



**COLLEGE OF AGRICULTURE AND NATURAL RESOURCE  
DEPARTMENT OF ANIMAL PRODUCTION AND TECHNOLOGY**

**ASSESSMENT ON CONSTRAINTS OF ARTIFICIAL INSEMINATION IN  
DAIRY COW UNDER FARMER MANAGMENT, ALICHO WURIRO  
WOREDA, SILTIE ZONE, SNNPR, ETHIOPIA**

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## **LIST OF ABBREVIATION**

AWWAO	Alicho Wuriro Woreda Agricultural office
AWWHO	Alicho Wuriro Woreda health office
AWWLFPO	Alicho Wuriro woreda Livestock and Fishery Production office
AI	Artificial insemination
CSA	Central statistical agency
EVA	Ethiopian veterinary Association
GDP	Growth development program
IOI	Insemination to Ovulation Interval
MOA	Ministry of Agriculture
NAAB	National Association of Animal Breeders
SNNPR	Southern Nation Nationality and People Region

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## ABSTRACT

*A cross-sectional study was conducted from September 2013 to July 2013 E.C in Alichu Wuriro Woreda to Assess constraint of artificial insemination (AI) conception rate. The study was conducted with 60 respondent farmers in four kebeles, It shows that 35% constraints based on lack of awareness heat detection, 25% caused by Distance of farmers home from AI service center, 20% related to performance of artificial inseminator, 13.3% unfortunately inaccessibility of inputs including motorcycle and other related problems conducted. Among 60 inseminated cows and heifers 37(61.7%) cows and heifer pregnancy test positive or successful conception 23(38.3%) negative pregnancy test among 37 positive test pregnant cow 26 cows pregnant for first inseminating 7 cows save with second inseminating and other 6 cows inseminating third round. Cows become failing to conception with various factors including bull semen quality ( semen collecting, storage, processing, handling) ,management failure, like proper feeding and health status of the animal is another factor, heat detection failure farm less award to detection of heat some cows show silent heat, other factor and hence reduce efficiency of conception rate. In order to improve the conception rate of dairy cow in study area allot of things measurable including emphasis of government. Semen storage is also other way of semen quality improvement through proper storage of semen in cryopreservation of liquid nitrogen (-196°C) in Woreda and Kebele AI centers because semen are caused to damage with un proper handling during insemination by failures of frozen semen thawing using must thaw 37°C for 30 seconds in study area some inseminators thawing semen with their hand friction this is caused failure of conception rate .So to improve proper conception rate and reduce major factor affecting the efficiency of AI the above mentioned parameter should be managed. the owners of dairy cows should be trained on how to detect estrous signs in dairy cows, heat detection methods, and AI technicians should also take training in order to improve their skills, in order to minimizing technical problems that struggles for Artificial insemination.*

**Key Words:** *Conception rate, Artificial Insemination, Semen quality, Heat detection problems*

## **1. 1. INTRODUCTION**

### **1.1 Background of the study**

In Ethiopia, livestock in general and dairy cows in particular has a great role for human life to contribute like meat, milk, and other benefits. Ethiopian cattle population for many decades first lead in Africa as mentioned by Webb.D *et al.* (2007) with the available 65.35 million cattle population (CSA, 2019/20), but still the country is not self-sufficient in milk production, even if country has been investing a significant sum of foreign currency for importing milk and milk products. To fill this unbalance between demand and supply, improving the productivity of dairy cattle through genetic improvement is great key importance. As secured in many countries an effective and efficient strategy to improve dairy cattle productivity is to breed dairy cows using well known semen with introducing Artificial Insemination (AI).Bahlibi. W (2017)

