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Adoption practices of dairy farmers in Haryana

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Abstract
Milk production in Haryana reached a volume of 11.7 billion litres. The state currently represents the fifteenth largest milk market in India. Haryana state is having higher per capita availability of milk has compare to our whole country e.g., 930gm which is 394gm in India. The present study was conducted to study the demographic profile of the dairy farmers of selected dairy units and to examine the extent of adoption of recommended management practices among dairy farmers in Haryana. The study was conducted in four districts of Haryana namely Karnal, Kaithal, Sirsa and Hisar. From the selected district two blocks from each district were selected randomly for the present study. From all four districts 8 blocks were selected deliberately 25 dairy farmers from each block were selected as respondents. Hence data of 200 dairy farmers were taken to achieve the specific objectives, the primary data from the sample dairy farms were collected through survey method on pre-structured schedules designed for the purpose. Data of 200 respondents was taken on five Likert point scale by using SPSS software. Descriptive statistics was used to find the desired objectives. Regarding adoption of good dairy practices our study concluded that among all the adoption practices for dairy farms hygiene milking was having lower mean value, hence highest agreeableness as milk comes under perishable commodity which deteriorate very fast and it may lead to lower price in the market hence hygiene milking practices were giver most preference by dairy farmers, followed by animal wellbeing, animal health, nutrition practices, environment practices and management practices with highest mean value, dairy practices regarding management were least preferred by dairy farmers as they were finding them time consuming as well as less economically viable. On the basis of findings dairy farmers are advised to have high education level as it will give them confidence to adopt new and latest technology existing in dairy farming now a days.

Keywords: Dairy farming, adoption, agreeableness

Introduction
In India around 70 per cent of the population is dependent on agriculture and livestock rearing. In a rural economy dairy farming is normal adjunct to agriculture. Animal rearing has traditionally been a part of the soil-plant, animal-man chain and this ecology system has been generating the part of food, fuel and farm power requirement of our people. Livestock farming is a critical for sustenance and supplementing the income of the farmer. India ranks first in milk production, accounting 22 percent of the total world milk during 2018-19 achieving an annual output of 187.7 million tons of milk, as compared to 176.3 million tons during 2017-18 recording a growth of 6.5 per cent over the previous year (Basic Animal Husbandry Statistics, DAHD&F, GOI Report, 2019). The dairy industry in India has indeed witnessed significant and enviable progress during the inception of the "Operation Flood Programme" in July 1970, the main aim was capturing liquid milk for metropolitan cities. As a result, about 34,500 dairy cooperative societies have been organized under 136 milk sheds. Before launching of "Operation Flood" India's annual milk production was around 20 million tons and at present it is estimated to be well over 187.7 million tons. After 1970's the dairy development started gaining momentum in the country through the implementation of various dairy cattle's and buffalo improvement programs initiated by central government, state government and other agencies. Although the existing dairy development programmes in the country has increased in milk production, but with the rise of human population, the increase in per capita availability of milk is only marginal. The per capita availability was 375g per day during 2017-18, 394g per day during 2018-19 (Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, GOI). The improvement of dairy production will be particularly important in coming years in view of the future demand for livestock products, which is expected to double by 2020 (Rangnekar, 2006). Total livestock in India is 535.78 million which shows increase of 4.6 percent from 2012. Total number of milch animals (in milk and dry) in cows and buffaloes

is 125.34 million an increase of 6.0 percent over the previous census. Total number of cattle in the country during 2019 is 192.49 million followed by 109.85 buffalos which shows increase of 0.8 percent and 1.0 percent respectively over previous census (Ministry of Fisheries, Animal Husbandry & Dairy 2019) Haryana state possesses a very high milk production potential in the country due to its many favourable resource's endowments like fertile land, assured irrigation, high yielding breed of milch animals like world famous "Murrah" buffalo and Sureti and above all a receptive farming community with a proven record of early adoption of improved crop milk technology. Haryana being one of the agriculturally advanced state of India and inhabited by the vegetarian population, the livestock production plays an important role in the economy of the state. Milk production in Haryana reached a volume of 11.7 billion litres. The state currently represents the fifteenth largest milk market in India. Haryana state is having higher per capita availability of milk has compare to our whole country e.g., 930gm which is 394gm in India. The milk production in Haryana mainly comprises of cow and buffalo milk. Haryana market grew at a CAGR of 9.6 percent during 2014-2019 (Ministry of Fisheries, Animal Husbandry & Dairy 2019). Basically, milk production (productivity) depends on four major animal husbandry practices i.e. breeding, feeding, health-care and management practices. It has been emphasized that dairy development is only possible if there is effective co-ordination among education, research, training and extension. It is also to be noted that just transferring the quality technologies cannot solve all the problems until the people have a sound knowledge about the existing technologies and technologies recommended by the experts. So, it required to understand the concept of knowledge. English and English (1961) conceived knowledge as "the body of understood information possessed by an individual or a culture". There is an urgent need to sensitize the dairy farmers to the modern technologies and scientific interventions in dairy production in order to enhance milk yield and milk quality from dairy animals.

