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ROSEMARIE BESAS TESORO, April 2012. *Assessment of the Artificial Insemination Program on Buffalo in the Cordillera Administrative Region.* Benguet State University. La Trinidad, Benguet.

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ABSTRACT

This study was conducted to look into the extent of implementation of the artificial insemination program on buffalo in the Cordillera Administrative Region; factors affecting the implementation; the advantages and benefits felt by the AI Technicians and farmers; and the problems encountered in the implementation of the program.

Findings showed that the extent of implementation of the AI Program on Buffalo in terms of its program components: AI Technicians' trainings, farmers class, government subsidies from both the National Government Agencies and the Local Government Units and the monitoring and evaluation component done by the Department of Agriculture-Regional Field Unit-Cordillera Administrative Region (DA-RFU-CAR) and the Provincial Veterinary Office (PVO), were perceived as moderately implemented.

The perceived factors affecting the implementation of the program are: knowledge and skills of AI Technicians and farmers on artificial insemination; positive attitudes towards the AI Program; and subsidies provided by both NGA and LGUs. Awareness of the program, as perceived by the farmers, led them to participate in the farmers' classes.

The perceived advantage of artificial insemination was the convenience of the Technicians and famers in handling the semen while transporting them to the inseminating areas. In natural breeding, transporting the bull is very difficult. The perceived benefits were higher income for

farmers due to better quality of the offspring through artificial insemination and more manageable behavior of the animals.

The problems encountered during the implementation of the program were: (1) negative attitudes of the farmers towards the AI program; (2) lack of AI Technicians; (3) no accessible roads to the farms; (4) lack of information dissemination about the program; (5) insufficient financial support by the LGUs; (6) dystocia or the difficulty of giving birth due to oversized and overweight offspring.

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INTRODUCTION

Background of the Study

Buffaloes have been an integral part of the livestock agriculture in Asia. It is an indigenous animal in the Philippines. There are about 174 million buffaloes in the world (FAO Statistics 2007) and roughly 97% or 167 million heads are found in the Asian region (Cruz, 2000).

In the Philippines, 3.3 million buffalo (BAS Survey 2006) are kept both in backyard and commercial farms. About 99% of the animals are kept in backyard farms and 1% is kept in commercial farms. In the Cordillera Administrative Region (CAR), buffalo population is 86,680 (all ages) wherein 86,296 heads are in the backyard and 384 are in commercial farms (BAS 2008).

Buffalo is considered as the beast of burden in the Philippines, producer of draft power and a primary source of milk, meat and hides. Despite its importance to the economic and social fabric of the country, its population has been declining due the following reasons: increased urbanization, industrialization and reforestation limiting paddy areas for buffaloes; growing buffalo slaughter rate to satisfy meat demands of a fast growing population; poor reproductive performance; and lack of proper attention by policy makers and researchers. In light of this, the animals have to be improved from being a mere source of draft power to a producer of meat and milk to serve as additional income to supplement

what the farmers earn from crops. This is the very reason why buffalo development was introduced by the government, which aims to produce genetically superior germplasm for enhanced and sustained genetic improvement.

The technology of artificial insemination for buffalo was strengthened through Republic Act 7307 (otherwise known as the Philippine Carabao Act of 1992). The Philippine Carabao Center (PCC), was mandated to promote the development of the buffalo as source of meat, milk, draft power and hides became operational in 1993 and took momentum from the gains and achievements of the earlier program of the Philippine Carabao Research and Development Center (PCRDC) which started in 1982 (PCC History). Artificial Insemination is defined as the collection of semen of the male and the introduction of the same into the vagina of the female tract at proper time with the help of instruments (Cruz, 2000).

Artificial Insemination played a valuable and important role in facilitating appropriate genetic improvement in animal population through widespread use of outstanding males and dissemination of superior genetic material (Food & Fertilizer Technology Center Newsletter 153, Sept. 2003). Further, Artificial Insemination also accelerated the improvement of animal production through the introduction of desirable traits such as higher milk yield or better growth rate while conventional breeding takes decades to produce major changes. Improving the animal's productivity improves the farmers' capability to generate additional

income supplementing what they earn from crops. Pagadut (2008) added that the Artificial Insemination Program was utilized for its economic importance and other advantages in carabao breeding, reproduction and genetic improvement.

