

Compare the Extent of Adoption of Good Dairy Farming Practices by the Dairy Farmers in Central Plain and Eastern Plain Zones of Uttar Pradesh

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ABSTRACT

Even though India stands first in milk production, majority of the farmers are practicing unhygienic and unhealthy milk production practices thus the produced milk is of poor standards. Good Dairy Farming Practices (GDFP) are used world-wide which support the farmers to produce and market safe, quality milk to satisfy the quality standards. The adoption of good dairy farming practices was studied purposively in Uttar Pradesh, since this state ranks first in milk production in India. The study was purposively conducted in central and eastern plain zones of UP. The study revealed that the majority (12.00%) of respondents found that overall adoption of good dairy farming practices. Adoption level of good animal health practices was found to be 12.00 percent and adoption level of good hygienic milking practices (7.00%), good feeding practices (15.00%), good animal welfare practices (16.00%), good environment practices (16.00%) and good socio-economic management practices (4.00%). Therefore, in the present study, an effort was made to know the extent of adoption of good dairy farming practices in the study area.

Key words: Adoption, Animal health, Environment, Animal welfare, Hygienic milking.

INTRODUCTION

With an annual production of 138 million metric tonnes during 2013-14, India continues to be ranked number one in the world in milk production since 1997¹. Indian dairy farming is dominated by marginal and small holder farmers who practice this as a complimentary farm enterprise along with crop and other enterprises. In fact, the practices being followed by farmers in India are unique in

nature in the sense that the livelihood and environment are inter-wined with the socio-economic conditions which determine the adoption and utility. Good Dairy Farming Practices (GDFP) is an important practical tool used world-wide in supporting farmers to produce and market safe, quality milk and milk products to satisfy the expectations of the food industry and consumers².

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In the context of present study it is operationalized as the degree of actual use of good dairy farming practices by the dairy farmers. Good practices of dairy farming are needed to be adopted to meet the growing demand of clean and safe milk and its products. Efficient transfer of technology in dairy farming and their practical application in field situation is a key for the development of dairy sector and the stakeholders. Keeping this in mind, compare the extent of adoption of good dairy farming practices was studied purposively in Uttar Pradesh. Hence this study was undertaken with following objectives:

1. To compare the extent of adoption of good dairy farming practices of the study area

MATERIAL AND METHODS

The present study was undertaken in the state of Uttar Pradesh since it ranks first in milk production and also is rich in bovine population. The study was purposively conducted in central plain zone (CPZ) and eastern plain zone (EPZ) of Uttar Pradesh.

From each zone one district namely, Rae Bareli from central plain zone and Varanasi from eastern plain zone were selected and from each district two blocks were randomly selected. From each block two villages were selected randomly and from each village 20 respondents were selected making a total of 160 respondents were selected. Respondents having at least one lactating animal were selected for data collection. The farmers were personally interviewed with the help of adoption index which is developed with expert consultation in each type of the activities viz. animal health, hygienic milking, feeding, animal welfare, environment and socio-economic management and calculate the index value based on respondent's response for the different statements, '0' score was given in case of not-adoption and '1' score was given in case of adoption. In case of negative statements, vice-versa was followed. Total score for the calculated for each respondents under different component. Index value was calculated as,

$$\text{Index value} = \frac{\text{Obtained score}}{\text{Maximum possible score}}$$

RESULTS AND DISCUSSION

ADOPTION LEVEL IN GOOD ANIMAL HEALTH PRACTICES:

Table: 1.1 reveals that 61.25 per cent of the overall respondents fall under low adopter category, 29.37 per cent in medium and only 8.75 per cent in high adopter category. In Central Plain Zone, 65.00 per cent respondents fall under low adopter category, 30.00 per cent in medium adopter category, and 5.00 per cent were of high adopter category. In Eastern Plain Zone, 57.50 per cent respondents fall under low adopter category, followed by 28.75 per cent in medium and 13.75 per cent high adopter category. Overall index value for good animal health practices was found to be 0.122. It indicates that overall good animal health practices among respondents were 12 percent. The calculated Z value was found to be -0.114,

and it indicated that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones. It can be concluded that the adoption of good dairy farming practices were low in good animal health practices as the respondents were not giving vaccination to their animals as per the recommended schedule. They were also not maintaining records for all management/ health care profile, ignorance on the account of management of animal diseases that can affect public health including regular health check- up for symptoms of disease was also found. Few respondents were using veterinary medicines as prescribed by veterinarians and mostly they were not selecting animal breeds well suited to their local environment.