In Haryana adoption of dairy farming as the advent technology changes, rapid growth of industries fastly increasing population in urban areas, increasing education, rising income and nutrition consciousness by the way of animal protein, the demand for milk and milk products being income elastic, is bound to increase in the coming years. Milk is very important component of human diet. It is rich source of protein which ranges from 3 to 4 per cent in cows and buffalo's milk. The milk protein is easily digestible. Nearly 50 per cent of total milk is consumed as fresh milk and the balance in the form of milk products, e.g., ghee, curd, cream, and cheese. In the diversified dairy farming provide employment and generate an additional income to the farmers. Livestock and livestock products are multicore industry in the agrarian economy of India. In light of the above-mentioned facts dairy farming comprises of technical allocate and economic efficiency (Heshmati and Kumbhakar, 1997). The ability of the dairy farmers to generate more income from dairying largely depends on the effective adoption of improved dairy husbandry practices that lead to increase in productivity but the farmers face various constraints in adoption of these practices. Hence efforts have been made to study demographic profile of the dairy owners as well as to examine the extent of adoption of recommended management practices among dairy farmers in Haryana.

Materials and Methods

The Haryana state was divided into two agro-climatic regions/zones i.e., eastern region and western region. The eastern region is comparatively wet with the annual rainfall of about 600-1100 mm as compared to western region which is dry with annual rainfall of about 300-450 mm. The dry region and wet region were denoted as Zone-I and Zone-II respectively in this study. Zone-I includes the districts of Kaithal and Karnal. Zone-II comprises of Sirsa and Hisar districts. From the selected district two blocks from each district were selected namely: Hisar (Adampur, Hisar), Sirsa (Dabwali, Sirsa), Karnal (Karnal, Nilokheri), Kaithal (Kaithal, Kalyat) were selected randomly for the present study. From all four districts 8 blocks were selected purposeilively 25 dairy farmers from each block were selected as respondents. Hence data of 200 dairy farmers were taken to achieve the specific objectives, the primary data from the sample dairy farms were collected through survey method on pre-structured schedules designed for the purpose. Descriptive statistics was used for the demographic profile of the respondents. For the objectives regarding adoption index of good dairy practices, constraints prevailing in dairy sector data of 200 respondents was taken on five Likert point scale by using SPSS software, where 1 stand for strongly agree,2 for agree,3 for neutral, 4 for disagree, 5 for strongly disagree. Objective of the Study:

- To study the demographic profile of the dairy farmers of selected dairy units.
- To examine the extent of adoption of recommended management practices.

Descriptive analysis was used. Lesser the mean value higher was the agreeableness of respondent and vice a versa. Mean value, overall mean and rank was calculated.

Results and Discussion

The present study revealed that majority of respondents belongs from middle age group which accounts 49 percent followed by young age group 32 percent. Only 18 percent respondents of study were in old age group. The findings inferred that majority of respondents belonged to middle age group who were doing dairy farming. The Study revealed that education level of majority of the respondents was up to primary school i.e., 48 percent followed by 17 percent respondent with middle education. However, 16 percent respondents of present study were graduates followed by 14 percent with high and secondary education level. Last but not the least only 4 percent respondents were under post-graduates. The study indicated that most of the respondents were under medium family size accounting 53 percent of the total respondents followed by nuclear or we may say small family i.e., 35 percent. Moreover, only 12 percent respondents were under large family size. The study revealed that maximum respondents were having new in business of dairy farming accounting 65 percent of the total respondents followed by 25 percent respondents who were in this business nearly ten years, however only 10 percent respondents of the present study were from experience of dairy farming more than ten years. In respect of heard size study concluded that most of the respondents of the present study were belonging to medium heard size covering 43 percent of the total respondents followed by 30 percent in large heard size category. However, 26 percent respondents were under small heard size category during the findings of the present study. About occupation study indicated that most of the respondents