In spite of the fact it is now close to seven decades since crossbreeding activities started in Ethiopia, the proportion of both hybrid and exotic breeds is not greater than 2% out of 65.35 million cattle population (CSA, 2019/20).Result obtained indicated that 97.76% of the total cattle in the county are local breeds. The remaining are hybrid and exotic breeds that a counted for about 1.91% and 0.32% respectively and also dairy cows are estimated to be 7.15 million and milking cows are about 12.57 million heads during the reference period. This implies crossbreeding program that has been implemented in the country over the last several decades through the application of AI technology is quite ineffective (Nuraddis et al., 2014). To improve those tangible and non-tangible products in livestock especially in dairy cows artificial insemination is crucial point. Reproductive performance of the cow and heifer is one of the most important factors that influence dairy sector improvement. Understanding the biological mechanisms associated with getting a cow or heifer breed can be a significant management tool for increasing realized profit. Reproductive technologies such as artificial insemination (AI) allow single animals to have many hundred progeny, reducing the number of parent animals required and allowing for significant increases in the intensity of selection, and proportional increases in genetic improvement of production (FAO, 2007). In 1981 National Artificial Insemination Center (NAIC) has been established to coordinate the overall AI activities most part of the country, even though a cross breeding program has been introduced to Ethiopia at a wider scope in late 1960's. The low productivity of the indigenous cattle and current rapid growth of human population make it difficult to meet the protein requirements of the population.

Cattle production system in Ethiopia is mainly small holder subsistence farming. Artificial insemination has been considered as a promising tool to improve genetic potential of dairy animals; in other word still many farmers at field conditions are not understanding of the technology with in terms of knowledge level and adoption of this promising technology.

Artificial insemination has been defined as a process by which sperm collected from Genetically highly improved male, technical processed, well stored, and after thawing artificially introduced into the female reproductive tract for the purpose of conception. Semen is collected from the bull, deep-frozen, and stored in a container with liquid nitrogen at a temperature of negative 196 degrees Centigrade and make for use. Artificial insemination has become one of the most important techniques ever devised for the genetic improvement of farm animals.

In Ethiopia the genetic improvement achieved throughout the country is still unsatisfactory due to several factors (Ahmed and Mohammed et al., 2017). Among most common factors cows become failing to conception are semen quality (semen collecting, storage, processing, handling), cow management failure, (like feeding management, watering management, Animals health managements many respondent's raise this question), heat detection failure, lack of effective AI delivery system, order of insemination, prevalence of reproductive problems (anestrous, retained fetal membrane, dystocia, repeat breeding, endometritis and abortion), and other routine factor reduce efficiency of conception rate (Sebsibe, 2008 and Azage et al., 2010). Mentioned problems are more aggravated by lack of poor recording system, estrous detection problems, wrong selection procedures, poor management of AI selected bulls and in adequate skills of inseminators, poor genetic potential, inadequate animal health services and other management related problems (Yemane Bed et al., 2007). Moreover, this suggests that the total number of cattle is so large, but the production level is very low. Therefore this study has focuses on the explained issues at the study SNNPR, Siltie Zone, Alichu wuriro woreda, with having mainly. To identify the constraints of Artificial insemination service at dairy cattle in study area and to know the effects of those limiting factors on efficiency of AI for conception rate.

## **1.2 Statement of the problem**

In spite of the presence of large and diverse animal genetic resources, the productivity (i.e., meat and milk) of livestock remains low especially in the study area as well as country for various reasons such as inadequate nutrition, poor genetic potential, inadequate animal health services, and other management related problems. Moreover, this suggests that the total number of cattle

is so large, but the production level is very low. According to those constraints by using scientific methods to improve mentioned problems there are limited information on constraints and opportunities of AI application in dairy cattle in the study area. Therefore this project has focused on the explained issues at the study area with having mainly to identify the constraints of Artificial insemination service at dairy cattle at farmer level in Study area,

### **1.3 Significant of the study**

This well organized study at the end of this study result minimize those obviously showing problems and serves as the source of information or reference material for those who interested to more study at relating issues at study area and surrounding areas for the future and other concerned bodies like AI technicians, woreda office experts, research centers researchers. Moreover, after the study point out constraint associated with Artificial insemination, farmers would be actively participated at using Artificial insemination service.