Artificial insemination offers an economically feasible means of increasing the productive performance of buffalo. According to Tomar (1984), the advantages of artificial insemination are: 1) One bull can replace the use of at least ten (10) bulls, 2) Semen from a bull can be easily transported to farther distances without being hindered by geographical boundaries, 3) Semen characteristics of every breeding bull are evaluated for their suitability in breeding operation, 4) a proven bull which has grown old can be fully utilized during his short life span, and 5) Un-equal mating with un-equal sized mates or with inter-species breeding may be made convenient with artificial insemination. As stated by Cruz, 2000, the use of best bulls with desirable traits is maximized by way of collecting their semen servicing as many females as possible, which are not normally available for natural mating. Truly, that a semen donor can produce an average of about 5,000 doses of semen per year which can serve about 2,500 - 3,500 females (NABC 2008). While the use of natural mating, a bull can only serve a maximum of 50 females per year. Similarly, Limson (2009) mentioned that improving the animals' productivity improves the farmers' capability to generate additional income. Given a very proficient AI technicians and good quality semen, it is expected that: the success rate may be comparable; animal

breed will improve with high vigor and larger body size; and, higher production through good quality carcass and increased income (Paligutan, 2008).

At present, the Department of Agriculture through the Philippine Carabao Center at Central Luzon State University, Muñoz, Nueva Ecija caters the implementation of the AI technology in the Cordillera Administrative Region. It is also mandated to conserve, propagate and promote the buffalo as a source of milk, meat, draft power and hide to benefit the rural farming families. Strengthening institutional capabilities towards the improvement of the animal resources as provider of milk and meat in order to enhance family nutrition and income among farming communities has been obtaining. The future outlook of the buffalo sector leads to the transformation of the buffalo as an important producer of milk and meat resulting to the creation of more employment opportunities and increase in rural income through the proliferation of buffalo-based dairy enterprise (www.pcc.da.gov.ph).

The effort was further strengthened when the project established its Semen Processing Laboratory to locally produce processed frozen buffalo semen for massive AI services and eventual distribution to breeding centers and individual farmers to carry out genetic improvement. Training is also important to equip and mobilize AI technicians to effectively implement the artificial insemination program. Likewise, development of technologies and assistance in policy

assessment and formulation leading to a more productive buffalo industry (Mamuad et al., 2008).

Shifting from the use of draft buffalo to small hand tractor is apparently common in irrigated rice-producing areas. Nonetheless, the reality remains that despite the introduction of hand tractors, the farmers can not totally do away with the draft buffaloes. If buffaloes are no longer used for work, then the animals have to be improved from being a mere source of draft power to a producer of meat and milk. The farmers need additional income to supplement what they earn from crops. This is the very reason why buffalo development is needed.

Conceptual Framework

To change the scenario, the government through the Department of Agriculture and other attached agencies such as the Bureau of Animal Industry and the Philippine Carabao Center and the local government units were included to work for agriculture modernization. The initiative and cooperation of farmers themselves and the community are also important in the buffalo development program. In addition, it is imperative that other commodities including buffaloes must be given special concern and attention so that they can be a potential for development (Bragado, 2004).

The paradigm (Figure 1) shows the direction and coverage of the study. The independent variables are the National Government support such as: trainings of

AI technicians, AI paraphernalia and cash incentives; Local Government Unit support such as AI Technicians and their travelling allowances; monitoring and evaluation.

The intervening variables focused on; the factors affecting the implementation of AI program which includes the technical knowledge of AI Technicians and farmers, and their attitudes towards the program.

The dependent variables look into the extent of implementation of Artificial Insemination on buffalo; and the benefits from AI Program on Buffalo. Artificial Insemination Program is implemented by the Department of Agriculture to accelerate the genetic resource improvement for buffaloes to produce animals with better productivity for milk and meat. The increase in the population of buffaloes in the Cordillera Administrative Region and increase in number of farmers' AI beneficiaries and increase on the farmers' income could be an indicator of a fully implemented project.

The support from the National Government through the Department of Agriculture provides policy framework in directing public investments and the Local Government Units to provide the support services necessary to make agriculture enterprises profitable and to help spread the benefits of development to the poor, particularly those in rural areas (Agriculture & Fishery Modernization Act of 1997). Provision of trainings, AI paraphernalia and cash incentives are

imperative to fully implement the Artificial Insemination Program and to improve the technical, business and social capabilities of farmers.

Trainings are provided by the Philippine Carabao Center. This is to equipped agricultural technicians with the necessary skills and knowledge (Pasalo, 2008). Davalos (2006) cited by Mandac (1984) who pointed out that agricultural extension workers who attended more training become more active in pertinent activities of the government.

