



## **MILK PRODUCER'S AWARENESS ON ECO-HEALTH PRACTICES IN DAIRY FARMING: A STUDY IN ANDHRA PRADESH**

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### **ABSTRACT**

The present study was conducted in three different regions of Andhra Pradesh state and one district from each region was selected purposively. 120 milk producers were randomly selected i.e 20 from rural and 20 from urban area of each district comprising 40 from each district with the help of interview schedule. There is a significant ( $P < 0.01$ ) association between independent variables like age, gender, educational qualification, main occupation, land holding, mass media exposure, extension contact, information seeking behavior, economic orientation, scientific orientation, management orientation with awareness of milk producers on Eco-Health practices. The present study highlights the awareness level of milk producers about Eco-Health practices in dairy farming and the importance of personal, socio-economic, communication and psychological profile for executing the any programmes related to dairy sector for environmental safety, product safety and public health.

**Keywords:** Awareness, Eco-Health practices, Milk producers, Dairy sector, Andhra Pradesh.

### **INTRODUCTION**

India has been the leading producer of milk and milk products from last few decades. But it was not same for export because of lack of quality. Majority of the Indian dairy sector was occupied by marginal and small farmers who are economically deprived. Most of the milk produced and distributed through informal chain where quality is a big concern. For gaining more profits majority of the farmers were following unethical practices and using misapplications which are not safe for public and environment (Ozturket *al.* 2019). This may be due to lack of awareness on food safety, animal diseases and impact of dairy sector on environment (Singh, 2019 and Bikokuet *al.* 2018). Although a great extent of trainings are being carried out in the state departments on dairy production system and a lot of emphases was given on the clean milking production practices but the sad part is that farmer are interested in producing more milk rather than clean milk. One Health

collaborative effort involving experts from a wide range of disciplines working for reducing the problems. These networks variously been termed as conservation medicine, one medicine, one health, ecosystem health or agroecosystem health and ecosystem approaches to health, usually shortened to “ecohealth”. Eco-Health practices in dairy farm assist milk producers to increase returns by following simple management practices, it helps to utilize natural resources promptly, can reduce the losses due to diseases by incorporating control programmes, increases the health and wellbeing, create coordination with stakeholders involved in dairy sector, gives them confidence about their production, can expects fair price in return according to the quality of product, make them aware of the public health risks associated with adulteration, reduce their reliance on subsidies, and make them feel responsible for environmental pollution from dairy farm. So the study was planned to document awareness of urban and rural milk producers from

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three districts of Andhra Pradesh state towards Eco-Health practices in dairy sector with respect to environmental aspects, human aspects and product safety.

### MATERIAL AND METHODS

The present study was conducted in three regions of Andhra Pradesh state. One district from each region that is Chittoor district from Rayalaseema, Krishna district from Coastal and Vishakhapatnam district from North coastal region were selected. From every district 20 urban and 20 rural milk producers' areas were selected randomly, comprising 120 from three districts. Rural and Urban milk producers were personally interviewed with the help interview schedule. The milk producers were categorized based on the value obtained by dividing the maximum

possible score with three since they were grouped separately into three categories i.e., low, medium and high level of awareness. The range for low, medium and high level of awareness for Eco-Health practices with respect to environmental aspects was <6, 6 to 12 and more than 12 respectively, for human aspects it was <4, 4 to 8 and >8 and for product safety it was <3, 3 to 4 and >4 respectively. The awareness was measured on two point continuum i. e. aware (score 1) and not aware (score 0). The collected data was tabulated and analysed with the help of SPSS version 23.

### RESULTS AND DISCUSSION

Table 1, 2 and 3 indicate the awareness of milk producers on Eco-Health practice with respect to environmental aspects, human aspects and product safety respectively. It is clear that the mean

