount of kilo calories to produce 1kg milk. Cattle and Buffalo is the largest capital asset as well as the friend of small farmers.

Cattle and Buffalo is triple purpose animal providing milk, meat and draught power, the contribution of buffaloes in country's economy is immense. Though buffaloes are less in numbers than cattle yet they currently produce about 87 million metric tonnes of milk, which is about 55% of the total milk produced in the country. Despite changes in consumption patterns the number of vegetarians is still very large and milk and milk products are the major source of good quality protein in their diets. Therefore, buffalo has paramount importance as a dairy animal in India.

As per the figures of 20th livestock census, India has over 535.78 million total livestock population in 2019. Cattle population of India is 192.49 million which contribute

around 35.94 per cent of the livestock population. The current buffalo population of India is 109.85 million which accounts for 20.45 per cent of livestock population. Adult female cattle and buffaloes is 145.12 million and 100.57 million, respectively. The milk production of India in 2018-2019 is 187.75 million tons and per capita availability of milk is 384 gram/day. Livestock sector is a main part of the agriculture of Indian economy. It contributes 4.11 % to total GDP where as in case of agriculture sector 25.6 % during 2018-2019(Annual report 2018-19, Department of Animal husbandry).

As per the figures of 20th livestock census 2019, the cattle and buffaloes population in Rajasthan state was 13.9 million and 13.7 million, respectively, while in the study area (Pratapgarh District) the population of cattle and buffaloes was 3.3 lakh and 1.50 lakh, respectively.

Today, India is faced with an extraordinary set of challenges of increasing food production of animal origin with all other limitations like land, water, feed resources etc. and the question is how would we meet these demands. It is only possible through livestock intensification and better feeding practices. Although minerals are most critical to livestock production, however, livestock in India do not receive mineral/vitamin supplements, except for common salt and calcite/dolomite powder. Hence, dairy animals depend on forages for their mineral requirements. A number of researchers in the world have reported a high incidence of forage samples below critical levels for different mineral elements, especially copper, zinc, cobalt, sodium and phosphorus. On the other hand, constant efforts are being made to increase crop yield per hectare, year by year. For that purpose, different crop varieties are being developed through scientific means for maximizing yields, ensuring more economic returns to the farmers. In this process, soils from all over country are getting depleted for one or more mineral elements as a result of intensive farming practices, which create imbalances of mineral elements in soil, plants and animals. The quantity of minerals, thus, present in forages may not be sufficient for optimum growth, milk yield and reproduction of animals. It is, therefore, obligatory to generate information on mineral status of feeds and fodders, so as to identify mineral deficiency or toxicity.

Till to date limited efforts have been made to find out the nutritional status of the dairy animal under field condition and a lot is equine to be done. Similarly, studies on correlation with the economic status and social characters with the nutritional status of the dairy cattle and buffaloes have not been carried out and which heads to be studies for the betterment of the society. Such data for Partapgrh district are not available and study was

hence the present carried out to know the “nutritional status of cattle and buffaloes” with the following objectives:

- i. To study the socio-economic status of the cow and buffaloes owners.
- ii. To evaluate the feeding practices followed by the dairy cows and buffaloes owners.
- iii. To assess the nutritional status of dairy cows and buffaloes.
- iv. To identify the constraints faced in feeding of cattle and buffaloes and suggest remedial measure.



## 2. REVIEW OF LITERATURE

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The review of literature has been presented four parts, first part deals with personal, social and economic characteristics, second parts deals with Feeding practices, third part deals with Nutritional status and fourth part deals with Constraints faced by farmers, present study conducted in four tehsils viz. Pratapgarh, Dhariawad, Arnod and Chhoti Sadri in district of Partapgarh. The literature unviewed so far has clearly quevealed that a few studies have been adopted the concept of nutritional status of cattle and buffaloes. However, a concern work done having a direct or indirect bearing on this study has been presented in sub group under the following heads.

### 2.1 PERSONAL, SOCIAL AND ECONOMIC CHRACTERISTICS:

Bashir and kumar *et al.* (2013) studied on milking management practices followed in selected areas of the Kottayam district of Kerala state and reported that farmers had less than 4 animals were 51.67 percent and between 5 to 10 animals 16.67 percent herd sizes, respectively.

Jacob and George (2013) studied on analysis of the milk production practices of dairy farmers of Kerala and reported that 67.00 of respondents belongs to middle age group followed by 20.00 per cent of old age group.

Patel *et al.* (2013) studied on housing management practices of dairy animal in Patan district of North Gujarat region and stated that 55.00 per cent of respondents were medium (6 to 10 animals ) herd size.

Udmale *et al.* (2014) studies on farmer's perception of drought impacts, local adoption and administrative mitigation measure in Maharashtra state, India. This study is based on both secondary and primary data collected via a survey of 223 farming households. The result show that decrease in yield of cereals, horticultural crops, livestock production and loss of employment, all associated with decreased income of farmers, were the most immediate economic impacts of drought.

Devaki *et al.* (2015) revealed that majority of the farm women were young, illiterate and maintaining nuclear family with less than five members. Most of them belonged to either landless or marginal land holding group and availing credit from private sources. Most of the

farm women had low level of annual income, livestock possession, mass media exposure, economic motivation and cosmopolite-localite contact. Their level of social participation was of medium nature with high level of extension agency contact.

Pal and Haldar (2016) observed that decision making power was positively correlated with the age of the women. Education of farm women was found effective in the participation of farm women in agricultural decision making process. Respondents of forward castes participated in farming decisions with greater frequencies than SC and ST. Although, the decision making score was higher among the male farmers, most decisions were taken jointly by both female and male participants indicating the development of social status of the farming women.

Chaudhary *et al.* (2016) studied on alternate dairy management practices of feeding and watering of animals followed by dairy farmers during drought in Patan district of Gujrat state and also reported that majority i. e. 61.67 per cent of farmers were from nuclear family and 38.33 per cent of the farmers belong to the joint families. They also observed that 62.50 per cent of respondents had low income during normal period and 91.67 per cent during drought. About 29.17 per cent of the respondents had medium income during normal periods and 08.33 per cent during drought. Only 08.33 per cent of farmers had high income during normal period. Income during drought and normal period decreased up to 100 per cent and 71.12 per cent of respondents among high income and medium income group, respectively. Herd size reduced up to 70.00 per cent during drought by the farmers owing large herd i. e. more than 10 animals. Whereas it increased about 166.67 per cent among farmers owing small size of herd. The change was more as the increase in number of animals during drought. The herd size decreased about 37.50 per cent during drought by the farmers owing medium size.

Hole (2016) Studies on management practices followed by cattle and buffalo owners in Latur tahshil and reported that 53.33 per cent cattle and buffalo owners belongs to middle age groups to owned by old age group 34.17 per cent and young age group 12.50 per cent. 23.33 per cent of the respondents belong to large family size. Majority of respondents 30.83 and 28.33 per cent primary (1st to 4th std.) and illiterate, respectively.

Prajapati *et al.* (2016) conducted following exploratory research design to ascertain the profile characteristics of livestock farmers in rural and urban areas of Navasari District. In the rural areas 53.5, 42 and 4.5 percent of dairy animal owners were from middle, old and

young age group category while in urban areas the proportion of the dairy animal owners in the above mentioned age group was 62, 23 and 15 per cent, respectively. In rural area 11, 29.5, 52.5 and 7 percent of the dairy farmers were illiterate, functional literate, educated up to secondary and graduate and above level while it was 11, 36, 47 and 6 percent in urban area, respectively.

Sarita *et al.* (2016) conducted a study on 120 dairy farmers of Hisar district to ascertain their socio-economic and psychological characteristics and reported that majority of the respondents were middle aged, literate having nuclear family with medium family size. Majority of the respondents were falling under small land holding and some of them were landless with small and medium herd size. Further study revealed that majority of dairy farmers was having low extension contact as well as low level of mass media exposure. Majority of them had medium economic motivation but showed very poor social participation.

Rangamma *et al.* (2017) observed that majority of milk producers belonged to middle age group followed by young and old age groups in rural, semi-urban and urban areas. Most of farmers belonged to backward caste, scheduled caste and tribe than the other caste in rural, semi-urban and urban areas. Majority of buffalo milk producers were literate ranging from primary to graduation level of education. Most of the milk producers in rural and semi-urban areas had agriculture as main occupation followed by dairying. Majority of the milk producers were marginal farmers followed by landless, small and medium farmers.

Gaikwad *et al.* (2017) collected from 150 Jaffrabadi buffalo owners randomly through pre tested questionnaire. The owners were distributed in three groups on the basis of number of buffaloes possessed by them as group I (< 5), Group II (6-10) and group III (>11). Majority of Jaffrabadi buffalo owners (58.67) were between age group of 31-50 years in Dhule city. Only (12.66%) livestock owners were above 51 years of age. It was observed that (25.33%) of the Jaffrabadi buffalo owners were illiterate and (45.34%) of the owners had completed primary education. Only (9.33%) owners were educated up to graduation. The majority of farmers (29.34%) were having small land holdings i.e.1-2 ha. and remaining (11.33%) having above 10 ha. land. It was found that most of farmers (62.38%) were producing 4.1-8 kg. milk/day/animal. Only (15.84%) were having buffaloes producing below 2-4 kg milk/day/animal. It was seen that an average 5.55, 6.47 and 7.33 kg milk production/buffalo/day, in different groups of farmer's viz. group I, group II and group III respectively. The ability to maintain social status, education and income of the buffalo

farmers were also increased through buffalo rearing. Considering all this parameters related to livelihood, it was clearly found that the socio-economic status of the buffalo farmers was improved through buffalo rearing although the management practices need to be improved with scientific approaches.

Sivaji *et al.* (2018) observed that buffalo farming is an occupation of young respondents with no formal schooling and small land owners belonging to all communities. It contributes 1/3rd of their family income. The average income obtained from buffalo farming was Rs. 75,236. Two third of the buffaloes were graded Murrah buffaloes and one third were non-descript buffaloes in the study. Majority (57.64%) had extension contact with para veterinarians and average experience in buffalo rearing was 14.89 years. About 3 per cent of the respondents only had undergone training in buffalo rearing in the last one year.

Pata *et al.* (2018) carried out a study on the socio-economic and milking patterns adopted by buffalo keepers in Junagadh and Porbandar districts of Gujarat State. A random sample of 300 buffalo owners were selected from three talukas of Junagadh and two talukas of Porbandar district. The study showed that a majority of buffalo owners (40%) were literate and belonged to middle age group. In the study area, 50.34% of the buffalo owners had large land holding and had nuclear type of family.

## **2.2 FEEDING PRACTICES:**

Rathore *et al.* (2010) conducted study in Churu district of Rajasthan to acquire first hand information on existing breeding, feeding and housing management practices for dairy cattle. It was observed that 86.00 per cent of the respondents resorted to natural service, 61.75 percent inseminate their cows at an early heat stage, and majority of farmers followed group feeding (68.75%) and grazed in fallow / harvested field (62.25%). Home prepared concentrate mixture (60.50%) with soaking (78.50%) was prevalent in the area. All the cattle keepers had kaccha floor in shed and 58.50 per cent kept their cattle near dwelling house.

Sharma *et al.* (2010) conducted an experiment at Pantnagar (Uttarakhand) to know the effect of feeding complete ration as mash or block form in comparison to conventional feeding system on feed intake, growth, nutrient utilization and certain blood biochemical parameters in growing crossbred calves.

Avinashilingan *et al.* (2011) reported that majority of tribal households for feeding livestock and watering to the animals ( 50.88 % regular and 33.33 % sometime), cutting of grass ( 56.86 % regular and 17.65% sometime), chopping of straw (58.82 % regular and

11.71 % sometime) and grazing of animals (52.94 % regular and 21.97 % sometime) were performed by respondent in Nilgiri district of Tamil Nadu.

Kannan *et al* (2011) undertaken a study at Chittoor district of Andhra Pradesh and concluded that ration balancing has a potential to improve milk production, microbial protein synthesis and reduce methane emission from lactating crossbred cows.

Gubbawar *et al.*(2012) studied on feeding and housing management with economic performance of Gaolao strain of Nagpuri Buffalo and observed that majority of buffalo owners from all the tahsil allowed their buffaloes to grazing forest area throughout the day *i.e.* practically for 10 hours.

Sarap *et al.* (2012) studied on animal husbandry practices followed by cattle owners in Karanja tehsil of Washim district and reported that about 92.94 per cent farmers provided housing for local cattle whereas 94.11 per cent farmers provided housing for crossbred cattle. Recommended dry fodder, green fodder and concentrates were 7.00 Kg, 15.00kg and 3.50 Kg, respectively. Avoid gap was noticed in feeding of concentrates (72 %) and green fodder (56.66 %). Majority of farmers (92.29 %) used mangers for crossbred cattle. Similarly majority of farmers (94.11%) used mangers for local cattle. About 83.33 and 87.05 per cent farmers mated their local and crossbred cattle within 12 hours while 16.66 and 12.94 per cent served cattle after 12 hours of induction of heat. The crossbred cattle farmers were well aware regarding health care practices *viz.*, eradication of eco parasites, regular vaccination, regular deworming than local cattle farmers. There was a small feeding gap in respect of green fodder and concentrates in crossbred than local cattle farmers. 60.83 per cent of the respondents applied *kutchha* type of housing. 81.17 per cent and 18.83 per cent of the farmers followed and not followed vaccination programmer, respectively.

Tanwar *et al.* (2012) studied on breeding and feeding management practices followed by members and non-members of dairy co-operatives in Jaipur district of Rajasthan and revealed that wheat straw was most common dry fodder used by majority (68.33 *v.s* 73.33%) of members and non-members families. About 54.17 percent and 46.67 percent animals were fed readymade feed (palliated) by members and non-members. Soaking to the concentrates before feeding was prevalent adopted by 65.0 and 61.67 percent members and non-members families. The feeding of mineral mixture and common salt was adopted by 30.83 and 21.67 per cent member's families whereas non-members families followed 6.67 and 9.17 per cent respectively. Majority (59.17 %) of member's families, mating to animals after 12 hours of

onset of heat whereas majority (60.83 %) respondents in non-members bred just after onset of heat. Bellowing was most common symptoms of heat detection adopted by both members and non-members families. Natural method of mating was used by majority of members (64.17 %) and non-members (94.17 %) families. Pregnancy diagnosis was not common in both the categories. 67.50 per cent of farmers used bellowing and 17.50 per cent farmers used mucus discharge + bellowing as the most common symptom of heat detection. Higher per cent (30.83) of respondents followed pregnancy diagnosis.

Chatterjee *et al* (2012) indicated that grazing is very common practice in eastern Himalayan region of cattle and also reported that feeding of cut field grasses (61.00 %), kitchen waste (53.00 %) and different tree leaves (44.00 %) to their animals.

Calamari *et al.* (2013) evaluate the effects of three different feeding management (FM) schedule on physiological markers of heat stress (HS), metabolic conditions, milk yield and quality during the hot season in dairy cows. During the hotter days, cows receiving morning (M) treatment showed higher values of rectal temperature (38.97 °C vs. 38.68 °C and 38.62 °C, in ME and E) and breathing rate (71.44 vs. 66.52 and 65.26 breaths min<sup>-1</sup>, in M and E), plasma glucose was lower in M (3.69 vs. 3.83 and 3.83 mmolL<sup>-1</sup>, in M and E) and a.m. plasma urea was lower in (E) evening. Only milk protein content and yield were higher in morning. Results on cow physiology indicate that M seems a less suitable FM to match cow welfare during the summer season,

Emily and Trevor (2015) reported that there is potential for various nutritional, housing and management factors to impact the learning of feeding behavior early in the life of dairy calves. Recent data suggests that providing forage to calves is important for rumen development, consequent growth and efficiency.

Jadav *et al.* (2014) studies on feeding practices of dairy animals in per urban areas of Surat district (Gujarat) and revealed that most of the respondents (64%) provided mineral mixture, while 76 per cent did not provide salt to animals. Only 24.00 per cent of respondents provided drinking water as free access and 17 per cent of respondents offered concentrate during milking.

Manohar *et al.* (2014) studied that all the respondents used to chop dry fodder before feeding while 70 per cent of respondent chopped green fodder. A large share *i.e.* 84.37 per cent of buffalo keepers soaked concentrate mixture before feeding. About 90.62 per cent of buffalo keepers fed concentrate mixture to buffaloes in advance pregnancy. Only 34.37 and

13.75 per cent of the respondents fed common salt and mineral mixture, respectively. None of the buffalo keeper has been recorded to prepare hay and silage. Five traits of respondents i.e. age, family size, education, land holdings and herd size were selected and their relationship with feeding management practices were identified. From the study it was concluded that feeding practices were significantly ( $p < 0.01$ ) correlated with education, herd size and age of respondents.