### **1.4 Objectives**

#### **1.4.1 General Objective**

- ✓ Assessment on constraints of Artificial insemination in Dairy cow

#### **1.4.2 Specific Objectives**

- ✓ To assess the effects of those limiting factors on efficiency of AI service.
- ✓ To identify in what stage Artificial insemination care attention in study area

## **2. LITERATURE REVIEW**

### **2.1. Artificial Insemination**

Artificial Insemination (AI) has a range of benefits to dairy farmers, such as providing access to the best genetics, supporting animal health and the safety of people who work on farms. AI enables farmers to access the best bull (male) genetics from all across the globe. Farmers want to improve the production, health traits, fertility and longevity of their dairy cattle by using a balanced approach to breeding. Successful outcome of artificial insemination (AI) in cattle depends on a number of intrinsic and extrinsic factors which have great and pollard effect. An understanding of the impact of such factors on the probability of success when performing AI is basic importance to established correction measures (Sebsibe, 2008 and Azage *et al.*, 2010). Reproductive performance is poor in most cattle production systems, mainly cows fail to become pregnant with various factors including lack of effective AI delivery system management, poor feeding status, prevalence of reproductive problem, semen quality and other negativity applied factors (Azage *et al.*, 2010).

The best conception rates occur at insemination is carried out in the middle to the end of standing estrus, i.e. 13–18 hours before ovulation. Cows may conceive if they are inseminated at the beginning of estrus or even 36 hours after the end of estrus but conception rates are reduced (Hamid et al, 2012). Poor motivations of sperm and skills of inseminators due to of lack of on job training, lack of support and readily available inputs such as liquid nitrogen (Alazaret *al.*, 2015). All these factors make the delivery service poor and some of the farmers move their cows for long distance in search of AI service (Desalegne *et al.* 2009) and Alemayehu (2010). This is happening in many areas and the reason is AI technicians are unable to get transport facilities like motor bicycles and fuel. But insemination is time dependent job, in which during this long journey/waiting, heat period is passed away before the service has been given (Lemma, 2010).

### **2.2 History of Artificial Insemination in Ethiopia**

In Ethiopia AI was introduced in 1938 in Asmara, at that time part of Ethiopia, which was interrupted due to the Second World War and restarted in 1952. 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 the Arsi Region, Chilalo Awraja under Swedish International Development Agency (Sida). And Zewdie *et al* (2006) has described that the technology of Artificial insemination for cattle has been introduced at the farm level in the country over 35 years ago as a tool for genetic improvement. The efficiency of the service in the

country, however, has remained at a very low level due to infrastructure, managerial, and financial constraints and also due to poor heat detection, improper timing of insemination and embryonic death. (Lemma, 2010)

### **2.3 Constraints of Artificial Insemination**

One of the major constraints in dairy cattle Artificial insemination is heat detection. Heat detection in cows carried out by experienced herd persons/inseminator who observing sign of behavioral symptoms of heat like mounting on other animals, vulva discharge, vaginal hyperemia, wetness, swelling of vulva, frequent urination, redness and mucus discharge of the vulva, restlessness and nervousness (Nuraddiset *al.*, 2014). Poor conception rates due to poor heat detection and poor performance of AI technicians, dissemination of reproductive diseases and poor fertility rates, if AI centers has not equipped with appropriate inputs & are not well managed (GebreMedhin, 2005). The author further showed that AI application enabled one dairy sire to provide semen for more than 60,000 services in one year. Gebre medhin (2005) has listed many opportunities of AI including prevention of reproductive diseases, control of inbreeding, minimizing the cost of keeping bulls for natural service and others. Besides, the availability of accurate breeding records such as breeding dates, pregnancy rates, inter-estrus intervals, and days to first service used to monitor fertility are other opportunities of Artificial insemination (Snishaw, 2004). According to Hamid et al (2012) mentioned that expression of estrus can be influenced by many factors such as heritability; number of days postpartum (after birth to 6 weeks), lactation number, milk production and health are known to influence estrus expression. Environmental factors like nutrition, season, housing, herd size, etc. also play a role in estrus expression. Estrus in cattle is commonly referred to as heat which occurs every 18 to 24 days in sexually mature, open (non-pregnant) female cattle when they are receptive to mounting activity by bulls or other cows or heifers.