ADOPTION LEVEL IN GOOD HYGIENIC MILKING PRACTICES:

Table: 1.2 shows that majority (88.75%) of the overall respondents in the study area adopted the hygienic milking practices to a low level. About 9.75 per cent of respondents had medium level of adoption and only 1.87 per cent had low level of adoption. About 93.75 per cent respondents in Central Plain Zone and 83.75 per cent respondents in Eastern Plain Zone had low level of adoption, followed by 3.75 percent and 15.00 percent of the respondents had medium and only 2.50 percent and 1.25 percent of the respondents with high level of adoption in Central Plain and Eastern Plain Zones respectively. The index value for good hygienic milking practices was found to be 0.060 in Central Plain Zone and 0.086 in Eastern Plain Zone. Overall index value for good hygienic milking practices was found to be 0.073. It indicates that adoptions of overall good hygienic milking practices among respondents were found to be only 7 percent. The calculated Z value was found to be -0.167; and it indicates that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones. From the above result we can conclude that the adoption of good hygienic milking practices were low as the farmers were not able to maintain clean housing and milking area. It was also found that the basic knowledge about hygienic milk production were also lacking i.e. disinfection of utensils after each milking, pre and post dipping of teats, arranging adequate milk storing containers and sanitization of clean milk storage container after each milk collection etc. similar finding For adoption of Clean Milk Production practices, majority of the respondents were in the low category (60%), followed by medium (33%) and high categories (1%).

ADOPTION LEVEL IN GOOD FEEDING PRACTICES:

It could be seen from Table: 1.3 that majority (85.00%) of the overall respondents in the study area fall under low adopter category, followed by medium (10.62%) category of

adoption and only 4.37 per cent of farmers had high level of adoption in good nutritional practices. In Central Plain Zone Majority (91.25%) of respondents had low level of adoption, followed by 6.25 per cent in medium level and only 2.25 per cent respondents had high level of adoption. In Eastern Plain Zone 80.00 per cent of respondents had low adopter category, followed by 13.75 per cent in medium and only 6.25 per cent of respondents had high level of adoption. Overall index value for good nutritional practices was found to be 0.159, while in Central Plain Zone, the value was 0.140 and in Eastern Plain Zones, the value was found to be 0.179. It indicated that overall good nutritional (feed & water) practices among respondents were found to be 17 percent. The Z value was found to be -0.254; and it indicates that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones as result in before. It was concluded from the above result that the adoption of good nutritional practices were low as farmers were weak in planning and execution of farm input management activities e.g. feed, fodder and medicines. A very few farmers were providing sustainable nutrition, irrigation and pest management practices to crops for the feed. Including this, proper care were not taken for activities like- handling of chemicals, supplying clean and fresh water, etc. Similar finding was found that the majority of respondent found were low level (43.75%)

ADOPTION LEVEL IN GOOD ANIMAL WELFARE PRACTICES:

It was observed from Table-1.4 that majority (70.62%) of the overall respondents fall under low category of adoption. about 23.12 per cent of respondents had medium level of adoption and 6.25 per cent with high level of adoption in good animal welfare practices. About 83.75 per cent in Central Plain Zone and 57.50 per cent in Eastern Plain Zone of the respondents had low level of adoption, followed by 13.75 per cent and 32.50 per cent of the respondents with medium in level and only 2.50 per cent and 10.00 per cent of respondents with high category of adoption in Central Plain Zone and

Eastern Plain Zone respectively. Overall index value for good animal welfare practices was found to be 0.164, followed by 0.134 and 0.194 in Central Plain and Eastern Plain Zones respectively. It indicates that overall good animal welfare practices among respondents were found to be 16 percent. The calculated Z value was found to be -0.384; and it indicated that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones. It can be concluded that the adoption of good animal welfare practices were low as the farmers were unable to provide suitable flooring and footing in animal-shed, it was also observed that the knowledge regarding toxic plants and other harmful substances were low including adequate ventilation. Apart from this, a fair amount of awareness about protecting the animals from adverse weather conditions was also observed.

ADOPTION LEVEL IN GOOD ENVIRONMENT PRACTICES:

Table-1.5 shows that 66.25 per cent of the overall respondents fall in low category of adoption. About one-fourth (24.62%) of respondents had medium level and 8.12 per cent had high level of adoption in good environment practices. In Central Plain Zone majority (73.75%) of the respondents fall under low level category of adoption, followed by 20.00 per cent in medium and 6.25 percent of respondents had high level of adoption. In Eastern Plain Zone more than half (58.75%) of respondents had low level of adoption, followed by 31.25 percent medium and 10.00 per cent high level of adoption. Overall index value for good environment practices was found to be 0.166, followed by 0.145 in Central Plain Zone and 0.188 in Eastern Plain Zone. It indicates that overall good environment practices among respondents were found to be 16 percent. The calculated Z value was found to be -0.284; and it indicates that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones. It can be concluded from the result that the adoption of good environment practices were low. This may be due to the fact that farmers were

unable to minimize the environmental pollutants from dairy farming as well as they were not able to manage livestock from adverse environmental impacts. It was also revealed that they were unable to use farm inputs such as water and nutrients effectively, and were not much aware about the implementation of practices to reduce, reuse or recycle farm waste as appropriate.

