



Assessment of Efficiency and Major Constraint of Artificial Insemination Service in Small Holder Dairy Farmers in and around Adama Town

Yohanis Kebebew¹ and Tilahun Bekele*¹

²School of Veterinary Medicine, Wollo University, Dessie, Ethiopia

*Corresponding Author: Tilahun Bekele, E-mail: bekele.tilahun2@gmail.com

Abstract

The aim of this study was to assess the efficiency and major constraints of AI service in small holder dairy farms. A questionnaire survey was prepared and 189 respondents (181 small holders and 8 AI professionals) were asked accordingly. Among the respondents, 47% were used AI service regularly without interruption and 53% didn't get the service regularly due to discontinuation of service on weekends and holidays, shortage of artificial insemination technician, shortage of input, long distance to get the service. About their level of satisfaction, more than half of the respondents were unsatisfied with the overall AI service in the study area due to different problems including: semen and liquid nitrogen doesn't come on time (29%), AIT problem (10.5%), heat detection problem (8.8%), conception failure (31.5%), insufficiency support from concerned body (19.3%). Majority of the professional revealed that they didn't get on job training. On top of that, fifty percent of the professionals didn't providing service on weekends and holiday. Therefore, regular training should be given to animal owners and AI technicians about technical and organizational facilities for AI and estrus synchronization has to be introduced as a means of resolving estrus detection problems.

Keywords: Adama town, Artificial insemination, Constraints, Dairy, Heat detection, Small holder farmers

Introduction

Ethiopia is believed to have the largest livestock population in Africa and this livestock sector has been contributing considerable portion to the economy of the country. It possesses one of the world largest livestock populations of which 59.5 million cattle population that make the country stand or rank first in Africa and 6th in the world, 30.7 million sheep population which makes 3rd in Africa 10th in the world and 30.2 million goats' population which makes again 3rd in Africa and 8th in the world. 2.16 million horse, 8.44 million donkeys, 0.41 million mules, 1.21 million camels, 56.53 million poultry population that includes (cocks, cockerels, pullets, laying hens,

non-laying hens and chicks) and 5.9 million bee hives that make Ethiopia to stand 1st in Africa and 9th in the World (CSA, 2017). The role of livestock in general and cattle in particular in the national economy is more significant than what the official production figures would suggest when their contributions for farm traction, farm fertilization and fuel (through manure) are considered (Hassenet *al.*, 2007). However, dairy industry is not developed as that of other east African countries such as Kenya, Uganda and Tanzania (EASE, 2003).

Livestock production is one of the fastest growing agricultural sub sectors in developing country where it accounts for more than a third of agricultural GDP. It is projected soon to overtake crop production as the most important agricultural subsector in terms of added value (FAO, 2006). Many developing countries have realized high economic growth in recent years. This coupled with an increasing population, an expanding urban population and growth in personal incomes is altering the life style and purchasing patterns with respect to food products by which global food protein demand is shifting from plant proteins to animal proteins. It is projected that the demand for animal products will nearly double by 2030 and that a large proportion of this increase will be in developing countries (FAO, 2002). In developed countries that have a well-defined breeding strategy and a sound technical base absorb and adapt the technology to meet their needs (BBC,2015). AI plays an important role in enhancing animal productivity, Achieving increased milk and meat production through genetic improvement of indigenous cattle have been the primary goals of the livestock development plan of Ethiopia (Heinonen,1989).

Artificial insemination(AI) is the manual placement of semen in the reproductive tract of the female by a method other than natural mating and it is among the group of technologies commonly known as assisted reproduction technologies (ART), where by offspring are generated by facilitating the meeting of male and female gametes. Semen collected from the bull is deep frozen and stored in a container with liquid nitrogen at a temperature of minus 196 degrees centigrade and made for use (Morrell,2011).