#### **2.3.1 Factors related to heat detection**

Among more constraints of conception rate factors accuracy of heat (estrus detection) is one of the major factor that determine AI program. A successful AI program must include efficient and accurate heat detection and timing of AI relative to ovulation. As mentioned to (Hamid *et al* 2012) coming heat can occur any time in a 24-hour period. However, the most expected time for a cow or heifer to show heat signs is at night but the season of the year can influence this, with more cows showing heat at night in summer or hot season and more showing heat during the day in winter or cold weather. Hot weather, high production, crowded conditions, and high stress

environments may reduce mounting activity. The efficiency of fertilization highly depends on the time between from insemination to ovulation interval meaning that insemination takes place too early, the sperm become weak or dead and by the time ovulation occurs it cannot fertilize the ovum and if insemination takes place too late, the egg is expire and fertilization and formation of a viable embryo is not likely (Tegegneet *al.* 2016) and Wolduet *al.*2011). Among the various problems, poor heat detection skill by farmers and timing of insemination are the main factors that determine the success and failure of AI program (Mekonen *et al.*, 2010).

During the next six hours the oocyte travels about third of the way down the uterine tube, during this time fertilization occurs, about 30 hours after the onset of estrus. There are various reports that indicate low rates of service in artificially inseminated cattle, mainly due to problems in the detection of estrus. Reproductive efficiency is thus poor in most cattle production systems, because cows either fail to become pregnant and require high number of services per conception. According to NAAB (2011) reported that embryonic quality and accessory sperm numbers can be affected by time of insemination.

### **2.3.2 Factors Related to Inseminator**

The most significant contributions to the successful efficiency of Artificial insemination in cattle breeding has been made by the continuous trained inseminator (Desalegne *et al.*2009).The efficiency of cow insemination depends, among other factors, on the ability of the inseminator to deliver the semen to the appropriate site dropping fertile spermatozoa like in fallopian tube and pass end of cervix begging of uterus in the reproductive tract on times of estrus. Even one professional inseminators palpate the reproductive tract of many cows every day; most are not identify the uterus and ovaries. This poses a serious practical limitation to the success. Animals showing signs of true heat should inseminate using frozen semen thawed at 37°C for 30 seconds but not more than 15minutes.(Tegegeneet *al.* 2016). Professional technicians are more successful at insemination than inexperienced ones, indicating that selection of a qualified inseminator is an important element in the success of the artificial insemination program and regular practice at inseminating is required to maintain high conception rate (Desalegneet *al.*2009).

Inseminator at the time of Insemination thawed spermatozoa drop into the cervix produces a lower fertilization rate, while insemination deeper into the uterus runs the risks of either inseminating into the uterine horn nearest to the ovulation site, or interring the endometrial with the tip of the insemination catheter (Gebrmedin, 2008), and NAAB (2011) recommends that very

deep insemination can insure sperm delivery. Also hygiene thawing methods, temperature maintenance between thawing to insemination have also play a factor in achieving pregnancy (Lemma, 2010).

### **2.3.3 Semen handling and order of insemination**

The primary objective of proper semen handling was to success of conception rate by preserving sperm fertility until insemination has taken place. For cattle artificial insemination, the thawing procedure of a single frozen semen straw (0.5 ml) in thawed water bath unit at optimum temperature throughout the processing period until the cooling process begins. The most common technical mistakes that compromise the quality and fertility of sperm include the following. Improper thawing temperature and thaw time for frozen semen. Always check the water temperature in the thawing device before pulling a frozen straw from the liquid nitrogen tank (I. Nuraddis *et al.*, 2017). Therefore, to increase the efficiency of conception rate of dairy cows proper semen handling is necessary. The semen/straws passing evaluation are stored in liquid nitrogen at -196°C in different sized cryopreservation until dispatched for AI.