ADOPTION LEVEL IN GOOD SOCIO-ECONOMIC MANAGEMENT PRACTICES:

It can be observed from Table-1.6 that majority (71.25%) of the overall respondents fall in low category of adoption. About one-fourth (26.87%) of respondents had medium level of adoption followed by only 1.87 per cent of respondents with high level of adoption in good socio-economic management practices. In Central Plain Zone majority (72.50%) of respondents fall under low category of adoption followed by 23.75 per cent in medium level and only 2.50 per cent of respondents had high level adoption. In Eastern Plain Zone majority (70.00%) of respondents had low level of adoption, followed by 28.75 per cent in medium and only 1.25 per cent of respondents had high level of adoption. Overall index value for good socio-economic management practices was found to be 0.041, followed by 0.039 and 0.043 in Central Plain and Eastern Plain Zones respectively. It indicates that overall good socio-economic management practice among respondents was only 4 percent. The calculated Z value was found to be 0.009; and it indicated that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones. It can be concluded that the adoption of good socio-economic management practices were low as farmers were lacking in implementing sustainable work practices, employment of labors based on national laws and practice, as well as they were not having appropriate procedures and equipment in place for undertaking dairy farming practices. It was also observed they were unable to manage financial risks up to certain extent through saving in credit institution from the dairy enterprise.

ADOPTION LEVEL IN OVERALL GOOD DAIRY FARMING PRACTICES:

It can be seen from Table-1.7 that majority (86.25%) of the overall respondents in the study area did not adopted good dairy farming practices fall under low level adoption. About 7.50 per cent of respondents had medium level of adoption and 7.50 per cent had high level of adoption. Majority (91.25%) of respondents in Central Plain Zone and about 65.00 percent in Eastern Plain Zone had low level of adoption, followed by 5.00 per cent and 23.75 per cent of the respondents with medium and only 3.75 per cent and 11.25 per cent of the respondents with high level of adoption in Central Plain and Eastern Plain Zones respectively. In the Central Plain Zone the index value for good dairy farming practices was found to be 0.108 and in the Eastern Plain Zone, this value was found to be 0.146. Overall index value for good dairy farming practices was found to be 0.127. It indicates that overall adoptions of good dairy farming practices among respondents were found to be 12 percent. The calculated Z value was found to be -0.233; and it indicated that there is no significant difference in level of adoption among the respondents of Central Plain and Eastern Plain Zones. It can be concluded from the above result that the adoption of overall good dairy farming practices was found to be low, as only 12 percent overall good dairy farming practices were adopted by the farmers in the study area. In case of good animal health practices adoption level was found to be 12

percent, followed by good hygienic milking practices (7%), good feeding practices (15%), good animal welfare practices (16%), good environment practices (16%) and good socio-economic management practices (4%) respectively. Similar finding was observed that the overall respondents in high adoption category were 16.25% whereas 40.00% were medium adopters; however, 43.75% respondents were in the low adopter's category.

CORRELATION BETWEEN SOCIO-ECONOMIC AND COMMUNICATIONAL CHARACTERISTICS OF THE RESPONDENTS AND THEIR ADOPTION LEVEL

It is evident from the table 1.8 indicate that, out of the 14 selected characteristics of dairy farmers, Education, Income, Operation Land Holding, Milk Production, Milk sale, social participation and Mass media exposure exerted highest positive correlation coefficient ($P < 0.01$) with extent of adoption of good dairy farming practices. Variables namely, Personal cosmopolite contact had positive significant relationship ($P < 0.05$) with extent of adoption whereas age, family size, experience, herd size milk consumption and Personal localite contact had negative non-significant relationship with extent of adoption of good dairy farming practices. The findings of the study are in conformity with Panchbhai *et al.*¹⁰ who reported that social participation had positive significant relationship with adoption of animal husbandry practices

Table 1: Distribution of respondents based on their Adoption index in Good animal health practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.092)	52 (65.00)	46 (57.50)	98 (61.25)
Medium (0.092 to 0.183)	24 (30.00)	23 (28.75)	47 (29.37)
High (>0.183)	4 (5.00)	11 (13.75)	14 (8.75)
Index value	0.110	0.134	0.122
Z value	-0.144		

