ADOPTION LEVEL OF ORGANIC ANIMAL HUSBANDRY PRACTICES AMONG LIVESTOCK OWNERS IN ARID REGION OF RAJASTHAN[#]

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ABSTRACT

The paper highlighted the adoption level of organic animal husbandry practices by livestock owners in arid region of Rajasthan. The study was confined in purposively selected Barmer and Bikaner district of Rajasthan. A total of 120 livestock owners were selected from 8 villages of 4 tehsils.The findings of the study show that the majority of the livestock owners (39.2%) possessed high level of overall adoption regarding organic animal husbandry practices. Among different animal husbandry practices, maximum adoption index (52.94) was found in organic breeding practices and minimum adoption index (32.01) was found in organic feeding practices.

Key words: Organic animal husbandry, adoption, arid region, adoption index

Introduction

Organic agriculture is one of the most dynamic and rapidly-growing sectors of the global food industry (Ellis *et al*., 2006).There is now unprecedented demand of organic food worldwide following adoption of green revolution technology and its adverse effects of pesticide use, fertilizer, genetically modified products etc. India is not lagging behind in the arena of organic produce in terms of its export and domestic consumption. Animal Husbandry sector is involved in production, quality assurance and supply of animal proteins in terms of milk, meat and eggs. Hence, Animal Husbandry in organic farming system is an important subject to be addressed adequately (Mittra, 2006). Globally, this growing awareness of health and environmental benefits of organic agriculture has resulted in steadily increasing demand for such products both in the developed and developing countries with an annual average growth rate of 20-25% (Naik and Nagadevara, 2010). In present organic agriculture is practiced in 172 countries, and 43.7 million hectares of agricultural land are managed organically by approximately 2.3 million producers. The country with the most producers is India (6, 50,000) followed by Uganda and Mexico. The current global market for organic products is US$ 80 billion in 2014 (Willer and Lernoud, 2016). India produced around 1.24 million MT of certified organic products. India exported 135 products last year (2013-14) with the total volume of 194088 MT (APEDA, 2014).

Rajasthan, largest state in India (61% hot desert), is characterized by low and erratic rainfall, high wind velocity and high temperature. The native livestock breeds, indigenous feeds and traditional wisdom of husbandry comes under the domain of organic system which hasproven that organic principles and practices in general and for livestock farming in particular can serve an effective pathway to sustainable development in Desert ecosystem (Sharma and Sharma, 2011).

The adoption behaviour of livestock owner about new technology depends on knowledge, economic motivation, family education status, extension agency contact, social participation and income (Kumar *et al.,* 2015).

Materials and Methods

The present study was conducted in purposively selected Barmer and Bikaner district of Rajasthan. A total of 120 livestock owners were selected from 8 villages of 4 tehsils. For the present study, the term adoption was operationalized as the new organic animal husbandry practices recommended by scientist after thorough 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 an adoption schedule was developed.

The scientific management practices and technologies were divided into four major aspects/areas namely animal breeding, feeding, health-care and management practices. Adoption level of practices were measured in three point continuum scale representing ‘always adopted’, ‘sometime adopted’ and ‘never adopted’ with score of 2, 1 and 0, respectively. The total score obtained by individual respondent was calculated with the help of adoption index and the respondents were further categorized into three levels of adoption as follows: low, medium and high.

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

The overall adoption level of livestock owners formed the basis for the categorization of respondents as high, medium and low level of adoption behavior in respect of organic livestock management practices.

Results and Discussion

Adoption level of different organic livestock management practices

Adoption level of livestock owners regarding different areas of organic livestock management practices was measured on four aspects namely, breeding, feeding, health care and

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management, which are discussed below:

Breeding practices

The data presented in Table 1 showed that majority (40.8%) of the respondents had medium level of adoption followed by low (35.8%) and high (23.3%) level of adoption regarding breeding practices.

The results showed that majority (53.61) of livestock owners used natural service for animals. Easy availability, no fees, no monitoring and high conception rate could be the reasons for adoption of natural service as compared to A.I.

Subrahmanyeswari and Chander (2008) concluded that majority of the farmers (68.18%) were using natural service method for breeding cattle and buffalo. Only few farmers (12.08%) had adopted artificial insemination methods for breeding. Similar results were found by Nalubwama *et al*. (2014) that farmers had mainly indigenous breeds for cattle (62%), goats (97.8%), pigs (87.5%) and chickens (100%) and natural mating was the most common method of breeding in cattle, goats and pigs in their organic study. Sharma *et al*. (2016) revealed in their study on prevailing animal husbandry practices and knowledge of livestock farmers in Udham Singh Nagar district of Uttarakhand that only 25% livestock farmers preferred natural service in comparison to artificial insemination.