### **3. MATERIALS AND METHODS**

#### **3.1 Description of the Study Area**

The study was conducted in Alichu Wuriro woreda Siltie zone, SNNPR. The woreda is located at 169 kms to the South West of Addis Ababa and 195kms from Hawassa, and 27 kms from North to worabe. Alichu wuriro woreda have 25 rural kebele administration and 4 municipals including wordas center kawaketo Town. The settlement is 93.7% and 6.3% living in rural and urban areas, respectively. Most of time responsibility carrying with women's because most of time men's are stable they go to different country cites for interest of better work and they return their home or village especially cultivation, harvesting and public holidays time. Agriculture is the predominant economic activity of the woreda, there by the largest contribution of the woreda Annual total production represents more than 95% of people's livelihood mainly in form of mixed farming. The remaining percent their income gain by trading and with other incomes

Alichu Wuriro woreda has 19345(Male 16288 and Female 3057) House holder farmers in different agro-ecological ranging in altitude between 2430 and 3360 masl; namely highland (Degas) representing about 64.5% It include 14 rural kebele and (Woyna dega) 35.5% it include 11 kebele comprising of the woreda. The average temperature range from 8 - 22degree Celsius and the average annual rainfall ranges from 1200mm - 1700mm. Total woreda has 29645.5hectare among this annually cultivated area 53.6%(15889.9 hectare) permanent crop like Inset, Apple, Chat cover 23.6%(6996.33hectare)in 2012 forest coverage reached to 19.7%(5840 hectare) communal land 3.1% (919.27 hectare) Wheat, Barly,Cereals; Inset, Chat, Apple and Vegetables (especially Cabbage, Carrot and Garlic) are the major crops source (AWWAO). Different types of livestock populations found in the area comprising of cattle 82,450, sheep 95,076, goat 5,596, equine12348 and chicken 146,349 source (AWWLFPO),in addition, the total human population of the woreda has an estimation of 141,700 And from this, 72,975(51.5%) are Female and 68,725(48.5%) are Male at source (AWWHO). The major woreda revenue in addition to agricultural product contributes from chat, Timber and stem (Gindila] or [boleta)

#### **3.2. Sampling Method and Sample Size**

The study was done by taking sample from the study population. Sestematic multi stage purposive sampling technique was employed. Therefore, sampling method we used purposively selected Alichu Wuriro woreda, because previosly we have full information about Alichu Wuriro Woreda live stock population and accessibility of forrage. Study area have 25 rural kebeles with arranged 6 clusters. In Alichu Wuriro Woreda 607 cattle inseminated at periods of Septembe 1/2013—may 30/2013 Ec, among 25 rural kebele first clusters name and kebeles name then by

using lottery sampling method and we selected four clusters and, by using of the same lottery random sampling method select 4 kebele namely (kawaketo 01, Ado2, Abzana2 & Shilmat) finally take the names of AI users farmers name in specific kebele including their age, sex and educational status then we ordered their name A-Z , then numbering and starting with number 1 and by passing 5 randomly we selected 15 respondent by using of sestematic random sampling method in each kebele, totally 60 respondant selected from four specific kebeles. AI user farmers kawakoto 01 kebele 97 user farmers, Ado2 kebele 68 farmers, Abzana2 kebele 55 used house hold and Shilmat kebele 53 farmers Artificial insemination inseminating from September 1/2013 - May 30/2013 E.c. Moreover, the study area was stratified based on coverage of AI application and number of house holds they were used AI service. Sample collected from Four selected kebeles (kawaketo 01, Ado2, Abzana2 & Shilmat). Selected respondent's according to Alichu Wuriro wored 10% respondent can show best information, this sampling percentage acceptable at more researchers, so 60 representative farmers were selected comprised of both sex, elders and younger's for questioners based on their ability to written and express their ideas.