of the present study were doing dairy farming accounting 66 percent of the total respondents followed by 19 percent who were doing agriculture as well as dairy farming, 10 percent respondents were doing job as well as dairy farming only 5 percent respondents were doing dairy farming as well as other side business. Regarding income level of respondent's study concludes that most of the respondents of the study accounting 51 percent of the total respondents were under low-income group followed by medium income group and high-income group i.e., 31 and 18 percent respectively. About land holding of respondent's study revealed that majority of the dairy owners i.e., 51 percent were under category of landless group followed by 32 percent of the respondents under small land holding category of the farmers, however respondents from medium and large land holding were 12 and 5 percent respectively during the findings of the study.

Table 1: Demographic Profile of Respondents

Demographic Variables	Frequency	Percent	Cumulative Percent
1. Age of Respondent			
Below 30 years (Young Age Group)	65	32.5	32.5
31-55 Years (Middle Age Group)	99	49.5	82.0
More than 55 Years (Old Age Group)	36	18.0	100.0
2. Qualification			
Primary	96	48.0	48.0
Middle	34	17.0	65.0
High School & Secondary	28	14.0	79.0
Graduate	33	16.5	95.5
Post Graduate	9	4.5	100.0
3. Family Size			
Up to 5 Family Members (Small)	70	35.0	35.0
5-8 Family Members (Medium)	106	53.0	88.0
More than 8 Members (Large)	24	12.0	100.0
4. Experience			
0-5 Years	130	65.0	65.0
5-10 Years	50	25.0	90.0
More Than 10 Years	20	10.0	100.0
5. Herd Size			
1-7 Animals (Small)	52	26.0	26.0
7-11 Animals (Medium)	87	43.5	69.5
12 & More Animals (Large)	61	30.5	100.0
6. Occupation			
Dairy farming	132	66.0	66.0
Dairy Farming + Agriculture	38	19.0	85.0
Dairy Farming + Job	20	10.0	95.0
Dairy Farming + Others business	10	5.0	100.0
7. Annual Income			
50000-100000 (Low Income Group)	102	51.0	51.0
100000-300000(Middle Income Group)	62	31.0	82.0
More than 300000 (High Income Group)	36	18.0	100.0
8. Operational Land			
No Land (Landless)	102	51.0	51.0
Up to 5 Acres (Small)	64	32.0	83.0
6-10 Acres (Medium)	24	12.0	95.0
More than 10 Acres (Large)	10	5.0	100.0

Table 2: Adoption of animal health practices by dairy farmers in Haryana

Adoption Strategies		Herd size				Overall percentage	Mean	Rank
		Small	Medium	Large	Overall			
I. Establish the herd with resistance to disease	Strongly agree	30(32.96)	36(39.56)	25(27.48)	91 200)	45.5	2.88	III
	Agree	14(22.58)	26(41.94)	22(35.48)	62 200)	31		
	Neutral	1(11.12)	4(44.44)	4(44.44)	9(200)	4.5		
	Disagree	3(12.50)	14(58.34)	7(29.16)	24 200)	12		
	Strongly Disagree	4(28.58)	7(50.00)	3(21.42)	14(200)	7		
II. Prevent entry of disease into the farm	Strongly agree	29(30.22)	39(40.62)	28(29.16)	96(200)	48	3.08	IV
	Agree	17(23.95)	31(43.66)	23(32.39)	71 200)	35.5		
	Neutral	0	0	0	0			
	Disagree	6(23.08)	14(53.84)	6(23.08)	26 200)	13		
	Strongly Disagree	0 (0)	3 (42.85)	4(57.15)	7 (200)	3.5		
III. Have an effective herd health management program	Strongly agree	16 25.39)	30 47.63)	17 26.98)	63 200)	31.5	1.92	I
	Agree	6(12)	28(56)	16(32)	50(200)	25		
	Neutral	3(21.42)	7(50)	4(28.58)	14(200)	7		
	Disagree	16(47.05)	9(26.47)	9(26.48)	34(200)	17		
	Strongly Disagree	11(28.20)	13(33.34)	15(38.46)	39(200)	19.5		