AI Technicians who are fully equipped with skills will directly contribute to the prompt adoption and technology dissemination. These are basic needs for improved performance of the livestock industry (Livestock Development Program). According to Estigoy (1990), farmers were provided with latest information and trained with the proper use of innovations through farmers' class and or training.

More significantly, Schwass et al., (1982) emphasized the need to produce extension workers and technicians who are professional officers, technically equipped to give farmers accurate advice on matters of crops and animal production. In addition, technicians must be knowledgeable, well-trained and committed to serve (Mamuad et al., 2008).

The provision of Paraphernalia which includes semen, liquid nitrogen (LN_2) tank, AI guns, insemination syringes, plastic shoulder length gloves, paper towels,

alcohol and other materials contained in the kit can facilitate the implementation of the AI Program.

Cash Incentives were given to AI technicians who performed the task effectively and efficiently. Each technician received P2,000.00 per month as incentive for all agriculture programs and additional cash of P100.00 for every calf drop/offspring produced from the animals they inseminated. Provision of incentives to the AI Technicians can be of great motivation that will contribute to the implementation of the programs. Estrada (2005) further emphasized that agricultural extension workers deserve appropriate and adequate remuneration and other incentives to ensure the responsive and effective delivery of services to the agricultural and fisheries sector.

An effective monitoring and evaluation components of the program ensures that the right inputs are made available at the right time and to ensure that the inputs are producing the planned outputs. Therefore, the success of every program rest mainly on the consent and dynamic participation of the governed and good management as well (Tesoro, 2002). It is designed to assess the effects of the project components. This component was expected to cause the changes and improve the performance of the implementers and the beneficiaries as well.

Another component of the program is the Local Government Units' support in terms of providing their technicians to implement the AI program in collaboration with the appropriate government agencies and the private sector. In

addition, the LGUs were task to provide the technicians their travelling allowances and incidental expenses in their respective areas of jurisdiction. Such provisions or counterparts are assumed to contribute to the full implementation of the AI program.

The factors affecting the Artificial Insemination Program are the technical knowledge of both the AI Technicians and farmers. Technical knowledge is becoming a much more important factor in the success of most developmental programs/projects in today's scenario (Moe, 2000). He further states that technology is the driver of the new economy and human capital is its fuel. Knowledge makes the difference in how an individual performs and also makes the difference in how well program/projects be implemented and for that matter, how well a country performs.

Education plays a prime role in acquiring technical knowledge. AI technicians as well as farmers should be technically equipped. This could only be overwhelmingly achieved through trainings, seminars and farmers' classes. A technically equipped AI Technicians and even farmers can contribute to the success of the AI program.

Attitudes of AI Technicians and farmers may be expressed as an opinion or it may be unexpressed. These have something to do with how they act. Understanding of attitude helps explain personal behavior which is useful in

understanding collective behavior in society. Understanding of attitude may help a lot of people, institution and organizations to learn and to be changed.