### **3.3 Data Collection Methods**

The relevant data that were necessary for the research study was collected from primary and secondary data source

#### **3.3.1 Primary data collection**

The primary data would be obtained by using semi-structured questionnaire, interviews and discussions with target groups. These primary data in the form of semi-structured questionnaire collected from households and AI technicians. Moreover, four focus group comprised of elders, females, younger and leaders would have been interviewed. And the data collected by prepared different questions regarding to our study matter and printed on paper based on the sample size and finally the paper distributed for those who can read and write.

#### **3.3.2 Secondary data collection**

Some relevant data for the study would have been collected from, written documents and annual reported from Alichu Wuriro Woreda Livestock and Fishery Production office documented file.

### **3.4 Data analysis**

The data would analyze by means of descriptive mathematical analysis such as tables and percentages, using excel.

## 4. RESULT AND DISCUSSION

### 4.1. Demography of Respondents

Table 1: Background information of respondents

Attributed demography		Number of respondent	Percentage
Sex	Male	43	71.7
	Female	17	28.3
	Total	60	100
Age	<28	7	11.7
	28-35	24	40
	>35	29	48.3
	Total	60	100
Educational level	Illustrated	-	-
	Basic education	8	13.3
	Primary (1-6)	12	20
	Junior (7-8)	21	35
	Secondary (9-10)	13	21.7
	Above 12	6	10
	Total	60	100

As showing to table 1, from the total respondent, 71.7% were male and 28.3% were female. This indicated that the largest portion of respondents were males. This may probably males actively adopt new technology and recognize the familiarity's than females this is due to most of time different trainings in Woreda and kebele center majority participants are males this is one probability factor and other recognizable factors women cannot recognize repeat breeding, so in

this study area most of time first serving conception probability less than 25% this reason for women to pushing or they choice locally available bull using, especially those far from the center of AI service and most of house hold agricultural activity at the study area males considered as dominant bodies with regard to improving productivity.

Regarding to sex of respondents, under the age of 28 were 11.7%; age between 28-35 were 40% and above age of 35 were 48.3%. So the largest proportions of respondents were between ages of greater than 35 year that we can say that most of the respondents were found in productive age. Youths are more close to accepting technology easily acceptance gradually improved time to time, the reason behind for use more adopt technology they observe different countries experience with help of internet and many written documents, so in our observation according to easily acceptance of AI regarding to technology more implemented by youths less than 35 age this best chance for continuity of technology in study area. Other opportunity for improvement junior and above junior learned farmers actively participating with this technology, in our study area more than 66% of respondent educational background they attended secondary educational level and above, so most of the respondents were they can easily recorded their animals heat detection as well as productivity performance.

#### 4.2 Breed types in the study area

Table 2. Type of breed owned by respondents

Breed type	Number of respondents	Percentage	Pregnancy test		
			Positive test	Negative test	Positive efficiency
Local breed	45	75%	28	17	62.2
Cross breed	15	25%	9	6	60
Total	60	100	37	23	

In table 2, of the respondent farmers their local breeds 75% cover research sampling this implies around study area still genetic improvement performance less and acceptance of AI under question in most farmer's level, and 25% were using cross breed for AI service. So this indicated that farmers at the study area were known by using low productive local breeds. Among 60

inseminated cows and heifers 37(61.7 %) cows and heifer pregnancy test positive or successful conception 23(38.3%) negative pregnancy test among 37 positive test pregnant cow 26 cows pregnant for first inseminating 7 cows save with second inseminating and other 6 cows inseminating third round. According to our assessment genetic difference was not significant difference both local and exotic breeds was similarly affected by poor feeding, poor performance of AI technicians, and distance of AI service centers farmers home, all this common problems in study area and minor difference on estrus, cross breeds more aggressive than local breed, farmers can easily differentiate when his cow come on heat.