In Ethiopia, AI was introduced in 1938 in Asmara (the current capital city of Eritrea), then part of Ethiopia, which was interrupted due to the Second World War and restarted in 1952 (Yemane *et al.*, 1993). It was again discontinued due to unaffordable expenses of importing semen, liquid-nitrogen and other related inputs requirement. In 1967, an independent service was started in Arsi zone, Chilalo Awraja under the Swedish International Development Agency (SIDA). The technology of AI for cattle has been introduced at the farm level in the country over 35 years ago as a tool for genetic improvement (Zewdie *et al.*, 2006).

The present National Artificial Insemination Center (NAIC) was established in 1984 to coordinate the overall AI operation at national level (GebreMedhin, 2005). However, cattle breeding are mostly

uncontrolled in Ethiopia making genetic improvement difficult and an appropriate bull selection criteria have not yet been established (Tegegn *et al.*, 1995). Despite the wide application of AI and its success throughout the developed world, the success rate in Ethiopia is still low (Belachew,2003;Desalegn,2008) owing to a number of technical, financial and managerial problems (Azage *et al.*, 1995; Woldu *et al.*,2011).

Therefore, the current study was undertaken with the following main objectives:

To assess the efficiency of AI service in small holder dairy farms in and around Adamatown.

To identify associated major constraints of AI service in small holder dairy farms in the study area.

Materials and Methods

Study Area

The study was conducted in and around Adama town, Oromia Regional state, Ethiopia from November 2017 to June 2018. Adama forms a Special Zone of Oromia region and is surrounded by East Shoa Zone. It is located at 8.54⁰N, 39.27⁰E at an elevation of 1712m.a.s.l, 99 km southeast of Addis Ababa, Capital of Ethiopia. The mean annual maximum and minimum temperatures are 31⁰C and 16⁰C, respectively with mean relative humidity of 67.3%. The city sits between the base of an escarpment to the west, and the Great Rift Valley to the east (CSA, 2017).

Study Population

The study population was represented by small holder dairy owners who were beneficiaries of artificial insemination service in and around Adama city. In addition, retrospective data obtained from recording book was used to see the relation between the number of dairy cows inseminated and number of calves born. Both dairy cows kept under extensive and semi intensive production systems were considered for this study.

Study Design

A cross-sectional study design supported by questionnaires was employed to assess the efficacy

and major constraint of AI service in and around Adama town. The study design used also comprised retrospective study. Retrospective study was used to collect data from the service records of AI service covering the period from January 2013 to 2017. Artificial insemination recording were obtained from AI certificates and from inseminators recording books. In questionnaire survey, a format was prepared and 189 respondents (181 small holders and 8 AI professionals) were asked accordingly. In AI professionals 4 AITS and 4 animals health professionals and veterinarians were included. Problems and challenges they faced were identified and evaluated after they are provided with questionnaire survey format and interviewed in the study site.

Sample Size Determination

The sample size was calculated by using 15-20% of the AI user at AI center of the study site according to the formula given by Roberts (Roberts,1985).The recorded data of the AI service center showed that the average numbers of small holder dairy cows inseminated in last 5 year were found to be 663 animals, Thus 20 % of these AI beneficiaries were taken for sample size determination as follows: 663 x20%, thus 133 small holder dairy farmers were required but in order to increase the precision of the study a total of 181small holder dairy farmers were interviewed and 8 professionals were purposively included in this study.

Study Methodology

The pre-tested structured questionnaire was prepared and used to collect data from 181 small holder dairy farmers and 8 professionals by face to face interview using the two commonly spoken local languages Afaan Oromo and Amharic. From 30 kebeles located

in and around Adama town, ten were selected by simple random sampling method and to achieve these sample size, 18 respondents were selected from each kebele, nineteen from one kebele, by simple random sampling method.In addition, the questionnaire paper was distributed for artificial insemination technicians (AITS) and animal health professionalsto collect data on the status of AI service and major constraints associated with AI service. Before the commencement of the interview, every respondent were briefed about the objectives of the study. Then the questions were presented to the respondents for quantitative study. The respondents were interviewed with a close ended questionnaire.

