**Chapter-1**

**Introduction**

Bangladesh is an agricultural based country. Its economy largely depends on the agriculture. Livestock is one of the major components of agriculture and plays a vital role in national economy. Its contribute about 6.5% of gross domestic product (GDP) and 13% of total foreign exchange earnings (DLS, 1995). According to the FAO statistic report the total ruminant livestock population of Bangladesh is composed of 24.0 million cattle, 34.4 million goats, 0.83 million buffaloes and 1.14 million sheep (FAO, 2002).

Bangladesh has large number of cattle population. The relative density of the cattle population is well above the averages found in many other countries of the world. It ranks 12th in cattle populations in the world and third among Asian countries (Alam *et. al.,* 1992). In spite of such a highly dense cattle population, the country has been deficient in milk, meat and draught power for quite some time. Because most of the cow indigenous type. Indigenous cattle have late maturity, short lactation length, long calving interval and poor production of milk and draught power but are more disease resistant and capable of thriving in harsh conditions (Rahman *et. al.,* 1995).

Artificial insemination (A.I.) is the most widely used tool in animal breeding. A.I. means the deposition of semen in the female reproductive tract by mechanical means rather than by natural mating. It is one of the most important animal production technique used in animal breeding for genetic improvement of farm animals (Hafez *et. al.,* 1993).

Most of the cattle in Bangladesh are indigenous type (*Bos indicus*) with some cross breeds along with some pure breeds, for example Sindhi, Sahiwal, Jersey, Holstein-Friesian etc. Now a day, cross breed number is uplifting the country wide day by day with the spread of artificial insemination practices (Rahman *et. al.,* 1995).

Artificial insemination was thus first introduced in Bangladesh from 1959 by using liquid semen of (High Yielding Variety) breed for cattle development. However, currently, 23 AI centers, 423 sub-centers and 554 points covering all the 64 districts of the country have been extending artificial insemination services using frozen semen.(Haque *et. al*., 2003).

Natural service is widely practice in over rural condition because of many superstition and religious obstacle in implementing A.I. programme in rural areas. Considering the importance of artificial insemination in dairy cows, the presents study was undertaken to fulfill the following objectives:

1. To identify the effect of different factors (education experience and farming system) affecting the artificial insemination in dairy cows at Boalkhali in Chittagong.
2. To study the conception rate of artificial insemination at Boalkhali in Chittagong district.

**Chapter-II**

**Materials and method**

**2.1 Study area:**

The study was conducted at Charandwip at Boalkhali Upazila in Chittagong district. It is one of the most important dairy zones in Chittagong district.

**2.2 Data collection:**

The study was conducted from March, 2017 to April, 2017. The study was conducted among 100 cows. Data were collected by interviewing the farmer. About 100 cattle farmers were interviewed through a preplanned questionnaire (appendix-1). The conception rate was evaluated by questionnaire.

**2.3 Data analysis:**

Collected data were entered in the Excel sheet and then analysis the data through following formula.

No. of cows /heifer pregnant

Conception rate =……………………………………………….× 100

No of cows /heifer inseminated

**Chapter-III**

**Result**

**3.1: Effects of education in receiving artificial insemination**

72% people were literate in the study area where 28% people were illiterate. In case of literate people 81.94% receive A.I. technology and 18.06% were did not received A.I. technology. On the other hand 10.71% people were received A.I. technology and 89.29% people were not received A.I. technology in case of illiterate people.

**Table 3.1: Effects of education in receiving A.I. technology**

|  |  |  |
| --- | --- | --- |
| **Trait (Education)** | **Number of percentage (%)**  **Of farmers received A.I. technology** | **Number and percentage (%) of farmers don’t received A.I. technology** |
| Literate 72 (72%) | 59(81.94%) | 13(18.06%) |
| Illiterate 28 (28%) | 3(10.71%) | 25(89.29%) |

**3.2: Effects of experience on receiving artificial insemination technology**

Farmers received A.I. technology according to their previous technology. From the study it is revealed following result. Farmers having previous experience of 0-<2 years about cattle farming, their tendency for receiving A.I. technology were 93.75% and tendency for non adaptation of A.I. technology were 6.25%.2-<4 years experienced farmers received A.I. technology 76.47% and tendency for non adaptation of A.I. technology were 23.53%. 4-<6 years farmers have high tendency to receive A.I. technology about 100%.Farmers with previous experience of 6-<10 years about cattle farming, their tendency for receiving A.I. technology were 82.76% and tendency for non adaptation of A.I. technology were 17.24%.10 years or above experienced farmer have also tendency for receiving A.I. technology were 82.76% and tendency for non adaptation of A.I. technology were 17.24%.