Kumar *et al.* (2015) studied that majority of the farmers used in stall feeding and both (stall and grazing) feeding. Two third majority of the respondent are cultivation of green fodder and also availability of green and dry fodder of the animal. Majority of the respondents fed green and dry fodders with chaffing. Almost two third of the respondents fed concentrate Homemade plus compounded cattle feed. Two third of concentrate feeding time are before of milking and one third of after milking of the dairy animal. Two third of the respondents provided mineral mixture while majority did not provide salt along with feed.

Patel *et al.* (2016) were collected using structured schedule from 150 professional breeders rearing Kankrej cattle. They had kept an average of 34 animals in which 4 animals were provided stall feeding (Calf, Old and Sick). All (100%) professional breeders supplied the concentrate (average 1.53 Kg) to their lactating cattle. Majority (61.8%) of respondents fed fodder as such to their animals. The animals were sent to grazing for more than 9 hours and sometimes 1 to 2 hours rest was provide to prevent heat stroke. Almost all (98.7%) respondents did not supply the mineral mixture and they were not aware about its importance. The water ponds and Village Lake were used by all respondents to provide water to their animals twice a day.

Sabapara (2016) was randomly selected 150 dairy animal owners. The present study revealed that majority (84.67%) of respondents followed stall feeding as well as grazing system while, only 15.33% of the respondents followed stall feeding system. The 82% and all respondents fed green non-leguminous and shedha grass to their milking animals, respectively. Paddy straw was major ingredient (96.67%) used as dry fodder. About 44% of respondents fed compound cattle feed as concentrate to their milking animals, based on milk production (34%), mainly after milking (56%). Majority of respondents (90.67%) practiced to feed green/dry fodders as such to their dairy animals. Majority of the respondents (54.67%) practiced to feed concentrates to their advanced pregnant heifers last two months of pregnancy and majority of the respondents (82.67%) followed special feeding after calving. Only 38% of respondents provided mineral supplements to their dairy animals and 88.67%

respondents did not provide extra salt to their dairy animals. All of the respondents followed practice of colostrums feeding to new born calves but only 40% of the respondents fed colostrums to new born calf before expulsion of placenta. All of the respondents allowed the calves to suckle only one teat of their dams for an average six minutes.

Reddy *et al.* (2017) studied to know the existing feeding practices followed by the landless, small farmer and commercial milk producers in Guntur district of Andhra Pradesh. Green fodder production was higher in commercial (100%) and small farmers (97%) than in landless milk producers (13%). Supplementation of mineral mixture was found to be higher in commercial milk producers (90%) than that in small farmers (35%) and landless milk producers (16%).

Jatolia *et al.* (2017) conducted an experiment to collect the relevant information on buffaloes managemental practices followed by 3932 responded in 22 villages of Udaipur district of Rajasthan. Majority of farmers provided green fodder to their buffaloes. None of the farmers practiced silage making. Concentrates was fed to the buffaloes at the time of milking only. Feeding of mineral mixture was provided by only 31 % of the farmers to their buffaloes.

Sivaji *et al.* (2018) conducted a study in Guntur and Prakasam districts of Andhra Pradesh through 144 buffalo farmers to assess the adoption level of selected buffalo husbandry practices. Feeding of green fodder (87%) and colostrums feeding to calves within one hour after calving (79%) were the most adopted feeding practices in the study area.

Pata *et al.* (2018) studied on 300 buffalo owners. Majority of buffalo owners (55.67%) had animal shed located inside dwelling house with kuccha slopped floor (83.67%). Most of buffalo owners reduced heat stress in buffaloes by splashing of water and 71% farmers adopted both stall feeding and grazing to their buffalo. In study area, 80% buffalo owners cultivated green fodder, 92.67% and 91% respondents did not feed salt and mineral mixture to their buffaloes, respectively. Most common green fodder used were maize and Lucerne in the study area, 51.33% and 40% respondents fed maize and Lucerne to their buffaloes respectively. Sorghum straw (33.33%) and groundnut gotar (61.67%) were fed as dry fodder to their buffaloes.

Pata *et al.* (2018) revealed that 85.8% of respondents followed stall feeding system for their animals. Majority (89.2%) of respondents fed their animals twice in a day followed by thrice or more (10.8%). Majority (69.6%) of respondents cultivated green fodder crops to



feed their animals. About 92.92% of respondents provided non-cultivated green grasses/grasses from bunds and 53.33% of respondents provided sugarcane tops. Only 11.2% of respondents offered chaffed green/dry fodders to their animals. Only 30.4% of respondents fed compound cattle feed to their animals, based on milk production (54.2%) and mainly after milking (87.5%). Majority of respondents (62.5%) did not feed concentrates to their young calves and 70.4% of respondents fed concentrates to their heifers.

### **2.3 NUTRITIONAL STATUS:**

Shaikh and Barman (2010) conducted study at Jammu and Kashmir and concluded that inclusion of fish meal in the calf starter had no effect on feed intake. The feed conversion efficiency was higher in fish meal. Higher body weight gain might be due to better digestion, absorption and assimilation of nutrient amino acid.

Khan *et al.* (2010) undertaken experiment at Jabalpur (Madhya Pradesh) and concluded that the digestibility of DM, CP and EE of plated ration was higher ( $P < 0.05$ ) than that of TMR and similarly, the digestibility in TMR group was higher ( $P < 0.05$ ) than that of conventional ration. There was no effect of dietary treatments on fat corrected milk (FCM) yield thus it may be concluded that palliating is a practical method of densification for improving nutrient intake and their utilization and milk production in dairy cows.

Kaushal *et al.* (2011) studied that relative proportion of concentrate was lower ( $P < 0.01$ ) in the diet of animals of Hoshiarpur district as compared to that in Gurdaspur district (8.8 vs. 17.7%), reverse trend was observed in the roughage proportion i.e. 91.2 vs. 82.3%, respectively. The CP and EE content of the diet offered was less than the actual recommended (12-17% CP and 3% EE, respectively), while the NDF content was higher than the actual recommended level ( $\leq 28\%$ ) for complete feed. The daily DM and CP intake were as per the requirements but the EE intake was much less than required by the animals in Hoshiarpur and Gurdaspur district i.e. 34.3 and 39%, respectively. Only 2% farmers in Gurdaspur and 25% farmers in Hoshiarpur district were supplementing the diet with mineral mixture.

Kumar *et al.* (2011) undertaken study to evaluate the effect of shatavari, supplementation on milk production and its composition and indicated that supplementation of shatavari root powder prepartum (60 days) @100 mg per kg live body weight to continue postpartum period (90 days) @ 200 mg per kg live body weight which improved 7 milk production, fat content and increased net returns per litre significantly in crossbred cattle.

Meena *et al.* (2011) concluded that nutrient utilization was enhanced by supplementing the wheat straw based ration with robotic, which was further enhanced by using the urea-ammonization of wheat straw, thus supplementation of urea treated wheat straw may be recommended with robotic for its optimum utilization in the ration of growing crossbred calves.

Mircha *et al.* (2012) conducted an experiment that majority of the dairy animals were on medium plane of nutrition representing increasing level of awareness about their feeding practices in the district. Only 46.5% of the dairy cattle and 34.0% of the dairy buffaloes (total 44.1% of the dairy animals) were receiving mineral mixture either premixed with feed or separately. The most common health problems reported among the animals were repeat breeding/anestrous followed by pica and low milk production.

Jarial *et al.* (2013) the present study was undertaken to assess seasonwise feeding practices, availability, requirement, and nutritional gap of dairy buffaloes in Tehri Garhwal and Pithoragarh districts of Uttarakhand. Feed samples were chemically analysed for proximate principles. Daily dry matter intake (DMI), crude protein (CP), metabolisable energy (ME), and nutritional gap were calculated. Results showed that both in Tehri Garhwal as well as in Pithoragarh, the lactating buffaloes were underfed in terms of quantity (DM). In Tehri, the shortage of dry matter was in the range of 25%, whereas protein shortage was 19% and energy deficit 17.3%. In Pithoragarh district the shortages were 27% (DM), 27% (CP) and 18.6% (ME).

Raj at and Girin (2014) concluded that inadequate intake of DM, protein and energy might be responsible for low productivity of lactating cattle under rural management in Mizoram. Reduced digestibility of nutrients might also be another contributing factor of poor productivity of dairy cows in Mizoram. The study indicated feeding of available local feed-stuffs based on nutritional composition **8** and balanced concentrate mixture to ensure adequate intakes of nutrients for the lactating cattle in Mizoram.

Meenalochani *et al.* (2015) were selected 213 dairy cows of various physiological activities and nutritional status. The deficit per cent of nutrient intake of DMI, TDN, CP and Ca in mid lactation of second calving pure Jersey cross (Jx) and Holstein Friesian cross (HFx) dairy cows were 1.46 and 1.32 kg/day and 986 and 900 g/day and 411 and 398 g/day and 14.84 and 37.6 g/day and phosphorus was excess by 8.31 and 16.24 g/day, respectively as compared with NRC (2001). Further, if the feeding was as per NRC (2001)

recommendation in Jx and HFx on regression analysis an addition yield of 4.63, 3.46 and 3.26 liters per day and 4.26, 3.55 and 3.89 liters per day could be expected in early, mid and late lactation respectively. This leads to the expected net profit of Rs. 36.69, 39.58 and 44.9 per day in Jx and Rs. 35.41, 36.67 and 23.12 per day respectively in HFx during early, mid and late lactation.

Chavda and Parnerkar (2016) were selected two villages from each taluka. In each village, 10 farmers whose animals produced at least 10 kg or more milk per day. On an average, the dry matter intake of buffaloes in Siddhpur, Patan, Chansma, Harij and Sami taluka was 15.83, 17.02, 16.96, 17.23 and 17.66 kg, respectively with district average of 16.94 kg. For corresponding talukas, the average DCP intake of buffaloes was 104.03, 96.33, 103.68, 103.68 and 102.86 % of requirement, respectively with district average of 102.12 % and the average TDN intake was 102.79, 114.80, 112.31, 124.55 and 127.06 % of requirement, respectively with district average of 116.30 percent.

Sherasia *et al.* (2016) assessed Calcium (Ca) content ranged from 0.22 to 1.74% in roughages, as compared to 0.02 to 0.19% in concentrates. Average phosphorus (P) content in concentrates (0.42%) was almost three times higher than that of roughages (0.14%). Copper (Cu) level was recorded low in most of the feed resources. Straws of jowar (*Sorghum bicolor*) (8.11 ppm), wheat (*Triticum aestivum*) (5.71 ppm) and bajra (*Pennisetum glaucum*) (9.82 ppm) were found low in zinc (Zn). Manganese (Mn) content in feeds and fodder ranged from 9.65 to 73.0 ppm. Average blood serum levels of Cu, Zn and Mn in buffaloes were 0.63, 0.79 and 0.05 ppm, respectively. As compared to critical level of Cu (0.65 ppm) and Zn (0.80 ppm) in blood serum, more than 60% of the animals screened showed low Cu and Zn status. Based on the calculated intakes of protein, energy, Ca, P, Cu, Zn and Mn from various feed resources, suggestions for correcting supply of protein and energy.

Thakur *et al.* (2018) revealed that nutrient availability of individual animal was compared with the nutrient requirements given in the feeding standards to work out the nutrient deficiencies/excess/imbalance. Results indicated shortage of DCP 11 %, P 21 %, Zn 65 %, Cu 2 %, vitamin A 45 % and vitamin E 80 % in advanced pregnant buffaloes. On the basis of results obtained a strategic nutritional supplement, containing deficient nutrients, was formulated.

## 2.4 CONSTRAINTS FACED BY THE FARMERS:

Dhaka *et al.* (2011) conducted a survey on 250 farmers in Bundi district of Rajasthan and reported that inadequate knowledge (76.25%), inadequate and poor quality of feed and fodder (69.15%), high incidence of disease (68.35%), poor genetic potential of animals (75.40%), non availability of support services in time (62.25%), poor extension support (35.45%), long calving intervals (36.65%) and repeat breeding (28.50%) were the major problems in study areas.

Kumar *et al* (2012) revealed that the major constraints involved in scientific dairy farming were non functional Artificial Insemination center, timely availability and non availability of vaccine and veterinary medicine in government hospitals, repeat breeding, preferences to cash or food crops rather than the fodder crops unawareness about recommended feeding practices, non availability of high yielding varieties of fodder seeds, poor availability and high cost of compound feed, mineral mixture, lack of veterinary doctors and lack of knowledge about scientific management and health care of dairy animals practices were perceived as the important constraint in adopting improved dairy farming practices by majority of respondents. They suggested that to minimize these constraints used appropriate strategy should be formulated by authority of Krishi Vigyan Kendra, Banka with help of district/block veterinary department, district development department of state government or with the other agencies engaged in dairy development in the area for transfer of technology relevant to scientific dairy farming practices in the area.

Sabpara *et al.* (2012) reported that high cost of feed (91.00 %) followed non availability of green fodder round the year (89.00 %), lack of knowledge of balanced ration (45.50%), lack of knowledge about silage preparation (30.00%), lack of knowledge about poor quality straw to its improve nutritive value (19.00%), lack of availability of fodder crop seed (5.50%). Vidyasagar *et al.* (2012) studied the constraints encountered in rearing livestock in dry land areas of Tamil Nadu and reported that major constraints of cattle and buffalo owners was water scarcity, lack of veterinary aid, lack of green fodder availability.

Aulakh *et al.* (2012) studied in Punjab to find out the extent of adoption of recommended feeding practices and constraints perceived in adoption by the buffalo owners and observed that buffalo owners had medium level of adoption of recommended management practices. High adoption was found in case of adequate supply of feed and water to the buffalo (95%), followed by udder cleaning (90.56%) and keeping of buffalo in

ventilated houses (82.22%). The low adoption rates (18.89%) and wallowing of buffalo in the pound (23.33%). The education level of the respondent was positively and significantly correlated with the adoption of recommended management practices.

Dubey *et al.* (2012) at Raipur city and stated that the majority (96.15%) of the respondents were opinion that lack of sufficient green fodder in the market, lack of knowledge of animal disease (71.74%) were major problems in the adoption of improved dairy farming practices.

Tailor *et al.* (2012) Reported that constraints faced by the farmers are inadequate knowledge about proper or scientific feeding of dairy animals, repeated breeding of milch animals, lack of awareness of clean milk production, lack of knowledge about vaccination against contagious disease.

Yadav and Grover (2012) reported that majority of men had animal health care and management constraint followed by personal constraint, organizational constraint, educational constraint and milk supply and payment constraint whereas majority of women had educational constraint followed by personal, animal health care and management, milk supply and payment constraint and organizational constraint, respectively. The spearman ranks order correlation reveals that the ranks are not consistent.

Rathore *et al.* (2013) studied that constraints faced by crossbred cattle keepers in adoption of milk production, calf rearing and housing management practices and stated that low price of milk (1.62 MS), lack of knowledge about milk processing (1.16 MS) were the major constraints in management practices of milk production. However regarding constraints in health cover management practices, lack of knowledge about deforming practices were found major constraints. Regarding constraints in housing management practices, high cost investment in construction of scientific dairy shed (1.43MS), inadequate credit facilities (1.33MS).

Chaudhary *et al.* (2013) studied on constraints faced by the farm women in adoption of improved cattle management practices in arid Rajasthan and reported that the breeding constraints faced by the women's were inadequate knowledge of breeding practices 45.33 per cent, distant location of AI centers 20.44 per cent, poor conception rate in dairy animals 10.66 per cent and also feeding constraints were limiting irrigation facilities for raising green fodder 51.12 per cent, high cost of concentrate 43.55 per cent. Lack of knowledge about cattle

disease and their control 37.77 per cent, lack of veterinary hospitals and health care centers 29.33 per cent were the constraints faced by the farmers in Rajasthan.

Rao *et al* (2013) conducted field survey in west coastal farming area, Chikhli taluka of Navsari district of south Gujarat to study the constraints faced by tribal dairy farmers. The major constraints that farmers faced here were related to feeding with high cost of feed followed by lack of knowledge of balancing ration, non-availability of green fodder round the year, lack of awareness about treatment of poor quality straw to improve its nutritive value, lack of knowledge about silage preparation and lack of availability of fodder crop seed, lack of knowledge in clean milk production and high cost of utensils. The constraints observed were repeat breeding, low conception through A.L, lack of knowledge of heat detection, lack of availability of insemination in time, lack of improved bulls in villages. The ' constraints faced by respondents related to health care were high cost of veterinary drugs followed by problems of mastitis in crossbred cow, inadequate knowledge of diseases and their control, non availability of vaccine in time, veterinary doctor not visiting village frequently and distant location of veterinary hospital.