IV.	Using only veterinary medicines as prescribed by veterinarians	Strongly agree	3(13.64)	10(45.46)	9(40.90)	22(200)	11	2.35	II
		Agree	16(30.76)	18(34.62)	18(34.62)	52(200)	26		
		Neutral	4(22.22)	10(55.55)	4(22.22)	18(200)	9		
		Disagree	21(25.30)	38(45.78)	24(28.92)	83(200)	41.5		
		Strongly Disagree	8(32)	11(44)	6(24)	25(200)	12.5		

Animal health practices

Poor animal health is one of the principal constraints to increasing small-scale dairy productivity, as it results in high morbidity and low production. Overcoming this constraint could significantly improve productivity and results in real and direct benefits for producers. A perusal of the data presented in Table 2 indicated that as far as animal's health was concerned majority of the respondents were agreed that they were establishing their herd in such a way to build them resistance to disease in order to minimize any kind of loss. The corresponding mean value was 2.88 and the rank was 3rd. Among all the respondents 45.5 percent were strongly agreed followed by 31 percent agree, 12 percent disagree, 7 percent strongly disagree respondents only 4.5 percent respondents were indifferent about this particular practice. Regarding preventing entry of disease into the farm in order to make dairy farm economically viable, majority majority of the respondents were agreed about it and the corresponding mean value was 3.08 and the rank was 4th. Among all the respondents 48 percent were strongly agreed followed by 35.5 percent agree, 13 percent disagree only 3.5 percent respondents were strongly disagreed. As far as an effective health management program for their dairy farm to safe guard their milch animals from any kind of disease and infection was concerned majority of the respondents were agreed about this particular dairy practice and the corresponding mean value was 1.92 and the rank was 1st. From all the respondents 31.5 percent respondents were strongly agreed followed by 25 percent agree, 19.5 percent strongly disagree, 17 percent disagree and only 7 percent respondents were neutral about this dairy practices. Hence we can conclude that majority of the respondents were disagreed about using only those medicines which were prescribed by veterinarians for their animal as some of the times they use medicines according to availability at that particular time. The corresponding mean value was 2.35 and the rank was 2nd. Among all the respondents 41.5 percent respondents were disagreed followed by 26 percent agree, 12.5 percent strongly disagree, 11 percent strongly agree and only 9 percent respondents were indifferent about this particular dairy practices.

Table 3: Adoption of hygiene milking practices by dairy farmers in Haryana

Adoption Strategies			Herd size				Overall percentage	Mean	Rank
			Small	Medium	Large	Overall			
I.	Ensuring milking is carried out under hygienic conditions	Strongly agree	31(30.10)	43(41.74)	29(28.16)	103(200)	51.5	2.09	I
		Agree	11(23.40)	20(42.55)	16(34.05)	47(200)	23.5		
		Neutral	5(25)	8(40)	7(35)	20(200)	10		
		Disagree	4(18.18)	11(50)	7(31.82)	22(200)	11		
		Strongly Disagree	1(12.50)	5(62.50)	2(25.00)	8(200)	4		
II.	Ensuring milking routines do not introduce contamination in milk	Strongly agree	6(26.09)	11(47.82)	6(26.08)	23(200)	11.5	2.28	III
		Agree	35(27.14)	53(41.08)	41(31.78)	129(200)	64.5		
		Neutral	5(41.67)	4(33.33)	3(25.0)	12(200)	6		
		Disagree	4(15.38)	15(57.69)	7(26.93)	26(200)	13		
		Strongly Disagree	2(20)	4(40)	4(40)	10(200)	5		
III.	Ensure milk is handled properly after milking	Strongly agree	31(30.69)	33(32.67)	37(36.64)	101(200)	50.5	2.13	II
		Agree	7(18.92)	19(51.35)	11(29.73)	37(200)	18.5		
		Neutral	4(23.53)	8(47.06)	5(29.41)	17(200)	8.5		
		Disagree	7(21.87)	19(59.38)	6(18.75)	32(200)	16		
		Strongly Disagree	3(23.08)	8(61.54)	2(15.38)	13(200)	6.5		