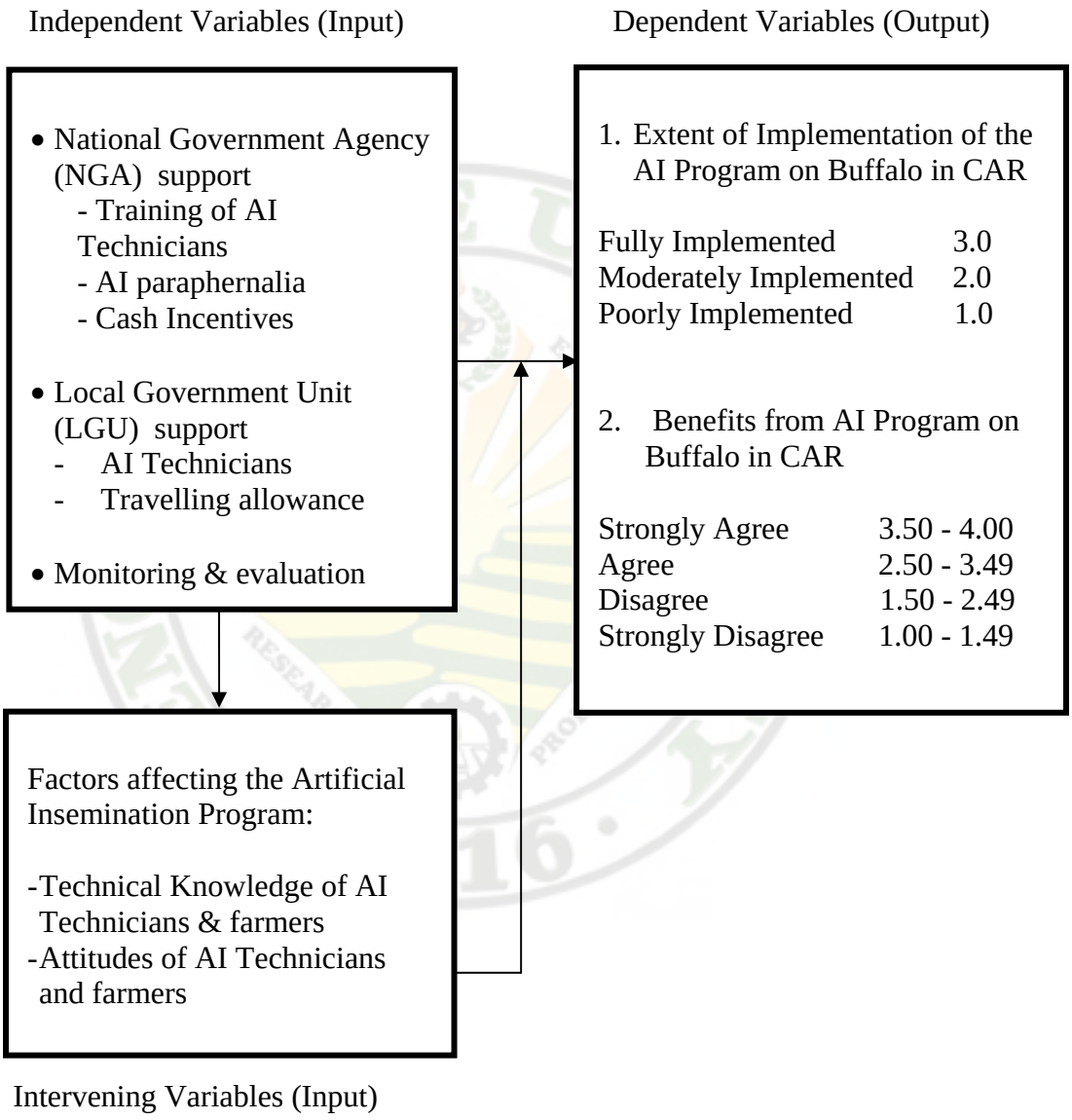

Figure 1. Paradigm showing the variables of the study

Statement of the Problem

The primary concern of this study was to assess the effectiveness of the artificial insemination program on Buffalo in the Cordillera Administrative Region. The program having the general objective for the acceleration of the genetic make-up of buffalo through the infusion of genetically elite and superior breed will assist farmers increase their income and improve the productivity of their existing large population of native breed of buffalo. The study answered the following questions:

1. What is the extent of implementation of the AI Program on Buffalo in the Cordillera Administrative Region as perceived by the AI Technicians and farmers?
2. What are the perceived factors affecting the implementation of the AI Program on Buffalo?
3. What are the perceived advantages and benefits felt by AI Technicians and farmers from using the Artificial Insemination?
4. What are the problems encountered in the implementation of the AI Program on Buffalo?

Hypotheses of the Study

The researcher was guided by the following hypothesis:

1. There are significant differences on the extent of implementation of the AI program on Buffalo in CAR as perceived by the AI Technicians and farmers.

2. There are significant differences on the factors affecting the implementation of the AI Program on Buffalo in CAR as perceived by the AI Technicians and farmers.

3. There are significant differences on the awareness of farmers on the importance and benefits that they could derive from the Artificial Insemination Program.

4. There are significant differences on the problems encountered by the AI Technicians and farmers in the implementation of the AI Program.

METHODOLOGY

This section presents the research design, population and locale of the study, data collection instruments, data collection procedures and treatment of data.

Research Design

The study used statistical computations to determine the factors and the extent of implementation of the Artificial Insemination Program in the Cordillera Administrative Region. Both the quantitative and qualitative approach was used to help the researcher to look at any suggestions in the sustainable implementation of the program.