Data Analysis

After collecting, the data were cleaned and checked for its completeness. Those incomplete and inconsistent were correctedwhen possible and removed otherwise. After complete check-up, the data were coded and entered to Microsoft Excel and transport to SPSS version 20.0 statistical packages for windows and analysis made. Descriptive statistics such as frequency and percentage were used to summarize data as required.

Results

Socio-demographic characteristics

One hundred eighty one heads of household were interviewed during the study period of this research. The majority of the respondents were male 133(73.5%) and 43.1% were between 31-45 years of age, while 38.1% and 18.8% were between 15 to 30 and > 46 years old, respectively. Concerning educational status, 117 (64.6%) of the participants were literate and 64 (35.4%) were had no formal education (Table 1).

Table1:Socio-demographic information of the study participants in and around Adama city during 2017 to 2018.

Variables	Category	Frequency	Percent
Age	15-30	69	38.1%
	31-45	78	43.1%
	>46	34	18.8%
Sex	Male	133	73.5%
	Female	48	26.5%
Educational Status	Literate	117	64.6%
	Illiterate	64	35.4%

Results of Questionnaire Survey of small holder dairy farmers

Out of 181 smallholder dairy farmers 166(85.1%) had a perception that local breeds had low milk production than cross and exotic breed. Likewise majority of the

respondents(154(85.1%)) believed that local breeds also had low genetic improvement. On the other hand exotic breeds (173(95.6%)) were indicated to have low disease resistance than exotic and local breeds (Table 2).

Table 2: Perception of respondents on inbreeding problems in relation to breed

Variables	Breed		
	Local	Cross	Exotic
Low milk production	166(91.7 %)	14(7.7 %)	1(0.6%)
Low genetic improvement	154(85.1 %)	18(9.9%)	9(4.0%)
Low disease resistance	2(1.1%)	6(3.3%)	173(95.6%)

Among 181 small holder dairy farmers in the study site, 85(47%) were used the AI service regularly and without interruption and 96(53%) didn't used AI regularly by different reasons. Out of which 34(18.8%), 10(5.5%), 14(7.7%), 22(12.2%), 9(5.0%) and 7(3.8%) of the respondent revealed

discontinuation of service on weekends and holidays, shortage of artificial insemination technician, shortage of input, long distance to get the service, all of the above and other problem as a cause of irregular service of AI in the study area (Table 3).

Table 3: Artificial insemination and cause of irregular service in the study area

Variables	Frequency	Percent
AI service without interpretation		
Yes	85	47
No	96	53
If not, why?		
Discontinuation of service on weekends and holidays	34	18.8
Shortage of artificial insemination technician	10	5.5
Shortage of input	14	7.7
Long distance to get the service	22	12.2
All of the above	9	5.0
Other problem	7	3.8

In the study area majority of small holder dairy farmers (125(69.1%)) kept dairy cows in Semi intensive management system while 56(30.9%) of them used extensive management System. About 97(53.6%) of the respondents isolated their cows from male animals and 84 (46.4%) of them allow the cow to live together with male animals. Small holders detect cow on heat by observing signs like mounting of the

cow on other animal (37 (20.4%)), clean mucus discharge (63(34.8%)), bellowing (57(31.5%)), restlessness(5(2.8%)), swollen red vulva (4(2.2%)) and all above mentioned estrus sign (15 (8.3%)). Out of 181 small holder respondents, 180(99.4%) of them used AI service and other 1(0.6%) used natural mating when they face repeat breeding problem in their animals (Table 4).