Das *et al.* (2014) studied constraints faced by dairy farmers in Kamrup district of Assam and observed that constraints as high cost of feed and medicine (72%), lack of financial assistance (34%)

Dhindsa *et.al* (2014) the study was conducted in four villages of Fatehgarh Sahib District of Punjab. The data was collected from 200 dairy farmers owning 1150 milch animals through a specially designed schedule. It was noted that more than 90 per cent dairy farmers believed high cost of feed and fodder, low price of crossbred cow milk, less fat content in cow milk. Other major constraints were inadequate knowledge about balanced feeding, low availability of quality green fodder round the year, lack of veterinary services and lack of A.I facilities.

Yadav *et al.* (2014) observed the constraints in livestock management practices perceived by tribal livestock owners of Banswara district of Rajasthan and reported that a list of constraints was prepared and divided in five main categories i.e. socio-economic, feeding, breeding, management and health care constraints. The respondents were asked to assign rank to each of listed constraint according to perceived intensity. On the basis of rank assigned by all the respondents to each constraint, rank based quotient for individual constraints was calculated. Lack of grazing pasture land, poor production status of livestock, repeat breeding

problem, poor economic condition of family and high cost of treatment for diseased animal were considered as major constraints reported by tribal's having RBQ value 98.34, 96.83, 96.67, 94.17 and 93.67, respectively.

Bhoj *et al* (2014) conducted survey on women dairy self help group (SHG) members with respect to socioeconomic features, institutional support structures available to dairy farmers, constraints experienced in milk production and their perception towards participation in microfinance program in the state of Uttarakhand, India. They observed that, major constraint was high cost of cattle feed, mineral mixture, fodder seeds also non-availability of green fodder all over the year, irregular and inadequate supply of cattle feed, the non availability of indigenous bulls, poor conception rate in artificially inseminated cows, poor knowledge about breeding practices, irregularity in the availability of semen at the AI centre, unavailability of emergency veterinary services, poor knowledge about health care practices, irregular visit of veterinary staff , unavailability of vaccines and improper deworming in members.

Ghugre (2014) found that constraints related to dairy animals were inadequate availability of green fodder (58.50 %), effect of high cost of fodder on its supply (64.00 %), use of silage and urea treatment to dry fodder (59.00 %), lack of availability of veterinary care hospital (26.00%), artificial insemination (14.50 %), availability of credit for purchasing animal (75.00%), inadequacy of own grazing land (51.00 %).

Nale (2014) studied in Parbhani (MS) and reported that constraints related to dairy animals were inadequate availability of green fodder (68.00%), effect of high cost of fodder on its supply (60.50%), use of silage and urea treatment to dry fodder (77.50%), lack of availability of veterinary care hospital (27.50%), were artificial insemination was not available, availability of credit for purchasing animal (72.00%), inadequacy of own grazing land (43.00%).

Modi *et al.* (2015) the study was carried out in Sabarkantha district of Gujrat to identify the various constraints perceived by the farmers in adoption dairy animal management practices and observed depicted that lack of knowledge of scientific housing, scientific method of milking and lack of knowledge to control eco parasite were constraints perceived by the farmers.

Nagrle *et al.* (2015) studied on an analysis of constraints faced by dairy farmers in Vidharbha region of Maharashtra and analyzed using Garret's ranking technique and

observed that lack of availability of green fodder was found as major feeding constraint, low productivity of animal as breeding constraint, low price of liquid milk as marketing constraint. Institutional constraint was lack of A.I. and veterinary facilities and overall major constraint considering all the above categories was lack of availability of green fodder.

Prajapati *et al.* (2015) conducted at the Navsari district of South Gujrat and stated that majority of respondents in the survey area were poor and major constraints observed related to housing, feeding and breeding management practices were lack of own capital, high construction cost, high cost of feed, lack of knowledge of balancing ration, non availability of green fodder round the year, lack of pedigree bulls for natural service.

Shrey *et al.* (2015) studied on constraints perceived by farmers in crop-dairy mixed farming system on small farms in Parbhani district of Marathwada region of Maharashtra state and reported that in case of local cow owners majority of respondent i.e. 100 per cent were facing the constraints low productivity. Where as in case of crossbreed cow majority of dairy owners (i.e.100 %) faced low price of milk, high cost of feed and fodder and lack of organized market as the major constraints in each case, followed by 93.34 per cent of the respondent as the non-availability of land for fodder cultivation. Regarding constraints of buffalo milk production, 100 per cent respondent opinioned to have inadequate knowledge about feeding was the major constraints, and followed by 95.92 per cent respondents have constraints as lack of availability of credit. Besides the major constraints respondent dairy owners were also faced same other constraints in milk production and marketing of local cows, cross-breed cow and buffaloes.

Singh *et al.* (2015) studied constraints faced by farmers in adoption of dairy entrepreneurship and found that the problems associated with adoption of feeding and healthcare practices were ranked first(61.8%) followed by constraints in adoption of milking practices (58.3%), breeding practices (51.0%) and housing practices (48.8%). Inadequate facilities of artificial insemination centre (71.1%), high price of concentrate mixture (84.4%) lack of capital for housing (66.7%). Constraints faced by the respondents were no availability of improved breeding bull (48.46%), lack of knowledge about balanced feed of animals (56.92%), lack of sufficient green fodder (96.15%).

Nagrle *et al* (2015) the data on commonly occurring feeding, breeding, marketing and institutional constraints in dairy farming ranked by farmers in the study area were collected and analyzed by using Garret ranking technique. Among the feeding constraints in



dairy farming, the lack of availability of green fodder, low availability and high cost of concentrates, low availability of dry fodder and non availability of land for fodder production constraint ranked first, second, third and forth respectively by dairy farmers.

Kumar (2015) revealed that majority (73.75%) of farmers were not having any knowledge about the breeds of buffaloes. Lack of knowledge about balanced feeding and high cost of concentrates were two main constraints about the feeding management faced by 83.75 and 76.25 per cent of respondents, respectively. Nearly 53 per cent respondents reported the problem of lack of finance for the construction of animal houses. In 45 per cent of the cases, farmer's ignorance towards animal housing was a major problem as far as housing practice was concerned.

Singh *et al.* (2015) studied constraints faced by farmers in adoption of dairy entrepreneurship and found that 66.70 per cent of farmers faced the lack of own capital followed by high construction cost (55.60 %) and lack of sufficient space (44.40 %), respectively.

Kumar and Shukla (2017) depicted that distant location of A.I. centre, lack of availability of improved breed, lack of knowledge about balance ration, non-availability of green fodder throughout the year, limited and poor quality grazing land, distant and location of veterinary hospitals, no knowledge about vaccine schedules, lack of marketing facility in the village, lack of finance for working capital and low price of milk were perceived as the most serious constraints faced by rural and urban weaker section's milk producers. Hence, there is a need to set up the A.I. centre within the reach of the milk producers and popularize the services provided by veterinary department and arrange the training programmer for mainly problems related to breeding, feeding and management practices for the rural and urban weaker section's milk producers in the study area.

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### 3. MATERIALS AND METHODS

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This chapter is describing the research design, tools and techniques for investigation for collection of data according to objective of the study. It is also affined with the selection of sampling techniques used for analysis of data. This section restrains methodology, which was adopted for the study and his discussed under following heads:

- 3.1 Plan of the study
- 3.2 Area of the study
- 3.3 Sampling of the techniques
- 3.4 Tools for the study
- 3.5 Collection of data
- 3.6 Tabulation of data
- 3.7 Analysis of data and statistical tests applied

#### 3.1 Plan of study

Livestock is back bone of the rural economy as a major resource of earning, in rural belt, especially, for landless, small and marginal farmers. It nearby endue an alternative source of income and has become a subsidiary occupation in rural and semi urban area particularly for landless, small and marginal farmers.

The scientific management of dairy animals, knowledge of nutrient requirements and the quality and quantity of feed intake to the dairy cattle and buffaloes are highly vital as these have great yielder for increasing the milk production and increasing the profitability for the dairy farmers.

#### 3.2 AREA OF THE STUDY:

The present study was undertaken in Pratapgarh district of Rajasthan. The southern boundary of the district touches Banswara district and MP state, while northern boundary touches Chittorgah district. The western boundary touches Udaipur and Dungarpur districts. There are total 5 tehsils in Partapgarh district viz. Pratapgarh, Dhariawad, Arnod, Chhoti Sadri and Peepalkhoont.

### **3.3 Geographical situation**

Pratapgarh District is a newly constituted district in Rajasthan state. It came into existence on 26 January 2008 as the 33rd district of Rajasthan. The Pratapgarh district lies in the Southern part of Rajasthan. Pratapgarh is located at 24.03° N 74.78° E. It has an average elevation of 491 metres (1610 feet). Pratapgarh is situated on the Madhya Pradesh state boundary.

### **3.4 SAMPLING TECHNIQUES:**

In this study areas includes the selection of district, tehsils, villages and respondents covered under the study.

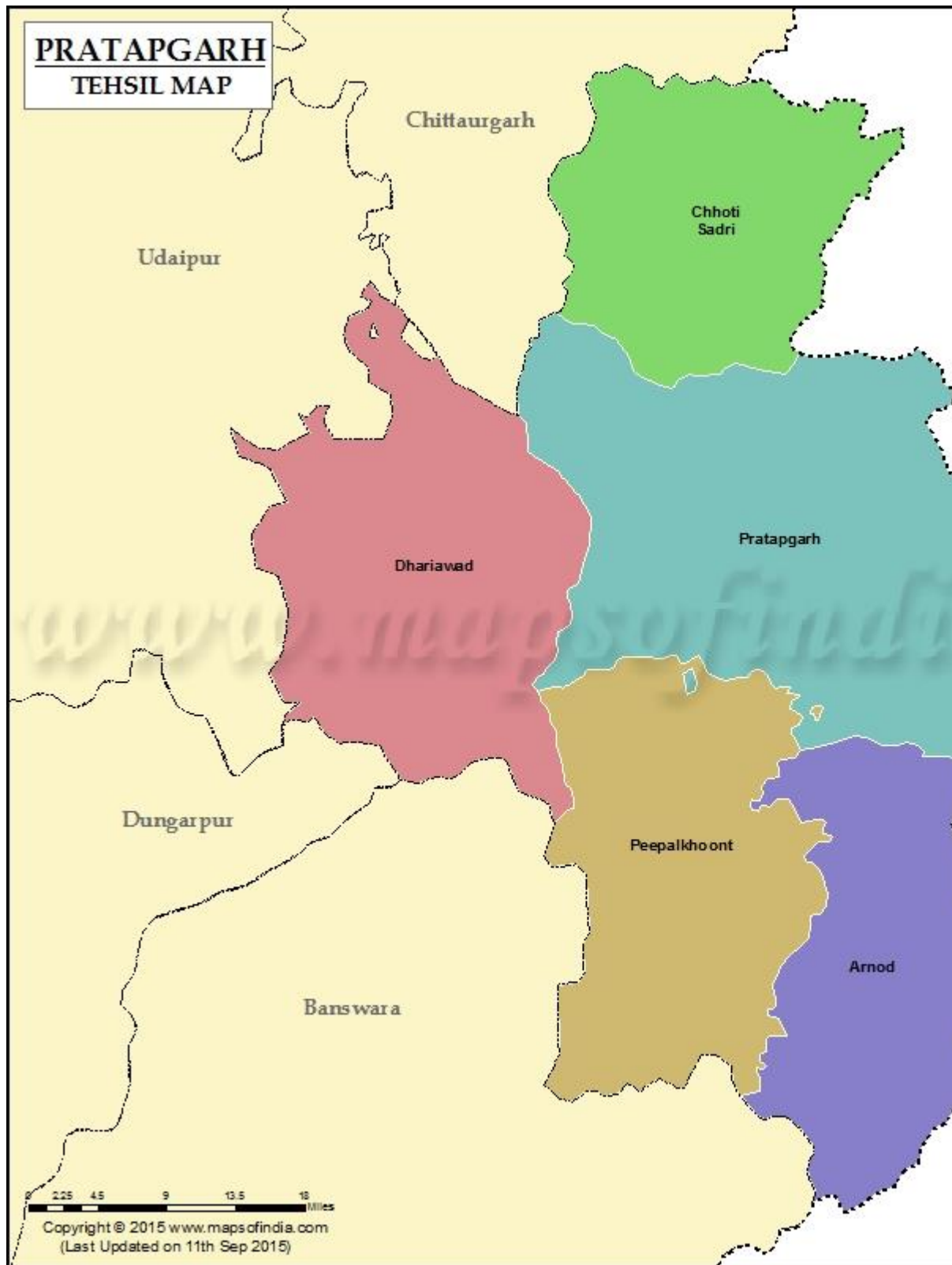
#### **3.4.1 Selection of District**

The study was conducted purposely selected for the present study because studies on evaluation of nutritional status of dairy cattle and buffaloes have not been carried out earlier in the district.

#### **3.4.2 Selection of tehsils:**

There are total 5 tehsils in pratapgarh district, out of which 4 tehsil has been selected namely Pratapgarh, Dhariawad, Arnod and Chotti Sadri on the basis of highest livestock population .

**PRATAPGARH  
TEHSIL MAP**

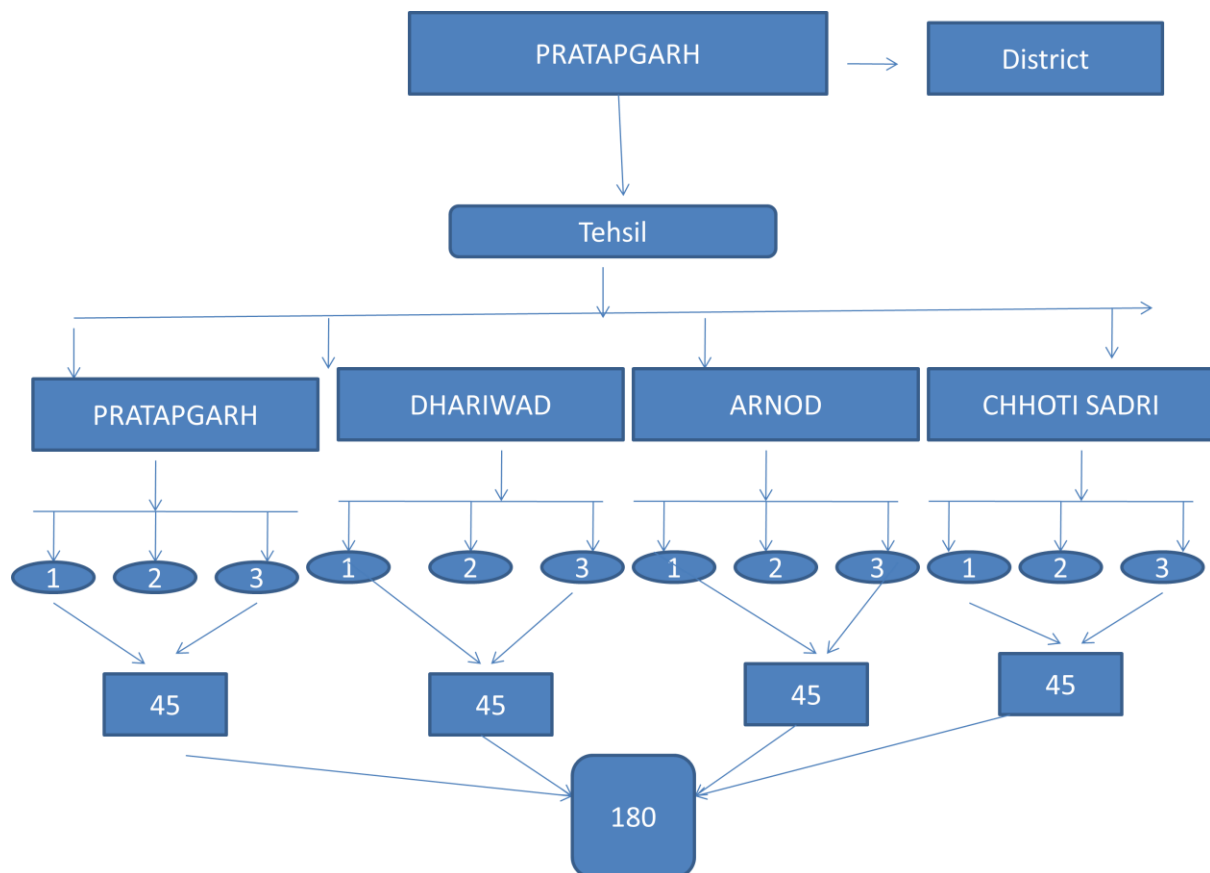


### 3.4.3 Selection of village:

Twelve villages were selected on the basis of highest population covering three villages from each tehsil of the district.