The predominant animal breeds in the study area were found to be indigenous but some livestock owners opted to cross breed, particularly the dairy cattle as a way of improving milk production. Tropical breeds are known to have unique and outstanding characteristics such as adaptability to hot environment and resistance to endemic diseases; their low productivity not withstanding (Olawuni, 2013). The use of well-adapted breeds is one of the major characteristics given much emphasis in organic production systems. Therefore, disease prevention should preferably be based on animal breed adaptability and diversity of flora and fauna (Magnusson 2001; Stockdale *et al.,* 2001).

Feeding practices

In case of feeding practices, majority (45.8%) of the respondents were possessed medium level of adoption followed by high (32.5%) and low (21.7%) level of adoption regarding organic feeding practices. Natural pastures were found to be the most common feed resource animals in the area. The availability of natural pastures is dependent on availability of rainfall, therefore during the dry seasons there is always drastic scarcity of this resource. At this time farmers used crop residues. Similar results were found in another study where farmers used crop residues as animal feed at the time of dry season in organic farm (Nalubwama *et al*., 2014). The use of crop residues in the study area has been possible because as the dry season approaches, harvesting of crops like bajara and maize are at the peak, some farmers used fodder trees as animal feed. Studies have indicated that animals with access to fodder trees have shown better performance than those kept on natural pastures in terms of milk yield, weight gain, reproduction performance and survival rates (Norton, 1994). Mahla *et al*. (2015) revealed in their study that about 62.81 per cent cattle keepers grazed animals on harvested/fallow field, while 30.63 per cent kept own pasture land for grazing.

Health care practices

With respect to health care practices, majority (43.3%) of the respondents had high level of adoption followed by medium (30%) and low level of adoption (26.7%). Livestock diseases and feed were the main challenges for livestock production among the livestock owners. These results are in agreement with studies already done by other researchers which indicated high prevalence of endemic diseases and inadequate feeds in tropical regions (Bogale *et al.,* 2008; Vaarst *et al.,* 2008 and Nalubwama *et al.,* 2011). Livestock owners also reported limited knowledge in organic animal farming which probably explains their continued use of conventional practices in managing livestock diseases. There is therefore a desperate need for development of functioning organic alternatives that are cheaper and effective in the pest and disease control in this hot and humid environment.

In study area livestock owners mostly used synthetic veterinary drugs to manage livestock disease with a few exceptions where herbal concoctions were used mainly to treat some infections in animals. Similar results were reported by studies done in Uganda (Vaarst *et al.,* 2008). Existing indigenous knowledge might also provide prospects for developing alternative remedies for animal diseases and pests under organic farming.

Management practices

In case of management practices, majority (52.5%) of the livestock owners had medium level of adoption followed by high (30.8%) and low level of adoption (16.7%). The common management system among livestock owners was found to be tethering and free-range. This is consistent with results of earlier studies among other smallholder farmers in Uganda (Lubwama, 2002; Kirunda and Mukiibi-Muka, 2006 and 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, it increases the risk of animals coming into contact with a broad range of environmental pathogens which might comprise animal health (Kijlstra and Eijck, 2006).

Overall adoption

A perusal Table 1 indicated that majority of the livestock owners (39.2%) possessed high level of overall adoption followed by medium (37.2%) and low (23.3%) adoption regarding organic livestock management practices. The overall adoption level was found to be 40.94.

Adoption index for different OAH practices

A perusal data presented in Table 1, among all the practices highest adoption index (52.94) was found for organic breeding practices and ranked first, followed by management practices (49.37), health care (44.69) and feeding practices (32.01) ranked as 2nd, 3rd and 4th, respectively.

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Table 1: Adoption level of different organic livestock management practices

OAH Practices	Adoption level	Frequency	Adoption Index	Rank
Breeding	Low(<7.2)	43(35.8)	52.94	I
	Medium(7.2-9.0)	49 (40.8)		
	High(>10.80)	28(23.3)		
Feeding	Low(<25.25)	26(21.7)	32.01	IV
	Medium(25.25-26.89)	55(45.8)		
	High(>28.53)	39(32.5)		
Health care	Low(<14.49)	32(26.7)	44.69	III
	Medium(14.49-16.98)	36(30.0)		
	High(>19.47)	52(43.3)		
Management	Low(<22.38)	20(16.7)	49.37	II
	Medium(22.38-23.70)	63(52.5)		
	High(>25.02)	37(30.8)		
Over all	Low(<23.3)	28(23.3)	40.94	
	Medium(23.3-37.5)	45(37.5)		
	High(>39.2)	47(39.2)		

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