#### 4.3 Major constraints of AI service in the study area

Table 3 Major constraints of AI service

Number	Constraints to AI service	Numbers of respondents	Percentage (%)	Rank
1	Breed of cow	4	6.7	5
2	Distance to AI center	15	25	2
3	Lack of awareness for heat detection	21	35	1
4	AI technicians efficiency	12	20	3
5	Shortage of inputs	8	13.3	4
	Total	60	100	

According to table 3, it showed that 35% constraints based on lack of awareness for heat detection, 25% caused by Distance of farmer from AI service center, 20% related to performance of artificial inseminator, 13.3% unfortunately inaccessibility of inputs including motorcycle and 6.7% of respondents replied that unclear and less amount in bread category by four respondent challenging issues with regard to AI service at the study area.

The present study had shown that major constraints of AI services were farmer's lack of awareness of heat detection, distance of AI center from the service provides center, poor performance of AI technicians, shortage of inputs and other associated. So this results in the present study were found to be more or less similar with these reported by (Gebre Medhin, 2005), like Poor conception rates due to poor heat detection and poor performance of AI technicians, dissemination of reproductive diseases and poor fertility rates, if AI centers has not equipped with appropriate inputs & are not well managed. And (Mekonen *al.*, 2010), Among the various problems, poor heat detection skill by farmers and timing of insemination are the main factors that determine the success and failure of AI program. During the next 6 hours on heat cow ready to inseminate because most of research shows this time fertilization occurs, about 30 hours after

the onset of estrus. So there were various reports that indicate low rates of service in artificially inseminated cattle, mainly due to problems in the detection of estrus.

#### 4.4 Challenges of AI Application

Discussion with the experts of the Alichu Wuriro Woreda indicated that for challenges of AI Application infrastructure, challenges of farmers inadequate AI technicians, and other additional input constraints (like sheath, Semen, Nitrogen, Containers, motorcycle, there was no sufficient incentive), low performance of AI technician, long distance traveling of farmers to get AI service, problems of poor heat detection skill by farmers and timing of insemination are the main factors that determine the success and failure of AI program faced mostly.

#### 4.5 Opportunities of AI service in the study area

Study area was huge numbers of dairy cattle, the area was highland regarding to nature feeds like improved forage Tree Lucerne Disho grass and locally available grass and inset in addition to crop residue, positive farmers interest to accept technology and other opportunities. Focus group discussion consisting of four focus group comprising of elders, females, Younger's and leaders were interviewed regarding opportunities of AI services and responded that relatively among three AI technicians one was having comparatively well performance than other two; AI service increased from time to time at his site and he was committed and serve farmers even holidays and his vacation time.

**Table 4 performance of AI technicians from questioner respondent**

Performance level	Numbers of respondents	Percentage
poor	27	45%
good	23	38.3%
Very good	10	16.7%
excellent	-	-
total	60	100

Accordingly to table 4, it showed that 45% poor, 38.3% good and 16.7% very good of respondents were evaluated performance of AI technicians. So, most of AI technicians were in the categories of poor. According to view of their customer. That we can conclude there was they were training problem or carelessness or may they cannot exactly palpation problem of ovary and uterus because of our suggestion there is no excellent performance and majority of respondent not satisfied by the service.

## **5. CONCLUSION AND RECOMMENDATIONS**

### **5.1 CONCLUSION**

According to our study result, different constraints associated with AI service in study area were clearly observed with respondent questioner response. Problems of heat detection, distance of AI center, poor performance of AI technician, Inadequate resource in terms of inputs, And some opportunities of AI service in the study area that means Highly production of improved and non-improved available forage access, disease control with vaccination program, Access of genetically improved bulls at farmers training center this is helping genetic improvement in addition to AI service, and high cattle population

Moreover as present study shown, majority of the professional revealed that they didn't get on job training. In study area professionals provided AI service they serve only five days per week and they rest holiday due to lack of additional incentive from government and there is no any type of payment by customer farmers it was free service. Similarly Professional technicians are more successful at insemination than in experienced ones, indicating that selection of a qualified inseminator is an important element in the success of the artificial insemination program and regular practice at inseminating is required to maintain high conception rate.