### 3.4.4. Selection of respondents:

A list of the dairy farmers having dairying as their subsidiary occupation were selected and collected from village dairy co-oprative, Sarpanch and Patwari. Thus a sample of one hundred eighty dairy farmers will formed the groups of respondents. From each village fifteen respondent were selected falling under their categorise viz having 1-2 cattle and buffaloes, 3-5 cattle and buffaloes and more than 6 cattle and buffaloes was taken for this study.



### **3.5 TOOLS FOR STUDY:**

Data were collected through personal contacts and interviews, which have been considered to be the most important tool through which the researcher could get most authentic first hand information. The interview schedule was prepared keeping in view the objectives of the study and common for all the respondents.

The interview schedule was prepared in such a way that the required information regarding the farmer and the information to arrive at the nutritional status of the dairy animals was obtained through various questions put across to the farmers. The interview schedule was divided into four major areas covering information regarding.

**(I) Socio-economic status of the respondents like**

- (1) Personal information
- (2) Land holding
- (3) Dairy animals

**(II) Feeding practices**

- (1) Green fodder
- (2) Dry fodder
- (3) Concentrate
- (4) Feed supplements
- (5) Water

**(III) Nutritional status**

**(IV) Constraints faced by dairy farmers and the remedial measure suggested**

### **3.6 COLLECTION OF DATA:**

Data were collected by personal interview from 180 respondents of twelve villages of Pratapgarh district. It was collected by the help of local leaders like Sarpanch, Ward members and Patwari was sought by the investigators by personal approach. The interview schedule developed for the study was used for collecting the information by personal interview. The respondents were meeting at their home or community place or their farms. Before actual interview, the investigator introduced him to the respondents and the objectives of the study were explained with a view to convincing them to give proper response. The questions/statements of the interview schedule were read out one by one and their responses were

recorded. Every possible care was taken to get unbiased response. After collection, all the data were compiled and tabulated in master sheet.

### **3.7 TABULATION OF DATA:**

The collected data were first transferred to a master sheet from which appropriate tables were formulated keeping in view the specific objectives of the study. Wherever necessary data were quantified according to standards laid down in consultation with subject matter specialists, village people, Gramsevak and dairy cattle owners. The table so prepared depicted data clearly pertaining to different villages separately in the study area.

### **3.8 Analysis of data statistical test applied**

The study being of an exploratory nature, it was desirable to collect data fairly exhaustively. Data pertaining directly to dairy cattle and buffaloes feeding practices rather than to the peripheral issues were analyzed. In order to achieve the objectives set, suitable and very pertinent statistical measure would be applied and valid conclusions would be drawn. Frequency, percentage, means, standard deviations and z-test etc., are proposed to be applied for analysis of data.

$$Z = \frac{|\bar{X} - \mu|}{S/\sqrt{n}}$$

Where,

$\bar{X}$  = Sample mean

$\mu$  = Population mean

S= Standard deviation of sample

n = Sample size

## 4. EXPERIMENTAL RESULTS

This chapter describes the experimental result of research work. This chapter includes presentation, analysis and interpretation of collected data. Data were gathered through schedule from the selected cattle and buffaloes owners by personal interview in the area of different tehsils of Partapgarh district of Rajasthan. Gathered data were classified, tabulated and analyzed by the help of the objectives of the study and obtainable, interpreted and discussed in a scientific way, under the following details:

4.1 Personal, social and economic characteristics

4.2 Feeding practices followed

4.3 Nutritional status of cattle and buffaloes

4.4 Constraints faced by the farmers

### 4.1 PERSONAL, SOCIAL AND ECONOMIC CHARACTERISTICS:

Data gathered about personal, social and economic characteristics of cattle and buffaloes holder were analyzed and the results are accessible in the following pages.

#### 4.1.1 Age:

Age is a vital factor, which influences the manners pattern of individual. The respondents were inquired to specify their age in completed years and data in this consider the presented in Table 4.1.

**Table 4.1 Distribution of respondents according to their age**

S.No.	Category	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Young age (upto 26 years)	11	24.44	15	33.33	14	31.11	10	22.22	50	27.78
2.	Middle age (26 to 52 years)	24	53.53	22	48.89	25	55.56	29	57.78	97	53.89
3.	Old above 52 years	10	22.22	8	17.78	6	13.33	9	20.00	33	18.33



Data specify that maximum (53.89 per cent) cattle and buffalo owners go to middle age category followed by young (27.78 per cent) and old (18.33 per cent). Further, the middle age group has superior experience and awareness, so they were forever prepared to accept new innovations without bearing in mind the reaction of the others ones.

#### 4.1.2 Education:

The rank of education of the respondents was reading and obtainable in Table 4.2.

**Table 4.2 Distribution of respondents according to their education**

S.No.	Education category	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Illiterate	14	31.11	15	33.33	18	40.00	13	28.89	60	33.33
2.	Primary	18	40.00	16	35.56	20	44.44	23	51.11	77	42.78
3.	Secondary	8	17.78	7	15.56	3	6.67	4	8.89	22	12.22
4.	Higher & secondary	3	6.67	6	13.13	4	8.89	2	4.44	15	8.33
5.	Graduation & above	2	4.44	1	2.22	0	0.00	3	6.67	6	3.33

It is observable from table 4.2 that big majorities (42.78 per cent) of the cattle and buffaloes holders were include primary level of education followed by (33.33 per cent) owners were illiterate, (12.22 per cent) were secondary, (8.33 per cent ) were higher secondary and (3.33 per cent) owners were graduation and above.

#### 4.1.3 Caste:

Caste is a vital nature, which concern the entrepreneurial manners of the respondents. The information concerning their caste was secret into four categories.

**4.3 Distribution of respondents according to their caste**

S.No.	Education category	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	SC	0	0	0	0	0	0	3	6.67	3	1.67
2.	ST	45	100.00	40	88.89	7	15.56	2	4.44	94	52.22
3.	OBC	0	0	5	11.11	32	71.11	26	57.78	63	35.00
4.	General	0	0	0	0.00	6	13.33	14	31.11	20	11.11

It is apparent from data presented in Table 4.3 that greater part (52.22 per cent) of the cattle and buffaloes owners belonged to ST, 35 per cent were OBC, 11.11 per cent were General and 1.67 per cent was SC castes.

#### 4.1.4. Land holding:

The information concerning land holding capacity of the cattle and buffaloes holders was serene and presented in Table 4.4.

#### 4.4. Distribution of respondents according to their land holding (in bigha)

S.No.	Land (in bigha)	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	1-5	14	31.11	13	28.89	12	26.67	10	22.22	49	27.22
2.	5-10	20	44.44	30	66.67	25	55.56	32	71.11	107	59.44
3.	10-15	11	24.44	2	4.44	8	17.78	3	6.67	24	13.33

A inspection of data presented in Table 4.4 create it apparent that a majority (59.44 per cent) of the cattle and buffaloes owners had medium land holding pursued by 27.22 per cent and 13.33 per cent belonged small and big size of land holding, respectively.

#### 4.1.5. Main occupation:

The cattle and buffaloes holders were inquiring to provide information concerning their main occupation and data in this observe are presented in Table 4.5

#### 4.5. Distribution of respondents according to their main occupation

S. No	occupation	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Agriculture	15	33.33	19	42.22	17	37.78	24	53.33	75	41.67
2.	Dairy farm	9	20.00	8	17.78	7	15.56	4	8.89	28	15.56
3.	Business	3	6.67	4	8.89	2	4.44	1	2.22	10	5.56
4.	Labour	18	40.00	14	31.11	19	42.22	16	35.56	67	37.22

It is apparent from data (table 4.5) that a greater part (41.67 per cent) of the cattle and buffaloes holders' observed agriculture followed by 37.22, 15.56 and 5.56 per cent possessed labour, dairy farm and business, respectively.

#### 4.1.6. Annual income:

The cattle and buffaloes holders were inquiring to provide information concerning their annual income and data in this observe are presented in Table 4.6.

#### 4.6 Distribution of respondents according to their annual income.

S. No	Category	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	10000 to 100000	11	24.44	9	20.00	16	35.56	14	31.11	50	27.78
2.	100000 to 250000	29	64.44	30	66.67	27	60.00	27	60.00	113	62.78
3.	Above 250000 rs	5	11.11	6	13.33	2	4.44	4	8.89	17	9.44

It is apparent from data (table 4.6) that a greater part (62.78 per cent) of the cattle and buffaloes holders' observed Rs 100000 to 250000 annual income followed by 27.78 and 9.44 per cent possessed Rs10000 to 100000 and above Rs 250000 annual income, respectively.

Data related to the different categories of dairy buffaloes and cattle obtained from the respondents are presented in Table 4.7

#### 4.7 Distribution of cattle and buffaloes under different categories

S. no.	Tehsil	Village	Types of animals	No. of cattle	No. of buffaloes	Total
1.		Heeravas	Milch	8	18	26
			Dry	4	7	11
			Advanced pregnant	2	3	5
			Bullock	5	0	5
			Heifers	8	10	18
2.		Sarada	Milch	12	16	28
			Dry	3	5	8
			Advanced	2	6	8

			pregnant			
			Bullock	8	0	8
			Heifers	10	12	22
3.		Sariguda	Milch	10	16	26
			Dry	4	5	9
			Advanced pregnant	1	2	3
			Bullock	8	0	8
			Heifers	10	12	22
4.		Devgarh	Milch	10	12	23
			Dry	5	8	13
			Advanced pregnant	2	2	4
			Bullock	7	0	7
			Heifers	4	8	12
5.		Sovani	Milch	17	20	37
			Dry	5	8	13
			Advanced pregnant	2	3	5
			Bullock	10	0	10

			Heifers	8	11	19
6.		Samlipathar	Milch	11	12	23
			Dry	2	4	6
			Advanced pregnant	1	5	6
			Bullock	8	0	8
			Heifers	7	10	17
7.		Jhankar	Milch	20	22	42
			Dry	3	4	7
			Advanced pregnant	2	5	7
			Bullock	6	0	6
			Heifers	8	10	18
8.		Veerawali	Milch	15	22	37
			Dry	4	6	10
			Advanced pregnant	2	3	5
			Bullock	11	0	11
			Heifers	6	7	13
9.			Milch	10	12	22

		Nagova				
			Dry	2	4	6
			Advanced pregnant	3	2	5
			Bullock	6	0	6
			Heifers	7	8	15
10.		Bambori	Milch	7	10	17
			Dry	3	5	8
			Advanced pregnant	2	2	4
			Bullock	5	0	5
			Heifers	7	9	16
11.		Jaloda jagir	Milch	13	12	25
			Dry	5	9	14
			Advanced pregnant	2	4	6
			Bullock	7	0	7
			Heifers	8	9	17
12.		Chandoli	Milch	10	14	24
			Dry	4	5	9

			Advanced pregnant	2	3	5
			Bullock	7	0	7
			Heifers	10	13	23
			<b>Total</b>	<b>391</b>	<b>415</b>	<b>806</b>

It is gathered from data (table 4.7) that 391 cattle were obtained by the respondents between which 143 were milch animals, 44 dry animals and 23 advanced pregnant. Further, the holders possessed 93 heifers and 88 bullocks. The respondents possessed 415 buffaloes between which 186 were milch animals, 70 dry animals, 40 advanced pregnant and 119 heifers.

#### **4.2 FEEDING PRACTICES FOLLOWED:**

The study was conducted out for the period of February to May, 2019. Cold climate for the period of February and hot summer throughout March, April and May described this period.

##### **4.2.1 Green fodder:**

This is measured to be in line season as far as the availability of green fodder related. Depending ahead the availability of land and irrigation services available throughout this season for fodder farming, a partial quantity of Lucerne, berseem, sorghum and bajra was fed to the animals. The amount of green fodder fed to animals ranged from concerning 2 to 10 kg per milch animal in the study area. Green fodder is being fed to all categories of dairy animals in study area. The dairy cattle and buffaloes holders' intake a mixture of leguminous and non-leguminous green fodder in the study area. In the study area, it was indicated that the animal was fed sufficient amount of green fodder in the study area, while such farmers providing green fodder of their animals around the year. The amount of green fodder fed to animals ranged from concerning 2 to 10 kg per milch animal in the study area. Green fodder is being fed to all categories of dairy animals in study area.

#### 4.2.1.1 Production of green fodder:

Data obtainable in Table 4.8 discovered that 56.57 per cent respondents were always cultivation of the green fodder, 33.33 per cent respondents were sometimes green fodder cultivation and 10.00 per cent farmers were did not cultivation of green fodder.

**Table 4.8 Distribution of respondents practicing green fodder cultivation**

S. No	Green fodder cultivation	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Always	24	53.33	26	57.78	23	51.11	29	64.44	102	56.67
2.	Sometime	17	37.78	14	31.11	18	40.00	11	24.44	60	33.33
3.	Not at all	4	8.89	5	11.11	4	8.89	5	11.11	18	10.00

Data given in table 4.9 indicate that 10.00 per cent of the respondents did not cultivation any type of green fodder. About 23.33 percent respondents cultivated about 51 to 100 quintals of green fodder per year while a little less percentage (22.22) cultivated about 101 to 150 quintals of green fodder per year. These farmers hired cultivated area of berseem and sorghum from others farmers who had large land holdings and irrigation facilities. Result of study area that was indicating the most of farmers cultivated green fodder their own land and other land. Green fodder was not purchased to market but sometimes farmers purchase green fodder to their neighbor farmers. Majority of (56.57 per cent) respondents were always cultivation of the green fodder.



**Table 4.9 Distribution of respondents in view of the quantity of green fodder cultivation**

S.No.	Quantity of green fodder cultivated (in quintals)	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Not cultivated	3	6.67	4	8.89	6	13.33	5	2.22	18	10.00
2.	Up to 50	8	17.78	8	17.78	8	17.78	4	11.11	28	15.55
3.	51 to 100	12	26.67	12	26.67	8	17.78	10	26.67	42	23.33
4.	101 to 150	11	24.44	10	22.22	8	17.78	11	26.67	40	22.22
5.	151 to 200	6	13.33	6	13.33	9	20.00	9	20.00	30	16.66
6.	200 to above	5	11.11	5	11.11	6	13.33	6	13.33	22	12.24

Data given in table 4.10 indicate that 38.89 per cent of the respondents were offered leguminous fodder, 35.00 per cent respondents were given non-legume fodder and 26.11 per cent respondents were offered both types of fodder to animals.

**Table 4.10 Types of green fodder fed to dairy animals**

S. No.	Types of fodder	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	<b>Legume</b>	21	46.67	16	35.56	15	33.33	18	40.00	70	38.89
2.	<b>Non-legume</b>	12	26.67	18	40.00	16	35.56	17	37.78	63	35.00
3.	<b>both</b>	12	26.67	11	24.44	14	31.11	10	22.22	47	26.11

#### 4.2.1.2. Average intake of green fodder by milch, dry and advanced pregnant animals:

Data available from tables 4.11 and 4.12 described that the average intake of green fodder by all categories of cattle and buffaloes in the different villages and tehsils are as under. It was indicated that the average green fodder fed by the milch animals of different tehsils of partapgarh district was in the range of 8.37 to 10.41 kg/day/animal pursue by that of dry animals 6.53 to 10.39 kg/day/animal and advanced pregnant animals 7.12 to 9.55 kg/day/animal (Table 4.12). It was observed in rainy green fodder availability is sufficient for dairy cattle and buffalo. While during summer season proper water resources was not available that green fodder availability is difficult and did not provide easily and in sufficient amount. So that green fodder availability is insufficient in study area.

