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Knowledge and Adoption Level of Organic Animal Feeding Practices by Livestock Owners in Arid Region of Rajasthan

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Abstract: ***The present paper highlighted knowledge and adoption level of livestock owners about organic animal husbandry feeding practices in arid region of Rajasthan. The study was conducted in purposively selected Barmer and Bikaner district of Rajasthan. A total of 120 livestock owners were selected from 8 selected villages of 4 tehsils namely Sheo, Chohtan, Lunkaransar and Kolayat. The final decision of livestock owners to use a new practice like organic animal husbandry practices are usually the result of their knowledge of the practices as well as their perception. The findings of the study show that livestock owners had highest knowledge and ranked first were found collectively in ample access to fresh water and feed to animals, adequate access for grazing, daily access to roughage and colostrum feeding to new born (mean score 1.00 for each).While the highest adoption was found for adequate feeding of animals, adequate access for grazing, provision of daily roughage, provide extra ration during pregnancy, colostrum feeding to new born and provision of clean and fresh drinking water with adoption index 100 ranked first collectively.***

Keywords: Organic animal husbandry, knowledge, adoption, arid region, feeding practices

1. Introduction

Healthy and safe food is basic for supporting a growing population and achieving minimum health standards. An adequate quantity of balanced and nutritious food is a primary indicator of quality of life, human welfare and development. Quality foods derived from animal sources have major importance for growth and well being of population. Production of quality food is a serious challenge to consumers, farmers, processors, retailers and governments alike due to a shift in food consumption pattern and intensified food production techniques.Good agricultural practices like integrated pest management, organic farming etc should be used in a pragmatic and sustainable mode to produce healthy food. (Venkateswarlu *et al.*,2008).

Organic agriculture is one of the most dynamic and rapidly-growing sectors of the global food industry (Ellis *et al*.,2006). During the last decade the demand for organic products has risen sharply across the world revealing public concern about food safety and quality, environmental effects of intensive agriculture and animal welfare (Sundrum, 2001; Hermansen, 2003). Organic systems of livestock production have developed to meet the concerns of society for good health and welfare required by farm animals that yield milk and meat as well as the need for safer and healthier products (Surdrum, 2001; Lund and Rocklinsberg, 2001).

Organics extends the boundaries of food and nourishment, beyond the native limits of production and profit – into the less quantifiable and broader areas of quality, values, responsibility, and caring for the wellbeing of all, future generations, the planet and all of life. The increased awareness on personal health, environment and food safety along with enhanced flavor and freshness of products, increasing the demand for organic products.Livestock plays an important role in relation to the general principles of organic agriculture, supporting biological cycles within the farming system and diversifying production (Hermansen, 2003).

Organic and conventional feeding practices of livestock are expected to differ due to specific regulations that are in place for organic farming.(Rahmann, G. & Aksoy, U. 2014) .In organic farming, animal husbandry is often understood in terms of natural living (Lund, 2006). That includes the possibility for the animal to perform natural behaviour, getting feed adapted to its physiology and living in an environment similar to that to which the animal is evolutionarily adapted. One of the main and basic principles of organic farming is that animals are kept as part of the whole production system and their nutrition should be based on locally grown organic feedstuffs.(Leming,2010). Organic animals receive their nutritional needs from organic forage and feed of good quality (IFOAM Norms, 2012). Animals shall be offered a balanced diet that provides all of the nutritional needs of the animals in a form allowing them to exhibit their natural feeding and digestive behavior (IFOAM, 2012), Organic animal feeding should be mainly based on fodder produced on the farm. According to IFOAM's requirements, at least 50% of the feed must be from the farm or from other organic farmers in the area. Organic animals must be fed organic feed - that means the feed is without pesticides and mineral fertilizer and as a part of a farming system which farm in accordance with the organic principles.

Knowledge about organic animal husbandry practices plays a very important role in the adoption of organic animal husbandry practices. Knowledge is a component of the behaviour of an individual. To improve the adoption of organic animal husbandry practices under village conditions it is necessary to assess the knowledge of the livestock owners. Keeping these facts in view, the present investigation was

carried out with the objectives of knowledge and adoption level of livestock owners in different sub areas of feeding practices of organic animal husbandry.