Hygiene milking

Table 3 focusing on the hygiene milking practices adopted by dairy farmers in Haryana. Good dairy practices for milking hygiene are ensures that milking routines do not injure the animals or introduce contamination into milk but if milking is carried out under hygiene conditions, and that milk is handled properly after milking that milk will be considered as safe and good for health. It can be concluded that majority of the respondents were agreed about ensuring milking process under hygienic conditions in order to avoid any kind of spoilage. The corresponding mean value was 2.09 and the rank was 1st. Among all the respondents 51.5 percent respondents were strongly agreed followed by 23.5 agree respondents, 11 percent disagree, 10 percent neutral and only 4 percent respondents were strongly disagree. It is also indicated that majority of the respondents were agreed about adoption of dairy practices regarding following milking routines in order to avoid any kind of contamination in milk. The corresponding mean value was 2.28 and the rank was 3rd. Among all the respondents 64.5 percent respondents were agreed, followed by 13 percent disagree, 11.5 percent respondents were strongly agree, 6 percent neutral and only 5 percent were strongly disagree respondents. Majority of the respondents were agreed that they were handling milk properly after milking as milk comes under perishable commodity and get deteriorate very soon. The corresponding mean value was 2.13 and the rank was 2nd. Among all the respondents 50.5 percent respondents were strongly agreed followed by 18.5 percent agree, 16 percent disagree, 8.5 and 6.5 percent were neutral and strongly disagree respondents respectively.

Table 4: Adoption of nutrition practices by dairy farmers in Haryana

Adoption Strategies		Herd size				Overall percentage	Mean	Rank
		Small	Medium	Large	Overall			
I. Secure feed and water supply from sustainable sources	Strongly agree	6(17.65)	15(44.12)	13(38.23)	34(200)	17	3.29	III
	Agree	37(30.83)	47(39.17)	36(30.0)	120(200)	60		
	Neutral	4(22.22)	10(55.56)	4(22.22)	18(200)	9		
	Disagree	2(16.67)	6(50)	4(33.33)	12(200)	6		
	Strongly Disagree	3(18.75)	9(56.25)	4(25)	16(200)	8		
II. Ensure animal feed and water are of suitable quantity and quality	Strongly agree	25(29.76)	32(38.09)	27(32.15)	84(200)	42	3.29	III
	Agree	16(26.23)	28(45.90)	17(27.87)	61(200)	30.5		
	Neutral	4(19.05)	12(57.14)	5(23.81)	21(200)	10.5		
	Disagree	4(30.77)	5(38.46)	4(30.77)	13(200)	6.5		
	Strongly Disagree	3(14.29)	10(47.62)	8(38.09)	21(200)	10.5		
III. Control storage conditions for feed	Strongly agree	10(23.25)	21(48.84)	12(27.91)	43(200)	21.5	1.89	I
	Agree	5(15.63)	17(53.12)	10(31.25)	32(200)	16		
	Neutral	5(41.67)	6(50)	1(8.33)	12(200)	6		
	Disagree	13(26)	22(44)	15(30)	50(200)	25		
	Strongly Disagree	19(30.16)	21(33.33)	23(36.51)	63(200)	31.5		
IV. Ensure the traceability of feed stuff brought on to the farm	Strongly agree	8(19.05)	21(50)	13(30.95)	42(200)	21	2.26	II
	Agree	6(26.09)	10(43.48)	7(30.43)	23(200)	11.5		
	Neutral	3(33.33)	4(44.45)	2(22.22)	9(200)	4.5		
	Disagree	24(27.59)	37(42.53)	26(29.88)	87(200)	43.5		
	Strongly Disagree	11(28.21)	15(38.46)	13(33.33)	39(200)	19.5		

Nutrition practices: Regarding the animal's health and productivity, as well as the quality and safety of their milk, depends largely on providing the right feed and water to them. Hence good dairy practices for nutrition should be followed by dairy units. From the Table 4 we can conclude that majority of the respondents were agreed that they were using feed and water for animals from sustainable source to ensure good animal health. The corresponding mean value was 3.29 and the rank was 3rd. Among all the respondents 60 percent respondents were agreed, followed by 17 percent strongly agree, 9 percent neutral, 8 percent strongly disagree and only 6 percent were disagree respondents. It is also revealed that majority of the respondents were agreed that they were adopting dairy practices regarding ensuring good quality and adequate quantity of feed and water for their milch animals. The corresponding mean value was 3.29 and the rank was 3rd. Among all the respondents 42 percent were strongly agreed followed by 30.5 agree, 10.5 percent were neutral as well as strongly disagree categories only 6.5 percent respondents were disagree. Majority of the respondents disagreed that they were not giving much attention towards controlled storage conditions for feed, majority of them were using their old buildings for storage of feed and fodder at their dairy farms. The corresponding mean value was 1.89 and the rank was 1st. Among all the respondents 31.5 percent were strongly disagreed followed by 25 percent disagree, 21.5 percent strongly agree, 16 percent agree and only 6 percent respondents were neither agreed nor disagree. It can also be concluded that majority of the respondents were not agreed about ensuring traceability of feed stuff brought on to the farm as they were purchasing feed and fodder according to their requirements. The corresponding mean value was 2.26 and the rank was 2nd. Among all the respondents 43.5 percent were disagreed, followed by 21 percent strongly agree, 19.5 percent were strongly disagree, 11.5 percent were agree and only 4.5 respondents were neutral.