**Table 3.2: Effects of experience in receiving A.I. technology**

|  |  |  |
| --- | --- | --- |
| Previous experience of farmers(years) | No. and percentage(%) of farmers who receive A.I. technology | No. and percentage (%) of farmers who did not received A.I. technology |
| 0-<2 | 15(93.75%) | 1(6.25%) |
| 2-<4 | 26(76.47%) | 8(23.53%) |
| 4-<6 | 12(100%) | 0(0%) |
| 6-<10 | 24(82.76%) | 5(17.24%) |
| 10 or above | 7(77.78%) | 2(22.22%) |

Farmers those have experience about 2-<4 years received A.I. technology only 76.47% which is the lowest and farmers those have experience about 4-<6 years or above received A.I. technology 100% which is the highest among all.

**3.3 Effects of farming condition in receiving A.I. technology**

It was observed from the study that, farmers having extensive farming condition received A.I. technology 86.79% and didn’t receive A.I. technology 13.21%.Farmers having extensive farming condition received A.I. technology 75.76% and didn’t receive A.I. technology 24.24%. Extensive farming condition received A.I. technology 92.86% and didn’t receive A.I. technology 7.14%. So we can tell that farmers those who reared their animals in intensive condition, prefer A.I. than natural insemination.

**Table 3.3: Effects of farming condition in receiving A.I. technology**

|  |  |  |
| --- | --- | --- |
| Farming condition | No. and percentage(%) of farmers received A.I. technology | No. and percentage (%) of farmers didn’t received A.I. technology |
| Extensive farming | 46(86.79%) | 7(13.21%) |
| Semi-intensive farming | 25(75.76%) | 8(24.24%) |
| Intensive farming | 13(92.86%) | 1(7.14%) |

**3.4 conception rate of artificial insemination technology:**

For estimating the conception rate of artificial insemination, the following formula was used

No. of cows/ heifer pregnant

Conception rate =………………………………………….×100

No. of cows/ heifer inseminated

No. of cows/ heifer inseminated = 84

No. of cows/ heifer pregnant =60 60

So, Conception rate =……….×100 = 71.42%

84

.

**Chapter-IV**

**Discussion**

The conception rate of artificial insemination mainly depends on the farmer’s experience, education status etc. In addition knowledge, age, previous experience and income of the farmers were the major problems confronting A.I. Similar findings were reported by Alam *et. al.,*1992.

The result of the field survey show that, farmers had previous experience about cattle farming play a positive role to the receive artificial insemination services in the survey area. 4-<6 years experience farmer’s have high tendency to receive A.I. The result had similarity with theQuddus M.A. *et. at.,* 1998*.*

Quddus *et. al.* (1998) cited that the farmers whose farming condition was extensive did not receive A.I. service at all. But, the study revealed that, whose farming condition was extensive also received A.I. at high level. The result revealed that the intensive farming have high tendency to receive A.I. technology.

Hasim (1985)cited that farming condition had significant positive association with farmers tendency towards A.I. The variable average conception rates 76.61 and 73.96% were recorded in indigenous and crossbred respectively (Rahman *et. al.* 1995). But this study revealed that the conception rate is same with the cited value.

Although the A.I. performances influenced on climatic factors e.g. temperature, rainfall, solar, radiation, temperature day after insemination. These factors had potential influence on performance rate according to the Gwazdusks *et. al.* 1975.

Taylor *et. al.,* (1985)cited that “warmer months were closely associated with lower conception rate than cooler months. Conception rate also decrease for semen by bulls 8 years and older “that were not followed in study.

The study had been done during March to April**.** So the conception rate is little bit high.

**Chapter-v**

**Conclusion**

The rural farmer’s tendency towards artificial insemination depends on many factors such as literacy rate, farming experience and types of farming which lead them towards receiving A.I. technology. To increase the farmer’s tendency towards A.I. technology we have to make more A.I. sub-centers, remove superstition, more literate farmers and more skilled technician. Thus, adequate measures are essential to the development and expansion of artificial insemination along the best possible ways, So that the greatest advantages of using A.I. might be gained in Boalkhali Upazilla, Chittagong. Formation of farmers association and establishment of A.I. sub center in each village of Chittagong district could have leaded this progoamme to great success.