Table 4: Detection of cows on estrus

Variable	Frequency	Percent
Mounting of cow on other animal	37	20.4
Clean mucus discharge	63	34.8
Bellowing	57	31.5
Restlessness	5	2.8
Swollen red vulva	4	2.2
All above mentioned estrus sign	15	8.3
Total	181	100%

Awareness of AI beneficiaries on time of insemination in the study site revealed that animals showed heat at the morning were inseminated as heat sign is seen (61.3%), morning of the next day (3.3%), as the technician order (12.7%), and on the same day after

noon (22.7%). Likewise, when the cow/heifer showed heat at after noon time, insemination would be as heat sign is seen (63%), morning of the next day (23.7%), as the technician ordered (9.4%) and on the same day after noon (3.9%) (Table 5).

Table 5: Time of insemination of cows showed heat in and around Adama city

Time of insemination	When cows and heifers showed heat	
	Show heat at morning No. of respondents (%)	Show heat at after noon No. of respondents (%)
As heat sign is seen	111(61.3%)	114(63%)
Morning of the next day	6(3.3%)	43(23.7%)
As the technician ordered	23(12.7%)	17(9.4%)
On the same day after noon	41(22.7%)	7(3.9%)
Total	181(100%)	181(100)

Constraints of AI service in the study area

About their level of satisfaction, eighty six (47.5%) respondents were satisfied with artificial insemination service of the city; while more than half of the respondents (95(52.5%)) were unsatisfied with the

overall AI service in the study area due to different problem including, semen and liquid nitrogen doesn't come on time (54(29.5%)), AIT problem (19(10.5%)), heat detection problem (16(8.8%)), conception failure (57(31.5%)), insufficiency support from concerned body (35(19.3%)) (Table 6).

Table 6: Major constraints of AI service in the study area

Variables	Frequency	Percent (%)
Semen and liquid nitrogen doesn't come on time	54	29.8
AIT problem	19	10.5
Heat detection problem	16	8.8
Conception failure	57	31.5
Insufficiency support of concerned body	35	19.3

In addition, (74%) of the smallholder dairy farmers also indicated that herd health problem was one of constraint of AI service in the study area. Out of 181 small holder farmers 85 (32%), 42 (23.2%), 4(2.2%), 14(7.7%), 16(8.9%) and 47 (26%) revealed

mastitis, reproductive health problem, both mastitis and reproductive problem, skin problem (dermatophilosis), respiratory diseases, none of the above were the major health herd problems in the study area, respectively (Table 7).

Table 7: Major herd health problems of dairy cattle in the study area

Herd health problems	Number of respondents (%)
Mastitis	58(32%)
Reproductive Health problems	42(23.2%)
Mastitis and reproductive Health problems	4(2.2 %)
Dermatophilosis	14(7.7%)
Respiratory diseases	16(8.9%)
None of the above	47(26%)
Total	181(100%)

Results of Questionnaire Survey of Professionals

For this particular study eight professionals four artificial insemination technicians and four veterinarians and animal health professionals, working in and around Adama city were purposively included and interviewed. Seventy five percent of the professionals revealed that they didn't get on job training and other incentives. With regard to source of

semen 75% of the respondent got the semen from regional livestock and fishery resource bureau while 25% were got semen directly from NAIC. Fifty percent of the professionals provided AI service on weekends and holiday but the rest (50%) was not providing service on weekends and holiday due to lack of additional incentive from government (50%) and from both government and animal owners (50%) (Table8).

Table 8: AITs response on the efficacy and major constraints of AI service in the study area

Variables	Frequency	Percent
AI Constraints		
Semen and Liquid Nitrogen doesn't come on time	2	25 %
AIT problems	1	12.5%
Heat detection problem	2	25%
Conception failure	1	12.5%
Insufficiency support of concerned body	2	25%
Means to improve the AI service in the future		
providing necessary material on time	2	25%
awareness creation to farmers about AI service	2	25%
providing support from the concerned body	1	12.5%
to training AIT very well	1	12.5%
Expanding AI center in the country	2	25%
Source of Semen		
regional livestock and fishery resource bureau	6	75%
NAIC	2	25%
On job training and other incentives		
Yes	2	25%
No	6	75%
AI service provision on weekends and holiday		

	Yes	4	50%
	No	4	50%
If no, why?			
	No additional incentive from government	2	50%
	no incentives from animal owner	–	0%
no incentives	from both government and animal owners	2	50%
	I don't want to work on these days	–	0%

Recording of Retrospective Data

Retrospective data obtained from artificial insemination service recording book from year 2013-2017 showed the beneficiaries of artificial

insemination service showed up and down. High numbers of inseminated animals (855) were recorded by the year 2017 and the least (442) by the year 2016 (Figure 1).