Table 5: Adoption of animal wellbeing practices by dairy farmers in Haryana

Adoption Strategies		Herd size				Overall percentage	Mean	Rank
		Small	Medium	Large	Overall			
I. Ensure animals are free from thirst, hunger and malnutrition	Strongly agree	30(27.52)	43(39.45)	36(33.03)	109(100)	54.5	2.33	II
	Agree	13(29.55)	20(45.45)	11(25)	44(100)	22		
	Neutral	4(23.53)	8(47.06)	5(29.41)	17(100)	8.5		
	Disagree	2(10.53)	10(52.63)	7(36.84)	19(100)	9.5		
	Strongly Disagree	3(27.27)	6(54.55)	2(18.18)	11(100)	5.5		
II. Ensure animals are free from pain, injury and disease	Strongly agree	16(28.57)	21(37.50)	19(33.93)	56(100)	28	2.47	III
	Agree	21(22.83)	47(51.09)	24(26.08)	92(100)	46		
	Neutral	4(33.33)	4(33.33)	4(33.33)	12(100)	6		
	Disagree	6(26.09)	9(39.13)	8(34.78)	23(100)	11.5		
	Strongly Disagree	5(29.42)	6(35.29)	6(35.29)	17(100)	8.5		
III. Ensure animals are free from fear	Strongly agree	20(27.77)	31(43.05)	21(29.17)	72(100)	36	2.06	I
	Agree	14(24.14)	29(50)	15(25.86)	58(100)	29		
	Neutral	3(16.67)	9(50)	6(33.33)	18(100)	9		
	Disagree	11(30.56)	13(36.11)	12(33.33)	36(100)	18		
	Strongly Disagree	4(25)	5(31.25)	7(43.75)	16(100)	8		
IV. Ensuring animals can engage in relatively normal patterns of animal behaviour	Strongly agree	10(30.30)	12(36.36)	11(33.33)	33(100)	16.5	2.72	IV
	Agree	28(26.17)	41(38.32)	38(35.51)	107(100)	53.5		
	Neutral	3(16.67)	9(50)	6(33.33)	18(100)	9		
	Disagree	5(31.25)	10(62.50)	1(6.25)	16(100)	8		
	Strongly Disagree	6(23.08)	15(57.69)	5(19.23)	26(100)	13		

Animal wellbeing

Animal wellbeing is primarily concerned with the well-being of animals. Dairy farming practices should aim to keep animals free from hunger, thirst and malnutrition, from discomfort, from pain, injury and disease, from fear, and to engage in relatively normal patterns of animal behaviour. A perusal of the data presented in Table 5 revealed that majority of the respondents were agreed that they were taking care for safe guarding their animals from malnutrition, as milk production depends on their nutrition. The corresponding mean value was 2.33 and the rank was 2nd. Among all the respondents 54.5 percent were strongly agreed followed by 22 percent agree, 9.5 percent disagree, 8.5 percent neutral respondents and only 5.5 percent respondents were strongly disagree. It can also be concluded that majority of the respondents were agreed about adoption of good dairy practices regarding good care of animals from any kind of pain, injury and disease. The corresponding mean value was 2.47 and the rank was 3rd. Among all the respondents 46 percent respondents were agreed followed by 28 percent strongly agree, 11.5 percent disagree, 8.5 percent strongly disagree respondents and only 6 percent respondents were indiscriminate. It was also revealed that major portion of the total respondents were agreed about adoption of dairy practices regarding well behaviour with their animals at their dairy farm to provide better atmosphere to their milch animals which leads to better productivity of milk. The corresponding mean value was 2.06 and the rank was 1st. Among all the respondents 36 percent were strongly agreed followed by 29 percent agree, 18 percent disagree, 9 percent neutral and 8 percent strongly disagree respondents. We also concluded that majority of the respondents were agreed that they were adopting dairy practices regarding normal behaviour with animals. The corresponding mean value was 2.72 and the rank was 4th. Among all the respondents 53.5 percent were agreed, followed by 16.5 percent were strongly agree, 13 percent were strongly disagree, 9 percent were neutral respondents and only 8 percent were disagree.