Locale and Population of the Study

The study was conducted in the five (5) provinces (Abra, Apayao, Benguet, Ifugao and Kalinga) of the Cordillera Administrative Region (Fig.2). There were 2 groups of respondents in the study. The first group consisted of 26 trained AI Technicians from: Abra (4), Apayao (4), Benguet (6), Ifugao (6), Kalinga (2) and DA-CAR (4). The second group comprised of 200 buffalo raisers from top three municipalities in each provinces of Abra, Apayao, Benguet, Ifugao and Kalinga. Said farmers were beneficiaries of the AI program and had their animals (buffalo) inseminated from year 2007-2009. (GMA-LP UNAIP Report 2007-2009).

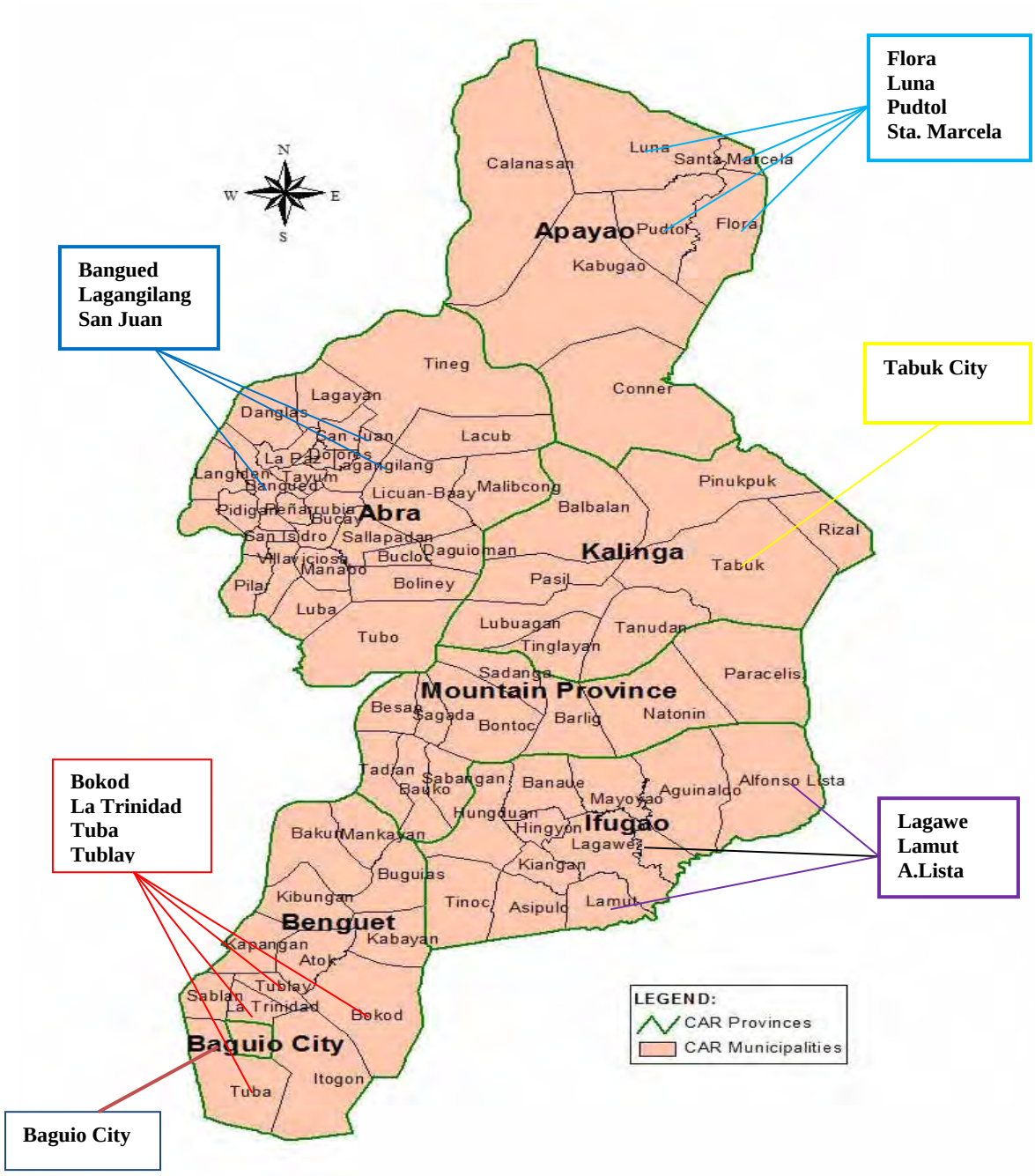

Figure 2. Map of the study area, Cordillera Administrative Region

In Mountain Province, there were only few beneficiaries due to lack of trained AI Technicians. The breakdown of respondents in each province is shown in Table 1.