**Table 1: Awareness of milk producers about Eco-Health practices with respect to environmental aspects.**

Visakhapatnam	Districts								
	Visakhapatnam			Krishna			Chittoor		
	Rural area (n=20)	Urban area (n=20)	Overall (n=40)	Rural area (n=20)	Urban area (n=20)	Overall (n=40)	Rural area (n=20)	Urban area (n=20)	Overall (n=40)
Biosecurity measures	3(15)	5(25)	8(20)	8(40)	9(45)	17(42.5)	6(30)	10(50)	16(40)
Dairy farming impact on climate change	2(10)	3(15)	5(12.5)	6(30)	8(40)	14(35)	8(40)	10(50)	18(45)
Impact of climate change on dairy farms	9(45)	12(60)	21(52.5)	15(75)	15(75)	30(75)	12(60)	16(80)	28(70)
Importance of proper disposal of farm waste for environmental safety	9(45)	14(70)	23(57.5)	12(60)	15(75)	27(67.5)	13(65)	20(100)	33(82.5)
Greenhouse gases	6(30)	8(40)	14(35)	10(50)	12(60)	22(55)	11(55)	14(70)	25(62.5)
Preventive measure for the reduction of methane gas emission	0(0)	3(15)	3(7.5)	5(25)	8(40)	13(32.5)	6(30)	9(45)	15(37.5)
Ill effects of open dung heaps.	11(55)	15(75)	26(65)	15(75)	16(80)	31(77.5)	14(70)	18(90)	32(80)
Quarantine period	6(30)	7(35)	13(32.5)	6(30)	8(40)	14(35)	10(50)	13(65)	23(57.5)
Water eutrophication	5(25)	3(15)	8(20)	4(20)	5(25)	9(22.5)	4(20)	7(35)	11(27.5)
Soil acidification	1(5)	3(15)	4(10)	3(15)	5(25)	8(20)	4(20)	6(30)	10(25)
Environment friendly insecticides that can be used in dairy farm	7(35)	5(25)	12(30)	6(30)	5(25)	11(27.5)	8(40)	7(35)	15(37.5)
Importance of cleanliness around farm premises	20(100)	20(100)	40(100)	20(100)	20(100)	40(100)	20(100)	20(100)	40(100)
Treatment of dairy effluents	0(0)	1(5)	1(2.5)	2(10)	4(20)	6(15)	5(25)	7(35)	12(30)
Environmental impact on human health	12(60)	15(75)	27(67.5)	15(75)	16(80)	31(77.5)	20(100)	20(100)	40(100)
Ill effects on environment due to deplorable human activities in dairy farm	2(10)	6(30)	8(20)	6(30)	8(40)	14(35)	7(35)	10(50)	17(42.5)
Humans-Animals-Environments interface can also be a source for diseases	6(30)	11(55)	17(42.5)	8(40)	9(45)	17(42.5)	11(55)	15(75)	26(65)
Are you aware that this interface impacting the social and economic well-being of the human population	3(15)	11(55)	17(42.5)	8(40)	12(60)	20(50)	11(55)	15(75)	26(65)
<b>Mean percentage</b>	<b>30.88</b>	<b>41.76</b>	<b>36.32</b>	<b>43.8</b>	<b>51.47</b>	<b>47.64</b>	<b>50</b>	<b>63.8</b>	<b>56.91</b>

Figures in parenthesis indicate percentage

**Table 2: Awareness of milk producers about Eco-Health practices with respect to human aspects.**

Awareness about	Districts								
	Visakhapatnam			Krishna			Chittoor		
	Rural area (n=20)	Urban area (n=20)	Overall (n=40)	Rural area (n=20)	Urban area (n=20)	Overall (n=40)	Rural area (n=20)	Urban area (n=20)	Overall (n=40)
Clean milk production	12(60)	14(70)	26(65)	8(40)	12(60)	20(50)	6(30)	10(50)	16(40)
Are you aware why experts recommend to discard fore-strips of milk	7(35)	12(60)	19(47.5)	5(25)	10(50)	15(37.5)	5(25)	7(35)	12(30)
Antibiotic withdraw period	2(10)	4(20)	6(15)	1(5)	3(15)	4(10)	1(5)	1(5)	2(5)
Diseases that can spread from milk	5(25)	9(45)	14(35)	4(20)	7(35)	11(27.5)	2(10)	3(15)	5(12.5)
Awareness about C.M.T kit	6(30)	9(45)	15(37.5)	4(20)	7(35)	11(27.5)	3(15)	6(30)	9(22.5)
Awareness about somatic cell count	1(5)	2(10)	3(7.5)	0(0)	1(5)	1(2.5)	0(0)	1(5)	1(2.5)
Mean percentage	27.5	41.66	34.58	18.33	33.33	25.83	14.17	23.33	26.25