**Table 4.11 Green fodder intake (kg/day/animal) by cattle and buffalo of different village**

S. No	Tehsils	Village	Average green fodder intake		
			In milk	Dry	Adv. preg
1	Dhriyawad	Heeravas	11.07±1.80(9.27-12.87)	9.18±2.50(6.68-11.68)	10.50±1.53(8.97-12.03)
2.		Sarada	9.33±1.75(7.58-11.08)	7.25±1.90(5.35-9.15)	8.58±1.25(7.33-9.83)
3.		Sariguda	10.83±2.07(8.76-12.90)	8.85±2.30(6.55-11.15)	9.58±1.68(7.90-11.26)
4.	Partapgarh	Devgarh	8.63±1.25(7.38-9.88)	6.78±2.22(4.56-9.00)	8.05±2.30(5.75-10.35)
5.		Sovani	9.14±1.57(7.57-10.71)	8.20±1.85(6.35-10.05)	7.50±1.57(5.93-9.07)
6.		Samlipathar	10.25±2.50(7.75-12.75)	10.00±1.75(8.25-11.75)	9.88±2.03(7.85-11.91)
7.	Arnod	Jhankar	7.83±1.21(6.62-9.04)	6.85±1.20(5.65-8.05)	6.10±1.21(4.89-7.31)
8.		Veerawali	7.67±3.29(4.38-10.96)	7.12±3.29(3.83-10.41)	8.12±3.29(4.83-11.41)
9.		Nagova	9.63±5.08(4.55-14.71)	5.63±1.20(4.43-6.83)	7.15±2.30(4.85-9.45)

10.	<b>Chotti sadri</b>	<b>Bambori</b>	8.85±2.46(6.39-11.31)	9.85±2.25(7.60-12.10)	7.25±2.10(5.15-9.35)
11.		<b>Jaloda jagir</b>	10.15±3.39(6.76-13.54)	10.12±2.10(8.02-12.22)	9.18±2.38(6.80-11.56)
12.		<b>Chandoli</b>	11.53±2.50(9.03-14.03)	11.20±1.68(9.52-12.88)	10.55±1.68(8.87-12.23)

Tabulated value indicate the range of green fodder

**Table 4.12 Green fodder intake (kg/day/animal) by cattle and buffaloes of different tehsils.**

S. No	Tehsils	Average green fodder intake		
		In milk	Dry	Adv. Preg
1.	<b>Dhriyawad</b>	9.57±3.46(6.11-13.03)	8.43±2.23(6.19-10.66)	9.55±1.49(8.07-11.04)
2.	<b>Partapgarh</b>	10.41±4.59(5.82-15.00)	8.33±1.94(6.39-10.27)	8.48±1.97(6.51-10.44)
3.	<b>Arnod .</b>	9.34±2.34(7.00-11.68)	6.53±1.90(4.64-8.43)	7.12±2.27(4.86-9.39)
4.	<b>Chotti sadri</b>	8.37±2.05(6.32-10.42)	10.39±2.01(8.38-12.40)	8.99±2.05(6.94-11.05)
	<b>Average partapgarh district</b>	10.17±3.24(6.93-13.41)	8.42±2.02(8.42-10.44)	8.54±1.94(6.59-10.48)

Tabulated data indicate the range of green fodder

#### **Milch animals:**

Data table 4.12 shows that the average green fodder consumed by the milch animals of different tehsils of partapgarh district ranged from 8.37 to 10.41 kg/day/animal. The animals of chotti sadri tehsils intake the minimum quantity (8.37 kg/day/animal) of green fodder with a range of 6.32-10.42 kg/day/animal. However, those of partapgarh tehsil animals green fodder intake the maximum quantity (10.41 kg/day/animal) with a rang of 5.82-15.00

kg/day/animal. The average green fodder intake by milch animals in rest of tehsils viz. dhriyawad and arnod was 9.57 and 9.34 kg/day/animal, respectively.

#### **Dry animals:**

Data table 4.12 indicate that the average green fodder intake by dry animals of various tehsils of Partapgarh district ranged from 6.53 to 10.39 kg/day/animal. The animal of Arnod tehsil consumed the minimum quantity of 6.53 kg/day/animal of green fodder with a range of 4.64-8.43 kg/day/animal. However, those of Chotti Sadri tehsil animal maximum intake of green fodder 10.39 kg/day/animal with a range of 8.38 to 12.40 kg/day/animal. The average green fodder consumed by the animals in rest of the tehsils viz., Dhriyawad and Partapgarh was 8.33 and 8.43 kg/day/animal, respectively.

#### **Advanced pregnant animal:**

Data table 4.12 indicate that the average green fodder intake by advanced pregnant animals of various tehsils of Partapgarh district ranged from 7.12 to 9.55 kg/day/animal. The animal of Arnod tehsil consumed the minimum quantity of 7.12 kg/day/animal of green fodder with a range of 4.86-9.39 kg/day/animal. However, those of Dhriyawad tehsil animal maximum intake of green fodder 9.55 kg/day/animal with a range of 8.07 to 11.04 kg/day/animal. The average green fodder consumed by the animals in rest of the tehsils viz., Chotti Sadri and Partapgarh was 8.99 and 8.48 kg/day/animal, respectively.

#### **4.2.2 Dry fodder:**

Dry fodder was mostly used in study area for animals of wheat and soyabean, stover of maize and sorghum and local mature pasture dry grasses. Sometimes gram mungbean used as dry fodder depending on their availability and cost factor. In winter season maize and sorghum Stover along with the dry grasses compose the feed of all categories of dairy animals. It was observed commonly used dry fodder for fed animals in study area during study time were wheat straw, soyabean and stover of maize and sorghum. Leguminous straw and local grasses were also provide fed to animals as dry fodder in study area during period of the study.

##### **4.2.2.1 Type of dry fodder:**

Data table 4.13 indicates that non-leguminous as well as leguminous dry fodder were being to provide to dairy cattle and buffalo in the study area. The maximum farmers (58.33%) provide non-leguminous fodder. While 41.67 per cent farmers provide both fodder provide to their animals.

**Table 4.13 Types of dry fodders fed to dairy animals**

S. No	Types of fodder	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Cereals (straw, stover and dry grasses)	25	55.56	23	51.11	33	73.33	24	53.33	105	58.33
2.	Cereals + pulses straw	20	44.44	22	48.89	12	26.67	21	46.67	75	41.67

**4.2.2.2 Average dry fodder intake by milch, dry and advanced pregnant animals:**

Data available from tables 4.14 and 4.15 described the average intake of dry fodder by all categories of cattle and buffaloes in the different villages and tehsils.

**Table 4.14 Dry fodder intake (kg/day/animal) by cattle and buffaloes of different villages**

S. No	Tehsils	Village	Average Dry fodder intake		
			In milk	Dry	Adv. preg
1	Dhriyawad	Heeravas	4.50±1.77(2.73-6.27)	4.47±0.85(3.61-5.32)	5.25±1.58(3.67-6.83)
2.		Sarada	5.53±0.99(4.54-6.52)	6.20±1.73(4.47-7.93)	6.53±1.41(5.13-7.94)
3.		Sariguda	8.22±1.68(6.54-9.90)	6.33±1.11(5.22-7.45)	7.45±1.10(6.36-8.77)
4.	Partapgarh	Devgarh	6.63±1.14(5.49-7.77)	5.27±1.15(4.12-6.41)	5.50±1.55(3.95-7.05)
5.		Sovani	4.45±1.27(3.18-5.72)	6.33±1.42(4.91-7.76)	6.50±1.99(4.51-8.49)

6.		<b>Samlipathar</b>	7.57±1.12(6.45-8.69)	7.33±1.18(6.16-8.51)	7.55±1.22(6.33-8.77)
7.	<b>Arnod</b>	<b>Jhankar</b>	5.53±1.45(4.08-6.98)	6.54±1.83(4.71-8.37)	7.93±1.22(6.71-9.16)
8.		<b>Veerawali</b>	7.02±1.92(5.10-8.94)	7.40±1.45(5.95-8.85)	7.97±2.05(5.92-10.01)
9.		<b>Nagova</b>	6.63±1.02(5.61-7.65)	8.80±0.94(7.86-9.74)	6.97±1.46(5.51-8.42)
10.	<b>Chotti sadri</b>	<b>Bambori</b>	8.63±0.99(7.64-9.62)	7.07±1.55(5.52-8.63)	7.33±1.50(5.84-8.83)
11.		<b>Jaloda jagir</b>	5.67±1.13(4.54-6.80)	6.87±1.39(5.47-8.26)	6.93±1.49(5.45-8.42)
12.		<b>Chandoli</b>	7.98±2.01(5.97-9.99)	5.08±1.40(3.68-6.49)	7.35±1.50(5.85-8.85)

Tabulated data indicate the range of dry fodder

Average dry fodder provide to the milch animals of different tehsils of Partapgarh district was in the range of 6.8 to 7.43 kg/day/animal followed by dry animals which was in the range of 5.67 to 7.58 kg/day/animal and advanced pregnant animals with a range of 6.41 to 7.20 kg/day/animal (Table 4.15).

**Table 4.15 Dry fodder intake (kg/day/animal) by cattle and buffaloes of different tehsils.**

S. No	Tehsils	Average dry fodder intake		
		In milk	Dry	Adv. Preg
1.	<b>Dhriyawad</b>	6.08±1.92(4.16-8.00)	5.67±1.52(4.14-7.19)	6.41±1.36(5.05-7.77)
2.	<b>Partapgarh</b>	6.22±1.60(4.62-7.82)	6.31±1.49(4.82-7.80)	6.52±1.59(4.93-8.10)
3.	<b>Arnod .</b>	6.39±1.52(4.87-7.91)	7.58±1.71(5.87-9.29)	7.62±1.58(6.05-9.20)
4.	<b>Chotti sadri</b>	7.43±1.56(5.87-8.98)	6.34±1.68(4.66-8.02)	7.20±1.49(5.71-8.70)

	<b>Average partapgarh district</b>	6.53±1.61(4.92- 8.14)	6.47±1.74(4.74- 8.21)	6.94±1.51(5.43- 8.44)
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Tabulated data indicate the range of dry fodder

#### **Milch animals:**

Data table 4.15 shows that the average dry fodder consumed by the milch animals of different tehsils of partapgarh district ranged from 6.22 to 7.43 kg/day/animal. The animals of Partapgarh tehsils intake the minimum quantity (6.22 kg/day/animal) of dry fodder with a range of 4.62-7.82 kg/day/animal. However, those of Chotti Sadri tehsil animals dry fodder intake the maximum quantity (7.43 kg/day/animal) with a rang of 5.87-8.98 kg/day/animal. The average dry fodder intake by milch animals in rest of tehsils viz. dhriyawad and arnod was 6.08 and 6.39 kg/day/animal, respectively.

#### **Dry animals:**

Data table 4.15 indicates that the average dry fodder intake by dry animals of various tehsils of Partapgarh district ranged from 5.67 to 7.58 kg/day/animal. The animal of Arnod tehsil consumed the maximum quantity of 7.58 kg/day/animal of dry fodder with a range of 5.87-9.29kg/day/animal. However, those of Dhriyawad tehsil animals minimum intake of dry fodder 5.67 kg/day/animal with a range of 4.14-7.19 kg/day/animal. The average dry fodder consumed by the animals in rest of the tehsils viz., Chotti Sadri and Partapgarh was 6.34 and 6.41 kg/day/animal, respectively.

#### **Advanced pregnant animal:**

Data table 4.15 indicate that the average dry fodder intake by advanced pregnant animals of various tehsils of Partapgarh district ranged from 6.41 to 7.62 kg/day/animal. The animal of Arnod tehsil consumed the maximum quantity of 7.62 kg/day/animal of dry fodder with a range of 6.05-9.20 kg/day/animal. However, those of Dhriyawad tehsil animal minimum intake of dry fodder 6.41 kg/day/animal with a range of 5.05-7.77 kg/day/animal. The average dry fodder consumed by the animals in rest of the tehsils viz., Chotti Sadri and Partapgarh was 7.20 and 6.52 kg/day/animal, respectively.

#### **4.2.3. Concentrate mixture:**

Special concern was taken by the farmers for milch animals as far as the feeding of concentrate was disturbed. It was observed that all the farmers provided concentrate to all milch animals and some advanced pregnant animals. Most of the farmers provided the

different types of concentrate mixture (cotton seed cake, cotton seed) to animals. Cattle and buffalo holders was also provided the concentrate like bajragrains, wheat grain crushed barley and soyabeen churi. Some farmers were provide market concentrate mixture to dairy cattle and buffaloes.

#### 4.2.3.1 Average concentrate mixture intake by milch, dry and advanced pregnant animals:

Data available from tables 4.16 and 4.17 described the average intake of concentrate mixture by all categories of cattle and buffaloes in the different villages and tehsils. The concentrate mixture provide to milch animals in different thsils of Partapgarh district was in range of 1.84 to 2.10 kg/day/animal followed by advanced pregnant animals with a range of 1.54 to 1.76 kg/day/animal (Table 4.17). While in the study area of Partapgarh district did not provide the concentrate mixture to dry animals.

**Table 4.16 Concentrate intake (kg/day/animal) by cattle and buffaloes of different villages**

S. No	Tehsils	Village	Average dry fodder intake	
			In milk	Adv. preg
1	Dhriyawad	Heeravas	1.70±0.70(1.00-2.40)	1.50±0.43(1.07-1.93)
2.		Sarada	1.94±0.43(1.52-2.37)	1.73±0.26(1.48-1.99)
3.		Sariguda	2.05±0.63(1.42-2.68)	1.50±0.26(1.24-1.76)
4.	Partapgarh	Devgarh	1.50±0.43(1.07-1.93)	0.82±0.24(0.58-1.06)
5.		Sovani	1.95±0.60(1.35-2.55)	1.10±0.29(0.81-1.39)
6.		Samlipathar	2.11±0.54(1.57-2.65)	1.53±0.21(1.33-1.74)
7.	Arnod	Jhankar	2.03±0.61(1.41-2.64)	1.61±0.23(1.38-1.83)
8.		Veerawali	1.63±0.53(1.10-2.16)	1.03±0.23(0.80-1.26)
9.		Nagova	1.87±0.67(1.19-2.54)	1.48±0.26(1.22-1.74)
10.	Chotti sadri	Bambori	1.50±0.58(0.92-2.08)	1.16±0.25(0.91-1.41)
11.		Jaloda jagir	2.50±0.57(1.93-3.07)	1.51±0.22(1.29-1.74)



12.		<b>Chandoli</b>	2.30±0.53(1.77-2.83)	1.51±0.25(1.26-1.77)
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Tabulated data indicate the range of concentrate mixture

**Table 4.17 Concentrate intake (kg/day/animal) by cattle and buffaloes of different tehsils.**

S. No	Tehsils	Average dry fodder intake	
		In milk	Adv. Preg
1.	<b>Dhriyawad</b>	1.90±0.63(1.27-2.52)	1.76±0.32(1.44-2.09)
2.	<b>Partapgarh</b>	1.86±0.57(1.28-2.43)	1.57±0.26(1.31-1.82)
3.	<b>Arnod .</b>	1.84±0.62(1.22-2.46)	1.56±0.24(1.32-1.80)
4.	<b>Chotti sadri</b>	2.10±0.55(1.55-2.65)	1.54±0.24(1.30-1.79)
	<b>Average partapgarh district</b>	1.92±0.60(1.32-2.52)	1.61±0.28(1.33-1.89)

#### **Milch animals:**

Data table 4.17 shows that the average concentrate mixture consumed by the milch animals of different tehsils of partapgarh district ranged from 1.84 to 2.10 kg/day/animal. The animals Arnod tehsils intake the minimum quantity (1.84 kg/day/animal) of concentrate mixture with a range of 1.22-2.46 kg/day/animal. However, those of Chotti Sadri tehsil animals concentrate mixture intake the maximum quantity (2.10 kg/day/animal) with a range of 1.55-2.65 kg/day/animal. The average concentrate mixture intake by milch animals in rest of tehsils viz. dhriyawad and Partapgarh was 1.90 and 1.86 kg/day/animal, respectively.

#### **Advanced pregnant animal:**

Data table 4.17 indicates that the average concentrate mixture intake by advanced pregnant animals of various tehsils of Partapgarh district ranged from 1.54 to 1.76 kg/day/animal. The animal of Dhriyawad tehsil consumed the maximum quantity of 1.76 kg/day/animal of concentrate mixture with a range of 1.44-2.09 kg/day/animal. However, those of Chotti Sdari tehsil animal minimum intake of concentrate mixture 1.54 kg/day/animal

with a range of 1.30-1.79 kg/day/animal. The average concentrate mixture consumed by the animals in rest of the tehsils viz., Arnod and Partapgarh was 1.56 and 1.57 kg/day/animal, respectively.

#### **4.2.4. Feeding practices:**

##### **4.2.4.1 Chopping of green fodder:**

Data given in Table 4.18 indicate that 42.22 per cent respondents were sometime chopping of green fodder, 30.56 per cent respondents were always chopping of green fodder and 27.22 per cent respondents were never chopping of green fodder. A greater part of respondents 42.22 per cent were sometime chopping of green fodder earlier than feeding to animals.

