

Constraints of Farmers in Adopting Improved Dairy Husbandry Practices: The Case of Ada'a District, Oromiya State, Ethiopia

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Abstract

The study was undertaken in Ada'a district of Oromia state, Ethiopia to know the constraints of farmers in adopting improved dairy husbandry practices. The study was conducted in eight purposively selected peasant associations/kebeles of the district from which thirty dairy farmers were selected randomly. A total of two hundred forty respondents were selected and personally interviewed through pre-tested questionnaires. The constraints of farmers in adopting improved dairy husbandry practices were operationalized as the reason/s for non-adoption and discontinuation of the practices after adoption. On the basis of the responses, frequency distributions of the constraints were done for different aspects of husbandry practices. The results revealed that lack of awareness about the importance of heat detection, lack of knowledge about proper weight at first breeding of heifer and pregnancy diagnosis, poor perception of the AI service and poor conception rate of AI, lack of awareness about the importance of proper height of the roof, lack of knowledge about proper ventilation of the house, lack of knowledge about the daily feed requirement of dairy cows, high cost of animal feeds, inadequate knowledge of the farmers about colostrum feeding, lack of knowledge about timely and regular vaccination of animals, lack of awareness about the importance of full hand milking, lack of knowledge about clean milk production, lack of knowledge about the importance of value addition, high price of urea to treat the straws and lack of adequate finance were the major constraints that influenced the decision to adopt improved dairy husbandry practices in the study area. Hence, focusing on these constraints and eliminating/reducing them could lead to increase in the rate of adoption of improved dairy husbandry practices and ultimately increase milk production in the area.

Key words: Adoption, constraints, dairy, husbandry practices

Introduction

It is a known fact that, for most of the world's poorest countries, livestock provides the leading source of employment and contributes large fractions to the national income. Hence, increasing livestock productivity is critical to economic growth and development in a country which can be achieved through the introduction of improved technologies and management systems. Improving milk supply from animals through higher livestock numbers as in the past is now severely constrained due to feed scarcity as a result of declining grazing land. The best options to increase livestock productivity are through adoption of improved technologies and efficient use of available resources (Bhende and Kalirajan, 2007). The failure of most of the dairy farmers to maximize their milk production may be due to lack of knowledge and failure to adopt recommended dairy technologies.

A unique feature of the Ethiopian dairy sector is its low productivity (with an average daily milk production of 1.44 liters per cow) which could be attributed to, among other factors, the existence of millions of small-scale dairy producers who do not use improved dairy husbandry practices. The problems could be solved when farmers successfully adopt new dairy technologies being generated in research institutes and increase their milk production efficiency. Though technologies to

improve productivity of dairy animals do exist, the level of technology adoption by smallholder farmers in Ethiopia is still unsatisfactory and is highly dependent on gender, family size and level of education of smallholder farmers (Mekonen *et al.*, 2009). The awareness and rate of adoption of dairy technologies in smallholder mixed farming systems is consistently low, because of the existing research and extension set up and related other constraints (Misra *et al.*, 2006). To achieve significant increases in productivity and competitiveness of the sector, identification of constraints of farmers in adopting improved dairy husbandry practices, looking for solutions to the existing constraints and policies that encourage the adoption of new technologies, as well as measures that promote efficient use of the existing technologies are required. In these contexts, the present study was aimed to identify constraints of farmers in adopting the improved dairy husbandry practices in Ada'a district.

Materials and Methods

The study was conducted in Ada'a district of East Shoa Zone of Oromiya state, Ethiopia. Ada'a district is located at about 45 km South East of Addis Ababa, the capital city of the country. The district lies between longitudes of 38° 51' to 39° 04' East and latitudes 8° 46' to 8° 59' North covering a land area of 1750 km².

The study was undertaken in eight purposively selected peasant associations/kebeles based on their better potential for milk production. Enumeration of all the households owning at least one milking cow in each of the selected peasant association/kebele was made with the help of the development agents (DAs) in the respective selected areas. From each of the selected PA/kebele, thirty dairy farmers were selected randomly. A total of two hundred forty respondents were selected and personally interviewed through pre-tested questionnaires to know the constraints of farmers in adopting improved dairy husbandry practices in the study area.

To estimate the extent of adoption of improved dairy husbandry practices, the recommended dairy husbandry practices were detailed and divided into six major aspects of husbandry practices viz., selection and breeding, housing, feeding and watering, animal health and disease control, care and management and value addition. The scale contained thirty five practices, six practices from each of selection and breeding, housing, feeding and watering, animal health and disease control, care and management and five practices from value addition. Corresponding to each of the practices, there were three columns representing 'continued adoption', 'discontinued after adoption' and 'not adopted' with weight of 3, 2 and 1, respectively. Accordingly, the minimum and

maximum scores a respondent could get on these scales were 35 and 105, respectively. A simple adoption index (Rao *et al.*, 1992) was used to measure the extent of adoption of the improved dairy husbandry practices as:

$$\text{Adoption Index} = \frac{\text{Total number of scores obtained}}{\text{Expected maximum score}} \times 100$$

The constraints of farmers in adopting improved dairy husbandry practices were operationalized as the reason/s for non-adoption and discontinuation of the practices after adoption. These constraints were ascertained by asking open-ended questions why the dairy farmers didn't adopt or/and discontinued the improved dairy husbandry practices. On the basis of the responses, frequency distributions of the constraints were done for different aspects of husbandry practices viz., selection and breeding, housing, feeding and watering, animal health and disease control, care and management and value addition.