### **5.2 RECOMENDATION**

- Woreda Governmental and in study area available non-governmental organization should give emphasis for effective utilization and advancement of AI.
- To simplify the work farmer and technician should be developing record keeping.
- Providing adequate inputs in terms of facilities and improving incentives for AI technicians
- The farmers should get awareness about AI service and training on sign of heat detection
- To increase cross breeds in short period of time in addition to AI service use of genetically high level of bulls at FTC and model farmers by supporting of Government and NGO'S is mandatory.

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## APPENDIX I

Questionnaire paper to interview to 60 respondents to collect data on the opportunities and challenges of AI on dairy cattle in Alichu wuriro Woreda

Region ..... Zone ..... Woreda ..... Kebele .....

Name of respondents ..... Age ..... Sex .....How long you lived in this kebele .....

1. Educational level

A/ Illiterate      B/ Basic education      C/ Primary 1-6

D/ junior 7-8      E/ Secondary 9-10      F/ Above 12

2. You use Artificial insemination?      A/ yes      B/ no

3. If your Answer is yes how many rounds you get service? -----

4. What is the main problem by use of AI service?

A/ breed of cow      B/ Lack of awareness for heat detection

C/ Lack of AI Technician      D/ Shortage of inputs      E/ All

5. What about your inseminated cow/heifer composition & breed type?

A/ Cross breed and milk cow      B/ Dairy and local breed      C/ Dry cow and cross breed

D/ milk and poor breed      E/ heifer and non milked      F/ other -----

6. Type of breeds of respondent

A/ local      B/ Exotic (Holstein) Jersey)      C/ cross\_\_\_\_\_

7. Do you have any AI organization which support AI service in your kebele

A/ yes      B/ no

8. If your answer is yes what kind of organization?

A/ Government      B/ NGO      C/A and B      D/other-----

9. Can you know about heat detection for your cow?

A/ yes      B/ no

10. If your answer yes what sign heat symptom observing most of time?

A/ mounting other cows      B/ mucus discharge      C/ blowing and restlessness

D/ swelling and reddish of vulva      E/decreased feed intake and milk yield

F/ standing when mounting      G/All heat signs

11. As user/client of artificial insemination 'do you get the service regularly and without interaction?

A/ yes      B/ no      C/other response-----

12. If your answer is no for above question what is the reason for this?

A/ service is not available on weakened (Saturdays and Sunday) and holiday

B/ there is shortage of AI technician in short distance

C/ there is shortage of input, sometimes [AI equipment, liquid nitrogen, semen]

D/ unwillingness of Technician

E/ Other Problems like shortage of motor services or vehicle or others

F/ All of the above

13. From question 12 your answer is C? what type of inputs shortage occur most of time

A/ AI equipment      B/ Liquid nitrogen      C/ semen

14. Do you get service on weekend holiday?

A/ yes      B/ no

15. From above question 14 If you answer is no 'what do you do?

A/ pass the day without breeding the cow      B/ use natural mating C/ what measure you use-----

16. Are your satisfied with over all AI service?

A/ yes      B/ no

17. If above question 16 your answer is yes what the conception rate is of inseminated your cow?

A/good      B/medium      C/poor

18. From above question 17 your answer is good how many Animals inseminated-----  
and how many calf you get-----

19. From above question 17 your answer is poor how many Animals inseminated-----and how  
many calf you get----- or other your reasons-----?

A/ pure breed semen      B/ cross breed semen      C/both      D/other-----

20. Do you have any problem in using AI service?

A/ yes      B/ no

21. From above question 20 If your answer is yes what type of problems-----

22. Do you have any awareness in the use of artificial insemination?

A/ yes      B/ no

23. If your answer is yes for the above question what type of importance?

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24. According to Artificial Insemination Constraint what things to be improved to best performance of AI successfulness -----

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