**Table 4.18 Distribution of respondents practicing chopping of green fodder.**

S. No	Chopping	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Always	14	31.11	13	28.89	15	33.33	13	28.89	55	30.56
2.	Sometimes	19	42.22	18	40.00	19	42.22	20	44.44	76	42.22
3.	never	12	26.67	14	31.11	11	24.44	12	26.67	49	27.22

##### **4.2.4.2 Conservation and preservation of fodder:**

Data given in Table 4.19 indicate that 67.22 per cent respondents were preserve green fodder for its utilization during scarcity and 32.78 per cent respondents did not preserve green fodder for its utilization during scarcity.

**Table 4.19 Preserve green fodder for its utilization during scarcity:**

S. No	Preserve green fodder	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Yes	28	62.22	30	66.67	31	68.89	32	71.11	121	67.22
2.	No	17	37.78	15	33.33	14	31.11	13	28.89	59	32.78

#### 4.2.4.3 Chopping of dry fodder:

Data obtainable in table 4.20 specify that chopping of dry fodder as a daily routine is being practiced by only 20.00 per cent of the respondents. However, 59.44 per cent of the respondents chopped dry fodder sometime. As reported only 20.56 per cent of the farmers never chopped dry fodder before feeding. Major part of respondents 59.44 per cent were chopped dry fodder sometime before feed to animals.

**Table 4.20 Distribution of respondents practicing chopping of dry fodder.**

S.No.	Chopping	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Always	8	17.78	9	20.00	7	15.56	12	26.67	36	20.00
2.	Sometimes	32	71.11	29	64.44	25	55.56	21	46.67	107	59.44
3.	never	5	11.11	7	15.56	13	28.89	12	26.67	37	20.56

#### 4.2.4.4 Mixing of dry and green fodder:

Data given in Table 4.21 indicate that only 67.22 per cent respondents mixed green fodder with dry fodder at the time of feeding to animals. But 32.78 per cent farmers did not mixed green fodder with dry fodder. Majority of farmers were reported that only 67.22 per cent respondents mixed green fodder with dry fodder at the time of feeding to animals. The ratio of mixing dry fodder with green fodder from 2:1 to 3:1.

#### 4.21 Distribution of farmers practicing mixing of dry fodder with green fodder

S. No.	Practice followed	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Mixing dry fodder with green fodder	28	62.22	30	66.67	31	68.89	32	71.11	121	67.22
2.	No mixing	17	37.78	15	33.33	14	31.11	13	28.89	59	32.78

#### 4.2.4.5 Pre-treatment of concentrate mixture:

Data table 4.22 indicates that 47.22 per cent dairy cattle and buffaloes owners adopt boiling method of pre-treatment of concentrate mixture. Whereas, soaking and grinding method used was 24.44 and 28.33 per cent farmers, respectively. A grater part of cattle and buffaloes owners (47.22 per cent) were adopt boiling method of pre-treatment of concentrate mixture before fed to animals.

**Table 4.22 Distribution of respondents practicing different types of pretreatments to the concentrate mixture**

S.No.	Pre-treatment	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Soaking	2	4.44	7	15.56	18	40.00	17	37.78	44	24.44
2.	Boiling	28	62.22	21	46.67	19	42.22	17	37.78	85	47.22
3.	Grinding and soaking	15	33.33	17	37.78	8	17.78	11	24.44	51	28.33

**Table 4.23 Frequency of giving concentrate mixture to dairy animals.**

S.No.	Frequency of giving concentrate mixture	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Once in 24 hrs.	2	4.44	7	15.56	18	40.00	17	37.78	44	24.44
2.	Twice in 24 hrs.	28	62.22	21	46.67	19	42.22	17	37.78	85	47.22
3.	Three time in 24 hrs.	15	33.33	17	37.78	8	17.78	11	24.44	51	28.33

Tabulated data (table 4.23) indicate that the maximum frequency of given concentrates mixture was 47.22 per cent twice in a day. Whereas, given concentrate mixture was once in a day and three times in a day was 24.44 and 28.33 per cent, respectively.

**Table 4.24 Methods of giving mineral mixture supplement to dairy animals.**

S.No.	Method of giving mineral mixture	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	By mixing in concentrate	28	62.22	18	40.00	25	55.56	14	31.11	85	47.22
2.	By block	10	22.22	16	35.56	12	26.67	13	28.89	51	28.33
3.	By dreching	7	15.56	10	22.22	5	11.11	9	20.00	31	17.22
4.	Any other methods	0	0.00	1	2.22	3	6.67	9	20.00	13	7.22

Data table 4.24 indicate that different types of method of giving mineral mixture to dairy animals in different tehsils of pratapgarh district. It was indicate the maximum method was used by mixing in concentrates was 47.22 per cent. However, the others methods namely by block, by drenching and any other methods was used 28.33, 17.22 and 7.22, respectively.

#### 4.2.5 Water:

Tabulated data (table 4.25) indicate that only 57.78 per cent dairy farmer's provide drinking water in the shed while 42.22 per cent farmers did not provide the water in the shed.

**Table 4.25 Distribution of respondent providing water in the shed itself**

S. No	Water management practice	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Providing water in shed	25	55.56	30	66.67	25	55.56	24	53.33	104	57.78
2.	Not providing water in shed	20	44.44	15	33.33	20	44.44	21	46.67	76	42.22

**Table 4.26 Different source of drinking water provide to dairy animals by respondents.**

S.No.	Source of drinking water	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Hand pump	2	4.44	5	11.11	0	0.00	5	11.11	12	6.67
2.	Well	35	77.78	23	51.11	23	51.11	32	71.11	113	62.78
3.	Village pond	6	13.33	10	22.22	13	28.89	4	8.89	33	18.33
4.	Any other	2	4.44	7	15.56	9	20.00	4	8.89	22	12.22

Tabulated data (table 4.26) indicate that only 62.78 per cent dairy farmers used village well as the source of drinking water for animals while others resources namely hand pump, village pond and any other was 6.67, 18.33 and 12.22 per cent, respectively.

**Table 4.27 Frequency of watering to dairy animals**

S.No.	Frequency of watering	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Once in 24 hrs.	2	4.44	0	0.00	4	8.89	0	0.00	6	3.33
2.	Twice in 24 hrs.	19	42.22	26	57.78	25	55.56	23	51.11	93	51.67
3.	Three time in 24 hrs.	16	35.56	13	28.89	16	35.56	19	42.22	64	35.56
4.	Four times in 24 hours	8	17.78	6	13.33	0	0.00	3	6.67	17	9.44

Frequency of watering, the cattle and buffaloes holders respond that they did not followed a fixed schedule of offering water to the animals. Tabulated data (table 4.27) indicate that 51.67 per cent dairy farmers water provide to animals two times in a day. Whereas, in summer season the frequency of given drinking water increased to 3 to 4 times a day.

#### 4.2.6 Feeding method:

In the study area dairy cattle and buffaloes owners their animals were sent for grazing to pasture and other places.

**Table 4.28 Distribution of respondents according to different feeding system**

S.No.	Feeding system	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Complete stall feeding	8	17.78	5	11.11	5	11.11	7	15.56	25	13.89
2.	Stall + pasture feeding	37	82.22	40	88.89	40	88.89	38	84.44	155	86.11
3.	Complete pasture feeding	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
4.	Any other method	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

Data given in table 4.28 indicates that only complete stall feeding was reported by only 13.89 per cent dairy farmers adopted in study area. Complete pasture feeding was not reported and 86.11 per cent farmers adopted stall + pasture feeding in study area.

**Table 4.29 Distribution of respondents according to average duration of sent animals for grazing.**

S.No.	Durations (hours / day)	Dhariyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	2-4 hrs	17	37.78	17	37.78	22	48.89	16	35.56	72	40.00
2.	4-6 hrs	20	44.44	24	53.33	18	40	22	48.89	84	46.67
3.	6-8 hrs	0	0.00	0	0.00	0	0	0	0.00	0	0.00
4.	No grazing	8	17.78	4	8.89	5	11.11	7	15.56	24	13.33



Data given in table 4.29 indicate that the greater part of dairy farmers (46.67%) sent their animals for 4 to 6 hours daily grazing while 40.00 per cent sent for 2 to 4 hours and 13.33 per cent did not sent their animals for grazing at all.

**Table 4.30 Distribution of respondent provide manger in the shed.**

S. No	Provide manger in shed	Dharyabad		Pratapgarh		Arnod		Chotti sadri		Overall	
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1.	Yes	22	48.89	15	33.33	21	46.67	22	48.89	80	44.44
2.	No	23	51.11	30	66.67	24	53.33	23	51.11	100	55.56

Data indicate (table 4.30) that only 44.44 per cent farmers manger providing in the shed while 55.56 per cent dairy farmers did not provided manger in the shed.

#### **4.3 NUTRITIONAL STATUS OF DAIRY ANIMALS:**

##### **4.3.1 Total DCP and TDN requirements and actual consumption by the milch animals**

**Table 4.31 Total DCP and TDN (maintenance + milk production) requirements and consumption by the milch animals of different villages**



	Name of village	Milk yield range	Milk yield	No of animals	Requirements		Consumed	
					DCP	TDN	DCP	TDN
1	<b>Heeravas</b>	1-4	3.5	16	370	3.64	350	2.79
		5-8	7.1	8	514	4.61	476	4.19
		>8	9.1	2	594	5.17	604	5.58
2.	<b>Sarada</b>	1-4	3.7	11	378	3.69	368	3.72
		5-8	7.6	8	534	4.75	461	4.59
		>8	10.5	9	650	5.53	556	5.47
3.	<b>Sariguda</b>	1-4	2.9	10	346	3.48	386	4.64
		5-8	6.9	5	506	4.56	511	5.99
		>8	9.9	11	626	5.37	638	7.31
4.	<b>Devgarh</b>	1-4	2.0	10	310	3.24	337	3.97
		5-8	5.7	5	458	4.23	392	4.55
		>8	8.9	8	586	5.10	446	5.46
5.	<b>Sovani</b>	1-4	4.0	10	390	3.78	347	2.97
		5-8	8.0	12	650	4.86	459	4.11
		>8	10.3	15	642	5.48	567	5.20
6.	<b>Samlipathar</b>	1-4	3.7	10	378	3.69	378	4.59
		5-8	7.6	7	534	4.75	504	5.67
		>8	10.5	6	650	5.53	618	6.72
7.	<b>Jhankar</b>	1-4	2.7	14	338	3.42	330	3.35
		5-8	6.1	10	474	4.34	434	4.49
		>8	9.6	8	614	5.29	535	5.63
8.	<b>Veerawali</b>	1-4	2.0	10	310	3.24	238	3.36
		5-8	5.7	15	458	4.23	383	4.87
		>8	8.9	12	586	5.10	528	6.38
9.	<b>Nagova</b>	1-4	3.5	10	370	3.64	253	3.65
		5-8	7.1	8	514	4.61	460	5.05
		>8	9.9	4	626	5.37	667	6.46
10.	<b>Bambori</b>	1-4	2.5	2	330	3.37	281	4.61
		5-8	5.5	5	450	4.18	398	5.61

		>8	10.0	10	630	5.40	528	6.66
11.	<b>Jaloda jagir</b>	1-4	3.6	5	374	3.67	395	3.89
		5-8	5.6	8	454	4.21	547	5.09
		>8	11.0	12	670	5.67	700	6.29
12.	<b>Chandoli</b>	1-4	2.0	9	310	3.24	434	4.65
		5-8	7.9	5	546	4.83	559	6.10
		>8	10.5	10	650	5.53	684	7.57

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**Table 4.32 Total DCP and TDN requirements and consumption by the milch animals of Partapgarh district**

Milk yield range (kg)	No. of animals		DCP(g)		TDN(kg)	
			Requirements	Consumed	Requirements	Consumed
<b>1-4</b>	117	Mean	354.50	341.42	3.51	3.85
		SD	27.27	58.69	0.20	0.66
		Z-value		2.19**		5.31**
<b>5-8</b>	96	Mean	507.66	465.33	4.51	5.03
		SD	56.79	57.92	0.26	0.68
		Z-value		5.11**		6.88**
<b>Above 8</b>	107	Mean	627	589.25	5.38	6.23
		SD	27.46	75.84	0.18	0.77
		Z-value		4.84**		11.13**

## DCP and TDN

### **\*\* Significant at 1 % level of significance**

Data given in table 4.32 that indicate the under milk yield range of 1-4 kg the animals consumed significantly less quantity of DCP (341.42 g) while TDN (3.85 kg) consumed was found significantly higher than the requirement in the aforesaid milk yield range. The range of milk yield 5-8 kg and 8 and above kg the animals consumed significantly less quantity of DCP (465.33g and 589.25 g) in comparison to the actual requirement. While TDN consumption (5.03 kg and 6.23 kg) was found significantly higher than the requirement in the aforesaid milk yield range.

### **4.3.2 Total DCP and TDN requirement and consumption by the dry animals**

**Table 4.33 Total DCP and TDN requirement and consumption by the dry animals of different villages**

S. NO.	Name of village	Average intake of fodder (kg)	No. of animals	Requirements		Consumed	
				DCP (g)	TDN (kg )	DCP (g)	TDN (kg)
1.	<b>Heeravas</b>	4.50*, 9.18**	11	230	2.7	231	2.91
2.	<b>Sarada</b>	5.53*, 7.25**	8	230	2.7	182	3.14
3.	<b>Sariguda</b>	8.22*, 8.85**	9	230	2.7	223	4.48
4.	<b>Devgarh</b>	6.63*, 6.78**	13	230	2.7	170	3.58
5.	<b>Sovani</b>	4.45*, 8.20**	4	230	2.7	206	2.79
6.	<b>Samlipathar</b>	7.57*, 10.00**	6	230	2.7	252	4.33
7.	<b>Jhankar</b>	5.53*, 6.85**	7	230	2.7	172	3.10
8.	<b>Veerawali</b>	7.02*, 7.12**	10	230	2.7	179	3.33
9.		6.63*, 5.63**	6	230	2.7	141	3.45

	<b>Nagova</b>						
10.	<b>Bambori</b>	8.63*, 9.85**	8	230	2.7	248	4.76
11.	<b>Jaloda jagir</b>	5.67*, 10.12**	14	230	2.7	255	3.51
12.	<b>Chandoli</b>	7.98*, 11.20**	9	230	2.7	282	4.62

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Data table 4.34 shows that DCP consuming (211.75 g) by dry animals was observed significantly lower in comparison to the requirement (230 g). While TDN the consumption by dry animals was recorded significantly higher (3.67 kg) than the requirements (2.7 kg).

Green fodder\* and Dry fodder\*\*

**Table 4.34 Total DCP and TDN requirement and consumption by the dry and advanced pregnant animals of partapgarh district**

S . no	Type of animals	No. of animals		DCP (g)		TDN (kg)	
				Requirements	Consumed	Requirements	Consumed
1.	<b>Dry</b>	105	Mean	230	211.75	2.7	3.67
			SD		43.23		0.70
			Z- value		4.33**		16**
2.	<b>Advanced pregnant</b>	63	Mean	300	374.75	3.7	4.76
			SD		54.57		0.46
			Z- value		10.88**		18.59**

### 4.3.3 Total DCP and TDN requirement and consumption by the advanced pregnant animals

**Table 4.35 Total DCP and TDN requirement and consumption by the advanced pregnant animals of different villages**

S. No.	Name of village	Average intake of fodder (kg)	No of animals	requirements		Consumed	
				DCP	TDN	DCP	TDN
1.	<b>Heeravas</b>	5.25* 10.50** 1.50***	5	300	3.7	439	4.32
2.	<b>Sarada</b>	6.53* 8.58** 1.73***	8	300	3.7	418	4.82
3.	<b>Sariguda</b>	7.45* 9.58** 1.50***	3	300	3.7	416	5.18
4.	<b>Devgarh</b>	5.50* 8.05** 0.82***	4	300	3.7	297	3.74
5.	<b>Sovani</b>	6.50* 7.50** 1.10***	5	300	3.7	317	4.29
6.	<b>Samlipathar</b>	7.55* 9.88** 1.53***	6	300	3.7	427	5.26
7.	<b>Jhankar</b>	7.93* 6.10** 1.61***	7	300	3.7	341	5.07
8.	<b>Veerawali</b>	7.97* 8.12** 1.03***	5	300	3.7	324	4.95
9.	<b>Nagova</b>	6.97* 7.15** 1.48***	5	300	3.7	353	4.70
10.	<b>Bambori</b>	7.33* 7.25** 1.16***	4	300	3.7	317	4.65
11.	<b>Jaloda jagir</b>	6.93* 9.18** 1.51***	6	300	3.7	407	4.91
12.	<b>Chandoli</b>	7.35* 10.55** 1.51***	5	300	3.7	441	5.24

Data table 4.34 shows that DCP consuming (374.75 g) by advanced pregnant animals was observed significantly higher than the requirement (300 g). While TDN the consumption by dry animals was recorded significantly higher (4.76 kg) than the requirements (3.7 kg).