Results and Discussion

Adoption of improved dairy husbandry practices

The overall extent of adoption of the respondents on different aspects of dairy husbandry practices in the study area is depicted in Table 1. Higher extent of adoption (67.85 per cent) was found in selection and breeding practices while lower extent of adoption was found in value addition

(14.25 per cent). The extent of adoption on feeding and watering practices was found to be lower (39.51 per cent) as compared to other major dairy management practices. The overall adoption of improved dairy husbandry practices in the study area was found to be only 50.44 per cent

indicating that there is a need to train the dairy farmers on different aspects of dairy husbandry practices, in general, and value addition and feeding practices of the dairy animals in, particular.

Table 1. Overall extent of adoption of improved dairy husbandry practices by the dairy farmers in the study area

Practices	Overall adoption (%)
Selection and breeding	67.85
Housing	66.33
Feeding and watering	39.51
Animal health and disease control	60.70
Care and management	47.99
Value addition	14.25
Overall adoption (%)	50.44

This study identified some farm level constraints that affected adoption of improved dairy husbandry practices by the dairy farmers (reasons for non-adoption of the improved practices). The reasons for non-adoption of the different aspects of the dairy husbandry practices viz., selection and breeding, housing, feeding and watering, animal health and disease control, care and management and value addition are depicted in Table 2 and discussed as under.

Constraints in adopting improved selection and breeding practices

It is evident from Table 2 that lack of awareness about the importance of heat detection (45.00 per cent), lack of knowledge about weight at first breeding of heifer and pregnancy diagnosis (27.08 per cent) and poor

perception of the AI service (11.67 per cent) were the major constraints in adopting improved breeding practices in the study area. Other constraints were poor conception rate of AI (7.50 per cent), inadequate availability of veterinary doctors (3.33 per cent) and farmers’ negligence in diagnosing pregnancy (1.67 per cent). The present finding gets support from the findings of Sanjeev *et al.*, (2009) and Rathore *et al.*, (2009). There is a need to intensify the existing extension efforts to create awareness on the importance of heat detection, proper weight of heifer at first breeding and pregnancy diagnosis. The poor perception of the AI service by the farmers and poor conception rate could be related to lower efficiency/skill of the AI technician. This is because AI is usually performed by the technicians who have trained for three months as there is inadequate availability of

veterinary doctors to perform AI in the country. Therefore, continuous practical on-the-job training programs should be arranged for the AI technicians to improve the efficiency/skill of the AI technicians in the study area as well as in the country. Apart from this, the quality of semen could be one factor influencing the conception rate of the cows. Thus, prior evaluation of semen quality before distribution and using on farm could improve the poor perception of the AI services.

Constraints in adopting improved animal housing

Constraints in adoption of improved animal housing are presented in Table 2. As it is apparent from the table, lack

of awareness about the importance of height of the roof (47.50 per cent), lack of knowledge about proper ventilation of the house (21.25 per cent) and difficulty in cleaning the barn/shed with filthy bedding materials (11.67 per cent) were reported as the major constraints in adopting improved animal housing practices in the study area. Inadequate knowledge about the optimum space requirement per cow under roof and lack of bedding materials were also another constraints reported by the dairy farmers. Awareness creation on the importance of the proper height of the roof, optimum space requirement per cow under the roof and proper ventilation of the house call for further extension work in the area.

Table 2. Constraints in adopting improved dairy husbandry practices as perceived by the farmers (N = 240)

Sr.No.	Constraints	Frequency	%
I. Selection and breeding			
1.	Poor conception rate of AI	18	7.50
2.	Poor perception of AI services	28	11.67
3.	Inadequate availability of veterinary doctors for AI	8	3.33
4.	Lack of awareness about the importance of heat detection	108	45.00
5.	Lack of knowledge about weight at first breeding of heifer and pregnancy diagnosis	65	27.08
6.	Farmers' negligence in diagnosing pregnancy	4	1.67
II. Housing			
1.	Lack of awareness about the importance of height of the roof	114	47.50
2.	Lack of knowledge about proper ventilation of the house	51	21.25
3.	Difficulty in cleaning the barn/shed with filthy bedding materials	28	11.67
4.	Inadequate knowledge about optimum space requirement per cow under roof	6	2.50
5.	Lack of bedding materials	4	1.67