**Chapter-VI**

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APPENDIX-1

A QUESTIONNAIRE ON FARMERS TENDENCY TOWARDS ARTIFACIAL INSEMINATION AND ITS SUCCESS RATE

CASE NO…….. DATE……….

OWNERS DETAILS:

1. NAME……………………………………………………………………………………
2. ADDRESS……………………………………………………………………………….
3. FARM TYPE:

Answer: EXTENSIVE/SEMI-INTENSIVE/INTENSIVE

1. FARM SIZE:

Answer: SMALL (<5)/MEDIUM (5-9)/LARGE(>10)

1. EDUCATIONAL QUALIFICATION:

Answer: ILLITERATE/LITERATE

1. PREVIOUS EXPERIENCE ABOUT FARMING:

Answer: 0-<2YEARS/2-<4YEARS/4-6<YEARS/6-<10YEARS/10YEARS or above.

1. PREVIOUS EXPERIENCE ABOUT A.I:

Answer: YES/NO

1. REPRTATION OF A.I.

Answer…Times

1. ANIMAL WAS PREGNANT:

Answer: YES/NO

……………………….

(Signature)

**Appendix-2**

Average result of 100 questionnaires:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trait | Number | Percentage | Receive A.I. | | Don’t receive | |
| No. | % | No. | % |
| Literate | 72 | 72 | 59 | 81.94 | 13 | 18.06 |
| Illiterate | 28 | 28 | 25 | 89.29 | 3 | 10.11 |
| Experience |  |  |  |  |  |  |
| 0-<2yrs | 16 | 16 | 15 | 93.75 | 1 | 6.25 |
| 2-<4yrs | 34 | 34 | 26 | 76.47 | 8 | 23.53 |
| 4-<6yrs | 12 | 12 | 12 | 100 | 0 | 0 |
| 6-<10yrs | 29 | 29 | 24 | 82.76 | 5 | 17.24 |
| 10yrs or above | 9 | 9 | 7 | 77.78 | 2 | 22.22 |
| Farm size |  |  |  |  |  |  |
| Small | 55 | 55 | 45 | 81.82 | 10 | 18.18 |
| Medium | 33 | 33 | 30 | 90.91 | 3 | 9.09 |
| Large | 12 | 12 | 9 | 75 | 3 | 25 |
| Farm type |  |  |  |  |  |  |
| Extensive | 53 | 53 | 46 | 86.79 | 7 | 13.21 |
| Semi-intensive | 33 | 33 | 25 | 75.76 | 8 | 24.24 |
| intensive | 14 | 14 | 13 | 92.86 | 1 | 7.14 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Farm Type | | | Farm Size | | | Literacy | | Experience | | | | | | | | Rep | Preg |
| E | SI | I | S | M | L | L | I | 1 | 2 | | 3 | | 4 | | 5 |
| Sneha | + |  |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Babul | + |  |  | + |  |  | + |  | + |  |  | |  | |  | |  | + |
| Ashad |  | + |  |  | + |  | + |  |  |  |  | | + | |  | |  | + |
| Palash |  |  | + |  |  | + |  | + | + |  |  | |  | |  | |  | + |
| Abul | + |  |  | + |  |  | + |  |  |  | + | |  | |  | |  | + |
| Rena | + |  |  | + |  |  | + |  |  |  |  | | + | |  | |  | + |
| Rofique |  | + |  |  | + |  | + |  |  |  |  | | + | |  | |  | + |
| Alok | + |  |  |  | + |  | + |  |  |  |  | | + | |  | | + |  |
| Jamal |  | + |  |  | + |  | + |  |  |  | + | |  | |  | |  | + |
| Ashis | + |  |  | + |  |  |  | + |  |  |  | | + | |  | |  | + |
| Jaman | + |  |  | + |  |  | + |  | + |  |  | |  | |  | |  | + |
| Arjun |  |  | + |  | + |  | + |  | + |  |  | |  | |  | |  | + |
| Riaz | + |  |  | + |  |  |  | + |  | + |  | |  | |  | | + |  |
| Ratul | + |  |  | + |  |  | + |  |  |  | + | |  | |  | |  | + |
| Babu | + |  |  | + |  |  | + |  |  |  |  | | + | |  | |  | + |
| Monirul | + |  |  | + |  |  | + |  |  |  |  | |  | | + | |  | + |
| Mintu |  | + |  |  | + |  |  | + |  |  |  | | + | |  | |  | + |
| Kobir |  |  | + |  |  | + |  | + |  |  |  | | + | |  | |  | + |
| Mobarak |  |  | + | + |  |  | + |  |  |  | + | |  | |  | |  | + |
| Gopal |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Zamman | + |  |  | + |  |  | + |  |  | + |  | |  | |  | | + |  |
| Horipodo | + |  |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Tuli | + |  |  |  | + |  | + |  | + |  |  | |  | |  | |  | + |
| Monir | + |  |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Reza | + |  |  | + |  |  |  | + |  | + |  | |  | |  | |  | + |
| Ratul | + |  |  |  |  | + | + |  |  |  |  | | + | |  | | + |  |
| Mubarok |  | + |  | + |  |  | + |  |  |  |  | | + | |  | |  | + |
| Sagor |  | + |  | + |  |  | + |  |  |  |  | | + | |  | |  | + |
| Probal |  | + |  | + |  |  |  | + |  | + |  | |  | |  | |  | + |
| Dipak | + |  |  | + |  |  | + |  |  | + |  | |  | |  | | + |  |
| Hassan |  |  | + | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Saiffulah | + |  |  | + |  |  | + |  | + |  |  | |  | |  | |  | + |
| Arjun |  | + |  | + |  |  |  | + |  |  |  | | + | |  | |  | + |
| Shaheda |  | + |  |  | + |  |  | + |  |  |  | | + | |  | |  | + |
| Liakat | + |  |  |  | + |  | + |  |  | + |  | |  | |  | |  | + |
| Sajjad |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Lima |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Tapan |  |  | + |  | + |  | + |  |  |  | + | |  | |  | |  | + |
| Rakhal | + |  |  |  | + |  | + |  |  |  |  | | + | |  | |  | + |
| Jottihallahe |  | + |  | + |  |  |  | + |  |  |  | | + | |  | | + |  |
| Niaz |  | + |  | + |  |  | + |  |  |  |  | |  | | + | | + |  |

