

**FEEDING STATUS OF DAIRY ANIMALS IN JINTUR
TAHSIL OF PARBHANI DISTRICT**

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PARBHANI 431 402 (M.S.) INDIA
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DISSERTATION

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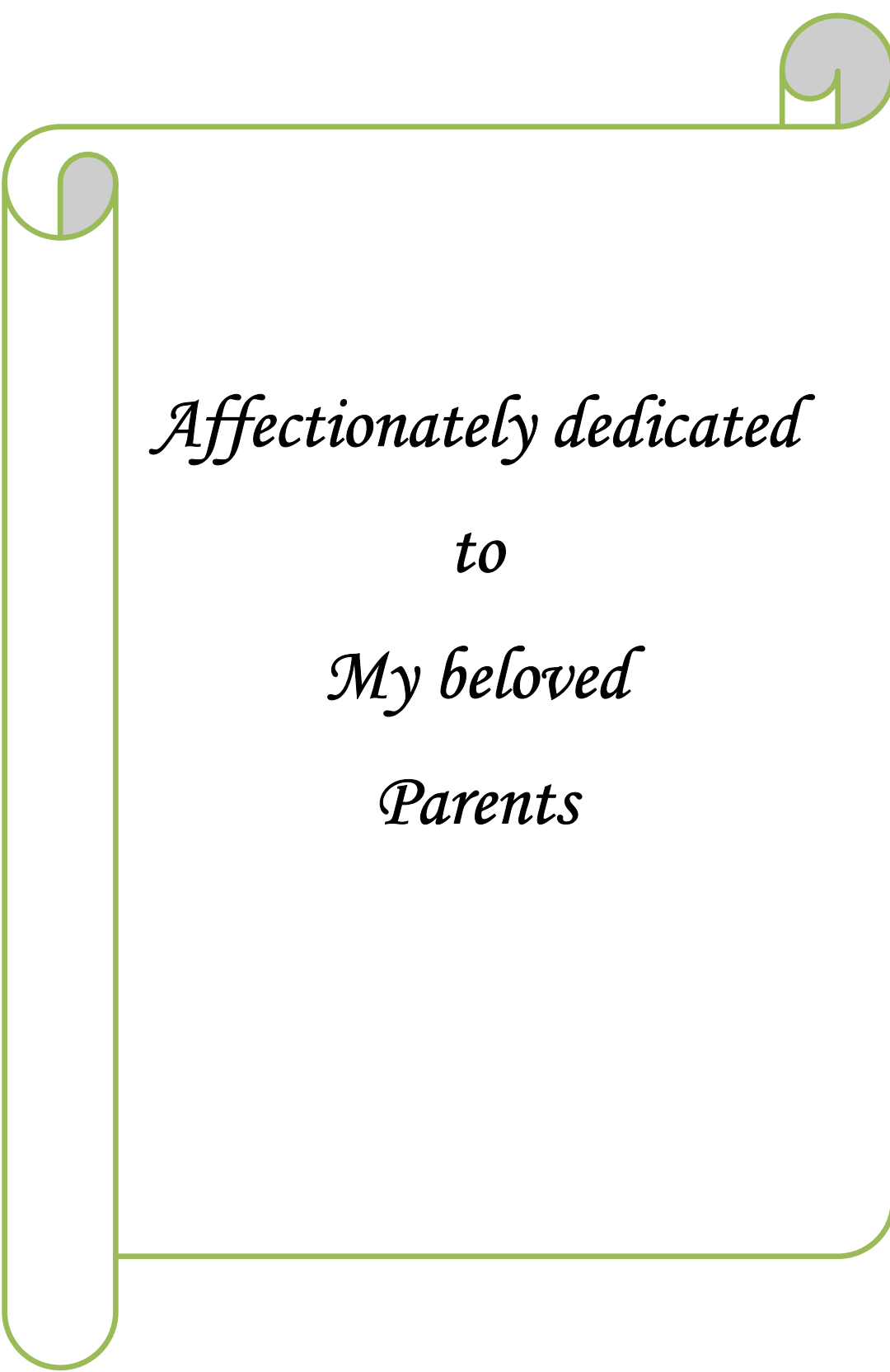
COLLEGE OF AGRICULTURE,

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VIDYAPEETH,

PARBHANI 431 402 (MS), INDIA

2019



Affectionately dedicated
to
My beloved
Parents

CANDIDATE'S DECLARATION

*I hereby declare that this dissertation or part thereof has
not been previously submitted by me or other person to this
/ any other university for a degree or diploma.*

Place: Parbhani
Date: 31 / 05 /2019

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This is to certify that **Mr. AKSHAY RAMCHANDRA THOMBARE** has satisfactorily prosecuted his course work and research for a period of not less than four semesters and that the thesis entitled "**FEEDING STATUS OF DAIRY ANIMALS IN JINTUR TAHSIL OF PARBHANI DISTRICT**" submitted by him is the result of original research work and is of sufficiently high standard to warrant its presentation to the examination.

I also certify that the thesis or a part thereof has not been previously submitted by him for a degree of any university.

Place: Parbhani

Date: 31 / 05 / 2019

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Research Guide and Chairman
of Advisory committee

CERTIFICATE II

This is to certify that the thesis entitled "**FEEDING STATUS OF DAIRY ANIMALS IN JINTUR TAHSIL OF PARBHANI DISTRICT**" submitted by **Mr. AKSHAY RAMCHANDRA THOMBARE** to the Vasantrya Naik Marathwada Krishi Vidyapeeth, Parbhani in fulfillment of the requirements for the degree of **MASTER OF SCIENCE (Agriculture)** in the subject of **ANIMAL HUSBANDRY** has been approved by the student's advisory committee after oral examination in collaboration with the external examiner.

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“Words cannot give full justice to express such of gratitude”

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Place : Parbhani.

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(A. R. Thombare)

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ABBREVIATIONS

%	=	Per cent
<	=	Less than
>	=	Greater than
⁰ C	=	Degree Celsius
e.g.	=	Exempli Gratia
<i>et al.</i>	=	And others
etc.	=	Et-ceteras
Fig.	=	Figure (s)
GDP	=	Gross Domestic Product
GOI	=	Government of India
HF	=	Holstein Friesian
Ha	=	Hectare(s)
Hrs	=	Hours
i.e.	=	That is
Kg	=	Kilogram(s)
MS	=	Maharashtra State
@	=	At the rate
>	=	Greater than
⁰ C	=	Degree Celsius
A.I.	=	Artificial Insemination
DM	=	Dry Matter
No.	=	Number(s)
Temp.	=	Temperature
MMT	=	Million Metric Tone
ICAR	=	Indian Council of Agriculture Research
VNMKV	=	Vasantrao Naik Marathwada Krishi Vidyapeeth



Introduction

CHAPTER I

INTRODUCTION

India is basically an agricultural country. Agriculture describes the practice of growing crops and raising animals. At present 70 per cent of Indians depend on their livelihood on agriculture. Agriculture is backbone of Indian economy. Out of total land holding 30 per cent is held by small and marginal farmers. They manage 80 per cent of total livestock in country. Livestock production is more impressive than that of food grain production. Livestock plays an important role in national economy. Next to agriculture animal husbandry sector is most important economic activity in rural area and about 73 per cent of all rural households depends upon livestock farming as the major source of supplementary income (Kurup, 2000).

Livestock is an integral component of agriculture. It makes multifaceted contribution to the growth of the agriculture sector. Indian agriculture without livestock is inconceivable idea, along with the crop improvement programme, there is an urgent need of improving livestock and agriculture. Livestock as it is considered as backbone of Indian agriculture. Livestock helps in improve food production, generate income, employment, act as cushion against crop failure, provide draught power and manure inputs to raise crops. They also provides valuable organic manure to maintain the soil fertility and helps to minimize the requirement of inorganic fertilizers which avoids the further pollution hazards and also saves cost incurred on it. Next to agriculture, livestock play a significant role in maintaining a strong agricultural economy in India. It contributes 3.46 per cent to total GDP where as in case of agriculture sector 29.20 per cent during 2012-2013 (Anonymous 2014).

Animal husbandry gives more return than agriculture in farm of milk and milk products, meat, bullock – power, dung for biogas for energy production and as compost, hide, hoof, bones and skin for various uses and manufactures. Under the prevailing conditions of farming in India, agriculture does not keep the farmer busy all the year round, during the off season he remains at most idle. Animal husbandry as a part of mixed farming therefore it provides a steady income and keeps him busy all through the year. Milk is universal food and it is most nearly perfect food. We should not wonder then that the dairy cow has been called the foster mother of the human race.

The dairy animals are the basic unit of production of dairy industry that exists of consumers demand for milk and dairy product. The existence of man on surface of earth has been largely dependent upon the animal life existing beside him. System of rearing of livestock in India is older than even its agriculture. Milch cattle were known even in vedic times, when cow was regarded as “Kamdhenu” and thus commanded the greatest respect from all. Latter on man settled down to the agriculture, cattle come to be used as draft animals.

As per report of the working group on animal husbandry and dairying- 11th five year plan: 2007-12, the livestock sector employs eight per cent of the countries labour force, including many small and marginal farmers, women and landless agricultural workers. Milk production alone involves more than 30 million small producers, each raising one or two cows or buffaloes (Islam *et al* 2016).

As per 19th Livestock census, 2012 India’s livestock sector is one of the largest in the world with a holding of 11.6% of world livestock population which consists buffaloes (57.83 per cent), cattle (15.06 per cent), sheep (7.14 per cent), goats (17.93per cent) and camel (2.18%). India has huge livestock population of 512 million which mainly includes cattle, buffaloes, goats, sheep and pigs. The total livestock population in India has decreased by 3.33 per cent over the previous census. With annual milk production of 132.4 million.

The importance of milk in the diet of human being is of a great value. It provides proteins, fats, vitamins and minerals required for body growth and maintenance of human being. India ranks first in the world and contributes about 16 per cent to the world milk production (Anonymous, 2014). The per capita availability of milk in India has increased from 130g per day in 1950-51 to 299g per day in 2012-13 which is little above the recommendation of ICMR i.e. 285g per day. As per (Anonymous 2017), the per capita availability of milk in the year 2016 -2017 in India is 355 g per day and in Maharashtra is 243 g per day.

As per 19th livestock census 2012, total livestock population in Maharashtra, cattle 15.4 million, buffalo 5.5 million, goat 8.4 million, sheep 2.5 million. As per (Anonymous 2015) the total milk production (‘000 MT) is 9089 in the year 2013-2014. As per (Anonymous 2017) the total milk production (‘000MT) is 10402.15 in the year 2013-2014.

Feeding constitutes the largest item of cost in milk production. It is therefore, important that feed costs are to be at lowest possible level in order to make production profitable. Producing more milk timely feeding of good quality ration in required quantity ultimately plays more than feeding otherwise. Selection of proper feed using right combination of feeds, feeding the adequate quantity with other related practices are some of the ways which will enable the farmer to feed his cows and buffaloes more economically, increase their efficiency and make the dairy more paying. The lack of understanding of the farmer about the importance of the feeding livestock has also contributed intensify situation more severely. Farmers are following old traditional feeding practices and there is decline in production potential of milch animals. How best the animal be as a milk producer, if it is not properly fed and cared for, it will speedily deteriorated and will be uneconomical producer.

Dry matter availability from different feed resources in India is 574.3 million tons (2011-2012), (Raju 2013). The total dry matter requirement in Maharashtra in 2011 is 65527 ('000 MT) and the total dry matter availability of Maharashtra in 2011 is 58620 ('000 MT) (Anonymous 2015).

The total livestock population in Parbhani District, cattle is 0.36 million, buffalo is 0.096 million, goat is 0.13 million. The total milk production of Parbhani district is 157.1 ('000 MT) (Anonymous 2012a). The total dry matter requirement in Parbhani dist. is 1561('000 MT). The total dry matter availability in Parbhani district is 1552 ('000 MT). (Anonymous 2015).

In India, farmers don't have adequate knowledge about nutritional requirement of an animal and cannot supplement or enrich a feed, if found deficient in particular nutrient. The analysis of feed stuff gives the important information about the quality of feed in respect of nutritional value of different purpose. Whatever be the inherent qualities all the animals are not to express these qualities in actual production unless they are properly fed their ration furnishes all the required nutrients in such proportion and amount as well as provide balance nourishment to the animal. Therefore understanding of certain fundamental principles involved in feeding by a livestock owner will prove very helpful in computing ration which should supply both qualitatively and quantitatively all the nutrient required for proper nourishing of animals.

The increase in the livestock population along with the intensive rearing system has resulted in increased demand for fodder and feed in the country. Green fodder is essential component of dairy ration otherwise productive and reproductive performance of dairy animals is adversely affected. Adequate nutrition is important for body maintenance, growth, and reproduction of animals. Now Maharashtra state facing a severe shortage of livestock fodder due to irregular rainfall. For managing the shortage of feed and fodder in this situation from last two decade, considerable work done on animal new feed resources (Anonymous, 2012b). Marathwada region have large biodiversity which can provide good quality green fodder. Out of total expenditure of dairy farming 70 per cent expenditure was done on cost of feeding. Reduction in the feed cost is aimed to increase the profitability of any of dairy/sheep/poultry farm so; it is decided to study feeding status of dairy animals in rural area of Jintur tahsil. Jintur is fast developing taluka in Parbhani district with large no. of livestock. The geographical area of Jintur taluka is 1238.82sq.km. spread over 173 villages. Different crops such as Jowar, wheat, tur, mug and cotton are grown in the area. The by-products of these crops are used as a fodder for livestock. There is tremendous scope to increase the milk production by using such fodder in diet of the livestock. With this view, the survey was carried out in areas of Jintur taluka with the following objectives.

1. To study the feeding status of dairy animals in respect to concentrate, green and dry roughages
2. To suggest the recommended practices of feeding for higher milk production
3. To identify the constraints in feeding

This survey shows the position of feeding status at farmer's doorstep. The emerging finding of the study may help in providing direction to current dairy development and also may prove helpful in working out dairy development strategy in future. It may prove useful to extension worker in identifying feeding practice to enable them to plan and execute extension education programme.

*Review of
Literature*

CHAPTER-II

REVIEW OF LITERATURE

The research conducted and published by the scientists from India and abroad on the aspect of adoption in technology for breeding, feeding and management of the Dairy animals, and its impact and constraints faced was reviewed and presented under following heads.

- 2.1 The feeding status of dairy animals in respect to concentrate, green and dry roughages
- 2.2 The recommended practices of feeding for higher milk production
- 2.3 The constraints in feeding

2.1. The feeding status of dairy animals in respect to concentrate, green and dry roughages

Singh and Dubey (1978) observed that the ordinary village cow can also yield on an average 60 per cent more milk due to better feeding and management.

Singh *et al.* (1981) reported that on an average 23.03 per cent of the milk produced in Punjab was sold, 44.99 per cent consumed at home and remaining 31.98 per cent was converted into such product as butter and ghee.

Chopra and Kurar (1983) observed that the intake of concentrate mixture ranging from 1.80 to 2.40 kg in crossbred, 2.40 to 3 kg in Murrah buffaloes whereas intake of wheat straw ranged from 3.02 to 6.25 kg in crossbred cows and 3.92 to 2.66 kg in buffaloes. The dry matter intake per 100 kg body weight in crossbred cattle and buffaloes was 1.75 and 1.11 kg respectively.

Ingole *et al.* (1987) observed that majority of owners fed only dry fodder and concentrates to their animals indicating improper feeding practices. This was due to high cost of ration prohibiting its adequate feeding to animal. Only 40 per cent of owners fed concentrates to crossbred cattle.

Handa and Gill (1989) conducted survey on nutritional status of dairy animals kept by different categories of farmer in Ludhiyana district of Punjab. They observed that average green fodder, dry fodder and concentrate fed round the year was 28.5, 5.6 and 1.3 kg / head / day.

Shirsat *et al.* (1991) conducted survey in five village of Parbhani district and revealed that majority of (95%) respondent were feeding cotton seed cake to milking animal and 90.83 per cent respondent were feeding concentrate at the time of milking where as 68.33 per cent respondent supplied green fodder in proportion milk production.

Thombare and Pawar (1993) made an effort to study the profile of crossbred cattle owners in Maharashtra. They identified the problems and made suggestions for crossbred cattle owners. They reported that near half (47.0 per cent) of the crossbred cattle owners were belonged to middle age group in Marathwada. Dysfunction of milk producer co-operative societies was the major problem followed by more expenditure on ration and lack of green fodder. Suggestions were given as milk producers co- operative societies should not be de-functioning and optimum price of milk should be given.

Baelli and Manjula (1997) revealed that nearly 51 per cent of gavalis spent 5 to 8 hours every day in grazing. However majority of gavalis (63.33 per cent) fed their animal twice a day.

Lall *et al.* (1998) studied nutritional status of lactating Murrah buffaloes maintained by landless, marginal, small, medium and large farmers in Faizabad district. They revealed that the average green fodder, dry fodder and concentrate fed round the year was 22.24, 6.25 and 1.09 kg/h/d however, their availability varied significantly ($P < 0.01$) between seasons. The average DCP, TDN and DM Supplied throughout the year to the animal averaged 0.53 ± 0.03 , 6.43 ± 0.16 and 12.15 ± 0.25 kg/h/d respectively.

Singh *et al.* (1998) reported that the landless, marginal, small, medium and large farmer were observed to feed 13.36, 13.60, 12.60, 13.75 and 17.55 kg green fodder where as they fed concentrate 2.86, 4.08, 4.71, 5.06 and 11.20 kg, respectively. It was observed that large farmer feeding significantly ($P < 0.01$) high amount of green fodder and concentrate to their animal compared to landless and marginal farmer.

Sonwane (2001) studied feeding status of milch animals in Ambejogai tehsil of Beed district maintained by landless, marginal, small, medium and large farmers and reported that 27.25 per cent dairy farmer were landless, 34.75, 30.75 and 7.25 per cent dairy farmers were marginal, medium, large respectively.

Hundal *et al.* (2004) studied that the Feeding of animals either by conventional feeding system or as TMR irrespective of the roughage source did not have significant impact on milk yield or its composition. The results revealed that feeding system did not have any significant impact either on milk production or on its composition both Berseem hay as well as oat hay based complete feeds (TMR) could sustain 15-16 kg of milk production per day.

Garg *et al.* (2007) reported that the average calcium (Ca) content in straws of groundnut, *ragi* and soybean was high (0.97%), whereas, straws of sorghum and paddy had low (0.23%) level. Ca content in green fodder was 0.38 per cent. Concentrate ingredients were particularly low (0.22%) in Ca. The phosphorus (P) content in crop residues and green fodders was 0.14 and 0.19 per cent, respectively, which was low, but higher (0.67%) in concentrate ingredients. The magnesium (Mg) content in roughages and concentrate ingredients was 0.38 and 0.32 per cent, respectively. The sulphur (S) content was deficient in concentrate ingredients (0.13%) and crop residues (0.12%). Cobalt (Co) was deficient in the diet of animals.