Table 6: Adoption of environmental practices by dairy farmers in Haryana

Adoption Strategies		Herd size				Overall percentage	Mean	Rank
		Small	Medium	Large	Overall			
I. Implement an environmentally sustainable farming system	Strongly agree	23(29.11)	32(40.51)	24(30.38)	79(100)	39.5	2.94	II
	Agree	19(25)	34(44.74)	23(30.26)	76(100)	38		
	Neutral	4(25)	8(50)	4(25)	16(100)	8		
	Disagree	2(16.68)	5(41.66)	5(41.66)	12(100)	6		
	Strongly Disagree	4(23.53)	8(47.06)	5(29.41)	17(100)	5		
II. Have an appropriate waste management system	Strongly agree	9(30)	12(40)	9(30)	30(100)	15	3.03	III
	Agree	4(25)	7(43.75)	5(31.25)	16(100)	8		
	Neutral	2(25)	4(50)	2(25)	8(100)	4		
	Disagree	25(23.81)	50(47.62)	30(28.57)	105(100)	52.5		
	Strongly Disagree	12(29.27)	14(34.15)	15(36.58)	41(100)	20.5		
III. Ensuring dairy farming practices do not have an adverse impact on the local environment	Strongly agree	24(27.91)	38(44.19)	24(27.90)	86(100)	43	2.50	I
	Agree	16(26.67)	23(38.33)	21(35.0)	60(100)	30		
	Neutral	5(29.41)	7(41.18)	5(29.41)	17(100)	8.5		
	Disagree	5(27.78)	9(50)	4(22.22)	18(100)	9		
	Strongly Disagree	2(10.53)	10(52.63)	7(36.84)	19(100)	9.5		

Environmental practices

Good dairy farming practices for the environment including an environmentally sustainable farming system, having an appropriate waste management system, and ensuring that dairy farming practices do not have an adverse impact on the local environment. From the Table 6 it can be revealed that majority of the respondents were agreed about adoption of environmental practices to ensure implementation of sustainable farming system. The corresponding mean value was 2.94 and the rank was 2nd. Among all the respondents 39.5 percent were strongly agreed, followed by 38 percent agree, 8.5 percent strongly disagree, 8 and 6 percent neutral and disagree respondents respectively. It can also be concluded that majority of the respondents were disagreed about adoption of appropriate waste management system as they were unaware of latest waste management technology prevailing in dairy farming now a days. The corresponding mean value was 3.03 and the rank was 3rd. Among all the respondents 52.5 percent were disagreed followed by 20.5 percent strongly disagree, 15 percent strongly agree, 8 percent agree respondents and only 4 percent respondents were indifferent. Moreover, Majority of the respondents were agreed about adoption of good dairy practices to reduce adverse impact on the local environment. The corresponding mean value was 2.50 and the rank was 1st. Among all the respondents 43 percent were strongly agreed followed by 30 percent agree, 9.5 percent strongly disagree, 9 percent disagree respondents. Only 8.5 percent respondents were indifferent about this particular dairy practices.

Table 7: Adoption of management practices by dairy farmers in Haryana

Adoption Strategies		Herd size				Overall percentage	Mean	Rank
		Small	Medium	Large	Overall			
I. Implementation of easy to manage dairy farm	Strongly agree	23(29.11)	32(40.51)	24(30.38)	79(100)	39.5	2.94	II
	Agree	19(25)	34(44.74)	23(30.26)	76(100)	38		
	Neutral	4(25)	8(50)	4(25)	16(100)	8		
	Disagree	2(16.68)	5(41.66)	5(41.66)	12(100)	6		
	Strongly Disagree	4(23.53)	8(47.06)	5(29.41)	17(100)	8.5		
II. Ensure farm tasks are carried out safely and competently	Strongly agree	19(27.94)	31(45.59)	18(26.47)	68(100)	34	3.30	III
	Agree	26(26.26)	39(39.39)	34(34.35)	99(100)	49.5		