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| Name | Farm Type | | | Farm Size | | | Literacy | | Experience | | | | | | | | Rep | Preg |
| E | SI | I | S | M | L | L | I | 1 | 2 | | 3 | | 4 | | 5 |
| Akkas |  | + |  | + |  |  | + |  | + |  |  | |  | |  | |  | + |
| Uzzal | + |  |  |  | + |  | + |  |  | + |  | |  | |  | |  | + |
| Masud |  | + |  |  | + |  | + |  |  | + |  | |  | |  | |  | + |
| Limon | + |  |  | + |  |  |  | + |  |  | + | |  | |  | |  | + |
| Asis |  |  | + | + |  |  | + |  |  |  |  | | + | |  | |  | + |
| Goutam | + |  |  |  |  | + | + |  |  |  |  | | + | |  | |  | + |
| Javed | + |  |  |  | + |  | + |  |  |  |  | |  | | + | |  | + |
| Rezaul | + |  |  |  | + |  |  | + | + |  |  | |  | |  | |  | + |
| Zakir | + |  |  | + |  |  |  | + | + |  |  | |  | |  | |  | + |
| Kapil | + |  |  |  | + |  | + |  |  | + |  | |  | |  | |  | + |
| Probir | + |  |  |  | + |  | + |  |  | + |  | |  | |  | |  | + |
| Rahim |  | + |  |  |  | + |  | + |  | + |  | |  | |  | | + |  |
| Vajan |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Sharmin | + |  |  | + |  |  | + |  | + |  |  | |  | |  | |  | + |
| Khokon |  |  | + | + |  |  | + |  |  |  | + | |  | |  | |  | + |
| Binod | + |  |  |  | + |  | + |  |  |  | + | |  | |  | |  | + |
| Joy |  |  | + |  | + |  |  | + |  |  |  | |  | | + | |  | + |
| Jahedul | + |  |  |  |  | + |  | + |  |  |  | | + | |  | |  | + |
| Rahim |  | + |  | + |  |  | + |  |  |  |  | | + | |  | | + |  |
| Rashad | + |  |  | + |  |  | + |  |  | + |  | |  | |  | | + |  |
| Bipul |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Chandan |  |  | + |  | + |  | + |  |  | + |  | |  | |  | |  | + |
| Jhuton | + |  |  |  | + |  |  | + | + |  |  | |  | |  | |  | + |
| Jasmin | + |  |  | + |  |  | + |  | + |  |  | |  | |  | |  | + |
| Kibria | + |  |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Abid | + |  |  |  |  | + | + |  |  | + |  | |  | |  | |  | + |
| Srikhanta |  | + |  |  | + |  |  | + |  |  |  | | + | |  | |  | + |
| Ahsan |  | + |  |  | + |  | + |  |  |  |  | | + | |  | | + |  |
| Shaon | + |  |  | + |  |  | + |  |  |  | + | |  | |  | |  | + |
| Kapil | + |  |  | + |  |  |  | + |  |  |  | | + | |  | |  | + |
| Rahul |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Tasmin |  |  | + | + |  |  | + |  |  | + |  | |  | |  | |  | + |
| Harun | + |  |  |  |  | + | + |  |  |  |  | | + | |  | |  | + |
| Bashir | + |  |  |  | + |  | + |  |  |  |  | | + | |  | |  | + |
| Liton | + |  |  | + |  |  |  | + |  |  |  | | + | |  | |  | + |
| Momen |  | + |  |  | + |  |  | + | + |  |  | |  | |  | |  | + |
| Rafiq |  | + |  |  |  | + | + |  |  | + |  | |  | |  | | + |  |
| Salam |  | + |  | + |  |  | + |  |  |  |  | |  | | + | | + |  |
| Barkat |  | + |  | + |  |  | + |  |  | + |  | |  | |  | |  | + |