Bainwad *et al.* (2007) data were collected from 200 rural buffalo farmers from different twenty villages under the watershed area of Parbhani district in Marathwada state. The maximum green (8.69), dry fodder (5.22) and concentrate (3.19) Kg, respectively made available to milch buffaloes was found in large farmers (F3) under watershed area owners provides their buffaloes for grazing during day and tie them at night (100 per cent), provide kaccha shed (77.50 per cent) with kaccha flooring (92.00 per cent) and part of residence (59.50 per cent). Before milking cleaning of udder, milk utensils, shed floor, shaving of buffaloes adopted by cent per cent farmers. Due to availability of purebred he buffalo breeding bulls all buffalo owners used natural service method of breeding and were also well aware about adoption of vaccination (95.00 per cent).

Lahoti and Chole (2010) conducted study in Ambajogai taluka of Beed district of Maharashtra state with objective to know the extent of adoption of improved feeding practices by goat keepers. Hundred respondents from 10 villages of the taluka were selected randomly for collection of data. The data were collected with the help of well constructed and pretested interview schedule. The data was analyzed by using suitable statistical methods viz frequency, percentage etc. It was revealed from the study that goat keepers usually did adopt the improved feeding practices.

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

Sarap *et al.* (2012) undertaken study to know the various management practices adopted at the farmers level. A sample of 170 farmers in to three categories viz. small, medium and large, based on the land holdings, consisting 10 each in 17 villages in Karanja tahsil group of 41-50 followed by 31-40 and 21-30 years. About 92.94 per cent farmers provided housing for local cattle whereas 94.11 per cent farmers provided housing of crossbred cattle.

Manohar *et al.* (2013) conducted to collect the first hand information on the feeding management practices of buffalo farmers in Jaipur district of Rajasthan. The data were collected from 100 buffalo rearers randomly selected from two tahsil of Jaipur district through pre designed interview schedule. Regarding feeding practices most of the farmers followed group feeding and grazed their buffaloes in harvested field. From the study it was concluded that feeding practices were significantly ($P < 0.01$) correlated with education, herd size and age of respondents.

Mutimura *et al.* (2013) reported that the major feed used during the rainy season was Napier grass (*Pennisetum purpureum*), which accounted for 20% of the feeds. It was followed by roadside grass (10.5%) and maize stover (8%). The least used feed resources were groundnut haulms (1.1%) and home wastes (0.1%). The high variability of feed resources indicates the shortage of feedstuffs in the country. During the rainy and wet seasons the most purchased feeds were maize bran (11%), commercial concentrate (9.6%) and rice bran (8.9%). Interestingly, multi-purpose trees (MPTs) were harvested free of charge from neighboring farms and comprised up to 2.6% of feed resources.

Devasena and Ramana (2015) study was aimed to understand the socio-economic conditions, feeding, management and technology adoption by the farmers rearing crossbred cattle in Chittoor district of Andhra Pradesh. Indicated that landless labour (27.1%) and small farmers with low land holdings (36.6%) in Chittoor district were dependent on dairying for their sustenance. On an average, herd size of less than

five crossbred animals (74.3%) were reared by these farmers producing up to five liters (48.3%) of milk/animal/day. Semi-intensive feeding was predominant system for rearing of animals and crop residues formed the major roughage source.

Emily and Trevor (2015) reported there was 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 was important for rumen development, consequent growth and efficiency.

Chavan *et al.* (2016) studied on adoption of scientific feeding practices by buffalo dairy entrepreneurs in peri-urban area. He concluded that the present study was conducted to assess the adoption level of scientific feeding practices during March to April 2015 in peri-urban areas of three districts of Marathwada region of Maharashtra by selecting 150 buffalo dairy entrepreneurs. The present study revealed that majority of respondents had medium adoption level of different component of scientific feeding practices viz. balanced diet 98.00%, use of mineral, vitamin mixture for high milk production 98.00%, calf feeding management 64.67%, recommended feeding for breeding 62.67%, use of different feed ingredient in animal diet 62.67%, fodder production of high yielding variety 50.67% while low level in fodder treatment 96.67% and use of green fodder 45.33%. Higher extent of adoption was observed in use of balance diet practices while lower extent of adoption was in fodder treatment area.

Patel *et al.* (2016) a field survey was conducted to acquire the first hand information on traditional feeding practices adopted by professional breeders of Kankrej cattle in Banaskantha district. The information on feeding practices was collected using structured schedule from 150 professional breeders rearing Kankrej cattle. Majority (72.7%) of the professional breeders were landless and marginal. 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.

kumar *et al.* (2017) evaluated the performance of Murrah buffalos calves (n=16) to test the hypothesis of nursing of calves by their own mothers increases the body weight of calves and decreases the milk production.

Yadav (2017) study was under taken to assess the production and requirement of fodder in India using secondary data from NATP and 19th livestock census. The results revealed that the fodder requirement in India was 883.95 Mt of green fodder and 583.66 Mt of dry fodder whereas the estimated fodder production was 664.73 Mt of green fodder and 355.93 Mt of dry fodder. Hence to minimize the existing gap of 218.22 Mt of green fodder and 227.73 Mt of dry fodder, adequate policy and research level initiatives have to be taken to strengthen the existing fodder resources. The findings of the study will help the policymakers of the country in designing trade strategy to maximize benefits from livestock production.

Kadam (2018) studied relationship of size and shape of udder and teats with milk yield in Deoni cattle of Latur district and he reported that 70.62 per cent of cattle owners were engaged in agriculture. Whereas 9.37 per cent cattle owners were engaged in business and in agriculture and business, 5.00 per cent engaged in service and agriculture and service, remaining 0.62 was engaged in only dairy.

2.2. The recommended practices of feeding for higher milk production

Raut and Amble (1969) conducted survey covering Delhi city and its suburban area and reported the standard of daily ration for a non descript dairy cow as 1.67, 4.44 and 0.58 kg green, dry and concentrate respectively. The non descript milch buffalo in suburban area was fed with 5.75, 4.74 and 2.32 kg green, dry and concentrate respectively.

Khupse *et al.* (1980) noted that below 40 per cent of respondents adopted practices such as inoculation, cleaning with smooth and dry cloth after birth, providing antibiotics through milk production, artificial insemination practices, respectively.

Rawal *et al.* (1980) studied the housing aspect for livestock and reported that livestock housing was important from the point of view of (animal health) comfort, hygiene, efficient and economical use of labour and to make the use of efficient environment for maximum milk production.

Nayak and Mitra (1983) reported that the quantity of DM intake per cow was varied from 9.9 to 11.23 kg in different seasons and revealed no significant variation between breeds but dry matter in winter was significantly higher in summer and rainy season. The lowest level in DM intake was observed during rainy season.

Sambasiva (1985) reported that production of milk depends on feeding, breeding and management of animals. The fodders and 3–4 kg of wheat straw only whereas cow yielding 8 kg milk will require 40-50 kg of green fodder with 1-2kg of jowar kadbi/wheat straw. For high producing cows (>10kg), 50-60 kg Berseem/Lucerne/ Oats green with 2-4 kg of concentrate mixture will sustain the production capacity.

Agarwal and Sharma (1986) concluded that improved dairy husbandry practices with respect to feeding, breeding and management of the animal can play an important role in increasing the production potential of the animals.

Singh and Chattarji (1989) studied the impact of dairy cooperatives on production, consumption and marketed surplus of milk by taking kisan cooperative milk union in Nadia district of West Bengal as a study area. The authors were view that dairy cooperatives have positive impact on milk production, consumption and marketed surplus of milk. They reported a family size in two villages as 6.4 and 5.9 respectively. They suggest that the members of cooperative societies should be increased. The non-covered villages and household families should also be covered for their economic development.

Dhiman *et al.* (1990) revealed that 86.5 per cent of farmer from a village of Hissar district groomed their animals and 63.75 per cent farmers followed disease control measure in adopted village. The farmers in adopted villages used proper method of milking, washing of udder and hand before milking.

Saha *et al.* (1991) reported that roadside and field grasses were utilized and available in their study area and also reported that most of dairy cattle ration are composed of straw as bulk and restricted quantity of low cost concentrate.

Borude (1992) found that a considerable proportion of members (i.e. between 25 and 64%) followed the management practices viz., dehorning of newly born calves, adoption of weaning system, full hand method of milking and timely vaccination of animals. A small proportion of (up to 8%) members followed practices

of culling of diseased animals from the herd and construction of improved buyer for the animal. Fifty per cent of members and non members had made provision of clean drinking water and regular medical check-up of milch animals.

Walthare *et al.* (1992) observed that out of 102 dairy farmers, 40 farmers had 25 to 35 years age whereas 42 farmers were between 36 to 45, 16 farmers 36 to 55 and 4 above 55 years age. The study further revealed that 73 farmers engaged in dairy with agriculture and 14 farmer having dairy, agriculture and service, nearly 13 farmers were engaged in dairy, agriculture and business.

Kumar (1994) reported that more milk production can be obtained by feeding the animals with concentrate rather than feeding roughages alone. The production of higher yielder cows can be tremendously increased by heavy feeding and good management.

Mote *et al.* (1997) revealed that only 5 per cent dairy farmers where totally depends on dairy, 2 and 4 per cent engaged in service and business with dairy. Maximum (63 per cent) farmers where engaged in dairy and agriculture whereas 14.50 and 14.50 per cent dairy farmers were engaged in agriculture along with service and business respectively.

Avinashilingam *et al.* (2008) studied the dairy farming practices in Nilgiri district of Tamil Nadu. The results showed that the tribal household left their animals in open land for grazing and offered feeds and fodders to increase in milk yield twice in day. The majority of dairy farmers have separate cattle shed for their animals.

Prasad *et al.* (2008) reported that, hygienic milk production was directly related to the economic prosperity and education level of the milk producers.

Khan *et al.* (2009) concluded that the fundamental approach to provide good quality diets to dairy cattle in sufficient amount to maximize production. Quantitative and qualitative shortage of feeds and fodder affects the performance of milking animal. Local cows yield on average 1.5 lit. milk per day against 5-8 lit. In cross bred cows, require better feeding mainly concentrates, which was not available to the farmers at the affordable prices. But income of farmers can be increased up to two fold by rearing cross bred cows. Since feed cost is becoming the most important factor in livestock production, increasing self sufficiency in feed production will be an important factor in future development programme also the more use of improved

quality grasses, legumes and treated agricultural by-products which could result in a reduction of the need for concentrates. It was recognized that animal performance and especially milk production was much more dependent on the quantity and quality of feed eaten rather than on the genetic makeup of the animal.

Sabapara *et al.* (2010) carried out health care management like preventive ensure proper health of animals that promotes their productivity. Hence the present study was undertaken to document information regarding breeding and health care management practices followed by the tribal farmers of Vansda taluka of Navsari district for providing help in adoption of scientific management practices in the area.

Gautam *et al.* (2014) studied on feeding practices and strategic supplementation to augment milk production in Kargil. Results indicated that all the farmers preferred hill grazing during summer and stall feeding during winter. Ninety eight per cent farmers used community land for grazing for 165 days @13 hour/day in a year. This migratory grazing is preferred to maximize the income over stall feeding. The average milk production/cow/d reported by 17.88, 42.88 and 39.24% of farmers was more than 5.0, 2.5–5 and less than 2.5 lit per day, respectively. More than 80% farmers did not supplement concentrate and rest 20% either supplemented mineral mixture or salt to the early lactating animals only. Lucerne and mulberry leaves was good sources of protein whereas buckwheat may be an alternate to maize grain in the region. Supplementation of concentrate alone, mineral mixture alone or both increased milk production by 9.82, 3.38 and 13.03% over the control.

Carlos Galdino *et al.* (2015) study explored whether technology adoption and changes in management practices were associated with farm structure, household and farmer characteristics and to identify processes that may foster productivity and sustainability of small-scale dairy farming in the central high lands of Mexico. Factor analysis identified three factors that explained 70 % of the cumulative variance with a Kaiser-Meyer-Olkin coefficient of 0.613.

Iqbal *et al.* (2015) studied on feed stuffs role in enhancing the productivity of milch animals in Pakistan- existing scenario and future prospect he concluded that, the productivity of milch animals in Pakistan was much low as compared to their known high potential. Under nourishment is one of the key factors behind poor performance of milch animals. Roughages and concentrate constitute the feed

resources but a dairy animal was deficient by 29 and 33% in total digestible nutrients (TDN) and crude protein (CP) respectively. There was a dire need to initiate a breeding program to produce quality seed of forage crops and an extension program should be launched to make farmers aware of latest production technology of forage crops. Forage trees such as Moringa must be incorporated into the forage supply chain.

Sherasia *et al.* (2015) studied on impact of feeding balanced rations on milk production, methane emission, metabolites and feed conversion efficiency in lactating cows was conducted to evaluate the effect of feeding balanced rations on milk production, enteric methane emission, metabolites and feed conversion efficiency (FCE). In comparison to requirements, the dietary intake of protein and energy were higher by 25.0 and 12.7% whereas, calcium and phosphorus intake were lower by 30.0 and 27.0%, respectively. Balanced feeding improved daily 4% FCM yield by 0.7 kg/cow ($P<0.05$) and intestinal flow of microbial nitrogen (N) by 37.0% ($P<0.01$), whereas, reduced ($P<0.01$) feeding cost by 17.0% and enteric methane emission (g/d/cow and g/kg milk yield) by 14.6 and 18.1%, respectively. Level of IgG, IgA, IgM and uric acid content increased significantly, whereas BUN level reduced ($P<0.01$) from 18.2 to 15.0 mg/dl. FCE improved ($P<0.01$) from 0.8 to 1.0 and efficiency of microbial protein synthesis also improved ($P<0.01$) by 63.6% owing to feeding of balanced rations indicating better performance of cows. Present study indicates that feeding nutritionally balanced rations improved milk production.

Suleiman *et al.* (2016) studied on characteristics of dairy farming and its effect on milk production: case study of Unguja island of Zanzibar, Tanzania. It was found that a dairy farmer possesses, on average, seven dairy cattle (range 1-31) and two lactating cows (range 1-8). West district had bigger average herd size of 7.5 followed by North B with 7.3 and Central with 6.2 cows per farm but the difference was not statistically significant ($P>0.05$). West district had bigger average number of lactating cows (2.4) compared to Central (1.9) and North B (1.8), the difference was statistical significant ($P<0.05$). More than two thirds (72%) of the farmers interviewed kept crossbreed dairy cattle that were managed mostly by intensive grazing system (65%). Only 61% of the respondents had constructed shed for their dairy animals. About 86% of the farmers provided maize bran, pollard or a mixture of the two as supplement feeds for their lactating cows, a practice which also differed significantly between the

study districts ($P < 0.05$). Average daily milk production was 7.6 ± 3.6 litres per cow per day. Average milk production was higher in West district (8.0/litres/day) compared to Central (7.2 /litres/day) and North B (6.9 /litres/day), the difference between districts was statistically significant ($P < 0.05$).

Vaghamashi *et al.* (2016) revealed that on feeding a balanced ration for 12 weeks, there was improvement average daily milk yield from 7.50 to 8.45 kg and milk fat from 3.98 to 4.22% on feeding a balanced ration. This translated into an additional daily monetary benefit of about 38 per animal to the milk producers. The study revealed that feeding of a balanced ration helped in improving milk production, fat content of milk and resulted in improve daily income of milk producer.

Golhar *et al.* (2017) studied the recommended feeding practices for maintenance and production of buffaloes on a dairy farm. Keeping this view in mind, an attempt has been made to study the existing feeding practices at the farmer's level for maintenance and production of buffaloes. The difference between recommended practices suggested by animal husbandry scientists and actual existing practices adopted by farmers shows the feeding gap. The dry fodder, green fodder and concentrates were fed to the extent of 9.02, 8.75 and 1.56 kg day⁻¹, respectively. The dry fodder was fed more to the extent of 50.34 per cent over recommended practices. A wide gap was also noticed in feeding of green fodder (12.50 per cent) and concentrates (65.34 per cent), respectively at the farmer's level at an overall level.

Wanapat *et al.* (2017) studied on-farm feeding interventions to increase milk production in lactating dairy cows. The objective of this study was to investigate the effect of tropical legume (*Phaseolus calcaratus*) mixed with ruzi grass feeding on the performance of lactating dairy cows. Eighty-eight lactating dairy cows from 22 smallholder dairy farms northeast of Thailand were assigned to respective dietary treatments according to Randomized Completely Block Design (RCBD). Four cows were selected from each farm and were allocated into two different feeding groups as follows: ruzi grass and *P. calcaratus* mixed with ruzi grass (1:1 ratio), respectively. All cows were fed with roughage ad libitum with 1:2 ratio of concentrate diet to milk yield. The results revealed that total dry matter intake, ruminal volatile fatty acids, and ammonia nitrogen concentration were enhanced when cows were fed with *P. calcaratus* mixed with ruzi grass ($P < 0.05$). Moreover,

feeding tropical legume mixed with ruzi grass could increase milk production and milk protein in this study.

Dey *et al.* (2018) revealed that the ration balancing has an immense impact on efficiency of feed utilization for increasing livestock production and reducing enteric methane emission under natural and managerial conditions. Large-scale implementation of a ration balancing programme can help in improving the production efficiency of livestock with the available feed resources in an environmentally sustainable manner.

2.3. The constraints in feeding

Kulkarni *et al.* (1990) identified the constraints in the adoption of dairy practices as non-availability of loan facility (100%), lack of preservation facility (100%), lack of knowledge (94.59%), cost of milk (79.35%) and non availability of veterinary aid centre (69.5%).

Rajendra and Prabhakaran (1992) revealed that only 26.67 per cent of farmers in Dharampuri district in Tamilnadu fed animal based on the milk production. Majority of household failed to feed the dry animal properly. Likewise the feeding of pregnant animal also did not receive much attention from the farmers, indicating lack of awareness of scientific feeding of dairy cattle.

Patil (1998) conducted a survey on 200 farmers in Tuljapur tahsil (district Osmanabad) and revealed that the major constraints in milk production were lack of extension facilities for educating farmers on scientific management of animals and unavailability of medicines, vaccines and other resources at village level.

Rajan (1998) stated that the problem which affect the feeding management in the country were shortage of green fodder, dry fodder and concentrates in almost all the region's leading to under feeding of animals resulting in poor performance in growth, meat, milk production, also observed that there was a lack of application of low cost or no cost feeding technologies generated in the research institution on the farmers animals.