Figures in parenthesis indicate percentage

**Table 3: Awareness of milk producers about Eco-Health practices with respect to product safety.**

Awareness about	Districts								
	Visakhapatnam			Krishna			Chittoor		
	Rural area (n=20)	Urban area (n=20)	Overall (n=40)	Rural area (n=20)	Urban area (n=20)	Overall (n=40)	Rural area (n=20)	Urban area (n=20)	Overall (n=40)
Clean milk production	12(60)	14(70)	26(65)	8(40)	12(60)	20(50)	6(30)	10(50)	16(40)
Are you aware why experts recommend to discard fore-strips of milk	7(35)	12(60)	19(47.5)	5(25)	10(50)	15(37.5)	5(25)	7(35)	12(30)
Antibiotic withdraw period	2(10)	4(20)	6(15)	1(5)	3(15)	4(10)	1(5)	1(5)	2(5)
Diseases that can spread from milk	5(25)	9(45)	14(35)	4(20)	7(35)	11(27.5)	2(10)	3(15)	5(12.5)
Awareness about C.M.T kit	6(30)	9(45)	15(37.5)	4(20)	7(35)	11(27.5)	3(15)	6(30)	9(22.5)
Awareness about somatic cell count	1(5)	2(10)	3(7.5)	0(0)	1(5)	1(2.5)	0(0)	1(5)	1(2.5)
Mean percentage	27.5	41.66	34.58	18.33	33.33	25.83	14.17	23.33	26.25

Figures in parenthesis indicate percentage

percentage of Visakhapatnam, Krishna and Chittoor rural milk producers regarding awareness on Eco-Health practices with respect to environmental aspects, human aspects and product safety was low compared to urban area milk producers. The mean percentages of awareness on Eco-Health practices was below 50 per cent in almost all districts except for Chittoor district regarding environmental aspects and this may be lack of proper exposure to different information sources, unavailability of experts nearby and lack of credit facilities causing disinterest on learning and adoption of scientific technologies which are suitable for present situation. So there is a need to develop interventions that can increase the awareness

level of milk producers through robust educational and training programmes and also it is essential to encourage by providing extra benefits to the dairy farmers who are producing residue free safe milk. The results regarding milk producer's awareness on Eco-Health practices are in agreement with the results of Gupta *et al.* (2020), Ahuja *et al.* (2019), Singh. (2019), Bikoku *et al.* (2018) and Aparna *et al.* (2013).

Results from Table 4 reveals that from Visakhapatnam district majority of the rural and urban milk producers had low level of awareness on Eco-Health practices with respect to environmental aspects (70% & 45%), human aspects (70% & 65%) and Product safety (85%

**Table 4: Distribution of milk producers according to their awareness score.**

Eco-Health Practices with respect to	Category	Districts					
		Visakhapatnam		Krishna		Chittoor	
		Rural area (n=20)	Urban area (n=20)	Rural area (n=20)	Urban area (n=20)	Rural area (n=20)	Urban area (n=20)
Environmental aspects	Low (<6)	14(70)	9(45)	8(40)	4(20)	2(10)	5(25)
	Medium (6-12)	5(25)	8(40)	6(30)	7(35)	13(65)	7(35)
	High (>12)	1(5)	3(15)	6(30)	9(45)	5(25)	8(40)
Human aspects	Low (<4)	14(70)	13(65)	14(70)	10(50)	15(75)	5(25)
	Medium (4-8)	4(20)	4(20)	4(20)	1(15)	0(0)	7(35)
	High (>8)	2(10)	3(15)	2(20)	9(45)	5(25)	8(40)
Product safety	Low (<3)	17(85)	14(70)	15(75)	11(55)	15(75)	12(60)
	Medium (3-4)	2(10)	5(25)	4(20)	7(35)	2(10)	4(20)
	High (>4)	1(5)	1(5)	1(5)	2(10)	3(15)	4(20)

Figures in parenthesis indicate percentage

**Table 5: Association between milk producer's awareness and their independent variables (n=120).**

SI. No.	Independent Variable	Chi-Square value ( $\chi^2$ )
1	Age	40.504**
2	Gender	9.783**
3	Educational qualification	77.460**
4	Family Size	5.250NS
5	Family Type	7.324*
6	Main Occupation	9.557**
7	Land Holding	20.192**
8	Herd Size	6.218*
9	Experience in Dairy Farming	5.629NS
10	Gross Annual Income	3.214NS
11	Dairy Farm Management	1.319NS
12	Mass Media Exposure	70.220**
13	Extension Contact	37.409**
14	Information Seeking Behavior	71.052**
15	Economic Orientation	55.774**
16	Scientific Orientation	52.310**
17	Management Orientation	74.061**