2. Methodology

The study was conducted in two purposively selected districts of Rajasthan i.e. Barmer and Bikaner. From each selected district, two tehsils were selected purposively. Sheo and Chohtan tehsils from Barmer district and Kolayat and Lunkaransar tehsils from Bikaner district were selected on the basis of highest livestock population. Two villages were selected randomly from each tehsil. Thus, total eight villages were selected for the purpose of study. From each selected village, 15 respondent were selected randomly. Thus, making the sample size of 120 livestock owners in present study. Data were collected from livestock owners with the help of semi-structured interview schedule, researcher's own observations were also recorded regarding the practices followed by livestock owners.

Knowledge level of livestock owners:

Knowledge is a body of understood information possessed by one individual about a particular thing, act or process. It is one of the most important sub-areas of human behaviour, which affect the covert and overt behaviour of human beings. Knowledge for this study has been operationalized as, the extent of known information by the non organic livestock owners with regarding organic animal feeding standards formulated by Government of India (NPOP,2002). The knowledge of livestock owners was measured by developing 'tailor-made` test, based on the organic animal husbandry standards, covering different aspects of organic animal feeding practices. The knowledge was measured on three-point continuum scale i.e. correct, partially correct and incorrect answer. The weightage of 2, 1, and 0 was allotted to each correct, partially correct and incorrect answer, respectively. The knowledge mean score of one respondent in a sub area/area was calculated by

$$\text{Knowledge mean score} = \frac{\text{Total obtained score}}{\text{Total obtainable score}}$$

Adoption level of livestock owners

For the present study, the term adoption was operationalized as the new organic animal husbandry practices recommended by scientist after through research for the benefit of livestock owners and whether the livestock owners are using these technologies over a period of time at the farm or not. For the measurement of adoption of scientific management practices and technologies by respondents a questionnaire schedule was developed.

The respondents were asked to give their response about adoption of organic animal feeding practices. The scores for sub areas were then calculated by summing up the item-wise scores obtained in sub areas. The overall adoption score for each respondent was then calculated by adding up all the scores obtained under each sub areas.

$$\text{Adoption index} = \frac{\text{Total obtained score} \times 100}{\text{Total obtainable score}}$$

3. Results and Discussion

Knowledge level of livestock owners in different sub areas of organic animal husbandry feeding practices:

In different sub-areas of organic animal feeding practices (Table No.1), the subareas in which the livestock owners had highest knowledge and ranked first were found collectively in ample access to fresh water and feed to animals, adequate access for grazing, daily access to roughage and colostrum feeding to new born (mean score 1.00 for each) followed by don't use any synthetic growth promoters in feed (mean score 0.98), as ranked second collectively. However, feeding of fully organic grown feed and feeding of urea treated straw (mean score 0.67 for each) both were ranked as third. Whereas followed by knowledge of balanced feeding (0.52), source of roughage feeding (0.46), and source of concentrate feeding (0.43) were ranked 4th, 5th and 6th respectively.

Table 1: Distribution of respondents according to their Knowledge level in different sub areas of organic animal husbandry feeding practices

S. N.	Sub areas of feeding practices	Mean score	Rank order
1	Ample access to fresh water and feed	1.00	I
2	Adequate access for grazing	1.00	I
3	Daily access to roughage	1.00	I
4	Feeding of fully organic grown feed	0.67	III
5	Colostrum feeding to new born	1.00	I
6	Knowledge of balanced feeding	0.52	IV
7	Don't use synthetic growth promoters in feed	0.98	II
8	Feeding of urea treated straw	0.67	III
9	Source of roughage feeding	0.46	V
10	Source of concentrate feeding	0.43	VI

Rayanagoudar *et.al.*(2008) studied on knowledge level of farm women about organic farming and organic foods and revealed that 25 per cent of the farm women from organic village knew that organic foods contain more of vitamins and minerals. About 20.00 per cent each felt that organic foods taste better than non-organic foods and that organic food are produced by using only natural material. About 8.00 per cent each were aware about absence of pesticide residues in organic food and that organic foods are good for wild life and the environment. The overall knowledge index of organic food was generally low i.e., 34.94. In non-organic village they do not have any knowledge about organic foods. Irrespective of women being from organic or non-organic villages women had either very low or no knowledge at all about the organic foods.