Shinde *et al.* (1998) observed that 94.00 per cent of dairy farmers expressed the non availability of training facilities in their village, lack of credit for purchasing

dairy animals (92.5%), lack of irrigation facilities for growing green fodder (77.5%) as main constraints for them.

Kumar *et al.* (1999) revealed the overall situation of the livestock sector in the Kumaon hills and selected randomly 658 farmers from 12 villages in 2 blocks of Nainital district. Main constraints faced by the farmers were lack of adequate feed and fodder and economic opportunity related to marketing of livestock products. It was concluded that a sound livestock policy was needed to enhance the return from this important sector for hilly agriculture.

Chaudhari and Intodia (2000) conducted study in Barmer district of Rajasthan state where efforts had been made to identify certain constraints in adoption of modern management practices. The results of the study depicted that poor irrigation facilities for growing green fodder, high cost of concentrate, transportation of feed and fodder and non availability of improved fodder seeds was realised as the most serious constraints of livestock owners.

Meshram (2001) observed that the degree of adoption of scientific feeding practices by the farmers was very low. The per cent of adoption of feeding balanced compounded cattle feed, extra dose of concentrate to pregnant animals, chaffing of roughages and soaking of common salt was 25.92, 77.04, 87.41 per cent respectively. Other feeding practices like use of tree leaves as fodder, cultivation in the form of silage and feeding of mineral mixture, enrichment of low quality roughages by urea or ammonization.

Narmatha *et al.* (2002) found that the constraints faced by the livestock from women entrepreneur were the financial constraints followed by marketing laborers, general and technical constraints.

Mishra and Pal (2003) revealed that inadequacy of technical knowledge (40.3%) poor organization support (28.6%) and lack of financial resources (92.01%) were the major constraints for the dairy sector. The advances in the dairy science have hardly percolated to the village level due to lack of training facilities to the rural dairy farmers.

Singh *et al.* (2004) revealed that the major constraints were shortage of feeds and fodder during dry season, traditional method of feeding, scattered and low land holding, poor animal productivity, poor extension resources.

Bardhan *et al.* (2005) observed that high cost of feeds to be the major constraints faced by the dairy farmers of the Uttaranchal region.

Singh and Chauhan (2006) stated that main constraints in adoption of scientific dairy farming practices were the high cost of feeds and fodders and poor resources for raising fodder crops. Other constraints regarding feeding of animals were poor availability and high cost of compound feed, mineral mixture and fodder seeds also related to the limited financial resources.

Thakre *et al.* (2011) studied on constraints in adoption of scientific recommendation in feeding of dairy cattle. In the present investigation, the efforts were made to inquire the constraints in adoption of scientific recommendation in feeding dairy cattle in Sindewahi tahsil in Chandrapur district of Maharashtra. From the investigation, it was found that the adoption of scientific recommendation in feeding of animals was meagre. The main constraints involved in feeding of dairy animals were financial, situational, infrastructural, personal, organizational and in technical aspects. Intensity of constraint was very high in small fallowed by landless, marginal, medium and large farmers.

Reddy *et al.* (2013) revealed that the constraints faced by the farmers were low price paid by the procurement agencies per liter milk, high cost and non availability of feed ingredients, high incidence of repeat breeding, lack of sufficient grazing land, non availability of vaccines in time, non availability of adequate medicines in hospitals and incidence of Theileriasis and Mastitis were the major health constraints.

Narayan *et al.* (2014) studied on constraints analysis of dairy farming in Banswara district. A study was conducted to identify the constraints faced by milk producer households in Banswara district of Rajasthan with a sample of 90 households. The data were analyzed by Garrett's ranking technique. The findings of study indicated that major constraints faced by milk producer households were high cost of green fodder, dry fodder and concentrate in feeding of animals.

Tadesse *et al.* (2014) conducted to characterize cattle production system in two zones of Harerge high lands eastern Ethiopia. In the survey structured questionnaire was used to collect from 120 households. Purposive sampling was employed to select the farmers. The most common feed resource was crop residue and the most common management system was tethering.

Nagrale *et al.* (2015) conducted that a detailed questionnaire in relation to various aspects of feeding, breeding, marketing and institutional constraints involved in dairy farming were enlisted and the dairy farmers from the study area were asked to rank the each constraint which were analysed using Garrer's ranking technique. 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 constraints, institutional constraint was lack of AI and veterinary facilities and overall major constraint considering all the above categories was lack of availability of green fodder.

Mooventhana *et al.* (2016) studied on assessment of tribal dairy farmer's perceived importance, level of awareness and constraints in the adoption of good feeding practices using exploratory factor analysis. Study revealed that about one-fourth (27.67%) of the tribal farmers were aware about green fodder varieties, nearly half (43.0%) of the respondents were aware about the importance of colostrum feeding to calf with proper timing and quantity. Constraints analysis revealed that majority (75.70%) of tribal farmers expressed the higher cost of concentrates, mineral mixtures and vitamin supplements as the major constraints in the feeding management of animals.

Panchbhai *et al.* (2017) reported that India was a major leader in milk production but its potential was not fully explored to the extent. Several constraints were perceived and faced by dairy farmers during adoption of recommended dairy management practices. The aim of this study was to evaluate constraints faced by dairy farmers in co-operative.

Salo *et al.* (2017) survey on constraints of improved forage adoption in Anelemo Woreda, Hadiya Zone, Ethiopia. The major constraints for improved forage adoption in the study area was a shortage of land (28.8%), shortage of forage seed (13.5%), lack of awareness and poor extension services. Livestock feed shortage (88%) and water shortage (12%) was the major problem in the study area. Therefore, integration of improved forage with crops, and with soil and water conservation structure was best opportunity for increasing adoption of this technology. Increasing accessibility of forage seed for the farmer.



Material and Methods

CHAPTER III

MATERIAL AND METHODS

The elaborative questionnaire was prepared to collect the information from the studied area about the dairy animals in respect of their feeding, management and constraints practices followed by the farmers. The details of the materials used and the methods followed in conducting the present investigation were presented in this chapter under appropriate heads.

3.1 Information about place of work

The data for present investigation entitled “Feeding Status of Dairy Animals in Jintur Tahsil of Parbhani District” was collected from different farmers specially who was rearing the cattle and buffaloes in Jintur tahsil of Parbhani district in Maharashtra State. A comprehensive questionnaire was prepared to collect information by personal interview with individual farmers.

3.2 General information about Jintur tahsil

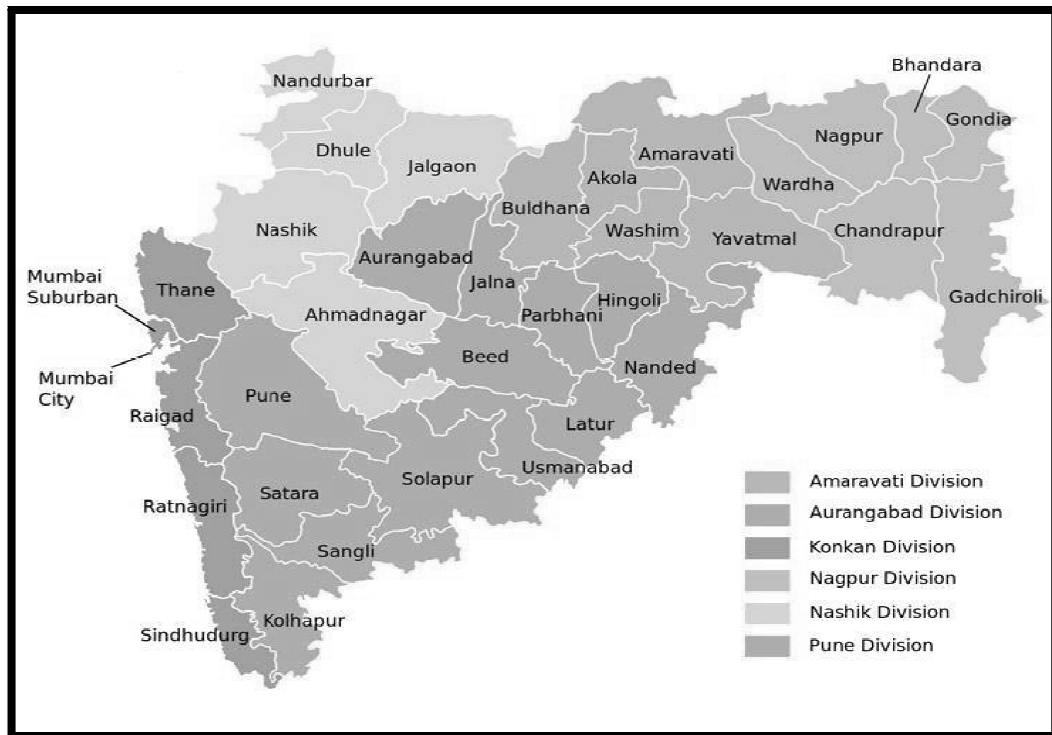
3.2.1 Geographical situation

Parbhani, Aurangabad, Jalna, Beed, Osmanabad, Latur, Nanded and Hingoli eight districts in the Marathwada region of Maharashtra state. The Jintur tahsil lies between 19.62° North latitude and 76.7° East longitudes. It is situated approximately at the central part of state and Marathawada region. Boundaries of Jintur are at Northern side Parbhani district, at East side of Jalana district, and South and West side of Hingoli district of Maharashtra state. The area presents plane lands.

3.2.2 Climate

The climate of this Jintur tahsil is generally dry except during the South-West monsoon season. The year may be divided into four seasons.

- | | | |
|-----------------------|---|------------------------------------|
| 1 Cold season | : | November to the end of February |
| 2 Hot season | : | March up to the first week of June |
| 3 South-West monsoon | : | June to September |
| 4 Post monsoon season | : | October and first half of November |



Map of Maharashtra state showing Parbhani district.

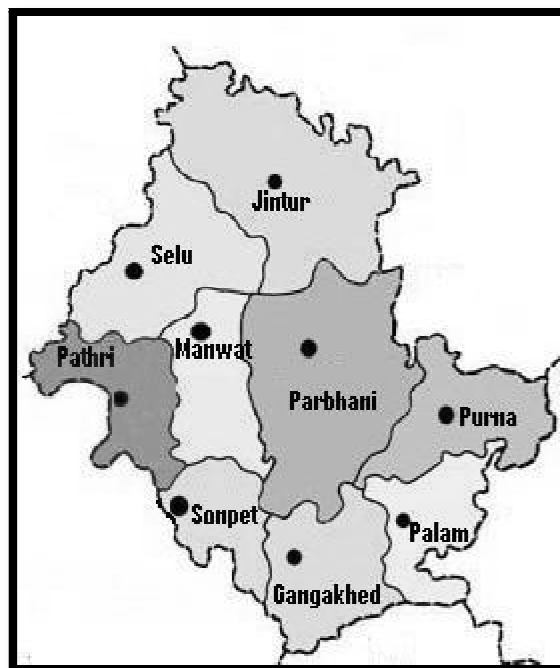


Fig.1: Map of Parbhani district showing Jintur tahsil.

Temperature of the Jintur taluka varies according to season during summer, it touches as high as 41°C to 43°C while, during winter season, it goes down as low as 5°C to 8°C. December is the coldest month, with the mean daily minimum temperature 13°C and the mean daily maximum at about 29°C. May is the hottest month of the year with the mean daily maximum temperature at about 42°C. On individual days the temperature sometimes goes up to 45°C to 46°C.

3.2.3 Rainfall

The average annual rainfall of Jintur is 774.59 mm. About 88 per cent of annual rainfall is received during the South-West monsoon season. The July is the rainy month in the year. Considering the general pattern of rainfall it is seen that the rainfall increases from West to East. On an average there are 47 rainy days in a year.

3.2.4 Soil and topography

Soils on plains interspersed with occasional stretches of shallow soils on the ridges. On the south side, the soils are deep and fertile particularly in Godavari valley. They are derived from Deccan trap. They can be classified as light, medium and heavy according to depth, texture and location. The formation of rills and shallow ravines are observed near the bank of river.

In Parbhani district, the soils in the northern portion are light and medium. The southern part of Gangakhed taluka has lighter soils with undulating topography. The central part of the district of Pathri and Parbhani talukas have medium and deep black soils, however, the best soils are observed in the valley of Godavari. Deep soils are invariably found within the vicinity of river banks as a result of deposition of the eroded material brought by river in floods. The soils in the area have attained a high degree of maturity during the period of long ages. They consist of shallow medium and deep black types. The shallow soils are found near the foot of the hills. Deep black soils are regarded as good for wheat, cotton, sugarcane, jawar and groundnut, etc. for both kharif and rabi crops.

Soil of other places have light grey-brown to grey-brown colour on the surface, clayed texture and blocky structure. They are moderately high in soil reaction (pH 8.06 to 7.76) with the total soluble salt contents varying between 0.26 and 0.94 per cent. Calcium carbonate is high but shows wide variation from 5.20 to 19.60 per

cent. Organic matter varies from 0.5 to 1.58 per cent. Applications of nitrogenous and phosphatic fertilizers were useful for increasing the crop production.

3.2.5 Crops

Agriculture being a seasonal occupation does not give full time employment to those who are dependent on it. This seasonal nature of agriculture in the tahsil attributed to the dependence of agriculture on the monsoon and inadequate irrigation facilities. It provides favorable condition, leading to harvest of Kharif and Rabi crops. Jowar (*Sorghum bicolor*), Cotton (*Gossypium sp*), Mung or Green gram (*Phaseolus aureus*), Tur or Pigeon pea (*Cajanus cajan*), Soybean (*Glycin max*), Bajra (*Pennisetum typhoideum*) are the crops taken in Kharif, Sunflower (*Helianthus annuus*) in post monsoon, Rabi Jowar (*Sorghum bicolor*), Bengal gram (*Cicer arietinum*) and Safflower (*Carthamus tinctorius* Linn.) in Rabi. Summer Groundnut (*Arachis hypogea*) and vegetable. Crops are grown. Jowar Kadbi (*Sorghum bicolor*) forms the major bulk of the ration for the ruminants. In addition, crop residues from Mung or Green gram (*Phaseolus aureus*), Groundnut (*Arachis hypogea*), Tur (*Cajanus cajan*) are also used for feeding the animals. Kharif season start in Jun-July and end in September-October. Rabi crops are generally sown in November and harvested in March.

3.2.6 Livestock population

Livestock, though non-descript, continues to be a valuable possession of the agriculturists in the tahsil. The agricultural economy is also dependent on the cattle. The agricultural operations such as ploughing, harrowing, sowing etc. including irrigation and threshing are done by the draught animals. The livestock broadly includes bovine (cattle, buffaloes), ovine (sheep, goats).

Cows are maintained for milk production. Sheep are kept for meat, manure and wool purpose. Goats are kept for milk, meat and manure purpose. Species wise livestock population of the tahsil is given as follows.

Table 3.1. Livestock population of the Jintur tahsil

Sr. No.	Species	Livestock population
1	Total cattle	73307
	i.Total exotic / crossbred cattle	1524
	iii.Total indigenous cattle	71783
3	Total buffaloes	13839
4	Total sheep	1296
5	Total goat	30250
6	Poultry	39232

(Anonymous, 2012b)

3.2.7 Fodder

Fodder consists of stalk of jowar, bajra, maize that are tied in bundles, husk of pulses, leaves and stalks of pulse crops, groundnut straw.

At many places jowar is grown principally for fodder wherever irrigation facilities are available. In addition to all these above mentioned, cakes of groundnuts, cotton seed and safflower are also utilized as a feed and are supposed to be the best food for livestock.

3.3 Methods of sampling and size of sample

The data obtained for the study was collected by multistage random sampling technique. At first stage Jintur taluka was selected.

- a) Selection of villages:** At second stage, random selection of 10 villages was made with 20 Livestock owners in Jintur tahsils.

List of selected villages from Jintur tahsil**N = 200**

Sr. No.	Name of village	No. of farmer
1.	Asegaon	20
2.	Devgaon	20
3.	Dhanora	20
4.	Dudhagaon	20
5.	Kasar	20
6.	Kok	20
7.	Pachegaon	20
8.	Pimpri	20
9.	Reedaj	20
10.	Repa	20

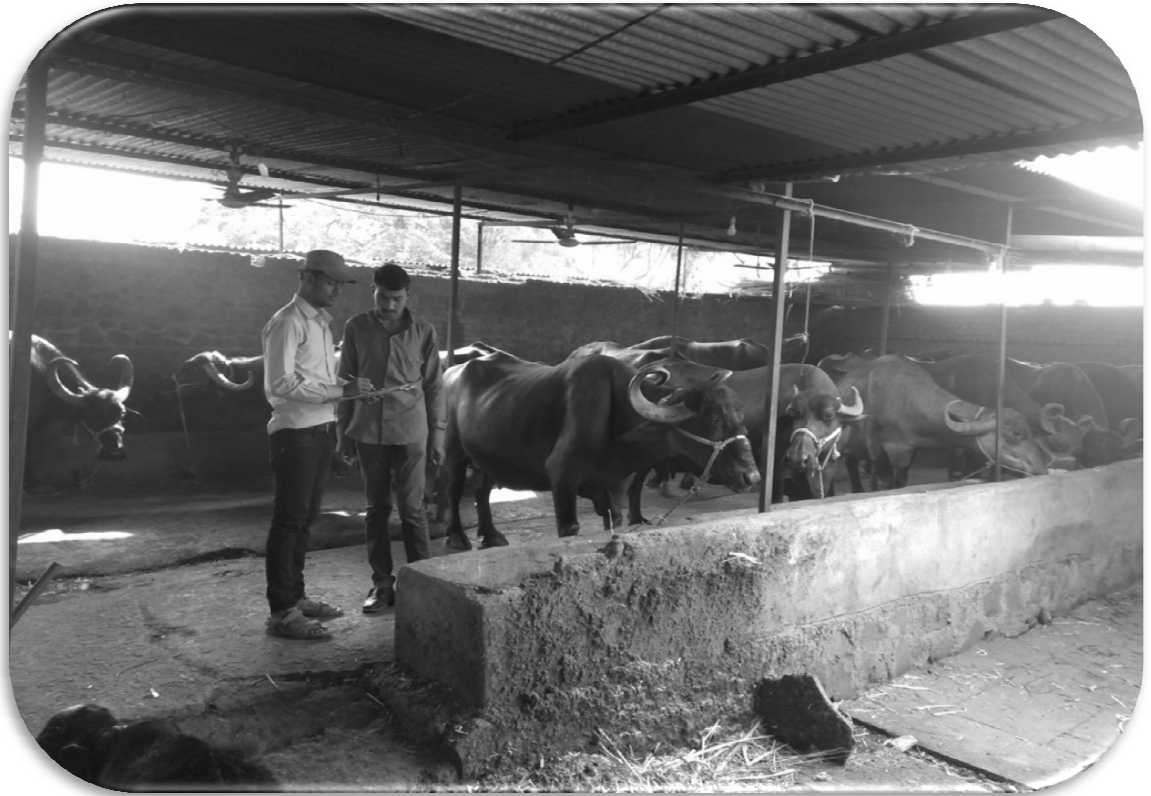


Plate 1. Interview with farmers at the time of data collection

Twenty numbers of (cultivator) farmers were randomly selected from each village. Thus, the total sample size comprised of 200 farmers.