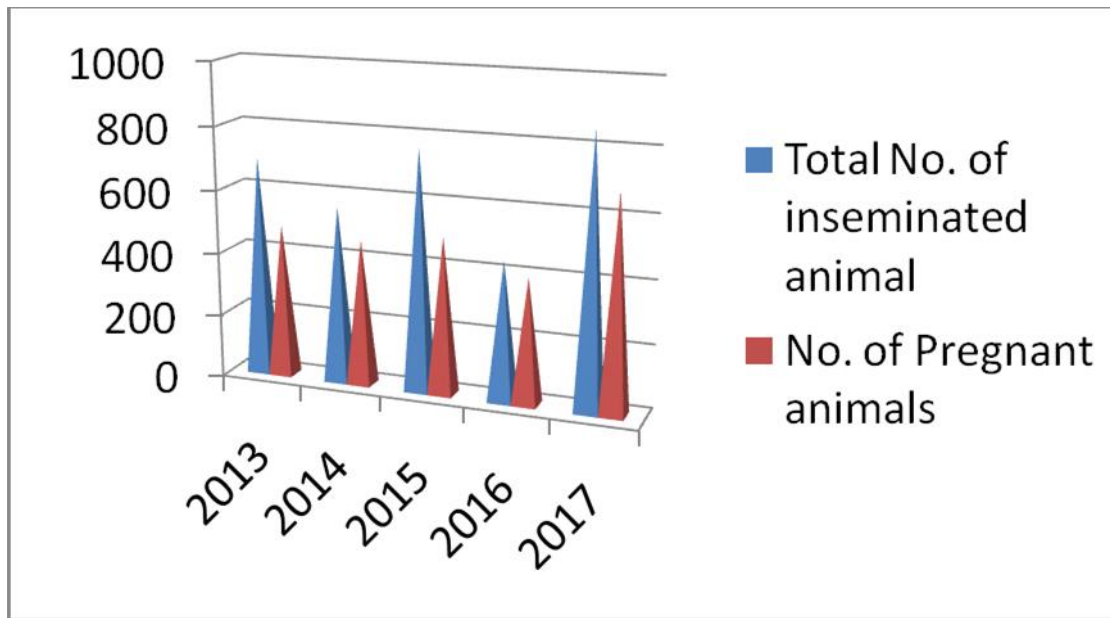


Figure 1: Retrospective data showing the number of cows inseminated from year 2013-2017.

From the retrospective data obtained from the year 2013 to 2017, high number of calves (560) was born in

2017 and the least (311) were recorded by the year 2014 (Figure 2).