Figures in parentheses indicate percentage

Table 2: Distribution of respondents based on their Adoption index in Good hygienic milking practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.087)	75 (93.75)	67 (83.75)	142 (88.75)
Medium (0.087 to 0.129)	3 (3.75)	12 (15.00)	15 (9.75)
High (>0.129)	2 (2.50)	1 (1.25)	3 (1.87)
Index value	0.060	0.086	0.073
Z value	-0.167		

Figures in parentheses indicate percentage

Table 3: Distribution of respondents based on their Adoption index in Good feeding practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.190)	73 (91.25)	64 (80.00)	136 (85.00)
Medium (0.190 to 0.218)	5 (6.25)	11 (13.75)	17 (10.62)
High (>0.218)	2 (2.25)	5 (6.25)	7 (4.37)
Index value	0.140	0.179	0.159
Z value	-0.254		

Figures in parentheses indicate percentage

Table 4: Distribution of respondents based on their Adoption index in Good animal welfare practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.176)	67 (83.75)	46 (57.50)	113 (70.62)
Medium (0.176 to 0.219)	11 (13.75)	26 (32.50)	37 (23.12)
High (>0.219)	2 (2.50)	8 (10.00)	10 (6.25)
Index value	0.134	0.195	0.164
Z value	-0.384		

Figures in parentheses indicate percentage

Table 5: Distribution of respondents based on their Adoption index in Good environment practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.105)	59 (73.75)	47 (58.75)	106 (66.25)
Medium (0.105 to 0.148)	16 (20.00)	25 (31.25)	41 (24.62)
High (>0.148)	5 (6.25)	8 (10.00)	13 (8.12)
Index value	0.145	0.188	0.166
Z value	-0.284		

Figures in parentheses indicate percentage

Table 6: Distribution of respondents based on their Adoption index in Good socio-economic management practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.101)	58 (72.50)	56 (70.00)	114 (71.25)
Medium (0.101 to 0.146)	19 (23.75)	23 (28.75)	43 (26.87)
High (>0.146)	2 (2.50)	1 (1.25)	3 (1.87)
Index value	0.039	0.043	0.041
Z value	0.009		

Figures in parentheses indicate percentage

Table 7: Distribution of respondents based on their Adoption index in overall Good dairy farming practices (n=160)

Category	Central Plain Zone (n=80)	Eastern Plain Zone (n=80)	Pooled (n=160)
Low (<0.150)	73 (91.25)	52 (65.00)	138 (86.25)
Medium (0.150 to 0.191)	4 (5.00)	19 (23.75)	12 (7.50)
High (>0.191)	3 (3.75)	9 (11.25)	12 (7.50)
Index value	0.108	0.146	0.127
Z value	-0.233		

Figures in parentheses indicate percentage

Table 8: Correlation between socio- economic and communicational characteristics of the respondents and their adoption level

Variables	'r' Value
Age (X ₁)	-0.00977 ^{NS}
Education (X ₂)	0.41333**
Family Size (X ₃)	-0.08515 ^{NS}
Experience (X ₄)	0.0159 ^{NS}
Herd size (X ₅)	0.071852 ^{NS}
Income (X ₆)	0.22472**
Operation Land Holding (Acre) (X ₇)	0.213043**
Milk Production (X ₈)	0.22578**
Milk consumption (X ₉)	-0.0787 ^{NS}
Milk sale (X ₁₀)	0.14589**
Social participation (X ₁₁)	0.199795**
Personal localite contact (X ₁₂)	-0.04447 ^{NS}
Personal cosmopolite contact (X ₁₃)	0.092261*
Mass media exposure (X ₁₄)	0.3428**

**Significant at 1 per cent level of probability (Two-tailed), *Significant at 5 percent level of probability (Two-tailed)
NS=Non-significant

CONCLUSION

India has the largest cattle and buffalo population in the world and Indian dairy farming is dominated by small and marginal farmers who practice this as a complimentary farm enterprise along with crop and other enterprises. Good dairy farming practices plays significance role in the production of market safe quality milk and milk product in the rural areas, so we can say that it is important to the every small and marginal farmer to increase their farm income from producing quality milk and milk product. From the study it can be concluded that the level of adoption of good dairy farming practices by the study group was low, because of the farmers being doing subsistence farming and not aware of the principles of good dairy farming practices. Overall, the adoption of Good Dairy Farming Practices was found to be unsatisfactory. Therefore, efforts should be made to convince dairy farmers about the adoption of good dairy farming practices. They should be motivated through organizing trainings and demonstrations at field levels. Efforts of local veterinary officers, Livestock

Supervisors and extension workers would be essential. Simultaneously, avenues must be open in this area for efficient and economic marketing of milk at good price.

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