The collection of above information of each dairy farmers, a method of 'Personal Interview' through questionnaire was followed. For this questionnaire, a standard perform of questionnaire as adopted by 'NBAGR' was prepared and taken for survey.

3.4 The investigation include following studies

3.4.1 Socio economic status of farmer

Socio economic status of farmer includes information about individual farmer in respect of their age, educational level. Number of milch animals they possess, their land holding, family size, main and subsidiary occupation etc.

3.4.1.1 Age group

Socio economic status of farmer include information about age group of individual farmer were collected. It helps in categorization of selected dairy farmer according to their age as 20-30 year, 31-40 years, 41-50 years, 51-60 years and > 60 years etc.

3.4.1.2 Educational level

Categorization of selected dairy farmer according to their educational level were collected viz illiterate, primary, middle, secondary, higher secondary, graduate, post graduate and Ph.D. etc.

3.4.1.3 Classification of dairy farmers on the basis of herd size

The dairy farmers were further categorized into four groups according to number of animal kept by them viz, Upto 2, 3 to 4, 5 to 6 and More than 6 animals.

3.4.1.4 Classification of data on the basis of breed

The data was classified on the basis of cattle and buffalo breeds viz, indigenous cattle breed namely Non Descript, Red Kandhari, Gir, Khillar, crossbreed cattle breed namely Jersey, Holstein Friesians and buffalo breed namely Marathwadi, Jaffrabadi, Murrah etc.

3.4.1.5 Classification of dairy farmer on the basis of land holding

Two hundred respondents were randomly selected from 10 villages i.e. twenty dairy farmer per village from Jintur tahsil of Parbhani district. Selected respondents were classified into the groups on the basis of farm size. It refers to actual land possessed by the respondent's family in hectares, the respondents were categorized in to four categories according to size of land holding viz, landless, marginal/small (up to 2 ha.), medium farmer (2 to 5 ha.) and large farmer (5 ha. and above).

3.4.2 Production and utilization status

The information on milch animals as regards to the species, their breeds, average lactation period and daily milk production and total milk yield, disposal of daily milk produced by way of household consumption and daily sale of fluid milk, ways of milk marketing i.e. milk cooperative societies, regular customers and private level processors, means of milk transport i.e. by walk, on bicycle, on motorcycle or by 4 wheeler.

3.4.3 Feeding status

The present picture and means to feed the dairy animals has been studied under following heads.

3.4.3.1 Grazing

The system of grazing followed by availability of grazing land in village and also availability of farmers having own grazing land has been studied and also the type of grazing area, its distance from animal stall and average time of grazing the milch animals were considered for this parameters.

3.4.3.2 Stall feeding

Most of farmers adopt stall feeding to their milking animals they were offering all types of feeds, self grown or purchased, green or dry fodder. The survey was made for collecting the information on type and quality of fodder fed to animals (i.e. whether, home grown or purchased), fed as such or chopped, whether fed alone or with concentrates, type and quality of concentrate, adopting feeding of mineral mixture and adopting new feeding practices or not.

3.4.4 Adoption of management practices

Adoption was the decision to make full use of innovation. The adoption with respect to management practices like housing, care and management, veterinary care, breeding, feeding, clean milk production and effect of occupation and literacy on adoption of dairy management practices were undertaken from the questionnaires.

3.4.5 Facilities expect for dairy activities

Facilities expect by dairy farmers for dairy activities was studied. It include easy loan facilities, availability of crossbreed animals, timely receipt of milk sale from collection centre, insurance of animals, veterinary – AI facility, ensured supply of feed and fodder, diseased diagnostic facilities at door step etc.

3.4.6 Major constraint in dairying

The constraints of an individual dairy farmer were studied. unavailability of green and dry fodder round the year, health care management, calf rearing constraint, reproductive problems, high cost of animal feed, unavailability of vet. aids, unavailability of pasture land, unavailability of proven sire / breeding bull at farmer's field all these constraints take in consideration.

3.5 Statistical Method

The data collected was be classified and tabulated as per the objective concerned and simple tabular analysis was followed for analyzing data, where the comparison was redundant only frequency and percentage was estimated (Panse and Sukhatme 1967).

*Results
and
Discussion*

CHAPTER-IV

RESULTS AND DISCUSSION

Milk production is associated with feeding status of lactating animals. No planned study has so far been conducted to evaluate the feeding status of dairy animals from Jintur tahsil of Parbhani district. In view of this and as a part of study of the feeding status of dairy animals maintained in Jintur tahsil, Parbhani district has been studied. Accordingly 10 villages from Jintur tahsil were selected as per the norms described at 3.3.

The result of this investigation were presented and discussed in this chapter under following heads.

4.1 Socio - economic status of dairy farmers

It includes the name of dairy farmers, age, level of education, number of dairy animal owned, land holding, family size and occupation details of the family.

4.1.1 Age

The farmers under study were interviewed for their age the result is presented in table 1.

Table 1: Age of dairy farmer

Sr. No.	Age group	Frequency	Percentage
1.	20-30	37	18.50
2.	31-40	62	31.00
3.	41-50	50	25.00
4.	51-60	37	18.50
5.	>60	14	7.00
	Total	200	100

From table 1 it was observed that maximum farmers were from 31 to 50 years age. This indicated that most of them young and working. Followed by 20 to 30 and 51 to 60 year age group which were engaged in grazing their animals. While above 60 years age group watch the animals in the absence of working persons. Thombre and Pawar (1993) revealed that about 47 per cent crossbred cattle owner were between 31 to 45 years of age. The present observations are similar with these findings.

4.1.2. Level of education

The data regarding the educational status of dairy farmers under study were presented in table 2.

Table 2: Education level of dairy farmer

Sr. No.	Level of education	Frequency	Percentage
1.	Illiterate	42	21.00
2.	Primary school (1 st - 4 th)	40	20.00
3.	Middle school (5 th - 7 th)	31	15.50
4.	Secondary school (8 th - 9 th)	53	26.50
5.	Higher secondary school (10 th - 12 th)	21	10.50
6.	Graduate	11	5.50
7.	PG	2	1.00
8.	Ph.D.	0	00
	Total	200	100

From table 2 it was seen that maximum 26.50 per cent of dairy farmers were having secondary school education, 21.00 per cent were illiterate, 20.00 per cent were having primary education, 15.50 per cent were having middle school education and 10.50 per cent having higher secondary school, 5.50 were having degree and 1.00 per cent having post graduation and not a single dairy farmer completed Ph.D. Shinde *et al.* (1998) reported that 46.67 per cent of the respondents were illiterate, 25 per cent respondents were educated upto primary level, 15.83 per cent were educated upto middle school and remaining 12.50 per cent respondents attained high school and higher education.

4.1.3 Animal wealth

The study on this aspect was grouped into number of animals owned by the farmer's i.e. 1-2, 3-4, 5-6, and above 6. The observations were analysed and presented in Table 3.

It was observed from table 3 that the maximum number of dairy farmers had 1-2 animals of both types buffaloes (69.05 per cent) and crossbred cows were (85.71 per cent) and indigenous cows (84.96 per cent), 3-4 buffaloes with 20.24 per cent, 5-6 with 5.95 per cent and more than 6 animals with 4.76 per cent farmers. The

corresponding figures for crossbred cows were: 14.29, 0 and 0 per cent, and for indigenous cows 9.77, 3.01, 2.26. Sonwane *et al.* (2001) reported that maximum number of dairy farmers had 1-2 animals of both types buffaloes (60 per cent) and cows were (74 per cent). Present observations are similar with these findings.

Table 3: No. of dairy animals owned by dairy farmers

Sr. No.	Animal owned	Buffaloes		Crossbreed cows		Indigenous cows	
		Frequency	Percentage	Frequency	Percentage	Frequency	percentage
1.	1-2 Animals	58	69.05	30	85.71	113	84.96
2.	3-4 Animals	17	20.24	5	14.29	13	9.77
3.	5-6 Animals	5	5.95	0	0	4	3.01
4.	>6 Animals	4	4.76	0	0	3	2.26
	Total	84	100	35	100	133	100

4.1.4 Dairy cattle and buffalo breed

The data regarding the dairy animal breed of dairy farmers under study was presented in table 4. It was revealed from table 4 that out of two hundred dairy farmers 84 dairy farmer have buffalo and in which 44 (52.38 per cent) dairy farmers have Marathwadi buffaloes followed by Jaffrabadi 22 (26.19 per cent) and Murrah 18 (21.43 per cent). Out of 200 dairy farmers 35 dairy farmers have crossbred animals in which 30 (85.71 per cent) dairy farmers have Jersey breed and 5 (18.75 per cent) dairy farmer have Holstein Friesian breed. In the indigenous breed out of 200 farmer 133 farmer have indigenous breed in which 69 (51.88 per cent) dairy farmer have Non descript cows, 57 (42.86 per cent) dairy farmer have Red Kandhari breed, 5 (3.76 per cent) dairy farmer have Gir breed, and remaining 2 (1.50 per cent) dairy farmers have Khillar breed.

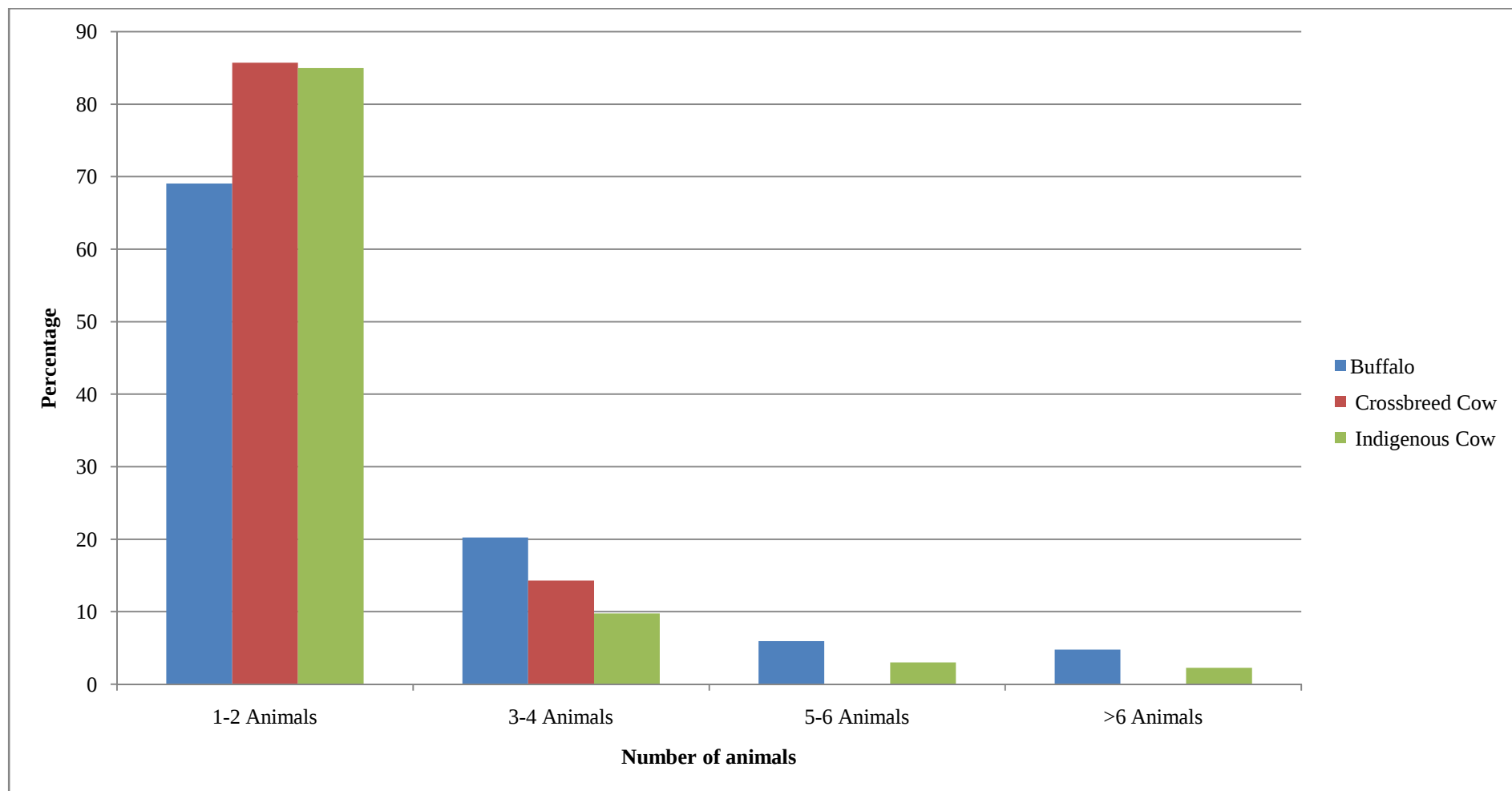


Fig. 2: Per cent share of dairy farmer based on number of dairy animals

Table 4: Category of dairy farmer based on cattle and buffalo breed

Name of buffalo breed	Frequency	Name of cattle breed			
		Name of crossbreed cow	Frequency	Name of indigenous breed	Frequency
Marathwadi	44 (52.38)	Jersey	30 (85.71)	Non Descript	69 (51.88)
Jaffrabadi	22 (26.19)	Holstein Friesians	5 (18.75)	Red Kandhari	57 (42.86)
Murrah	18 (21.43)	-	-	Gir	5 (3.76)
-	-	-	-	Khillar	2 (1.50)
Total	84	-	35	-	133

4.1.5 Land holding status of farmers

Land holding is one of the major factors in dairy management. According to their land holding, dairy farmers were categorized into landless, marginal / small, medium and large. The results of the study were presented in table 5.

Table 5: Land holding status of dairy farmers

Sr. No.	Land Holding	Frequency	Percentage
1.	Landless	19	9.50
2.	Marginal / Small (up to 2 ha.)	120	60.00
3.	Medium (2 – 5 ha.)	49	24.50
4.	Large (> 5 ha.)	12	6.00
	Total	200	100

From table 5 it was observed that maximum 60.00 per cent of the dairy farmers were marginal /small farmers having less than or equal to 2 ha. land holding. Among them 24.50 per cent of the dairy farmers were medium farmers having more than 2ha. and less than / equal to 5 ha. land holding. Then 9.50 per cent of the dairy farmers were landless and 6.00 per cent of the animal owners were large having more than 5 ha. land holding. Walthare *et al.* (1992) reported that 40 per cent dairy farmers

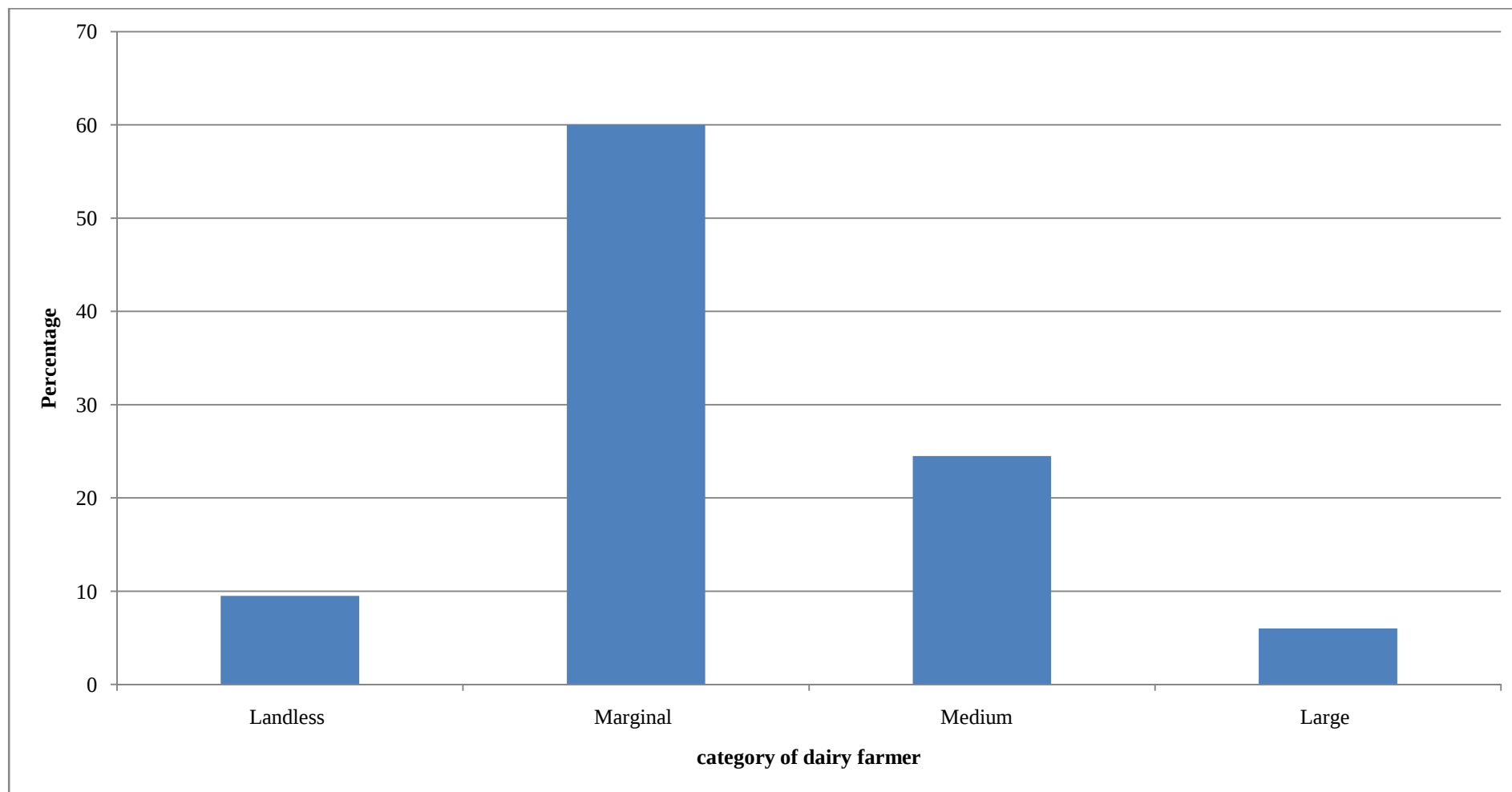


Fig. 3: Per cent share of dairy farmer based on land holding

had below 2 ha land holding, 43 per cent had 2 to 5 ha and 17 per cent dairy farmers had above 5 ha land holding.