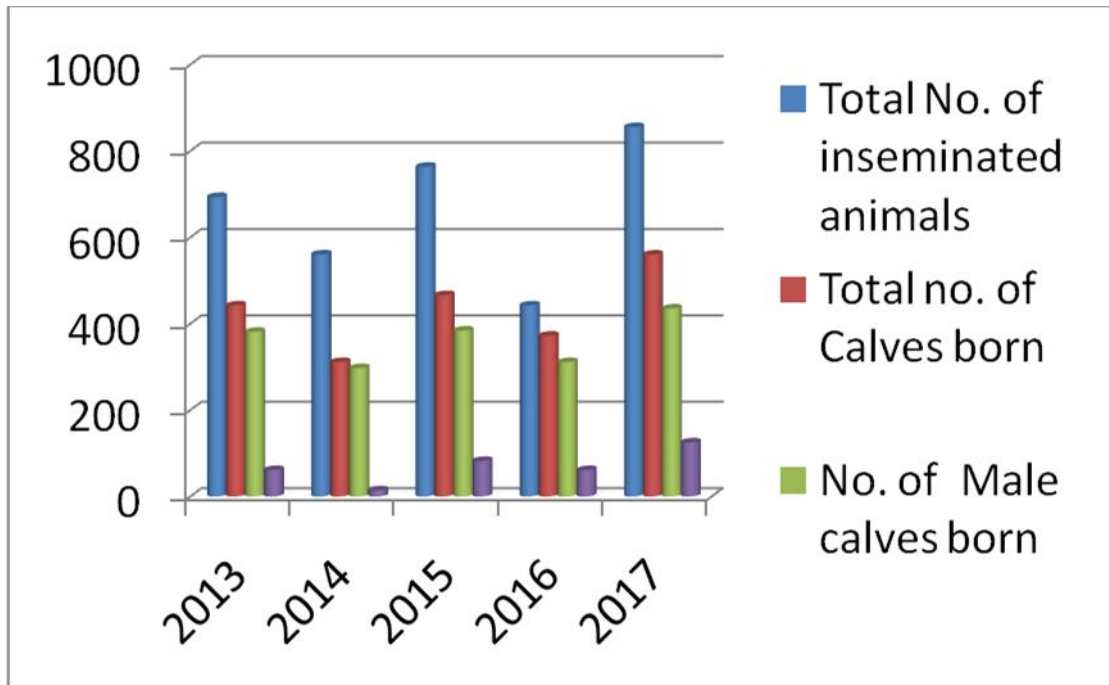


Figure 2: Retrospective data showing the number of cow inseminated and calves born from year 2013-2017.

Discussion

In developing countries, AI is the most common technology used as compared to other Biotechnologies probably due to that it has the most favorable cost benefit ratio than other reproductive bio technologies (Thibier *et al.*, 2004). However, AI service is weak and even declining due to inconsistent service in the small holder livestock production systems of the Ethiopian high land. The problem is more aggravated by wrong selection and management of AI bulls along with poor motivations and skills of inseminators (GebreMedhin, 2005). In the current study, majority of small holder dairy farmers manage dairy cows in semi intensive management system while few used extensive management system. This finding was in line with Lee Kim, (2014) from Arsi zone, in and around Asella town, reported majority of respondents managed dairy cow in semi intensive management system while it was compared with extensive management system. Semi intensive management system provides sufficient supplementary feeding to dairy cow which will enhance reproductive performance and prevent spreading of diseases. As reported by Obese *et al.*, (1999) and Domecq *et al.* (1997) lack of supplementary feeding in extensive grazed dairy cows affects their reproductive performance.

The current study showed 53.6% of the small holders isolated their cows from the male animals and 46.4% of them allow cow to live together with male animals. In contrast with this finding, Sisay *et al.* (2017) reported that majority of the respondents of small holders of Ejere district kept male and female animals separately. The variation might be due to lack of awareness of the farmer. Ninety one point seven percent of smallerholder dairy farmers had a perception that local breeds had low milk production than cross and exotic breed. Likewise majority of the respondents 85.1% believed that local breeds had low genetic improvement. On the other hand 95.6% of the respondents indicated exotic breeds had low disease resistance than exotic and local breeds. This finding was disagreed with Sisay *et al.* (2017) who reported about half of the respondents said exotic breed had low milk production than local and cross breed. This report also revealed more than one third (28.5%) of small holders responded local breed had low genetic improvement and only 5% of the respondents indicated exotic breed had low disease resistance than local and cross breed. This variation might be due to the fact that exposure to a hot climate, poor feeding, poor management and suffering from sickness from tropical diseases and parasites results in animals that shows poor heat, low pregnancy rates and produce low milk yields-despite their genetic potential of dairy cows (Camilla, 2013, Nakimbugwe *et al.*, 2004).