III. Feeding and watering			
1.	High cost of feeds	79	32.92
2.	Lack of knowledge about the daily feed requirement of the cow	80	33.33
3.	Inadequate knowledge about colostrum feeding	39	16.25
4.	Low availability of mineral licks/blocks	4	1.67
5.	Lack of awareness about concentrate feeding to calf from one month of from one month of age	33	13.75
IV. Animal health and disease control			
1.	Lack of awareness about tuberculosis and brucellosis testing	116	48.33
2.	Lack of knowledge about timely & regular vaccination	27	11.25
3.	Farmers' negligence in isolating sick animal & proper carcass disposal	6	2.50
4.	Lack of veterinary doctors for treatment & AI	43	17.92
5.	Distant location of veterinary clinics	3	1.25
6.	Inadequate and untimely supply of vaccine	10	4.17
7.	Inadequate knowledge on the control of external & internal parasites	2	0.83
V. Care and management			
1.	Lack of awareness about the importance of full hand milking	124	51.67
2.	Unavailability of the mastrip/strip cup for mastitis detection	7	2.92
3.	Inadequate knowledge about the importance of grooming dairy cows	22	9.17
4.	Lack of knowledge about clean milk production	65	27.08
5.	Shortage of water for regular washing and disinfection of shed	9	3.75
VI. Value addition			
1.	Lack of knowledge about the importance of value addition	106	44.17
2.	Lack of awareness about biogas plant	103	42.92
3.	High price of urea for straw treatment	21	8.75
4.	Lack of adequate finance	10	4.17

Source: Field survey

Constraints in adopting improved feeding and watering practices

Scientific feeding of milk animals is basic need for successful dairy farming. There are different constraints confronting the dairy farmers that influence the adoption of improved feeding and watering practices to increase milk production. Constraints in adoption of improved feeding and watering practices are presented in Table 2. The data revealed that lack of knowledge about the daily feed requirement of the dairy animals (33.33 per cent), high cost of animal feeds (32.92 per cent) and inadequate knowledge of the farmers about colostrum feeding were perceived as the major constraints in

adopting improved feeding and watering practices for the dairy animals. Lack of awareness about concentrate feeding to calf from one month of age (13.75 per cent) and low availability of mineral licks (1.67 per cent) were another constraints in adopting improved feeding and watering practices as reported by the dairy farmers in the study area. The present finding is supported by the findings of Ashok *et al.*, (2009), Sanjeev *et al.*, (2009), Rathore *et al.*, (2009b) and Kumar *et al.*, (2011). From the present finding, it can be inferred that further extension works are required to improve the knowledge of the dairy farmers on scientific feeding and on how to prepare least cost feed from their available resources to

overcome the problem of high cost of animal feeds in the area.

Constraints in adopting improved animal health and disease control practices

It is evident from Table 2 that lack of awareness about tuberculosis and brucellosis testing (48.33 per cent), lack of veterinary doctors for treatment and AI (17.92 per cent) and lack of knowledge about timely and regular vaccination of animals (11.25 per cent) were the major constraints reported for non-adoption of the improved health care practices in the study area, followed by inadequate and untimely supply of vaccine (4.17 per cent), farmers' negligence in isolating sick animals and proper carcass disposal (2.50 per cent), distant location of veterinary clinics (1.25 per cent) and inadequate knowledge on the control of external and internal parasites (0.83 per cent). This finding is in accordance with the findings of Sanjeev *et al.*, (2009), Rathore *et al.*, (2009b) and Kumar *et al.*, (2011). Taking these constraints into account, it is suggested that appropriate awareness creation strategies must be devised by the dairy development agencies to improve the extent of adoption related to improved health care practices in the area.

Constraints in adopting improved care and management practices

Table 2 revealed that lack of awareness about the importance of

full hand milking (51.67 per cent), lack of knowledge about clean milk production (27.08 per cent) and inadequate knowledge about the importance of grooming dairy cows (9.17 per cent) were reported as the major reasons for non-adoption of the improved dairy cow management practices in the area. In addition to these, shortage of water for regular washing and disinfection of animal sheds (3.75 per cent) and unavailability of the mastrip/strip cup for mastitis detection (2.92 per cent) were also stated as constraints in adopting improved management practices. The present finding is in conformity with the findings of Ashok *et al.*, (2009), Sanjeev *et al.*, (2009), Rathore *et al.*, (2009b) and Kumar *et al.*, (2011).

Constraints in adopting value addition

Constraints in adopting value addition in the study area are depicted in Table 2. It is apparent from the table that, lack of knowledge about the importance of value addition (44.17 per cent), lack of awareness about biogas plant (42.92 per cent), high price of urea to treat the straw (8.75 per cent) and lack of adequate finance (4.17 per cent) were detailed as the constraints in adopting value addition in the area.

Conclusions

The overall adoption of improved dairy husbandry practices in the study

area was found to be low (50.44 per cent). This low adoption rate in the study area is mainly associated with lack of awareness, inadequate knowledge and poor perception of the dairy farmers on different aspects of improved practices, high cost of animal feeds and drugs and inadequate finance. Thus, awareness creation for the farmers through experience sharing visits within and across dairy farms, arranging training programs for the dairy farmers and on-the-job training for development agents and AI technicians, preparation of manuals in local languages for different husbandry practices, introducing practices of replacing high cost feeds with the locally available low cost feed types, strengthening ethno-vet health care practices using traditional medicines, etc could be some of the interventions to address the identified constraints and thereby increasing the rate of adoption of improved dairy husbandry practices and ultimately increase milk production in the area.

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