4.1.6 Family size

Family size an important factor influencing labour availability for crop and livestock production. In big families, the members have to work hard for earning more money incurring the family expenditure (Shinde *et al.*, 1998). Considering these, the data was collected, compiled and presented in table 6.

Table 6: Family status of dairy farmers.

Sr. No.	Type of family	Total no. of members	Male	Female	Children
1.	Single Member	4 (0.32)	4 (1.32)		
2.	Nuclear Family	683 (55.08)	176 (58.09)	148 (57.81)	359 (52.72)
3.	Joint Family	553 (44.60)	123 (40.59)	108 (42.19)	322 (47.28)
4.	Total	1240 (100)	303 (24.44)	256 (20.64)	681 (54.92)

From table 6 it was observed that in a family size of 6.2 members, proportion of male was nearly 25 per cent while that of female and children was about 20 and 55 per cent, respectively. Singh and Chatterji (1989) reported a family size in two villages as 6.4 and 5.9 respectively. The presented study also revealed the ratio of nuclear to joint family of about 55: 44.

4.1.7 Occupation

In village areas, where main stay of life was agriculture. Dairying was only suited as economic activity. Thus the dairy has become a subsidiary occupation of rural families (Mote *et al.* 1997). Data regarding the occupation of animal's owners was represented in table 7. From Table 7, it was revealed that maximum number 79.50 per cent of cattle owners were engaged in agriculture.

Table 7: Occupation status of dairy farmers

Sr. No.	Occupation	Frequency	Percentage
1.	Dairy	8	4.00
2.	Dairy+Service	5	2.50
3.	Dairy+Business	8	4.00
4.	Dairy+Agriculture	159	79.50
5.	Dairy+Poultry	0	00
6.	Dairy+Agriculture+Service	11	5.50
7.	Dairy+Agriculture+Business	9	4.50
8.	Dairy+Poultry+Agriculture	0	00
	Total	200	100

Whereas 5.50 per cent cattle owners were engaged in agriculture and service, 4.50 per cent engaged in agriculture and business, only 4.00 per cent milk producer totally depends on dairy business and remaining 4.00 per cent 2.50 per cent cattle owners were engaged in dairy + business and dairy + service respectively. Mote *et al.* (1997) also find nearly similar results.

4.2 Production and utilization status

Production and utilization status include daily and total milk yield, disposal of daily milk, way of household consumption and daily sale of fluid milk, ways of milk marketing, means of milk transport.

4.2.1 Milk production and utilization status:

The production performance of the dairy animals has been compiled and results were presented in table 8. Utilization status of milk by the rural families of the dairy farmers has also been studied presented in Table 8. The results of table 8 show that the average daily milk yield of buffalo, crossbreed and indigenous cow was 6.06 kg, 8.93 kg and 3.32 kg respectively. Generally lactation period of cows is 270 days and for buffaloes 290 days. Corresponding figures for mean total daily milk production / family was 13.96 kg, 16.07 kg and 6.74 kg respectively. Most of the farmers do keep the milk for home consumption. The amount of home consumed milk was 1.69 kg of buffalo milk and 1.60 kg of crossbred milk and 1.07 kg of cow milk. Overall table shows that buffalo have higher daily milk production, total milk

production, milk consumption and sale of milk than indigenous cow but crossbreed animals have higher milk production and sale of milk than indigenous cows and buffaloes. Singh *et al.* (1981) reported that on an average 23.03 per cent of the milk produced in Punjab was sold, 44.99 per cent consumed at home and remaining 31.98 per cent was converted into such product as butter and ghee. Dhiman *et al.* (1990) recorded the same trend of utilization of buffalo milk for the preparation of indigenous milk product chiefly the ghee. Regarding sale of milk about 12.40 kg of buffalo milk, 15.17 kg of crossbreed milk and 5.95 kg of indigenous cow milk was sold by the farmers in the market

Table 8: Milk production and utilization status of dairy animals

S.N.	Particulars	Buffalo	Cow	
			Crossbreed	Indigenous
1.	Daily milk yield / animal (kg)	6.06	8.93	3.32
2.	Total milk production/family/day (kg)	13.96	16.07	6.74
3.	Quantity of milk consumed (home) /day (kg)	1.69	1.60	1.07
4.	Quantity of milk sold/day (kg)	12.40	15.17	5.95

Price of milk was varied from species of animals and ways of milk marketing. Buffalo milk got high price in market than indigenous and crossbreed cows because of high fat and protein content in milk than others. In the milk cooperative society price of milk was depend on fat content in milk. The price of buffalo milk at milk co-operative society was Rs. 45/- per lit. and crossbreed and indigenous cow milk was Rs. 35/- per lit. But the price of milk was higher when they sale milk to regular customers and consumers i.e. Rs. 60/-, Rs. 50/- and Rs. 50/- per lit of buffalo, crossbreed and indigenous cow milk respectively.

4.2.2 Milk marketing

Dairy farmers use different market to sale the milk i.e. milk co-operative societies, consumers, regular customers and private level processor the result was narrated below. Data regarding the disposal of milk was represented in table 9.

From Table 9, it was observed that maximum number of dairy farmers deliver the milk to regular customers (39.00 per cent) whereas 31.00 per cent and 18.50 per

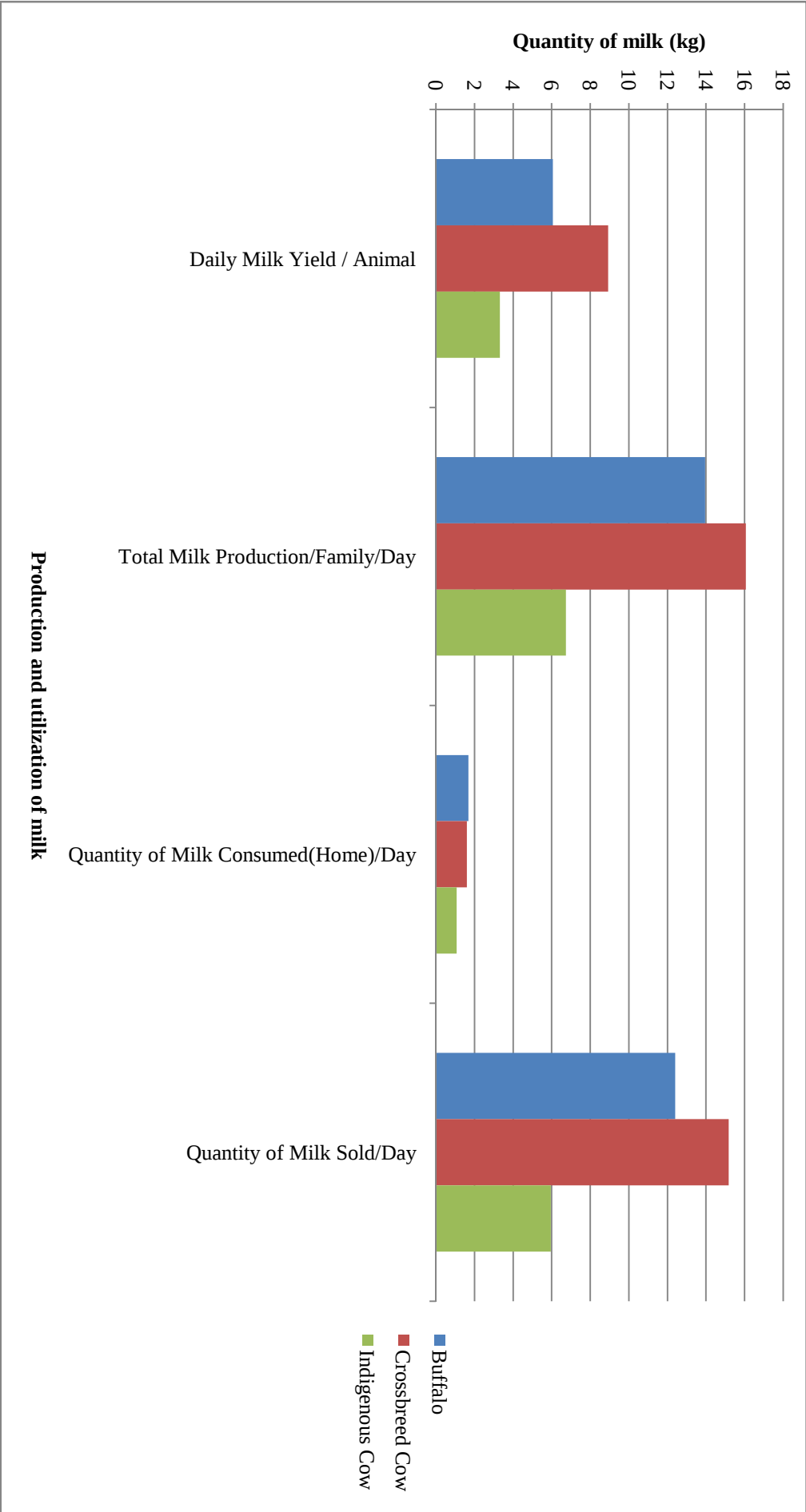


Fig. 4: Production and utilization status of milk

cent and 11.50 per cent dairy farmers sale the milk to the consumer, private level processor and milk cooperative society respectively.

Table 9: Ways of milk marketing

Sr. No.	Ways of milk marketing	Frequency	Percentage
1.	Milk cooperative society	23	11.50
2.	Regular customer	78	39.00
3.	consumer	62	31.00
4.	private level processor	37	18.50
	Total	200	100

During the personal discussion with the farmers, they told that by selling the milk to regular customers, they not only get a bulk amount of money at the end of month but also maintain social relation with their customers.

4.2.3 Milk transportation

The milk transportation was somewhat difficult in village areas. The dairy farmers were required to transport milk by different means i. e. by walk, by cycle, on motor cycle and through a 4 wheeler. The use of different means of milk transport was studies and results were given in table 10.

Table 10: Means of milk transport

Sr. No.	Means of milk transport	Frequency	Percentage
1.	By walk	37	18.50
2.	On cycle	23	11.50
3.	On motor cycle	106	53.00
4.	Through vehicle	34	17.00
	Total	200	100

From table 10 it was observed that maximum number of dairy farmers i.e. 53.00 per cent carry the milk by motor cycle from milking point to milk market, 18.50 per cent farmers carry milk by walk, vehicles were used by 17.00 per cent of farmers and very few cycles was used by about 11.50 per cent dairy farmers as means of milk transport.

4.3 Feeding status of dairy animals

Feed and fodder was important for milk production. Apart from the genetic capabilities of the animals, the milk production in dairy animals goes in response with

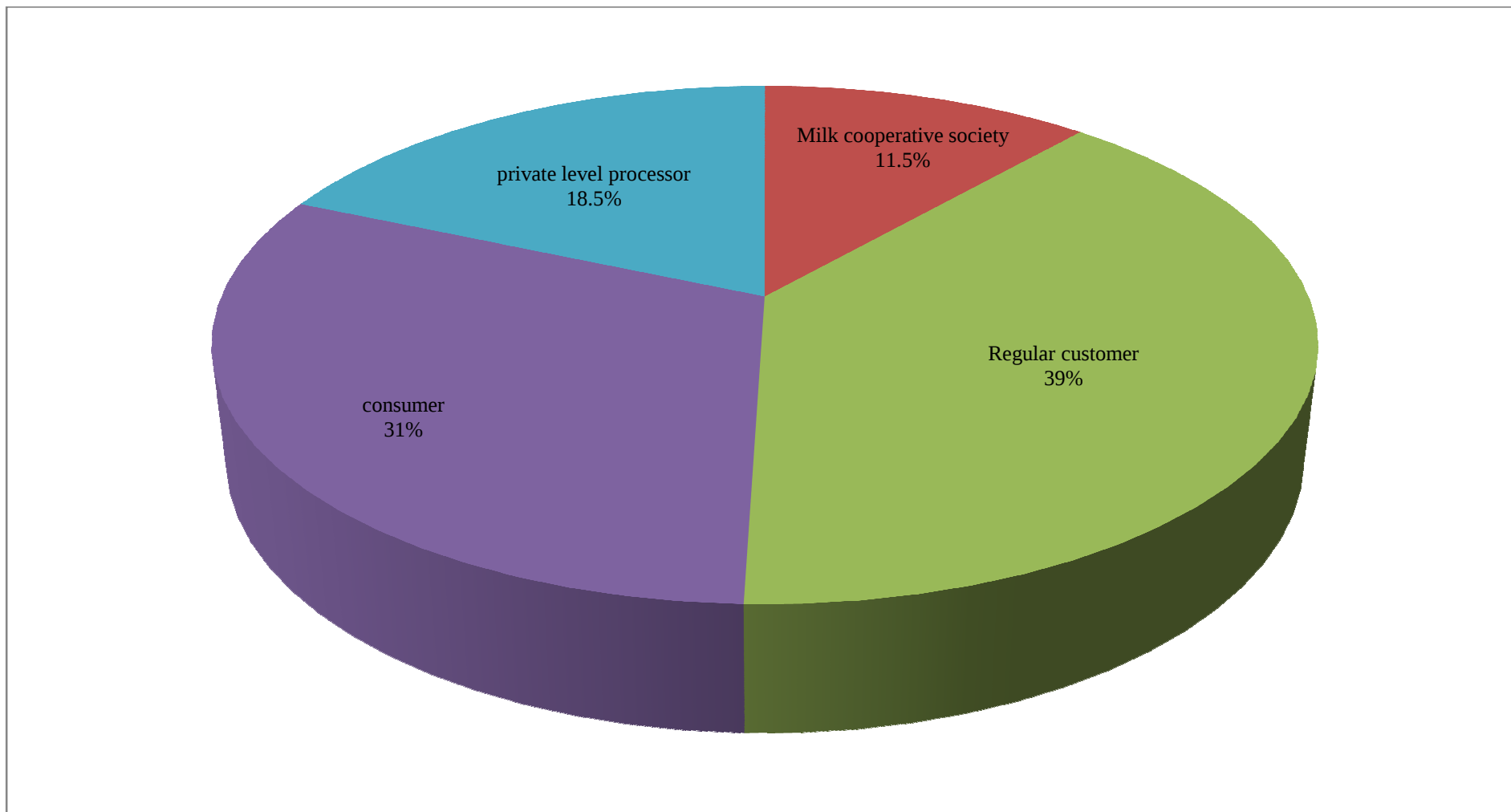


Fig. 5: Ways of milk marketing

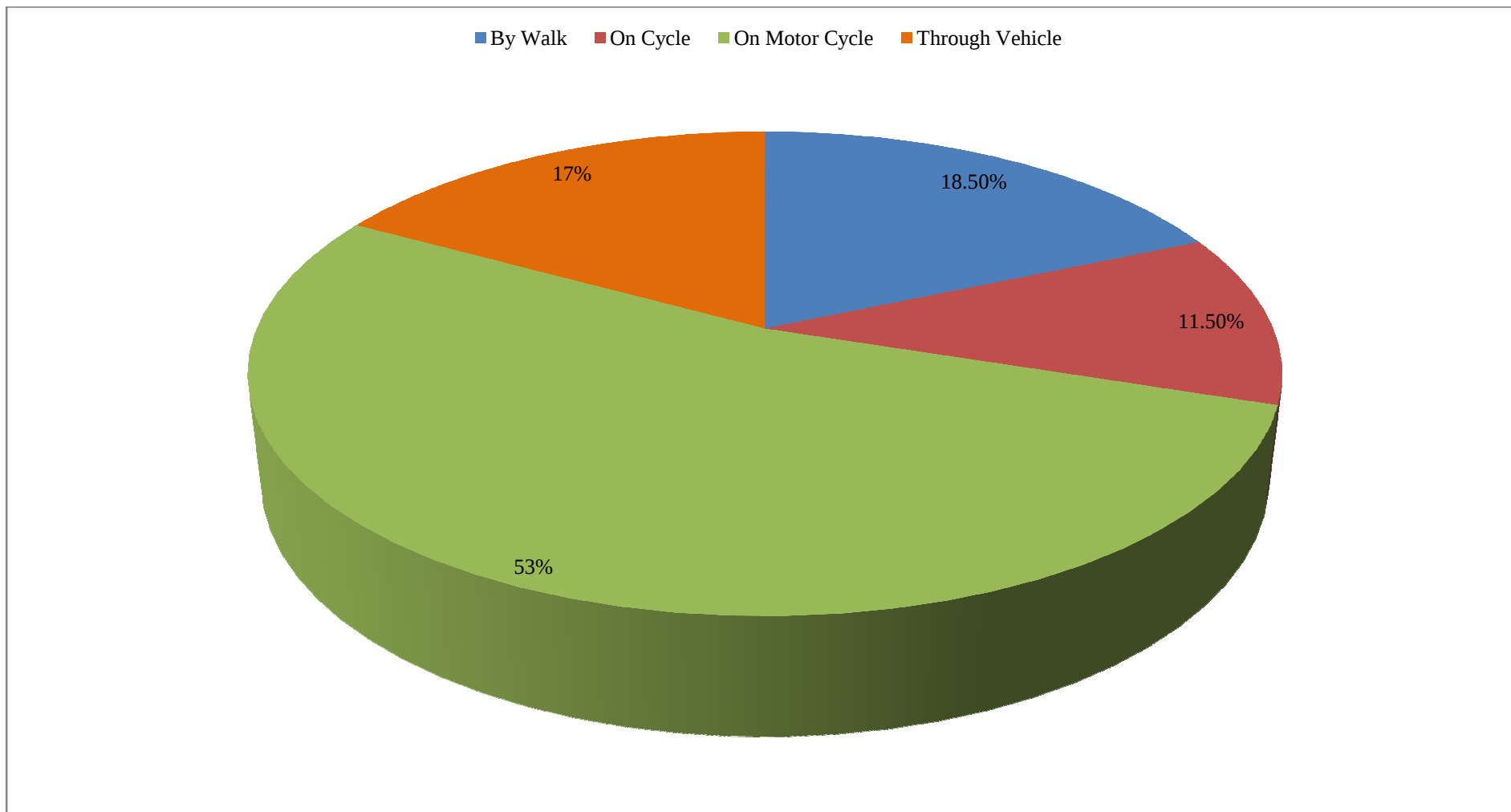


Fig. 6: Means of milk transport

quantity and quality of the feeds and fodder allowed to them. So that it was necessary to evaluate the present feeding status of dairy animals adopted by the dairy farmer on their own farm.