NS-non significant; \*Significant at 5%; \*\*Significant at 1%

& 70%). From Krishna district majority of the rural milk producers had low level of awareness on Eco-Health practices with respect to environmental aspects

(40%), human aspects (70%) and Product safety (70%). From rural area majority of milk producers had high level of awareness on Eco-Health practices with

respect to environmental aspects (45%) and low level of awareness with respect to human aspects (50%) and Product safety (55%). From Chittoor district majority of the rural milk producers had medium level of awareness with respect to environmental aspects (65%) and low level of awareness with respect to human aspect (75%) and product safety (75%). From urban area majority of the milk producers had high level of awareness regarding environmental aspect (40%) and human aspects (40%) and low level of awareness on product safety (60%). The results are similar to the results of Lunner-Kolstrup and Ssali (2016) and Jacob and George (2013). This may be due to the fact that when compared to urban milk producer's majority of the rural milk producers had lower level of education, income, communication profile and psychological profile. Expert from animal husbandry department, state veterinary university and public health officers from medical field may intervene at this juncture and amplify the milk producer's awareness towards Eco-health practices by providing regular trainings, advisory services, field tours to successful farms, exhibitions and providing information in local languages.

It was clear from Table 5 that out of seventeen independent variables, thirteen variables were found to be significantly associated with milk producer's awareness. However, eleven variables namely age, gender, educational qualification, main occupation, land holding, mass media exposure, extension contact, information seeking behavior, economic orientation, scientific orientation, management orientation had highly significant ( $P < 0.01$ ) association. Similar findings were reported by Ahuja *et al* (2019) and Ozturket *al.* (2019).

This may be due to middle and young age milk producers had high level of education, communication and psychological profile compared to old age group. Gender was significantly associated with milk producer's awareness towards Eco-Health practices. Majority of the participants were male who had greater personal, socio-economic, communication and psychological profile compared to females. The significant association with education signals that higher the education levels higher the milk producer's awareness regarding Eco-Health practices. Majority of the milk producer's main occupation was agriculture and animal husbandry which are always

interdependent to each other. Land holding was significantly associated with the milk producer's awareness regarding Eco-Health practices. This may be due to the fact that greater land holding provide greater incentive in terms of adoption and applicability of technologies. Mass media exposure was significantly associated ( $P < 0.01$ ) with the milk producer's awareness regarding Eco-Health practices. The probable reason may be that as the milk producer's exposure towards mass media increases, the awareness on Eco-Health practices also increases.

Extension contact was significantly associated ( $P < 0.01$ ) with the milk producer's awareness. This may be due to the fact that continuous contact with extension officials leads to knowledge acquisition. Milk producers with higher information seeking behavior had higher awareness regarding Eco-Health practices. This trend may be due to the fact that formal and informal sources will provide more information. There was a significant association between the awareness of milk producers and economic orientation may be due to the fact that farmers who wants to improve the economic status will always try to adopt the technologies and practices and seek information from experts that can improve the farm income. Scientific orientation was significantly associated ( $P < 0.01$ ) with the milk producer's awareness with respect to Eco-Health practices. The probable reason may be that milk producers having more mass media exposure, extension contact, information seeking behavior and economic orientation guide the milk producer to gain more information and to accept the more new technologies. Management orientation was significantly associated with milk producer's awareness towards Eco-Health practices. This may be due to the fact that farmers with more management orientation which is comprises of planning and production management are more likely to learn the practices that increases the farm revenue.

## CONCLUSION

The findings of the study concluded that the awareness level of milk producers towards Eco-Health practices with respect to Environmental aspects, human aspects and product safety was low in rural areas of Visakhapatnam, Krishna and Chittoor districts compared to urban areas. And even in urban areas it was not up to the mark. This may be due to lack of awareness on Eco-health practices. So there is a need to improve awareness among milk producers by experts from different fields for better understanding

regarding the concepts of Eco-Health and its importance in dairy sector for reducing environmental pollution, for increasing product safety and for curtail public health risks from dairy sector by considering the socio-economic characters, communication profile and psychological profiles. There is need for great coordination and continuous interaction among stakeholders from dairy sector and experts from line department to conduct different training programmers and to motive the milk producers to avoid unethical practices during milk production which are peril for environment, humans and dairy sector itself.

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