The awareness of the small holder about estrus sign detection in the present study indicated that the respondents were detected heated cows by observing signs like mounting of the cow on other animal(20.4%), clean mucus discharge(34.8%), bellowing(31.5%), restlessness(2.8%), swollen red vulva (2.2%) and all the above estrus sign (8.3%). In agreement with this study Alazaret *al.*(2015) indicated majority of the respondents (55.5%) detected heated dairy cows by observing mounting of the cow on other animals, while other listed redness and mucus discharge of the vulva, restlessness and nervousness and loss of appetite as a sign of estrus. Moreover, Milkessa (2012) also reported that small holders were detected heated cows and heifers by observing the following signs: mounting of the cow on other animals, redness and discharge on the vulva, bellowing and restlessness. The main estrus signs expressed by dairy cow and heifers eight hour before coming to heat are stands and bellows, smells other cows head butts other cows attempts to ride other cows but will not stand to be mounted, red, moist, slightly swollen vulva and clear mucous discharge from vulva. But while they stand on heat, the cow will stands to be mounted, rides other cows, bellows frequently and nervous and excitable (Jane *et al.*, 2009).

In the present study, the awareness of high proportion of AI beneficiaries on time of insemination indicated that animals showed heat at the morning would be inseminated as heat sign is seen (61.3%) followed by insemination on the same day after noon. Likewise, when the cow/heifer showed heat at after noon time, majority of the respondents indicated insemination would be as heat sign is seen (63%) or morning of the next day (23.7%). In agreement with this study Sisayet *al.* (2017) showed almost seventy five and seventy three point three percent of the small holders indicated animals showed heat in the afternoon and morning were inseminated as the sign is seen, respectively. Insemination of heated cow from mid estrus to the end of estrus will enhance conception rate and increase fertility of the animal (Gomes, 1977). The current study showed that more than half of the respondents (52.5%) were not satisfied with overall AI service of the study area. In line with this work Riyadet *al.* (2017) in West Hararghe, Tullo district reported that 55.8% were unsatisfied with AI service. The current study revealed that 47% of small holder dairy farmers used AI service without interruption. This finding was in line with Nuraddiset *al.* (2014) reported from Jimma zone which was about

41% of the smallholder dairy farmers have got artificial insemination services regularly and without interruption while 59% of them do not. However, this finding was relatively higher than the report of Tegenu and Feyera (2016) conducted in Arsi zone Tiyo and Sagureworeda, about 31.8% of the respondents were benefited from AI service without interruption. On the other hand, Sisayet *al.* (2017) reported higher AI service delivery (85%) without interruption in Ejere district. However, about 53% of small holders revealed that there was an interruption and discontinuation of AI service. They mentioned the main reasons of discontinuation were when it is weekend and holiday (18.8%), long distance traveling to get the service (12.2%), shortage of input (7.7%) and shortage of AIT (5.5%). This finding was in agreement was Sisayet *al.* (2017) who reported shortage of AIT, long distance coverage by farmers, discontinuation of service on weekends and holidays as a main constraints of Ai service in Ejere district. In the present study, out of 181 small holder dairy farmers, 180(99.4%) of them used AI service and only 1(0.6%) were used natural mating when they face repeat breeding problem in their animals. In line with the current result Tegene and Feyera (2016) reported about 74.7% of the respondent used AI while they faced repeat breeding. High numbers of repeated breeding are the result of problems associated with poor semen quality, poor semen handling practices, poor insemination practices, poor heat detection and inappropriate time of insemination (Sharif *et al.*, 2009).