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| Name | Farm Type | | | Farm Size | | | Literacy | | Experience | | | | | | | | | | Rep | Preg | |
| E | SI | I | S | M | L | L | I | 1 | | 2 | | | 3 | | 4 | | 5 |
| Forid | + |  |  | + |  |  | + |  | + | |  | |  | |  | |  | |  | + | |
| Tumpa |  | + |  |  | + |  | + |  |  | | + | |  | |  | |  | |  | + | |
| Kanchan | + |  |  |  | + |  |  | + |  | |  | | + | |  | |  | |  | + | |
| Tithi |  |  | + |  | + |  | + |  |  | |  | |  | | + | |  | |  | + | |
| Munna | + |  |  | + |  |  | + |  |  | |  | |  | | + | |  | |  | + | |
| Tarek | + |  |  | + |  |  |  | + |  | |  | |  | |  | | + | |  | + | |
| Sumon |  | + |  |  |  | + |  | + |  | | + | |  | |  | |  | |  | + | |
| Jiauddin |  | + |  |  | + |  |  | + |  | |  | |  | |  | | + | |  | + | |
| Rahat | + |  |  | + |  |  | + |  |  | | + | |  | |  | |  | | + |  | |
| Rabbi |  | + |  |  | + |  | + |  |  | | + | |  | |  | |  | | + |  | |
| Mitun |  | + |  |  |  | + | + |  | + | |  | |  | |  | |  | |  | + | |
| Arafat | + |  |  | + |  |  | + |  |  | |  | | + | |  | |  | |  | + | |
| Milan | + |  |  | + |  |  |  | + |  | |  | |  | | + | |  | |  | + | |
| Fahim | + |  |  |  | + |  | + |  |  | |  | |  | | + | |  | |  | + | |
| Monoara | + |  |  |  | + |  | + |  |  | |  | | + | |  | |  | |  | + | |
| Nipul |  |  | + | + |  |  |  | + | |  | |  |  | |  | | | + |  | | + |
| Shuvo |  |  | + | + |  |  | + |  | | + | |  |  | |  | | |  | + | |  |
| Jibon |  | + |  | + |  |  | + |  | |  | | + |  | |  | | |  |  | | + |
| Kamal |  | + |  |  |  | + | + |  | |  | | + |  | |  | | |  |  | | + |
| Arnab | + |  |  |  | + |  |  | + | |  | |  |  | |  | | | + |  | | + |
| Total=100 | 52 | 34 | 14 | 55 | 33 | 12 | 72 | 28 | | 16 | | 34 | 12 | | 29 | | | 9 | 16 | | 84 |

E=Extensive farming

SI=Semi-intensive farming

I=Intensive farming

S=Small farm

M= Medium farm

L=Large farm

LI=Literate

I=Illiterate

1=0-<2 years

2=2-<4 years

3=4-<6 years

4=6-<10 years

5=10 years or above