	Neutral	3(37.50)	5(62.50)	0(00)	8(100)	4		
	Disagree	1(14.28)	4(57.14)	2(28.58)	7(100)	3.5		
	Strongly Disagree	3(16.67)	8(44.44)	7(38.89)	18(100)	9		
III. Manage the enterprises to ensure its financial viability	Strongly agree	26(28.26)	34(36.96)	32(34.78)	92 100)	46	2.64	I
	Agree	12(24.49)	20(40.82)	17(34.69)	49(100)	24.5		
	Neutral	2(18.18)	4(36.36)	5(45.45)	11(100)	5.5		
	Disagree	10(25)	25(62.50)	5(12.50)	40(100)	20		
	Strongly Disagree	2(25)	4(50)	2(25)	8 (100)	4		

Management practices

Management and economic sustainability are an integral to good dairy farming practices, as they address two key risks to the farming enterprise, human resource and financial management to ensure the sustainability of the dairy farming. From the Table 7 it can be concluded that majority of the respondents were agreed that they were implementing easy to manage dairy farms for their animals, as it help them to save time during functioning of dairy tasks. The corresponding mean value was 2.94 and the rank was 2nd. Among all the respondents 39.5 percent were strongly agreed followed by 38 percent agree, 8.5 percent strongly disagree, 8 and 6 percent neutral and disagree respondents respectively. It can also be revealed that majority of the respondents were taking care about safety while doing farm tasks in order to safe guard the manpower. The corresponding mean value was 2.94 and the rank was 3rd. Among all the respondents 49.5 percent were agreed, followed by 34 percent strongly agree, 9 percent strongly disagree, 4 percent neutral respondents. Only 3.5 percent respondents were disagree. Majority of the respondents were agreed about adoption of dairy practices to make dairy farming financial viable as majority of the dairy farmers were doing dairy as an occupation. The corresponding mean value was 2.64 and the rank was 1st. Among all the respondents 46 percent were strongly agreed, followed by 24.5 percent agree, 20 percent disagree, 5.5 percent indifferent respondents while 4 percent respondents were strongly disagree.

Table 8: Adoption of good dairy practices by dairy farmers in Haryana

Sr. No.	Dairy farming practices	Mean	Rank
1.	Animal health	2.55	III
2.	Hygiene milking	2.09	I
3.	Nutrition	2.68	IV
4.	Animal wellbeing	2.39	II
5.	Environment	2.94	V
6.	Management	3.09	VI

As per the information in table 8 Regarding adoption of good dairy practices our study concluded that among all the adoption practices for dairy farms hygiene milking was having lower mean value e.g. 2.09, hence highest agreeableness as milk comes under perishable commodity which deteriorate very fast and it may lead to lower price in the market hence hygiene milking practices were giver most preference by dairy farmers hence that was given rank 1st, followed by animal wellbeing (corresponding mean value 2.39 and rank 2nd), animal health (corresponding mean value 2.55 and rank 3rd), nutrition (corresponding mean value 2.68 and rank 4th), environment practices (corresponding mean value 2.94 and rank 5th) and management practices with mean value 3.09, dairy practices regarding management were least preferred or we may say adopted by dairy farmers as they were finding them time consuming as well as less economically viable hence management practices was given rank 6th. Hence, we may say that dairy practices regarding hygiene milking was the most important dairy practice in Haryana as it was adopted by majority of the dairy farmers, followed by dairy practices regarding animal wellbeing, animal health, nutrition and environment practices. On the other hand, dairy practices regarding management practices were least adopted by dairy farmers as they were finding that practices more time consuming and less important.

Conclusion

Present study revealed that majority of the respondents belonged to middle age group (49.5%) i.e., 31-55 years, majority were educated up to primary school (48%), belonged to medium sized family (53%), having less than five-year experience in dairy farming (65%), majority were under medium heard size (43%), opting dairy farming as their occupation (66%), having annual income less than one lakh (51%), had no land for farming (61%). Regarding adoption of good dairy practices our study concluded that among all the adoption practices for dairy farms hygiene milking was having lower mean value e.g. 2.09, hence highest agreeableness as milk comes under perishable commodity which deteriorate very fast and it may lead to lower price in the market hence hygiene milking practices were giver most preference by dairy farmers hence that was given rank 1st, followed by animal wellbeing (corresponding mean value 2.39 and rank 2nd), animal health (corresponding mean value 2.55 and rank 3rd), nutrition (corresponding mean value 2.68 and rank 4th), environment practices (corresponding mean value 2.94 and rank 5th) and management practices with mean value 3.09, dairy practices regarding management were least preferred or we may say adopted by dairy farmers as they were finding them time consuming as well as less economically viable hence management practices was given rank 6th.

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