In this study, 74% respondents said herd health problem was the main constraint in their farm. This findings were relatively lower than the previous report of Tegene and Teyera 2016) that were 85.2%. However, it is higher than the study in Ambo by Milkessa (2012) and Haileyesus (2006) that were 36.9% and 9%, respectively. Among the major diseases reported in the area, mastitis and reproductive health problems were highly prevalent diseases. In line with this study, the study by Alazaret *al.* (2015) in Debretabor town and Sisayet *al.*(2017) in and around Ejere district high proportion of the respondents revealed mastitis and reproductive health problem as major herd health problems. Any breeding regime is dependent of well managed animals for achieving good results. A healthy cow produces more than a sick cow and is therefore more profitable and leaves a smaller carbon footprint. Factors as mastitis, reproductive health problem and other diseases have a negative impact on reproduction. It caused an animal to

show poor heat, low pregnancy rates and produce low milk yields. A better education of farmers is needed so they can improve management and feeding as well as the reproduction and production in their herd (Peake *et al.*, 2011).

Majority of the professional revealed that they didn't get on job training. Fifty percent of the professionals provided AI service on weekends and holiday but the rest was not providing service on weekends and holiday due to lack of additional incentive from government and animal owner. Studies have shown that participation in refresher on job trainings can lead to higher AI success rates and it has an influence on their performance (Santolaria *et al.*, 2012). Santolaria *et al.* (2012) also indicated that AITs who attended training have higher success rates than those who didn't attended trainings. Hence, training of AITs has been shown to be very vital in maintaining a satisfactory breeding efficiency.

The major constraints of artificial insemination service raised by professional were semen and liquid nitrogen doesn't come on time, heat detection problem, and conception failure, insufficient support from concerned body. For the future as possible solution, providing necessary material on time, awareness creation to farmers about AI service, providing support from the concerned body and training of AITs suggested by all professionals. According to Tadesse (2010), poor heat detection leads to prolonged calving interval, long lactation, low milk yield, few calf crop and loss due to repeat breeding expenses. Poor heat detection results from poor accommodation, over crowdedness, poor feeding, lack of education and inadequate observation. In order to improve heat detection practice, these conditions can be resolved with checkup of cows at least twice a day for 20-30 minutes (Oscar, 2003).

Retrospective data obtained from artificial insemination service recording book from year 2013-2017 showed that there is inconsistency in number of animals inseminated and number of calves born. High numbers of inseminated animals (855) were recorded by the year 2017 and the least (442) by the year 2016 while high number of calves (560) was born in 2017 and the least (311) were recorded by the year 2014. In contrast with this finding Sisay *et al.* (2017) reported that there is consistent increment in number of animals inseminated and calves born. These variations might be due to differences in farmer's awareness towards advantage of AI over natural service, lack of

AI technicians and heat detection problems. Despite the well-known advantages of artificial insemination, a large number of dairy farmers all over the world still use natural service (NS) bulls to breed their cows. The main arguments allegedly justifying their choice are higher AI costs compared to those of keeping herd bulls and additional costs resulting from extended calving intervals because of low heat detection rates when AI is used. AI costs include; labor, equipment, liquid nitrogen, semen and three ratios of "services per conception". The availability of economically priced liquid nitrogen for the cryopreservation of semen is also a particular constraint to utilize AI as a whole (Valergakis *et al.*, 2007).

Conclusion

According to the results of this study, small holder dairy farmers were unsatisfied with overall service of AI in the study area. There was discontinuation of the service on weekends and holidays. Heat detection was mainly rely on signs like mounting on other animals, clean mucus discharge and restlessness. Animals showed heat sign in the morning and in the afternoon were inseminated as heat sign is seen. The major constraints of AI service in the study area includes AITs problem, shortage of inputs and facilities, conception failure, heat detection, there was no job training and other incentive from government and small holders, long distance to get the service, insufficiency of concerned body support, prevalent diseases and the repeat breeding problems. Therefore, Regular training should be given to animal owners and AI technicians about technical and organizational facilities for AI. Furthermore, sound long-term breeding strategies that would improve the farmers' profits in the shortterm without destroying the indigenous genetic resources in the long term should be supplemented.

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