#### **4.4 CONSTRAINTS FACED BY THE DAIRY FARMERS:**

##### **4.4.1 Constraints in adoption of modern feeding practices:**

The constraints faced by the dairy cattle and buffaloes holders were considered by taking into concern all the possible general troubles happen in feeding of the dairy animals. Each cattle and buffalo holder was inquiring to show the troubles and show the amount of feeding on four point range namely: very much, much, less and not at all. The score of 3, 2, 1 and 0 were dispersing to very much, much, less and not at all respectively.

Behind conniving the total scores for all problems, the mean score was calculating and position was done accordingly. The data is considered are presented in table 4.36.

In relation to the constraints concerning feeds and feeding practices a changeable feedback was acquire and between the major constraints faced by dairy farmers were unavailability of cheap and quality green fodder round the year (rank I); Unavailability of equipment (chaff cutter) for chopping of fodder (rank II); Unavailability of concentrate mixture at subsidized rate (rank III); Lack of proper improvement of pasture land and development of fodder grasses (rank IV); Unavailability of proper health management (rank V); Unavailability of good quality seeds for growing fodder crops (rank VI); Unavailability of breeding stock (rank VII); Lack of knowledge about silage preparation (rank VIII); Unavailability of proper care of calf and heifer (rank IX) and Unavailability of cattle and buffaloes ingredients For concentrate adequately throughout the year (rank X).



**Table 4.36 Distribution of the dairy farmers according to constraints faced by them in adoption of scientific feeding practices**

<b>S. No.</b>	<b>Problems in feeding practices</b>	<b>MPS</b>	<b>Rank</b>
1.	Unavailability of cheap and quality green fodder round the year	75.00	I
2.	Lack of proper improvement of pasture land and development of fodder grasses	68.33	IV
3.	Lack of knowledge about silage preparation	52.50	VIII
4.	Unavailability of cattle and buffaloes ingredients For concentrate adequately throughout the year	47.78	X
5.	Unavailability of good quality seeds for growing fodder crops	60.83	VI
6.	Unavailability of equipment (chaff cutter) for chopping of fodder	74.44	II
7.	Unavailability of concentrate mixture at subsidized rate	69.44	III
8.	Unavailability of breeding stock	55.83	VII
9.	Unavailability of proper care of calf and heifer	48.61	IX
10.	Unavailability of proper health management	63.33	V

#### **4.5 Remedial measures suggested in overcoming the constraints faced by the dairy farmers its adoption of scientific feeding practices**

- I.** To ensure irrigation facilities for growing green fodder and Stover crops so as to ensure availability of quality green fodder round the year.
- II.** To ensure quality feed availability through co-operative government agriculture department /SAUS / NGOS.
- III.** To arrange grazing system of dairy animals for that the renovate community pasture land and undertaken adequate protection measure
- IV.** Excess amount green grasses can be preservation as hay or silage for feeding during scarcity of feeds.
- V.** Chaffing of green fodder before feeding for better utilization and to minimize wastage.

- VI.** To ensure availability readymade feed ingredients or concentrate mixture around the year.
- VII.** To supply extra allowance to advanced pregnant and milch animals.
- VIII.** To create awareness programmer among the dairy farmers regarding scientific feeding, management and breeding.
- IX.** To ensure proper DCP and TDN intake while preparing concentrate mixture.
- X.** To provide mineral mixture supplement in concentrate mixture.
- XI.** To provide manger for feeding to dairy cattle and buffaloes in the sheds.
- XII.** To provide fresh and clean drinking water in the shed.
- XIII.** To send dairy livestock for grazing before 9 AM and 5 PM during summer months.

## 5. DISCUSSION

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This chapter is described the results of present investigation have been discussed the following heading:

- 5.1 Personal, social and economic characteristics
- 5.2 Feeding practices followed
- 5.3 Nutritional status of cattle and buffaloes
- 5.4 Constraints faced by the dairy farmers

### 5.1 PERSONAL, SOCIAL AND ECONOMIC CHARACTERISTICS:

#### 5.1.1 Age:

whereas present the results in the previous chapter, it was observed that a maximum (53.89 per cent) cattle and buffalo owners go to middle age category followed by young (27.78 per cent) and old (18.33 per cent) specify in (table 4.1). this finding is well supported by the findings of Patel *et al.* (2013), Hole (2016) and Prajapati *et al.* (2016).

#### 5.1.2 Education:

In this result, it was observed that big majorities (42.78 per cent) of the cattle and buffaloes holders were include primary level of education followed by (33.33 per cent) owners were illiterate, (12.22 per cent) were secondary, (8.33 per cent ) were higher secondary and (3.33 per cent) owners were graduation and above (table 4.2). This could be credited to the partial schooling services existing in the study region.

#### 5.1.3 Caste:

Data presented in Table 4.3 that greater part (52.22 per cent) of the cattle and buffaloes owners belonged to ST as compare to OBC, General and SC castes.

#### 5.1.4 Land holding:

Data presented in Table 4.5 create it apparent that a majority (59.44 per cent) of the cattle and buffaloes owners had medium land holding pursued by belonged small and big size of land holding. This finding is well supported by Gaikwad *et al.* (2017) and Sarita *et al.* (2016).

### **5.1.5. Main occupation:**

It is apparent from data (table 4.6) that a greater part (41.67 per cent) of the cattle and buffaloes holders' observed agriculture followed by labor, dairy farm and business . This finding is well supported by Rangamma *et al.* (2017).

### **5.1.6. Annual income:**

It is apparent from data (table 4.6) that a greater part (62.78 per cent) of the cattle and buffaloes holders' observed Rs 100000 to 250000 annual income followed by 27.78 and 9.44 per cent possessed Rs 10000 to 100000 and above Rs 250000 annual income, respectively.

## **5.2 FEEDING PRACTICES FOLLOWED:**

### **5.2.1 Green fodder:**

In the study area, it was indicate that the animal was fed sufficient amount of green fodder in the study area, while such farmers providing green fodder of their animals around the year. This finding is well supported by Jatolia *et al.* (2017) and Patel *et al.* (2019). The amount of green fodder fed to animals ranged from concerning 2 to 10 kg per milch animal in the study area. Green fodder is being fed to all categories of dairy animals in study area. It is also supported by Sarap *et al.* (2012).

#### **5.2.1.1 Production of green fodder:**

Result of study area that was indicating the most of farmers cultivated green fodder their own land and other land supported by Pata *et al.* (2018) and Patel *et al.* (2019). Green fodder was not purchased to market but sometimes farmers purchase green fodder to their neighbor farmers. Majority of (56.57 per cent) respondents were always cultivation of the green fodder well supported by Patel *et al.* (2019).

#### **5.2.1.2. Average intake of green fodder by milch, dry and advanced pregnant animals:**

Through presentation of result in the previous chapter, it was indicated that the average green fodder fed by the milch animals of different tehsils of partapgarh district was in the range of 8.37 to 10.41 kg/day/animal pursue by that of dry animals 6.53 to 10.39 kg/day/animal and advanced pregnant animals 7.12 to 9.55 kg/day/animal (Table 4.12). this is well finding supported by Sarap *et al.* (2012) and Patel *et al.* (2019). It was observed in rainy green fodder availability is sufficient for dairy cattle and buffalo. While during summer season proper water resources was not available that green fodder availability is difficult and

did not provide easily and in sufficient amount. So that green fodder availability is insufficient in study area.

### **5.2.2 Dry fodder:**

It was observed commonly used dry fodder for fed animals in study area during study time were wheat straw, soyabean and stover of maize and sorghum. Sometimes gram mungbean used as dry fodder depending on their availability and cost factor. In winter season maize and sorghum Stover along with the dry grasses compose the feed of all categories of dairy animals Leguminous straw and local grasses were also provide fed to animals as dry fodder in study area during period of the study. These results are well supported by findings of Tanwar *et al.* (2012).

#### **5.2.2.1 Average dry fodder intake by milch, dry and advanced pregnant animals:**

Average dry fodder provide to the milch animals of different tehsils of Partapgarh district was in the range of 6.8 to 7.43 kg/day/animal followed by dry animals which was in the range of 5.67 to 7.58 kg/day/animal and advanced pregnant animals with a range of 6.41 to 7.20 kg/day/animal (Table 4.15). Similar conclusion finding by Tanwar *et al.* (2012) and Sarap *et al.* (2012) .

### **5.2.3 Concentrate mixture:**

The result observed in study area that was prepared the concentrate mixture by cotton seed cake, wheat barn, maize grain, cotton seed and market material. In study area farmers were mostly special care taken the milch animals and some farmers were given special care for advanced pregnant animals.

#### **5.2.3.1 Average concentrate mixture intake by milch, dry and advanced pregnant animals:**

The concentrate mixture provide to milch animals in different thsils of Partapgarh district was in range of 1.84 to 2.10 kg/day/animal followed by advanced pregnant animals with a range of 1.54 to 1.76 kg/day/animal (Table 4.17). While in the study area of Partapgarh district did not provide the concentrate mixture to dry animals. Similar conclusion finding by Sarap *et al.* (2012) and Manohar *et al.* (2014).

### **5.2.4 Feeding practices:**

#### **5.2.4.1. Chopping of green fodder:**

A greater part of respondents 42.22 per cent were sometime chopping of green fodder earlier than feeding to animals. The results are mainly carried by the findings of Avinashilingan *et al.* (2011), Manohar *et al.* (2014).

#### **5.2.4.2. Chopping of dry fodder:**

Major part of respondents 59.44 per cent were chopped dry fodder sometime before feed to animals. This result well supported by the findings of Avinashilingan *et al.* (2011) and Manohar *et al.* (2014).

#### **5.2.4.3. Mixing of dry and green fodder:**

Majority of farmers were reported that only 67.22 per cent respondents mixed green fodder with dry fodder at the time of feeding to animals. This result is supported by Pata *et al.* (2018) and Pata *et al.* (2018).

#### **5.2.4.4. Pre-treatment of concentrate mixture:**

A grater part of cattle and buffaloes owners (47.22 per cent) were adopt boiling method of pre-treatment of concentrate mixture (table 4.22). This result similar to Tanwar *et al.* (2012), and Rathore *et al.* (2010).

#### **5.2.5 Water:**

Water is the basic unit of live organs. In animals, water is a vital factor of life like in food digestion, body temperature and more metabolic activities etc. in study area water were provided to dairy animals and buffaloes to village pond, well, lack and others sources of water. Mostly farmers (57.78 per cent) were provided drinking water dairy cattle and buffaloes in the shed of itself (Table 4.25). A greater part of respondents (62.78 per cent) were used village well as the source of drinking water for animals while others resources namely hand pump, village pond and any others (Table 4.26). Frequency of watering, the cattle and buffaloes holders respond that they did not followed a fixed schedule of offering water to the animals. Mostly (51.67 per cent) dairy farmers (51.67 per cent) were water provide to animals two times in a day. Whereas, in summer season the frequency of given drinking water increased to 3 to 4 times a day. The whole results are mainly supported by Sarap *et al.* (2012), Patel *et al.* (2016), and Avinashilingan *et al.* (2011).

#### **5.2.6 Feeding method:**

In the study area dairy cattle and buffaloes owners their animals were sent for grazing to pasture and other places. Animals were sent for feeding in the hilly area of surrounding the village, individual pasture and social pasture by almost all the dairy farmers. A greater part of farmers (86.11 per cent) were adopted stall + pasture feeding in study area. Complete pasture feeding was not reported in the study area (Table 4.28). The greater part of dairy farmers (46.67%) sent their animals for 4 to 6 hours daily grazing in study area (Table 4.29). this result well reported by Gubbawar *et al.*(2012).

### **5.3 NUTRITIONAL STATUS OF CATTLE AND BUFFALOES:**

Found on datum concerning amount of feeds and fodder their eating by the milch animals, their DCP and TDN standards were intended and were corresponding with the real DCP and TDN requirement based on the standard body mass.

In study area Data given in table 4.32 that indicate the under milk yield range of 1-4 kg the animals consumed significantly less quantity of DCP (341.42 g) while TDN (3.85 kg) consumed was found significantly higher than the requirement in the aforesaid milk yield range. The range of milk yield 5-8 kg and 8 and above kg the animals consumed significantly less quantity of DCP (465.33g and 589.25 g) in comparison to the actual requirement. While TDN consumption (5.03 kg and 6.23 kg) was found significantly higher than the requirement in the aforesaid milk yield range.

Data table 4.37 shows that DCP consuming (211.75 g) by dry animals was observed significantly lower in comparison to the requirement (230 g). While TDN the consumption by dries animals was recorded significantly higher (3.67 kg) than the requirements (2.7 kg).

Data table 4.37 shows that DCP consuming (374.75 g) by advanced pregnant animals was observed significantly higher than the requirement (300 g). While TDN the consumption by dries animals was recorded significantly higher (4.76 kg) than the requirements (3.7 kg).

### **5.4 CONSTRAINTS FACED BY THE DAIRY FARMERS:**

In relation to the constraints concerning feeds and feeding practices a changeable feedback was acquire and between the major constraints faced by dairy farmers were unavailability of cheap and quality green fodder round the year (rank I); Unavailability of equipment (chaff cutter) for chopping of fodder (rank II); Unavailability of concentrate mixture at subsidized rate (rank III); Lack of proper improvement of pasture land and development of fodder grasses (rank IV); Unavailability of proper health management (rank V); Unavailability of good quality seeds for growing fodder crops (rank VI); Unavailability

of breeding stock (rank VII); Lack of knowledge about silage preparation (rank VIII); Unavailability of proper care of calf and heifer (rank IX) and Unavailability of cattle and buffaloes ingredients For concentrate adequately throughout the year (rank X). this result were supported by Dhaka *et al.*(2011), Kumar *et al* (2012), Sabpara *et al.* (2012), Dubey *et al.* (2012), Rao *et al* (2013), Yadav *et al.* (2014) and Nale (2014).



## 6. SUMMARY

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The present investigation was carried out in Partapgarh district of Rajasthan between February to May 2019 to know the nutritional status of the dairy cattle and buffaloes of Partapgarh district in field conditions and to identify the area of information of feeding practices and actual feeding practices being practiced by the respondents. In overall four tehsils and three villages from each tehsils were selected making a total of twelve villages. From every village 15 farmers were selected having different herd size, making a sample range of 180 respondents. Common information concerning farmers socio-economic status, feeding practices pursue by the farmers and the constraints faced by the farmers were collected using a detailed questionnaire. Nutritional status of the animals was estimate by comparing the actual nutrient requirement and nutrient intake by the different group of animals.

### **6.1 PERSONAL, SOCAIL AND ECONOMIC CHARACTERISTICS OF DAIRY CATTLE AND BUFFALOES KEEPERS:**

Maximum (53.89 per cent) cattle and buffalo owners go to middle age category followed by young (27.78 per cent) and old age group (18.33 per cent). Mostly farmers were educated majorities (42.78 per cent) of the cattle and buffaloes holders were include primary level of education followed by (33.33 per cent) owners were illiterate, (12.22 per cent) were secondary, (8.33 per cent ) were higher secondary and (3.33 per cent) owners were graduation and above. Greater part (52.22 per cent) of the cattle and buffaloes owners belonged to ST, 35 per cent were OBC, 11.11 per cent were General and 1.67 per cent was SC caste. Majority (59.44 per cent) of the cattle and buffaloes owners had medium land holding pursued by 27.22 per cent and 13.33 per cent belonged small and big size of land holding, respectively.

A greater part (41.67 per cent) of the cattle and buffaloes keepers were agriculture farmers followed by 37.22, 15.56 and 5.56 per cent possessed labour, dairy farm and business, respectively. Majority (62.78 per cent) of the cattle and buffaloes owners were observed Rs100000 to 250000 annual income followed by 27.78 and 9.44 per cent possessed Rs 10000 to 100000 and above Rs 250000 annual income, respectively.

### **6.2 FEEDING PRACTICES:**

Mostly farmers of partapgarh district provided commonaly available green fodder like Lucerne, Berseem and to a partial amount of Maize and Sorghum depending ahead the availability of irrigation and land size services in different tehsils. In study area green fodder

was fed to all groups of animals. Availability of green fodder was more during rainy season compare that summer season. Average green fodder consumed by the milch animals of different tehsils of partapgarh district ranged from 8.37 to 13.13 kg/day/animal followed by dry animals of various tehsils of Partapgarh district ranged from 6.53 to 10.39 kg/day/animal and advanced pregnant animals of various tehsils of Partapgarh district ranged from 7.12 to 9.55 kg/day/animal.