Adoption index for different subarea of organic animal husbandry feeding practices

Data presented in Table No.2 revealed that highest adoption was found for adequate feeding of animals, adequate access for grazing, provision of daily roughage, provide extra ration during pregnancy, colostrum feeding to new born and provision of clean and fresh drinking water with adoption index 100 ranked first collectively. However, frequency of concentrate feeding, frequency of roughage feeding and frequency of change in diet with adoption index 66.6 and ranked second jointly.While provide special ration for

breeding male, source of roughage feeding, source of concentrate feeding and provide fully organically grown feed, place of feeding and balanced feeding were having adoption index of 65, 58.47, 49.44, 49.16, 48.95 and 45 ranked 3rd, 4th, 5th ,6th ,7th and 8th respectively. Low level of adoption related to feeding practices were observed in case of source of drinking water and use of antibiotics and synthetic vitamins, minerals, feed additives with adoption index of 33.33 and 3.94 and stands ranked 9th and 10th.

Table 2: Distribution of respondents according to their adoption index for different subarea of organic animal husbandry feeding practices

S. N.	Sub areas of feeding practices	Adoption Index	Rank order
1	Adequate feeding of animals	100	I
2	Fully organically grown feed	49.16	VI
3	Balanced Feeding	45	VIII
4	Adequate access for grazing	100	I
5	Place of feeding	48.95	VII
6	Provision of daily roughage	100	I
7	Source of roughage feeding	58.47	IV
8	Source of concentrate feeding	49.44	V
9	Frequency of roughage feeding	66.6	II
10	Frequency of concentrate feeding	66.6	II
11	Provide extra ration during pregnancy	100	I
12	Special ration for breeding male	65	III
13	Colostrum feeding to new born	100	I
14	Frequency of change in diet	66.6	II
15	Use of antibiotics and synthetic vitamins, minerals, feed additives	3.94	X
16	Provision of clean and fresh drinking water	100	I
17	Source of drinking water	33.3	IX

Nalubwama, *et al*. (2014) studied on Challenges and prospects of integrating livestock into smallholder organic pineapple production in Uganda and revealed that natural pastures were found to be the most common feed resource for ruminants in the area. Heavy dependence on natural pastures with limited avenues for conservation and animal supplementation characterized free range and tethering management practices by smallholder farmers. In study area among livestock owners was found to be adequate feeding to animals by tethering and free-range system. This is consistent with results of earlier studies among other smallholder farmers in Uganda (Lubwama 2002; Kirunda and Mukiibi-Muka 2006; Byarugaba 2007). These management systems provide animals with sufficient outdoor access as required by the organic livestock standards (IFOAM 2000). Although tethering and free-range systems provide outdoor access, a requirement in the organic standards and desirable practices in organic animal husbandry. Subrahmanyeswari and Chander (2008) studied on integrating indigeneous knowledge of farmers for sustainable organic farming: An assessment in Uttarakhand state of India and revealed that farmers were providing grazing to animals along with forage and pasture which varies with the season.

4. Conclusions

The livestock owners provided their animals with ample access to free movements, provided protection against extreme weather condition, grazing was provided to all animals for a considerable time, mixed farming system was adopted by farmers, most of the livestock owners was using own farm produce as feeding source for their livestock. Thus, on basis of above findings, study concluded that most of the livestock owners were following organic livestock feeding practices without much knowing the advantages of organic production system. All these practices conferred a high standard of animal welfare, most sought criteria for organic farms.The proper extension strategy like training, gosthi, exhibition, farm visits and kisan mela may be found more important in updating the knowledge level of organic cultivators under organic farming system. Converting to organic production may be far easier for Indian livestock owners .The low external inputs based Indian diary sector has better opportunities to convert to organic production since majority of Indian livestock owners are organic livestock owners not by choice but by tradition. The government policy support, incentives, creating awareness, training, development of strong markets for exports may turn to quality of organic production.

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