The present investigation was therefore under taken to assess the feeding status of dairy animals in term of grazing, green roughages, dry roughages, concentrates and mineral mixture supplied. Data regarding the feeding status of dairy animals was presented hereunder

4.3.1 Grazing

Feeding system was based on grazing of animals on native pasture. Ruminants receive part or most of the feed requirement through grazing on natural grassland. Large ruminant receive about 50-60 per cent of dry matter from crop residues. Data regarding the grazing of dairy animals was presented below

4.3.1.1 Grazing distance

Grazing distance was distance between animal shed and grazing area. Bunds of field and native pasture were common grazing areas utilized in rural area. The grazing distance for dairy animal varied: the animals had to walk for 0.5 to 3 km to reach the grazing land. There was neither reserved grazing land nor common grass lands. The animals were brought in the field and allowed to graze the field boundries and low lying fields of conventional grasses.

4.3.1.2 Type of grazing

Generally native pasture and field bunds were utilized as grazing area. Dairy farmers generally use field bunds as grazing area. Nearly 85 per cent of owners took their animals for grazing on bunds/ boundries, only 15 per cent of the farmers took the animal on the common pastures and road sides. Saha *et al.* (1991) reported that roadside and field grasses were utilized and available in their study area.

4.3.1.3. Time of grazing

Generally all dairy farmers take their animals i.e. cows and buffalo for grazing at 10am – 11am in morning and return during evening at 5pm – 6pm. Animals were engaged in grazing for about 7-8 hrs. Belli and Manjula (1997) also find similar results they reported that nearly 51 per cent gavalis spent 5 to 8 hours daily in grazing their livestock.

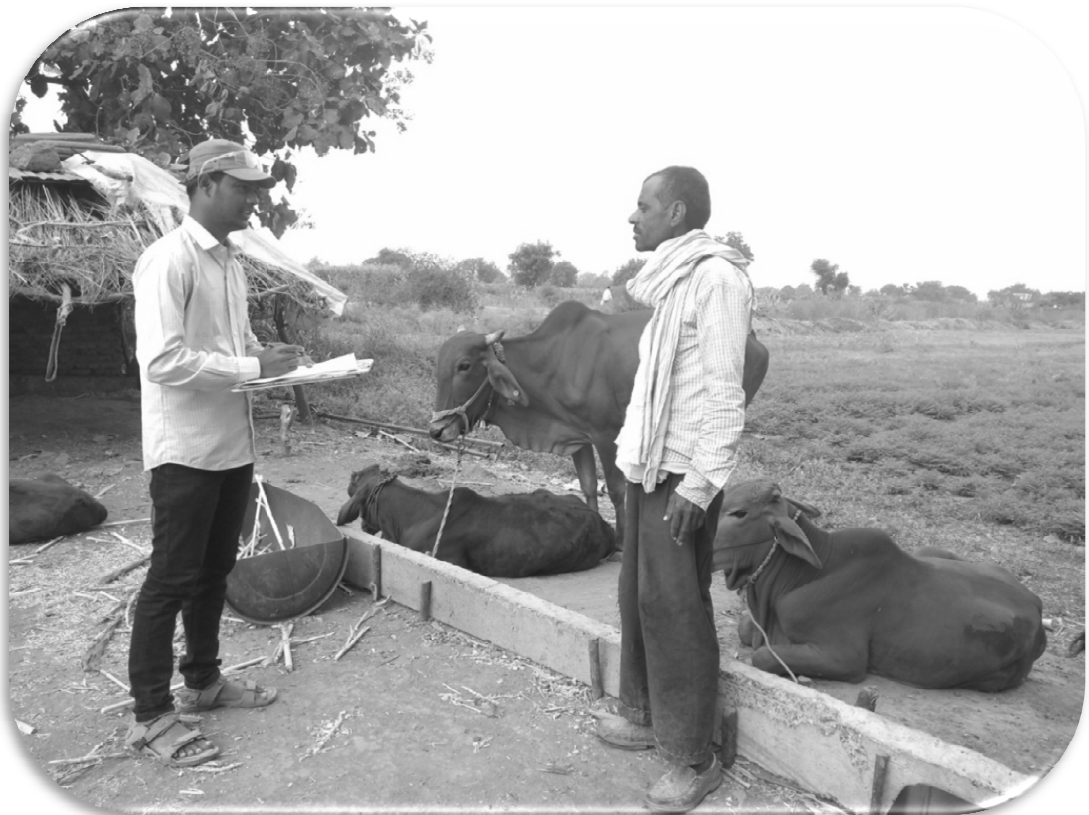


Plate 2. Interview with farmers at the time of data collection

4.3.2 Stall feeding

During, the investigation, it was seen that dairy farmers feed their animals either dry fodder (purchased or homegrown) green fodder as per the availability. Except landless, all the dairy farmers did offer their animals roughages available either in the form of by product such as jowar and bajra whereas the landless animals owners purchase such fodder in the form of fodder maize, fodder jowar and sometimes green grass from the sugarcane fields were the major fodders and cotton seed cake, arhar / soybean guli were the concentrate available for feeding.

4.3.2.1 Feeding green roughages

The data on the quantity of green roughage fed to milch cow and buffalo by landless, marginal / small, medium and large farmers were compiled analysed for the interpretation of result. The results on these aspects was present in table 11.

Table 11: Mean green roughages offered to dairy animals by various group of dairy farmers.

S.N.	Types of Farmers	Mean daily green roughages offered (kg/animal)		
		Buffalo	crossbred	Indigenous
1.	Landless	10.85	12.80	7.07
2.	Marginal/small	11.17	13.17	7.82
3.	Medium	13.04	15.20	10.00
4.	Large	14.50	16.66	12.25

Above data shows that one milch buffalo was offered 10.85, 11.17, 13.04, 14.50 kg / day green roughages by landless, Marginal / small, medium and large farmer respectively. From the figures, it could be seen that buffalo of landless farmer got least amount of green roughages in comparison to others. Buffalo of large farmer got highest amount of green roughages in comparison to others.

The quantity of green roughages offered to crossbred cow by landless, marginal / small, medium and large farmers was 12.80, 13.17, 15.20 and 16.66 kg/head/day respectively. From the figures, it could be seen that crossbred cow of landless farmer got least amount of green roughages in comparison to others.

The mean green roughage offered to indigenous milch cows was comparatively less than that offered for buffalo and crossbred cow by each type of farmers. The quantity of green roughages offered to indigenous cows by landless,

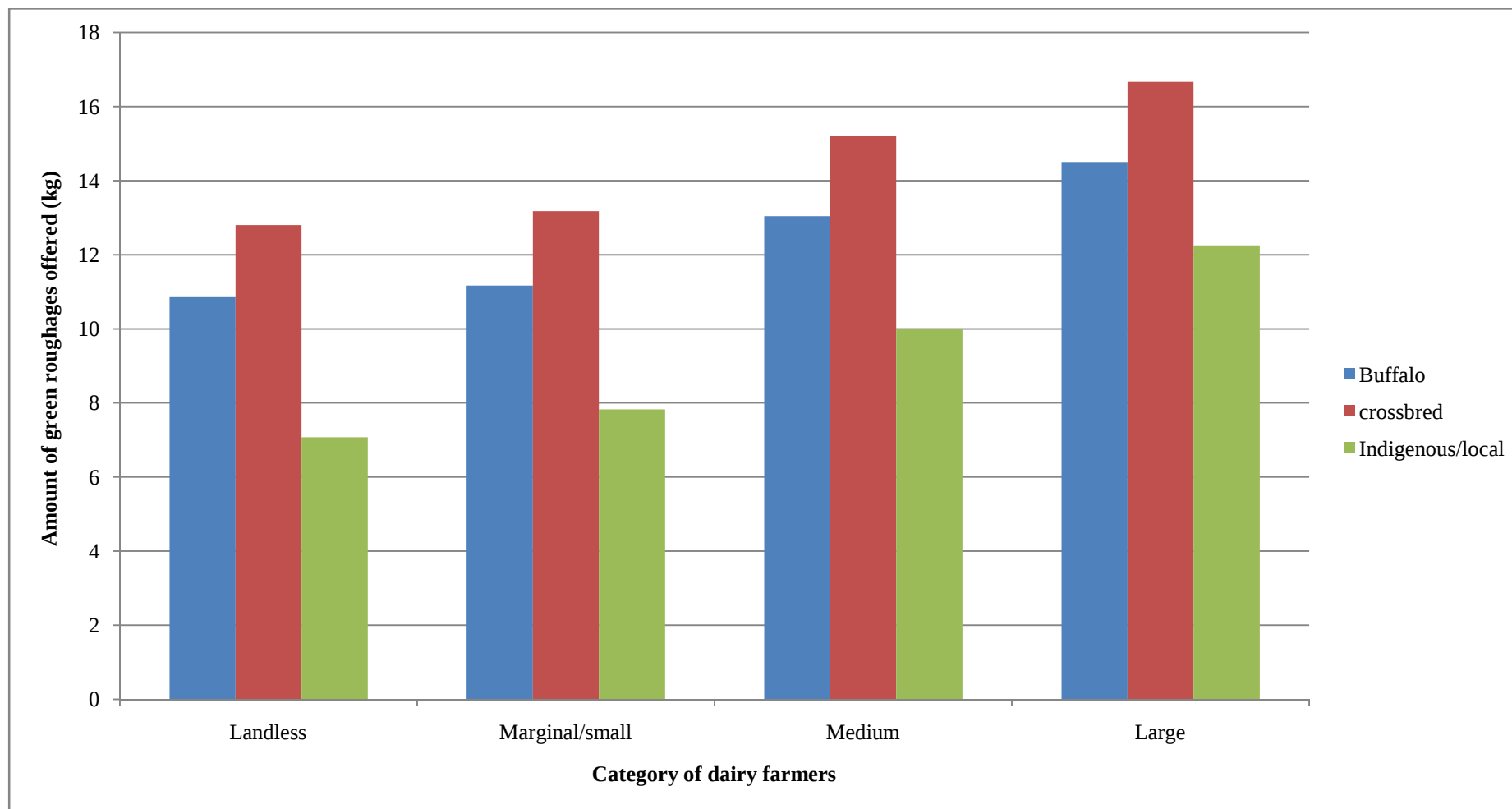


Fig. 7: Mean green roughages offered to dairy animals by various group of dairy farmers

marginal / small, medium and large farmers was 7.07, 7.82, 10.00 and 12.25 kg /head/day respectively. The statistical analysis of data for this parameter revealed that large farmers fed significantly higher amount of green roughages than others.

The overall picture of table 11 reveal that among the three types of milch animals, the indigenous cows were most neglected by all the dairy farmers having offered the green roughage in the range of 7.07 to merely 12.25 kg daily. One buffalo could get roughage in the range of 10.85 to 14.50 kg/day in comparison with crossbred cow receiving minimum 12.80 to maximum 16.66 kg/day.

4.3.2.2 Feeding dry roughages

The data on the quantity of dry roughage fed to milch cow and buffalo by landless, marginal / small, medium and large farmers were compiled analysed for the interpretation of result. The results on these aspects were presented in table 12.

Table 12: Mean dry roughages offered to dairy animals by various group of dairy farmers.

S.N.	Types of Farmers	Mean daily dry roughages offered (kg / animal)		
		Buffalo	Crossbred	Indigenous/local
1.	Landless	8.71	10.20	4.92
2.	Marginal/small	9.04	9.17	5.47
3.	Medium	10.39	12.90	7.71
4.	Large	11.87	13.66	9.50

Table 12 shows that, one milch buffalo was offered daily 8.71, 9.04, 10.39, 11.87 kg roughages by landless, Marginal / small, medium and large farmer respectively. From the figures, it could be seen that buffalo of landless farmer got least amount of dry roughages in comparison to others. However lall *et al.* (1998) recorded that the average green fodder, dry fodder and concentrate fed round the year was 22.24, 6.25 and 1.09 kg/head/day.

The quantity of dry roughages offered to crossbred cows by landless, marginal / small, medium and large farmer was 10.20, 9.17, 12.90 and 13.66 kg/head/day respectively. There was significant difference between the quantity of dry roughages offered daily to crossbred cows by large and medium farmers.

The quantity of dry roughages offered to indigenous cows by landless, marginal / small, medium and large farmers was 4.92, 5.57, 7.71 and 9.50

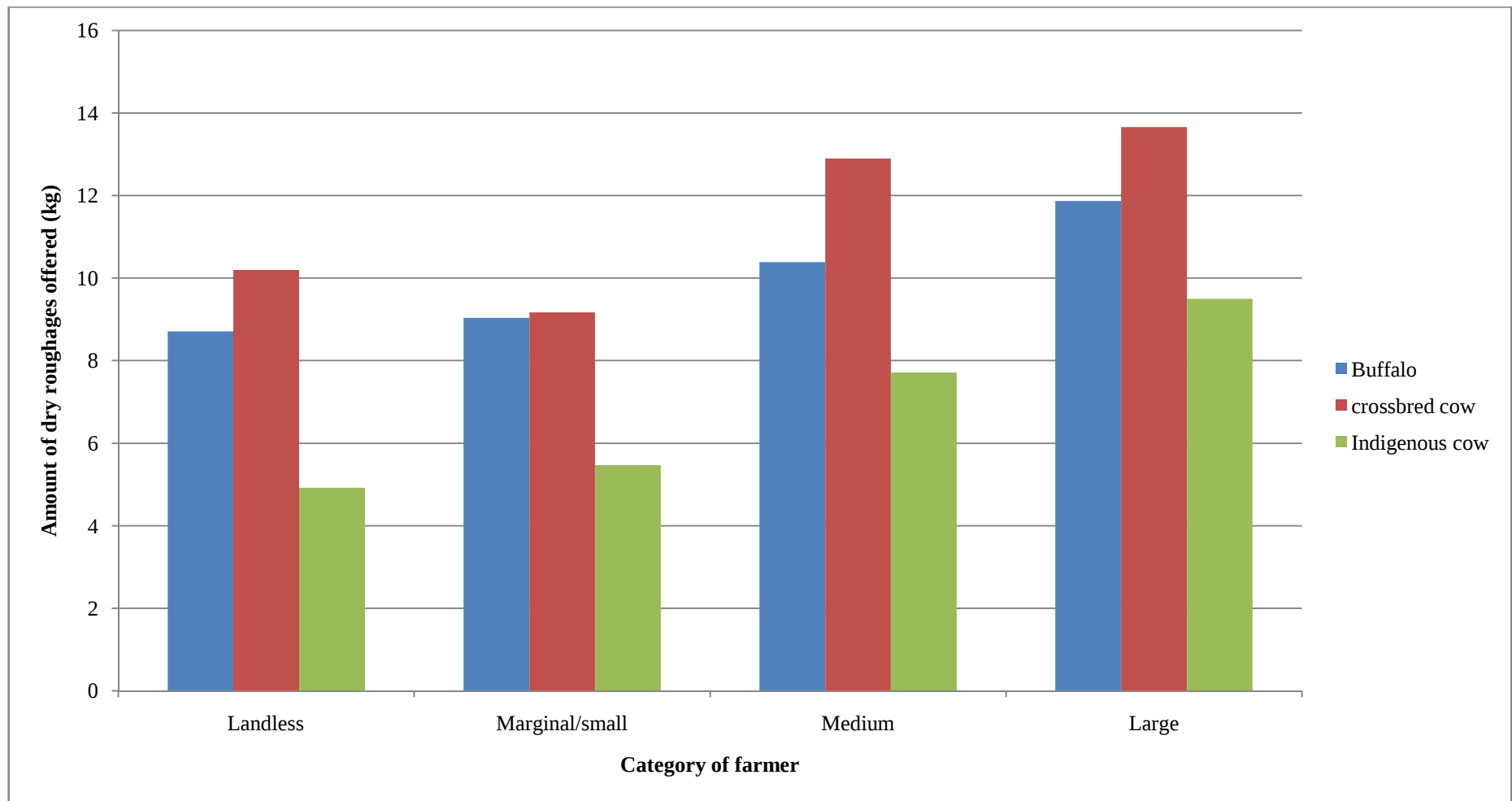


Fig. 8: Mean dry roughages offered to dairy animals by various group of dairy farmers

kg/head/day respectively. The mean dry roughage offered to indigenous milch cows was comparatively less than that offered for buffalo and crossbred cow by each type of farmers. The statistical analysis of data for this parameter revealed that large farmers fed significantly higher amount of dry roughages than others.

From table 12 reveal that among the three types of dairy animals, the indigenous cows were most neglected by all the dairy farmers having offered the dry roughage in the range of 4.92 to merely 9.50 kg/head/day. Further landless farmers could offer nearly half of the roughage offered by the large farmer. One buffalo could get dry roughage in the range of 8.71 to 11.87 kg /day in comparison with crossbred cow receiving minimum 10.20 to maximum 13.66 kg / day. Nearly similar finding were also reported by Nayak and Mitra (1983) as crossbred cows were fed from 9.92 to 11.23 kg dry fodder/day in different seasons.

4.3.2.3 Feeding concentrate

Besides roughages feeding, dairy farmers use to feed their milch animals with concentrates. The data collected for this parameter and presented in table 13

A Landless farmer could offer 1.50 kg of concentrate to his buffalo, while marginal/small 1.38, medium 2.04 and large 2.56 kg/head/day. The statistical analysis revealed that large farmers offered significantly higher concentrate than rest of the farmers. Unexpectedly marginal farmers fed least concentrate to their buffaloes than landless farmer. During the survey farmer has been informed that no quantity of concentrate fed was in proportion to the quantity of milk obtained daily. singh *et al.* (1998) reported that landless, marginal, small medium and large farmers daily feed 2.86, 4.08, 4.71, 5.06 and 5.66 kg concentrate respectively. The present observations are very low as compared with these findings.

Table 13: Mean concentrate offered to dairy animals by various group of dairy farmers.