Dry fodder was mostly used in study area for animals of wheat and soyabean straw, stover of maize and sorghum and local mature pasture dry grasses. Sometimes gram and mungbean used as dry fodder depending on their availability and cost factor. In winter season maize and sorghum Stover along with the dry grasses compose the feed of all categories of dairy animals. The maximum farmers (58.33%) provide non-leguminous green fodder to dairy animals.

The average dry fodder consumed by the milch animals of different tehsils of partapgarh district ranged from 6.22 to 7.43 kg/day/animal followed by dry animals of various tehsils of Partapgarh district ranged from 5.67 to 7.58 kg/day/animal and advanced pregnant animals of various tehsils of Partapgarh district ranged from 6.41 to 7.62 kg/day/animal.

Most of the farmers provided the different types of concentrate mixture (cotton seed cake, cotton seed) to animals. Cattle and buffalo holders was also provided the concentrate like bajra grains, wheat grain crushed barley and soyabeen churi. Some farmers were provide market concentrate mixture to dairy cattle and buffaloes.

The average concentrate mixture consumed by the milch animals of different tehsils of partapgarh district ranged from 1.84 to 2.10 kg/day/animal followed by advanced pregnant animals of various tehsils of Partapgarh district ranged from 1.54 to 1.76 kg/day/animal.

Mostly 42.22 per cent respondents were sometime chopping of green fodder earlier than feeding to animals. In study area 67.22 per cent respondents were preserve green fodder for its utilization during scarcity in the form of hay. In study area 59.44 per cent of the respondents chopped dry fodder sometime and only 67.22 per cent respondent's mixed green fodder with dry fodder at the time of feeding to animals. Mostly 47.22 per cent dairy cattle and buffaloes owners adopt boiling method of pre-treatment of concentrate mixture and the maximum frequency of given concentrates mixture was 47.22 per cent twice in a day and sometime farmers were provide the mineral mixture in the concentrate mixture.

The source of clean and fresh drinking water is mainly village pond, well, hand pump and other sources. 57.78 per cent dairy farmer's provide drinking water in the shed while

42.22 per cent farmers did not provide the water in the shed and 62.78 per cent dairy farmers used village well as the source of drinking water for animals. The cattle and buffaloes holders respond that they did not followed a fixed schedule of offering water to the animals that 51.67 per cent dairy farmers provide water to animals two times in a day. Animals were sent for grazing in the hilly area of surrounding the village, individual pasture and social pasture by almost all the dairy farmers 86.11 per cent farmers adopted stall + pasture feeding in study area and the greater part of dairy farmers (46.67%) sent their animals for 4 to 6 hours daily grazing and that only 44.44 per cent farmers used manger providing feeds and fodder in the shed.

### **6.3 NUTRITIONAL STAUS OF CATTLE AND BUFFALOES:**

It was observed that most of tehsils of Partapgarh district owners of dairy cattle and buffalos provide less quantity of DCP as compare that actual intake of animal body weight and TDN quantity observed was more than body requirement. The under milk yield range of 1-4 kg the animals consumed significantly less quantity of DCP (341.42 g) while TDN (3.85 kg) consumed was found significantly higher than the requirement in the aforesaid milk yield range. The range of milk yield 5-8 kg and 8 and above kg the animals consumed significantly less quantity of DCP (465.33g and 589.25 g) in comparison to the actual requirement. While TDN consumption (5.03 kg and 6.23 kg) was found significantly higher than the requirement in the aforesaid milk yield range. The DCP consumption was (211.75 g) by dry animals was observed significantly lower in comparison to the requirement (230 g). While TDN consumption by dries animals was recorded significantly higher (3.67 kg) than the requirements (2.7 kg). The DCP consuming (374.75 g) by advanced pregnant animals was observed significantly higher than the requirement (300 g). While TDN the consumption by dry animals was recorded significantly higher (4.76 kg) than the requirements (3.7 kg).

### **6.4 CONSTRAINTS FACED BY THE FARMERS:**

The major constraints as reported by cattle and buffaloes owner in the present study were unavailability of cheap and quality green fodder round the year, unavailability of equipment (chaff cutter) for chopping of fodder, unavailability of concentrate mixture at subsidized rate, lack of proper improvement of pasture land and development of fodder grasses, unavailability of proper health management, unavailability of good quality seeds for growing fodder crops, unavailability of breeding stock, lack of knowledge about silage preparation, unavailability of proper care of calf and heifer and unavailability of cattle and buffaloes feed ingredients for concentrate adequately throughout the year.

## CONCLUSION

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In the present study, it may be concluded that the cattle and buffaloes respondents of various villages and tehsils of Partapgarh district did not follow scientific feeding practices, housing management and health care of various categories of dairy cattle and buffaloes as evident from the nutritional status of various categories of dairy cattle and buffaloes.

It was observed such area the lack of proper improvement of pasture land and development of fodder grasses lack of knowledge about silage preparation unavailability of cattle and buffaloes feed ingredients for concentrate adequately throughout the year. The level of DCP intake by different categories of dairy cattle and buffaloes was noted below the nutritional standards. The remedial measure suggested to overcome the constraints will go a long way in improving the nutritional status of dairy cattle and buffaloes of the study area.

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# **Nutritional Status of Dairy Cattle and Buffaloes in Pratapgarh District of Rajasthan**

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## **ABSTRACT**

The investigation was conducted to assess the nutritional status of dairy cattle and buffaloes at Pratapgarh district of Rajasthan. Four tehsil were selected randomly and three villages were selected from each tehsil and fifteen dairy farmres from each of village were selected thus making a sample of 180 respondents from twelve villages in Partapgarh district of Rajasthan.

The study indicated that maximum (53.89 per cent) cattle and buffalo owners go to middle age category followed by young (27.78 per cent) and old (18.33 per cent). The dairy farmers were educated to primary level (42.78 per cent) followed by (33.33 per cent) owners were illiterate. Greater part (52.22 per cent) of the cattle and buffaloes owners belonged to ST, 35 per cent were OBC, 11.11 per cent were General and 1.67 per cent was SC castes. a majority (59.44 per cent) of the cattle and buffaloes owners had medium land holding pursued by 27.22 per cent and 13.33 per cent belonged small and big size of land holding, respectively. A greater part (41.67 per cent) of the cattle and buffaloes holders' observed agriculture followed by 37.22, 15.56 and 5.56 per cent possessed labour, dairy farm and business, respectively. A greater part (62.78 per cent) of the cattle and buffaloes holders' observed Rs 100000 to 250000 annual income followed by 27.78 and 9.44 per cent possessed Rs10000 to 100000 and above Rs 250000 annual income, respectively.

In study area, mostly green fodder provided to animals like Lucerne, berseem, sorghum and bajra was fed to the animals. The amount of green fodder fed to animals ranged from concerning 2 to 10 kg per milch animal in the study area. Green fodder is being fed to all categories of dairy animals in study area.

Dairy cattle and buffalo owners were fed non-leguminous as well as leguminous dry fodder to dairy cattle and buffalo in the study area. The maximum farmers (58.33%) provide non-leguminous fodder. Mostly dry fodder fed to animals like wheat and soyabean, stover of maize and sorghum and local mature pasture dry grasses. Sometimes gram mungbean used as dry fodder depending on their availability and cost factor.

It was observed that all the farmers provided concentrate to all milch animals and some advanced pregnant animals. Most of the farmers provided the different types of concentrate mixture (cotton seed cake, cotton seed) to animals. Cattle and buffalo holders were also provided the concentrate like bajra grains, wheat grain crushed barley and soyabean churi etc. Some farmers were provide market concentrate mixture to dairy cattle and buffaloes.

It was observed in study area that 42.22 per cent respondents were sometime chopping of green fodder, 67.22 per cent respondents were preserve green fodder for its utilization during scarcity. However, 59.44 per cent of the respondents chopped dry fodder sometime. In study area that only 67.22 per cent respondents mixed green fodder with dry fodder at the time of feeding to animals. A grater part of cattle and buffaloes owners (47.22 per cent) were adopt boiling method of pre-treatment of concentrate mixture before fed to animals. The maximum frequency of given concentrates mixture was 47.22 per cent twice in a day, that only 57.78 per cent dairy farmer's provide drinking water in the shed, 62.78 per cent dairy farmers used village well as the source of drinking water for animals while others resources namely hand pump, that only complete stall feeding was reported by only 13.89 per cent dairy farmers adopted in study area. Animals were sent for feeding in the hilly area of surrounding the village, individual pasture and social pasture by almost all the dairy farmers. The greater part of dairy farmers (46.67%) sent their animals for 4 to 6 hours daily grazing in study area.

In study area that indicate the under milk yield range of 1-4 kg the animals consumed significantly less quantity of DCP (341.42 g) while TDN (3.85 kg) consumed was found significantly higher than the requirement in the aforesaid milk yield range. The range of milk yield 5-8 kg and 8 and above kg the animals consumed significantly less quantity of DCP (465.33g and 589.25 g) in comparison to the actual requirement. While TDN consumption (5.03 kg and 6.23 kg) was found significantly higher than the requirement in the aforesaid milk yield range, that DCP consuming (211.75 g) by dry animals was observed significantly lower in comparison to the requirement (230 g). While TDN the

consumption by dry animals was recorded significantly higher (3.67 kg) than the requirements (2.7 kg) and that DCP consuming (374.75 g) by advanced pregnant animals was observed significantly higher than the requirement (300 g). While TDN the consumption by dry animals was recorded significantly higher (4.76 kg) than the requirements (3.7 kg).

The major constraints faced by dairy farmers were unavailability of cheap and quality green fodder round the year (rank I); Unavailability of equipment (chaff cutter) for chopping of fodder (rank II); Unavailability of concentrate mixture at subsidized rate (rank III); Lack of proper improvement of pasture land and development of fodder grasses (rank IV); Unavailability of proper health management (rank V); Unavailability of good quality seeds for growing fodder crops (rank VI); Unavailability of breeding stock (rank VII); Lack of knowledge about silage preparation (rank VIII); Unavailability of proper care of calf and heifer (rank IX) and Unavailability of cattle and buffaloes ingredients For concentrate adequately throughout the year (rank X). Lack of veterinary doctors and lake of scientific management and health care of dairy animals practices were as the important constraint in adopting improved during farming practices majority of respondents.





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**Interviewer: Ankit Kumar, M.Sc. (Ag.) Animal Production**

## I PERSONAL INFORMATION :

1. Name : Shri ..... S/o Shri .....

2. Age : .....

3. Caste : .....

4. Village : .....

5. Tehsil : .....

6. District : Pratapgarh

7. Education:

(a) Illiterate .....

(b) Primary .....

(c) Secondary .....

(d) Higher secondary .....

(e) Graduation and above .....

8. Main occupation :

i. Agriculture

ii. Dairy farm

iii. Business

iv. Labor

9. Annual income :

i. Rs 10,000 to 100000 .....

ii. Rs 100000 to 2,50000 .....

iii. Above Rs 2,50000 .....

## II. SIZE OF LAND HOLDING (IN HAECTARE)

S. NO.	Kind of land	Crop production	Fodder production	Total
1.	Un-irrigated			

2.	Irrigated			
3.	Pasture land			

### III. DAIRY ANIMALS

S. No.	Type of animal	Class of animals						Calves upto 1 year	
		In milk	Dry	Adv. Preg.	Heifers upto 3 years	Bulls	Bullocks	Male	Female
1.	Cattle								
2.	Buffaloes								
<b>Total</b>									

### IV. FEEDING MATERIAL

#### A. GREEN FODDER

1. Do you give green fodder to all types of dairy animals? Yes / No

Which type of green fodder do you feed to the different class of dairy animals.

S. No.	Class of fodder	Fodder	Score
1.	Leguminous		
2.	Non-leguminous		
3.	Both (mix)		

2. Do you chop the green fodder before feeding to the animals.  
Always / sometimes / never

Chop green fodder	Score		
	Always	Sometimes	Never

5. Do you preserve excess green fodder for its utilization during scarcity/ lean period:  
Yes/ No

6 Do you grow green fodder at your farm

S.No.	Time	Score
1	Always	1
2	Sometimes	2
3	Not at all	3

7. How much quantity of green fodder cultivated at your farm

S. No.	Quantity of green fodder (in quintals)	Score
1	Not cultivated	
2	Up to 50	
3	51 to 100	
4	101 to 150	
5	151 to 200	
6	200 to above	

## DRY FODDER

Types of dry fodders fed to dairy animals.

S. No.	Dry fodder	score
1	Cereals (straw, kadbi, stover and dry grasses )	1
2	Cereals + legume	2

- (2) In case you are feeding mention the average quantity consumed / day / animal.

S. No.	Class of animals	Average quantity consumed / day /animal		
		Cereals (straw, kadbi, stover and dry grasses)	Cereals + legumes	
1.	Milch			
2.	Dry			
3.	Adv. Preg.			
4.	Heifers			
5.	Bulls			
6.	Bullocks			
7.	Calves			

- (3) Do you mix green fodder with dry fodder while feeding : Yes / No

**C. Concentrate mixture :**

- (1) Do you feed concentrate mixture to the dairy animals ; Yes / No
- (2) Specify the quantity of concentrate mixture fed per day to the different classes of the dairy animals.

S. No.	Category of animals	Quantity give in kg
1.	Milch	
2.	Dry	
3.	Adv. Preg.	
4.	Heifers	
5.	Bulls	
6.	Bullocks	

7.	Calves	

- (6) What pretreatment do you give to the concentrate mixture before feeding it to animals.

Soaking / boling / grinding and soaking

- (7) What is the frequency of giving concentrate mixture and when it is given.

(a) Once in 24 hrs.

(b) Twice in 24 hrs.

(c) Three times in 24 hrs.

(d) Four times in 24 hrs.

- i. In which way you feed these supplements to dairy animals.

I. By mixing it in the concentrate mixture

II. By using a lick / block

III. By drenching

IV. Any other methods

## **E. Water:**

- (1) Do you provide water in shed where animals are reared: Yes / No

- (2) What is the source of drinking water.

i. Hand pump

ii. Well

iii. Village pond

iv. Any other

- (4) What is the frequency of watering in animals.

S. No.	Frequency	Score
1.	Once in 24 hrs	
2.	Twice in 24 hrs.	
3.	Three times in 24 hrs.	
4.	Four times in 2 hrs.	

## F. Feeding practices:

(1) How do manage feeding of animals.

- i. Complete stall feeding.
- ii. Complete pasture feeding.
- iii. Stall feeding and pasture grazing both.
- iv. Any other system.

(2) Average duration for which animals were sent for grazing : hours / day:

S. No.	Duration (hours / day)	Score
1	2-4 hrs	1
2	4-6 hrs	2
3	6-8 hrs	3
4	No grazing	4

(3) Do you provide a manger in the shed: Yes / No.

(4) if your answer to question No. 5 is “Yes” then the type of manger.

- i. Cement and concrete manger common for all animals.
- ii. Cement and concrete manger for individual animal.
- iii. Made by wood.
- iv. Made by any other material. Specify.....

(5) If there is no manger in the shed then how you are offering feed to animals.

- i. In a utensil like tagari / bucket etc.
- ii. On the floor.
- iii. Any other method please specify.

(6) Do you have a water through in your shed : Yes / No.

(7) Do you have proper drainage system in your shed : Yes / No.

(9) To work out the % supply of DCP and TDN

S. No.	Feed ingredient	Quantity	DCP	TDN	+/-	+/-

+/- = Surplus / Deficient Respectively

**(10) For computing the requirements of the animal according to the body weight and production**

S. No.	Age of animal	Body weight	Production	Calculated requirement (ICAR std.)	Actual offered	+/-
				DCP		
				TDN		
				DMI		

+/- = Surplus / Deficient Respectively

**(11) Constraints faced by dairy farmers**

S. No.	Problems in feeding practices	VM	M	L	NAA
		3	2	1	0
1.	Unavailability of cheap and quality green fodder round the year				
2.	Lack of proper improvement of pasture land and development of fodder grasses				



3.	Lack of knowledge about silage preparation				
4.	Unavailability of cattle and buffaloes ingredients For concentrate adequately throughout the year				
5.	Unavailability of good quality seeds for growing fodder crops				
6.	Unavailability of equipment (chaff cutter) for chopping of fodder				
7.	Unavailability of concentrate mixture at subsidized rate				
8.	Unavailability of breeding stock				
9.	Unavailability of proper care of calf and heifer				
10.	Unavailability of proper health management				