S. N.	Types of Farmers	Mean daily concentrate offered (kg/animal)		
		Buffalo	crossbred	Indigenous/local
1.	Landless	1.50	2.10	0.84
2.	Marginal/small	1.38	2.50	1.01
3.	Medium	2.04	3.05	1.67
4.	Large	2.56	3.33	2.06

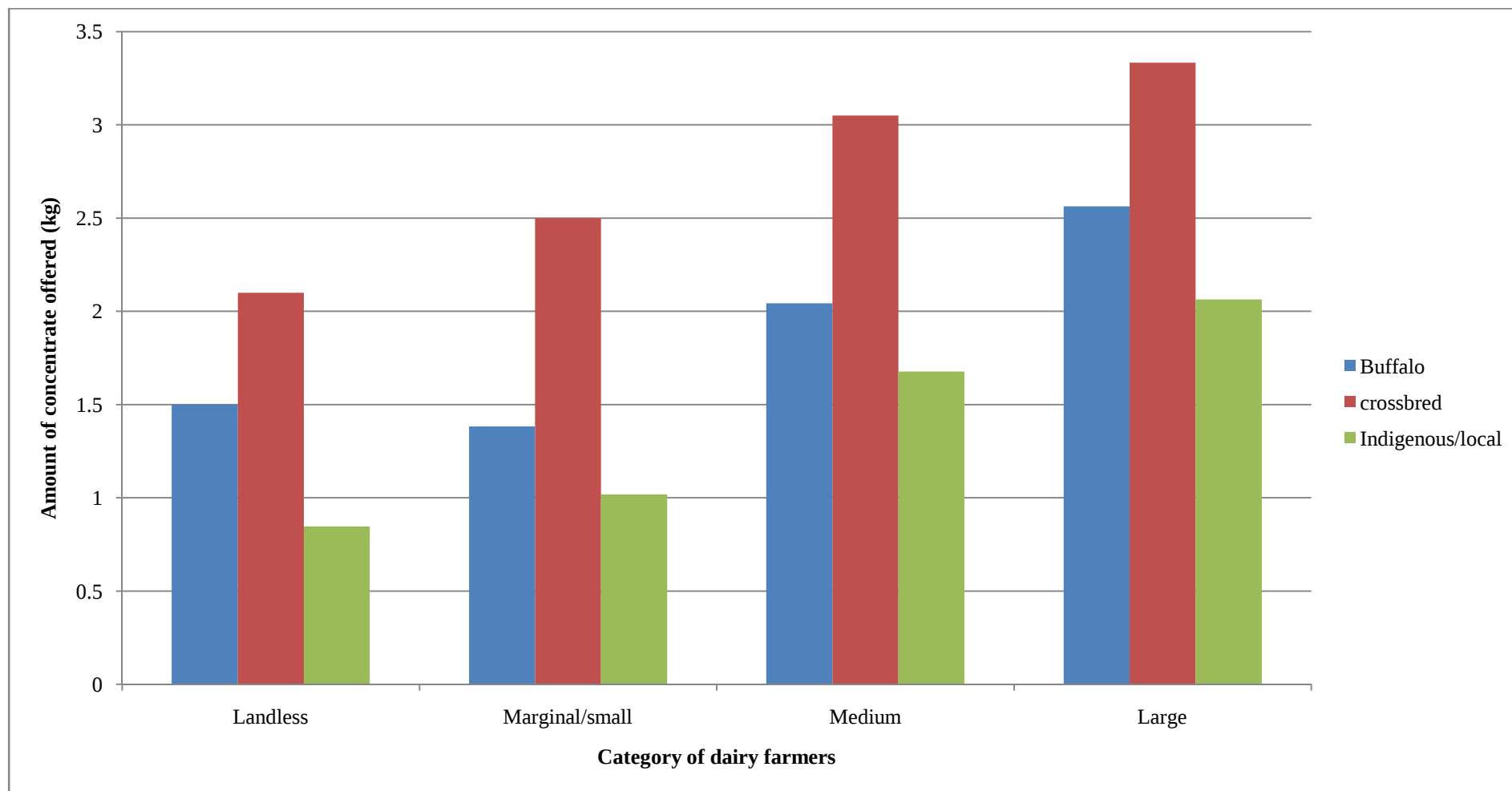


Fig. 9: Mean concentrate offered to dairy animals by various group of dairy farmers

The crossbred animals could get the concentrates from 2.10 to 3.33 kg/head/day irrespective of their production performance. The crossbreds also were preferred and fed more concentrate than buffaloes by every farmer. This may conclude that farmers give little more importance in managing cross bred cows. Chopra and Kurar (1983) reported that the intake of concentrate mixture ranged from 1.80 to 2.40 kg/head/day in crossbred which was lower than present result. Nevertheless indigenous cows due to their low milk yield performances have been neglected. Concentrate offered to indigenous cow varied from 0.84 to 2.06 kg/head/day. Table 13 reveals that large farmers did offer highest amount of concentrates to all categories of milch animals Raut and Amble (1969) reported that buffalo was fed with 5.75, 4.74, 2.34 kg/head/day green, dry fodder and concentrate respectively.

4.3.2.4 Feeding preserved roughages

In the 200 dairy farmers, not a single dairy farmer was aware about the method of preservation of roughages either into silage or hay. In the survey it was seen that the major problem in preservation of such roughages were lack of sufficient surplus green fodder and method of demonstration of preparation of either silage or hay.

4.4 Adoption of management practices

Different management practices were adopted for increasing the milk production by the dairy farmers such as adopting recommended feeding practices, enrich low quality fodder, supplements, use of stimulants for increasing milk production and veterinary aids etc. the present study was conducted to know the extent of adoption of these management practices by dairy farmers.

4.4.1 The dairy farmers in the survey area were not adopting any recommended feeding practices by taking into consideration the milk yield of animals, its body weight and proper use of available feeds for economic returns.

4.4.2 Urea feeding was also unknown to animal owners however 112 out of 200 dairy farmers use of jaggary to their animals but just after the calving and not during the lactation period.

4.4.3 In survey area not a single dairy farmers fed mineral and vitamin in proper proportion to their animals. Mineral imbalance was common occurrence in livestock throughout the continent affecting in a number of ways (Garge *et al.*

1999). However common salt was the only mineral used largely in the survey area. It was dissolved in water and sprayed on dry fodder and fed to dairy animals. This method of feeding mineral was also not done regularly and as per requirements. From the data, it was shows that 60 per cent of farmers fed common salt to their animals.

4.4.4 Regarding the use of a stimulant for increasing the milk production, it was informed that no dairy farmer use any such stimulant as hormonal preparation to increase the milk production of their animals.

4.4.5 Dairy farmers store the dry fodder either in open air or under shed. Quantity of stored fodder largely depends on their land holding. From the data, it was seen that on an average, a holding. Farmer's stores 850 bundles (about 2550 kg) dry fodder. The period of storage depends on the number of animals owned by each farmer. The farmer stores such fodder till next season. Maximum farmer (88 per cent) stores the dry fodder in open air in their fields while few owners store it under the shed near the cattle shed.

4.4.6 Provision of health care to the dairy animals in the survey area was very less and in only 2 out of 10 villages the veterinary dispensary units were available. Irrespect of the distance the farmer in difficult has to take his animal to the nearest veterinary units for treatment. The A.I. facilities were not available either of units.

4.5 Facility expect for dairy activity

Two hundred farmers were interviewed and study their expectation about dairy activity as easy availability of loan for dairy development, supply of crossbred animals and timely receipt of milk sale from collection centre, insurance of the animals. They were also asked for AI facilities, ensured supply of feed and fodder and disease diagnostic facilities at the door step etc. Result of this study shows that maximum number of dairy farmers i.e. 162 (81.00 per cent) dairy farmers expect ensured supply of feed and fodder because of unavailability of green and dry fodder around the year. Thereafter 159 (79.50 per cent) dairy farmers expect easy loan facilities because of their economic backwardness, 156 (78.00 per cent) responded to timely receipt of milk sale whereas 141 (70.50 per cent) expected availability of crossbreed animals for higher milk production, 121 (60.50 per cent) dairy farmer

expect disease diagnostic facilities at door step. Then 100 (50.00 per cent) dairy farmer expect veterinary – AI facility for animal health care and management, and remaining 71 (35.50 per cent) dairy farmer expect insurance of animals to avoid mortality loss.

Table 14: Facility expect for dairy activity by dairy farmer

Sr. No.	Facility expect for Dairy activity	Landless	Marginal	Medium	Large	Total
1	Easy loan facilities	18 (94.73)	101 (84.16)	37 (75.51)	3 (25)	159 (79.50)
2	Availability of crossbreed animal	9 (47.36)	89 (74.16)	37 (75.51)	6 (50)	141 (70.50)
3	Timely receipt of milk sale	19 (100)	97 (80.83)	33 (67.34)	7 (58.33)	156 (78)
4	Insurance of animal	9 (47.36)	40 (33.33)	15 (30.61)	7 (58.33)	71 (35.50)
5	Veterinary facilities	6 (31.57)	46 (38.33)	42 (85.71)	6 (50)	100 (50)
6	Ensured supply of feed and fodder	19 (100)	104 (86.66)	32 (65.30)	7 (58.33)	162 (81)
7	Disease diagnostic facilities at door step	19 (100)	65 (54.16)	30 (61.22)	7 (58.33)	121 (60.50)

(Figures in parenthesis shows percentage of respective farmers)

4.6 Care / facilities for crossbred cow

During the investigation, it was seen that out of two hundred dairy farmers 35 farmers have crossbreed animals. Crossbred cows were preferred by dairy farmer and this has been also seen that they offered comparatively more roughages and concentrates to crossbred cows than either milch buffaloes or indigenous cow. Some farmer provides extra facilities like washing and grooming and keeping hygienic condition of cattle shed.

4.7 Constraints in dairying

During the investigation, the data of constraints in dairying by each and every dairy farmer recorded. i.e. unavailability of green and dry fodder round the year, health care management, calf rearing problem, reproductive problems, high cost of animals feed, unavailability of veterinary aid at farmers door step, unavailability of pasture land, unavailability of proven sire / breeding bull at farmers field etc the data was presented in table 15.

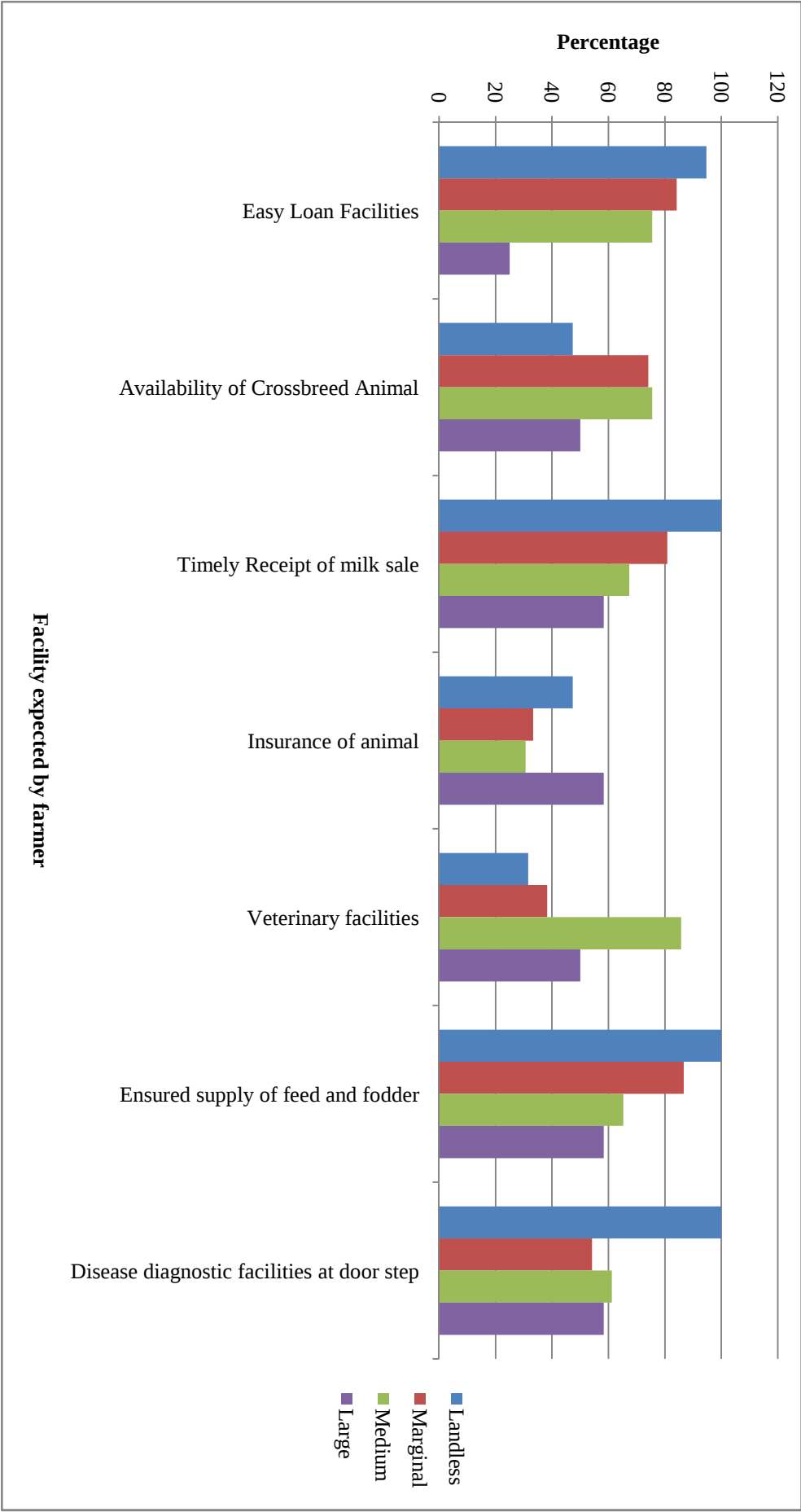


Fig. 10: Facilities expected for dairy activities by dairy farmers

Table 15: Constraints in dairying by various groups of dairy farmers

Sr. No.	Constraints	Landless	Marginal	Medium	Large	Total
1	Inadequate availability of green and dry fodder	19 (100)	92 (76.66)	28 (57.14)	4 (33.33)	143 (71.50)
2	Health care management	17 (89.47)	60 (50)	24 (48.97)	3 (25)	104 (52)
3	Calf rearing	15 (78.94)	44 (36.66)	23 (46.93)	2 (16.66)	84 (42)
4	Reproductive problem	14 (73.68)	62 (51.66)	12 (24.48)	4 (33.33)	92 (46)
5	High cost of animal feed	19 (100)	98 (81.66)	24 (48.97)	4 (33.33)	145 (72.50)
6	Unavailability of veterinary aids	19 (100)	65 (54.16)	30 (61.22)	6 (50)	120 (60)
7	Unavailability of pasture land	16 (84.21)	45 (37.50)	16 (32.65)	3 (25)	80 (40)
8	Unavailability of proven sire	17 (89.47)	58 (48.33)	23 (46.93)	2 (16.66)	100 (50)

(Figures in parenthesis shows percentage of respective farmers)

In case of constraints, about 72.50 per cent of the farmers have problem in high cost of animals feed. The problem of unavailability of green and dry fodder around the year was faced by 71.50 per cent respondents. In case of veterinary care hospital 60 per cent of respondents faced the problem, 52 per cent had faced problem of health care management. About 50 per cent of dairy farmers face the problem of unavailability of proven sire, reproductive problem faced by 46 per cent dairy farmers. Calf rearing problem faced by 42 per cent of dairy farmers and 40 per cent farmers faced the problem of unavailability of pasture land. Kulkarni *et al.* (1990) identified the constraints in the adoption of dairy practices as non-availability of loan facility (100%), lack of preservation facility (100%), lack of knowledge (94.59%), cost of milk (79.35%) and non availability of veterinary aid centre (69.5%).

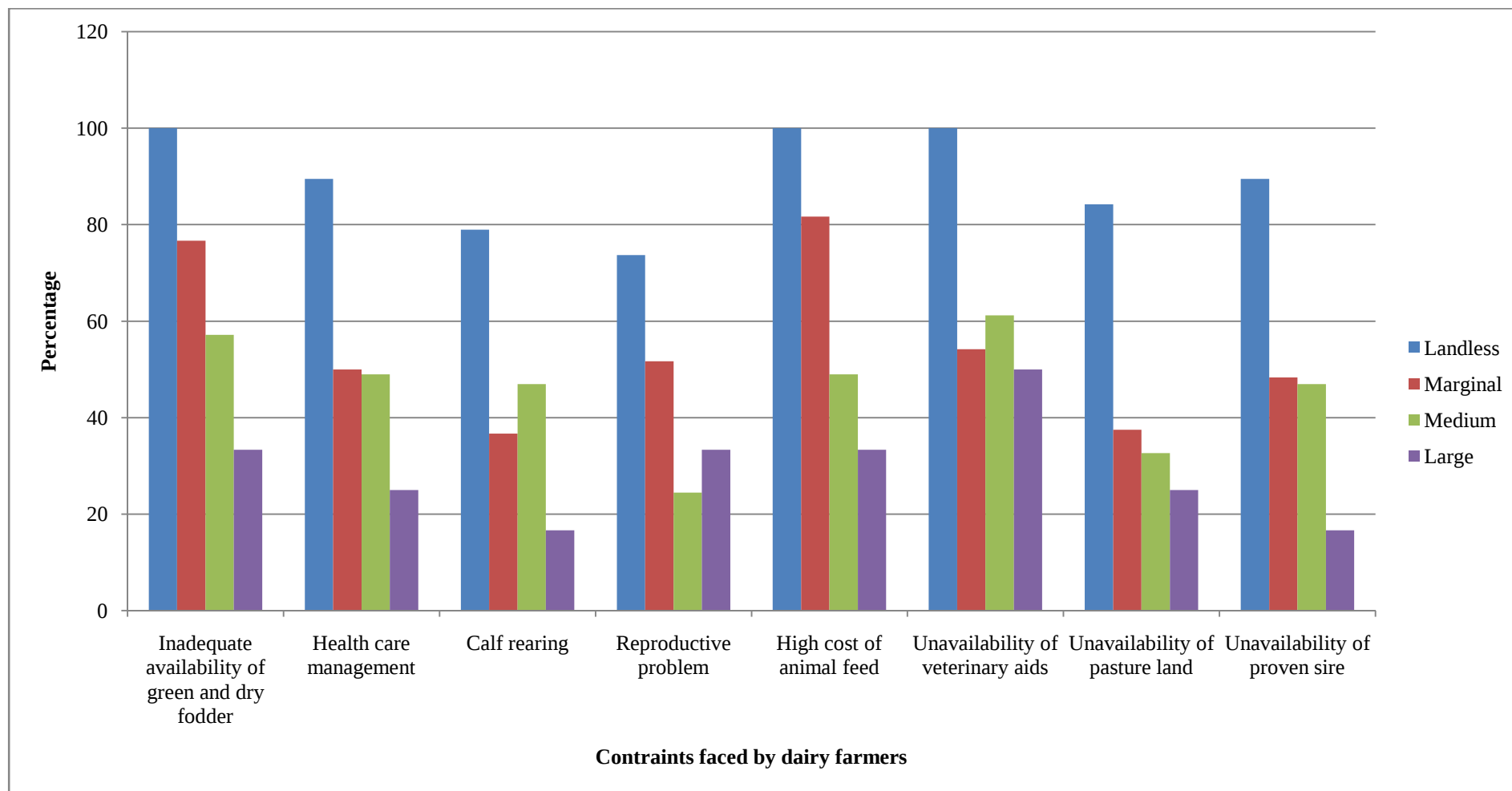


Fig. 11: Constraints in dairying faced by various group of dairy farmers



Summary and Conclusions

CHAPTER V

SUMMARY AND CONCLUSION

The present investigation was carried out to study the “Feeding status of dairy animals in Jintur Tahsil of Parbhani District” of Maharashtra state. The sample consists of 200 farmers from 10 villages. Twenty numbers of farmers were randomly selected from each village and collecting the information through questionnaires. The selected villages were Asegaon, Devgaon, Dhanora, Dudhagaon, Kasar, Kok, Pachegaon, Pimpri, Reedaj, Repa. The objectives of study were as follows.

1. The feeding status of dairy animals in respect to concentrate, green and dry roughages
2. The recommended practices of feeding for higher milk production
3. The constraints in feeding

5.1 Socio-economic status of dairy farmers

5.1.1 Age

About 56 per cent dairy farmer from selected villages were in the age group 31 to 50 years. This indicated that most of them young and working. Followed by 20 to 30 and 51 to 60 year age group which were engaged in grazing their animals. While above 60 years age group watch the animals in the absence of working persons.

5.1.2 Educational level

From the selected villages the maximum 26.50 per cent of dairy farmers were having secondary school education, 21.00 per cent were illiterate, 20.00 per cent were having primary education, 15.50 per cent were having middle school education and 10.50 per cent having higher secondary school, 5.50 were having degree and 1.00 per cent having post graduation.

5.1.3 Animal wealth

Dairy farmers possessing 1-2 milch buffaloes, crossbred and indigenous cow share to the extent of 69.05, 85.71 and 84.96 per cent respectively. The corresponding values for 3-4 animal owners were 20.24, 14.29 and 9.77. The corresponding values for 5-6 milch buffalo and indigenous cow: 5.95 and 3.01 and only 4.76 and 2.26 per cent of dairy farmers were with milch animals exceeding 6.

5.1.4 Dairy animal breed

Out of two hundred dairy farmers 44 (52.38 per cent) dairy farmers have Marathwadi buffaloes followed by Jaffrabadi 22 (26.19 per cent) and Murrah 18 (21.43 per cent), 30 (85.71 per cent) dairy farmers have Jersey breed and 5 (18.75 per cent) dairy farmer have Holstein Friesian breed, 69 (51.88 per cent) dairy farmer have Non descript cows, 57 (42.86 per cent) dairy farmer have Red Kandhari breed, 5 (3.76 per cent) dairy farmer have Gir breed and remaining 2 (1.50 per cent) dairy farmers have Khillar breed.

5.1.5 Land holding

Maximum 60.00 per cent of the dairy farmers were marginal /small farmers. 24.50 per cent of the animal owners were medium farmers. Then 9.50 per cent of the dairy farmers were landless and 6.00 per cent of the animal owners were large.

5.1.6 Family size

The average family size of dairy farmers was 6.2. The proportion of male 24.44 per cent while that of female and children was about 20.64 and 54.92 per cent, respectively. The ratio of nuclear to joint family of about 55: 44.

5.1.7 Occupation

The occupation status of cattle owners in the study revolved that maximum number 79.50 per cent of cattle owners were engaged in agriculture. Whereas 5.50 per cent cattle owners were engaged in agriculture and service, 4.50 per cent engaged in agriculture and business, only 4.00 per cent milk producer totally depends on dairy business and remaining 4.00 per cent 2.50 per cent cattle owners were engaged in dairy + business and dairy + service respectively.

5.2 Production and utilization status

5.2.1 Milk production and utilization status

The milk production status of dairy animals reflects the average daily milk yield of buffalo, crossbreed and indigenous cow was 6.06 kg, 8.93 kg and 3.32 kg respectively. Corresponding figures for mean total daily milk production / family was 13.96 kg, 16.07 kg and 6.74 kg respectively. The amount of home consumed milk was 1.69 kg of buffalo milk, 1.60 kg of crossbred milk and 1.07 kg of indigenous cow

milk. Regarding sale of milk about 12.40 kg of buffalo milk, 15.17 kg of crossbreed milk and 5.95 kg of indigenous cow milk was sold by the farmers in the market.

5.2.2 Milk marketing

Maximum number of dairy farmers deliver the milk to regular customers (39.00 per cent) whereas 31.00 per cent and 18.50 per cent and 11.50 per cent dairy farmers sale the milk to the consumer, private level processor and milk cooperative society respectively.

5.2.3 Milk transportation

Maximum numbers of dairy farmers carry the milk by motor cycle 53.00 per cent from milking point to milk market, 18.50 per cent farmers carry milk by walk. Vehicles were used by 17.00 per cent of farmers. Very few cycles was used by about 11.50 per cent dairy farmers.

5.3 Feeding status of dairy animals

5.3.1 Grazing

No specific grazing land was available in the area. The farmer has to take their animals to reach the low lying field, boundries, bunds etc. that too after the emergence of green grass after monsoon. The farmer takes his animals for grazing for about 7-8 hours. Grazing distance was about 0.50 - 3 Km.

5.3.2 Stall feeding

Most of appetite of animal was fulfilled in the stall where they were fed green maize, jowar grass from sugarcane field, straws of sorghum, bajra, gulli from tur, soybean, cotton seed cake and ground nut cake.

1. Feeding green roughages

Crossbred cow were fed marginally higher amount of green roughages than either buffaloes or indigenous cows by all types of dairy farmers. Large and medium farmers offered significantly higher quantity of green roughage to all type of animals. Marginal and landless farmers offered minimum green roughages to each category of animal. Indigenous cows were most neglected by all dairy farmers having offered green roughage in the range of 7.07 to merely 12.25 kg/head/day.

2. Feeding dry roughages

Indigenous cows were most neglected by all dairy farmers having offered dry roughage in the range of 4.92 to merely 9.50 kg/head/day. In general crossbred cow were fed marginally higher amount of dry roughages than either buffaloes or indigenous cows by all types of dairy farmers. Large and medium farmers offered significantly higher quantity of dry roughage to all type of animals. Marginal and landless farmers offered minimum roughages to each category of animal.

3. Feeding concentrate

Like roughage feeding, feeding of concentrate was biased by all the farmers towards crossbred cows which were fed the concentrate from minimum of 2.10 to maximum 3.33 kg/head/day as compare either to buffaloes (1.50 to 2.56 kg/head/day) or indigenous cows (0.84 to 2.06 kg/head/day). Similarly large farmers could offer significantly higher concentrate than other farmers, whereas landless offered about 1.50 kg concentrate daily to buffaloes. Marginal farmers fed significantly lowest concentrates (1.38 kg/head/day). Landless farmers with indigenous milch cows fed significantly lower (0.84 kg/head/day).

4. Feeding preserved roughages

In the 200 dairy farmers, not a single dairy farmer was aware about the method of preservation of roughages either into silage or hay. In the survey it was seen that the major problem in preservation of such roughages were lack of sufficient surplus green fodder and method of demonstration of preparation of either silage or hay.

5.4 Adoption of management practices

Adoption of standard management practices like feeding dairy animals as a balanced ration, enrich low quality fodder, use of supplement i.e. vitamin and use of any stimulant for increasing milk production were not followed by the dairy farmers of the selected villages. In survey area not a single dairy farmers fed mineral and vitamin in proper proportion to their animals. But 60 per cent of farmers fed common salt to their animals. Provision of health care to the dairy animals in the survey area was very less and in only 2 out of 10 villages the veterinary dispensary units was available.

5.5 Facility expect for dairy activity

Most of dairy farmer's i.e. 162 (81.00 per cent) dairy farmers expect Ensured supply of feed and fodder. Thereafter 159 (79.50 per cent) dairy farmers expect easy loan facilities, 156 (78.00 per cent) responded expect Timely receipt of milk sale. Whereas 141 (70.50 per cent) farmers expected availability of crossbreed animals, 121 (60.50 per cent) dairy farmer expect disease diagnostic facilities at door step. Then 100 (50.00 per cent) dairy farmer expect veterinary – AI facility and remaining 71 (35.50 per cent) dairy farmer expect insurance of animals.

5.6 Care / facilities for crossbred cow

Crossbred cows were preferred by dairy farmer and this has been also seen that they offered comparatively more roughages and concentrates to crossbred cows than either milch buffaloes or indigenous cow. Some farmer provides extra facilities like washing, grooming and keeping hygienic condition of cattle shed.

5.7 Constraints in dairying

Main constraint of maximum number of farmers i.e. 72.50 per cent of the farmers have high cost of animals feed. Followed by the problem of unavailability of green and dry fodder around the year was faced by 71.50 per cent respondents. Veterinary care hospital 60 per cent of respondents faced the problem.

CONCLUSION

The findings of this study are first hand information and therefore, no concrete conclusion can be drawn. However the prominent conclusion as emerged from this study and suggestion there upon are briefed below

- It was concluded from the results of this investigation mainly illiterate (21 per cent) and less educated persons were engaged in dairy business. So it is necessary to well educate this section of the society so that they would be more aware of scientific knowledge.
- Crossbred animals have higher milk production (8.93 kg) and sale of the milk (15.17 kg) than indigenous cows (3.32 kg), (5.95 kg) and buffaloes (6.068 kg) and (12.40 kg).
- Quantity of green and dry roughages fed to buffalo crossbred cow and indigenous cow varied according to land holding. Landless farmers offer less green and dry roughages than all categories of dairy farmers. From the result it was observed that landless farmer could offer nearly half the quantity of the roughage offered by the large farmers.
- Feeding of green and dry roughage and concentrate to the dairy animals by the farmers without any scientific ground so it is suggested that for potential milk production the dairy animals fed according to the quantity and quantity of milk produced.
- A landless farmer could offer 1.500 kg of concentrate to his buffalo while crossbred 2.100 and indigenous cow got 0.846 kg. Large farmers fed significantly higher amount of concentrate than other farmer. Large farmer offered 2.563 kg, 3.333 kg and 2.063 kg concentrate to his buffalo crossbred and indigenous cow respectively.
- Non-adoption of recommended feeding and management practices shows negative impact on milk production.
- High cost of animal feed, inadequate availability of green and dry fodder around the year and very less availability of veterinary hospital was the major problems faced by the farmers.

Suggestions

1. For economic milk production it is essential to use of non conventional sources and nutritionally high quality roughages along with incorporation of green fodder in daily diet.
2. The improvement in feeding and management can be done by providing technical knowledge about cattle management, timely financial support and veterinary aids.
3. Adoption of judicious feeding, scientific breeding, proper management and health cover practices by dairy farmers will result in popularization of dairy as a subsidiary and paying income business to the rural farmers.
4. It is essential to guide the farmers through agricultural extension workers regarding scientific feeding of livestock.
5. According to thumb rule,
 - The dry matter requirement is 2.0 per cent of live weight of dry cow, 2.5 per cent of indigenous lactating cow and 3.0 per cent of live weight of milch crossbred cow.
 - Roughages requirement should be fulfilled as $\frac{2}{3}^{\text{rd}}$ of DM through dry roughages and $\frac{1}{3}$ through green roughages.
 - The concentrate requirement of cattle for maintenance, production and pregnancy is satisfied as follows,
 - A) The maintenance requirement of deshi cow and cross breed cow is 1 and 1.5 kg / head respectively.
 - b) crossbred milch breed cow and Lactating indigenous cow should be given 1 kg of additional concentrate allowance for every 2 and 2.5 kg milk produced respectively.
 - c) Pregnant cows should receive 1.5 kg / day extra concentrate allowance during advance pregnancy to meet extra need of nutrients for growth of foetus.
 - d) Breeding bulls in service should get 1 kg / day extra concentrate allowance to maintain good health and sex libido.

- Mineral mixture and common salt each cattle @ 25-50 gm should be given daily to fulfill mineral requirement of animal.
- Vitamin mixture @ 20-30 grams /100 kg concentrate mixture should be given daily to animals.
- When straw is used as sole roughages then 1 – 2 per cent lime stone powder should be added in straw.

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*Thesis
Abstract*

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THESIS ABSTRACT

- a) Title of the thesis : **“Feeding Status of Dairy Animals in Jintur Tahsil of Parbhani District”**
- b) Name of student : **THOMBARE AKSHAY RAMCHANDRA**
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ABSTRACT

The present investigation entitled “Feeding Status of Dairy Animals in Jintur Tahsil of Parbhani District.” Was be collected from different farmers specially who was rearing the cattle and Buffaloes in a Jintur tahsil of Parbhani district in Maharashtra State. To study the feeding status of dairy animals in respect to concentrate, green and dry roughages and to suggest the recommended practices of feeding for higher milk production and to identify the constraints in feeding. Random selection of 10 villages was made with 20 livestock owners in Jintur tahsils. Thus, the total sample size comprised of 200 farmers. Mainly illiterate (21 per cent) and less educated persons were engaged in dairy business. Dairy farmers possessing 1-2 milch buffaloes, crossbred and indigenous cow share to the extent of 69.05, 85.71 and 84.96 per cent respectively. Crossbreed animals have higher milk production and sale of milk than indigenous cows and buffaloes. Large ruminant receive about 50-60 per cent of dry matter from grazing. Bunds of field and native pasture were common grazing areas utilized in rural area. No specific grazing land was available in the area. The farmer has to take their animals to the low lying field, boundries, bunds etc. The farmer takes his animals for grazing for about 7-8 hours. Grazing distance was about 0.50 - 3 Km. Most of appetite of animal was fulfilled in the stall where they were fed green maize, jowar grass from sugarcane field, straws of sorghum, bajra, gulli from tur and soybean and cotton seed cake and ground nut cake. Indigenous cows were most neglected by all dairy farmers having offered less quantity of roughage and concentrate than crossbred cows and buffaloes. Large and medium farmers offered significantly higher quantity of roughage and concentrate to all type of animals. Marginal and landless farmers offered minimum roughages and concentrate to each category of animal. Not a single dairy farmer was aware about the method of preservation of roughages either into silage or hay. Feeding dairy animals as a balanced ration, enrich low quality fodder use of supplement i.e. vitamin and use of any stimulant for increasing milk production were not followed by the dairy farmers of the selected villages. Most of dairy farmers i.e. 162 (81.00 per cent) dairy farmers expect ensured supply of feed and fodder. Thereafter 159 (79.50 per cent) dairy farmers expect easy loan facilities. 156 (78.00 per cent) responded expect Timely receipt of milk sale. High cost of animal feed, inadequate availability of green and dry fodder around the year and very less availability of veterinary hospital was the major problems faced by the farmers.



Appendix

Name of student : Thombare Akshay Ramchandra **Reg. No.** 2017A/74M
Research guide : Dr. D.V. Bainwad Asst. Prof., Dept. of AHDS, VNMKV, Parbhani
Title : **Feeding Status of Dairy Animals in Jintur Tahsil of Parbhani District**

- 1) Landless
- 2) Marginal/ Small farmer (less than or equal to 2 ha.)
- 3) Medium farmer (more than 2 ha. and less than/equal to 5 ha.)
- 4) Large farmer (Greater than 5 ha.)

5. Family size:

Type of family	Total no. of members	Male	Female	Children
Single member				
Nuclear family				
Joint family				

6. Family occupation:

Activities	No. of persons engaged		
	Male	Female	Children
Dairy			
Dairy + Service			
Dairy + Business			
Dairy + Agriculture			
Dairy + Poultry			
Dairy + Agriculture + Service			
Dairy + Agriculture + Business			
Dairy + Poultry + Agriculture			

B) Production and utilization status**1) Milk production status**

Sr. No.	No. of particulars	Buffalo	Cow	
			Crossbreed	Indigenous
1.	Daily milk yield/ animal (kg)			
2.	Total milk production / family / day (kg)			
3.	Mean lactation period (Days)			

2) Milk utilization status

Sr. No.	No. particulars	Buffalo	Cow		Total
			Crossbreed	Indigenous	
1.	Quantity of milk consumed(Home)/ day/ (kg)				
2.	Quantity of milk sold/ day (kg)				

3) Ways of milk marketing and price

Sr. No.	No. of particular	Yes/No	Price
1.	To milk co – operative society		
2.	Regular customers		
3.	Consumers		
4.	To private level processor		
		Total	

4) Means of milk transport

1. By walk :
2. On cycle :
3. On motor cycle :
4. Through vehicle :

C) Feeding status

1. Grazing

- a) Distance from home : Km
- b) Type of grazing : 1) Pastures 2) Bunds 3) Others
- c) Hours of grazing : hours
- d) Grazing area available :
- e) Types of pasture available :
in the grazing land

2. Stall feeding

Sr. No.	Quantity of feed offered (kg.) / animal / day		Buffalo	Cattle	
				Crossbred	Indigenous/local
1.	Roughages	Green			
		Dry			
2.	Concentrates	Energy rich			
		Protein rich			

I) Purchased / Home grown

II) Whether chaffed or fed as such

III) Fed during milking Yes / No

5. Preserved roughages

- a) Whether fed or not : Yes/No
- b) If fed, type : Silage / hay
- c) Quantity (kg) :
- d) Fed : Before milking / After milking

D) Adoption of management practices

- a) Are you aware of recommended feeding practices : Yes/No
If no, reason:
- b) Do you enrich the low quality fodder : Yes /No
If yes (Which fodder and method)
- c) Do you use supplements for increasing milk production : Yes/No
If yes (Specify i.e. use of urea / gur / mineral mixture)
- d) Do you use any stimulants for letting down of milk : Yes/No
- e) Which means do you adopt to storage the dry fodder?
I) Open air II) Under shed III) Quantity IV) Period of storage
- f) Is there any vet. clinic available in the village: Yes / No
If yes (Private / Government clinic)
- g) Other management practices:
1. Rearing of calf :
 2. Disposal of dry animal and salvation:
 3. Vaccination :
 4. Type of housing :
 5. Culling :
 6. Breeding of animals :

E) Which facilities do you expect for dairy activities?

State the reason in order of priority

- a) Easy loan facilities
- b) Availability of cross breed animal
- c) Timely receipt of milk sale from collection centre
- d) Insurance of animal
- e) Veterinary – AI facilities
- f) Ensured supply of feed and Fodder
- g) Disease diagnostic facilities at door step

F) Do you provide special care / facilities for crossbreed cow :-

G) Major constraints in dairying:

Constraints in,

1. Feeding the animals and unavailability of green and dry fodder round the year
2. Health care management
3. Calf rearing
4. Reproductive problems
5. High cost of animal feed
6. Unavailability of vet. aids at farmer's door step
7. Unavailability of pasture lands
8. Unavailability of proven sire/breeding bull at farmer fields