Table 1. Distribution of respondents by province by municipality

PROVINCE	MUNICIPALITY	NUMBER AI Technicians	%	Farmers	%
Abra (PVO)		**4**	**15.0**		
	Bangued			11	
	Lagangilang			10	
	San Juan			10	
				31	**15.5**
Apayao (PVO)		1			
	Flora	1		18	
	Luna	-		12	
	Pudtol	1		-	
	Sta. Marcela	1		19	
		4	**15.0**	**49**	**24.5**
Baguio (DA-RFU-CAR)		4			
Benguet (PVO)		2			
	Bokod	1		-	
	La Trinidad	1		14	
	Tuba	1		13	
	Tublay	1		9	
		10	**38.46**	**36**	**18.0**
Ifugao (PVO)		1			
	Lamut	2		20	
	Lagawe	1		9	
	Alfonsolista	2		25	
		6	**23.07**	**54**	**27.0**
Kalinga (PVO)					
	Tabuk	**2**	**7.69**	**30**	**15.0**
	Total	26		200	

Source: GMA-LP-UNAIP, 2007-2009

Socio Demographic Profile of the
Artificial Insemination Technicians

Table 2 shows the socio-demographic profile of the AI Technicians.

Sex, age and marital status. There were more male respondents (96.2%) than females (Table 2). Majority, 50% of the respondents were within the 31 to 50 years of age; the next age group which accounted for 26.9 % belonged to the 50 years old and above; and the least group, 23.1% belonged to 30 years old and below. Most of them were married, 84.6% while the other two are single and widow, 7.7%, respectively.

Educational attainment. Twenty one (21) or 80.8% of the AI technicians are holder of Bachelor's Degree and Doctor of Veterinary Medicine; two (7.7%) finished a certificate and diploma course, respectively while only one or 3.8% is a high school graduate.

Field of specialization. Among the AI Technicians, 50% have specialized in animal science/animal husbandry; veterinary medicine, 7.7%; agribusiness/agriculture, 23.1%; while 19.2% disclosed no specialization.

Position in government office. At least 30% of the AI Technicians were agricultural technologist. The others are the Village Based Artificial Insemination Technicians (VBAIT), 26.9% who do not hold any position in the government because; they are volunteers assisting the AI technicians.

Table 2. Socio-demographic profile of AI Technicians/VBAITs

Particulars	Frequency n= 26	Percentage %
a. Sex		
Male	25	96.2
Female	1	3.8
b. Age		
30 & below	6	23.1
31 – 50	13	50.0
51 & above	7	26.9
c. Marital Status		
Single	2	7.7
Married	22	84.6
Widow	2	7.7
d. Educational Attainment		
Certificate	2	7.7
Diploma	2	7.7
BS	21	80.8
High School	1	3.8
e. Field of Specialization		
Animal Science/Husbandry	13	50.0
DVM	2	7.7
Agribusiness/Agriculture	6	23.1
None	5	19.2
f. Position in Government Office		
Market Inspector	4	15.4
Center Chief	1	3.8
Agricultural Technologist	8	30.8
Sr. Agriculturist	3	11.5
Agricultural Technician	1	3.8
Job Order	2	7.7
None (VBAIT)	7	26.9

Table 2. continued…

Particulars	Frequency n= 26	Percentage %
g. Current designation		
Regional AI Coordinator (RAIC)	1	3.8
Provincial AI Coordinator (PAIC)	5	19.2
None	20	77.0
h. Length of Service		
20 years up	4	15.4
10 – 20	10	38.5
5 – 10	6	23.1
1 – 4	6	23.1
i. VBAIT		
Yes	6	23.1
No	20	76.9
j. Years as VBAIT		
10 years up	0	0
5 – 9	1	3.8
1 – 4	5	19.3
Less than 1 year	20	76.9

Administrative designations. Majority of the AI technicians (77%) had no administrative designation in the government office. Five (19.2%) of the respondents were Provincial Artificial Insemination Coordinators (PAIC) and only one (3.8%) respondent is the Regional Artificial Insemination Coordinator (RAIC).

Length of service. Four (15.4%) of the AI Technicians have served the government for 20 years and above; Six (23.1%) of them were in the service for 5-10 years and another 6 (23.1%) 1-4 years; Ten (38.5%) respondents have 10 – 20 years in the service. This result shows that most of the AI technicians have

been in the service for 10-20 years which implies that they had experiences in the buffalo upgrading program.

Skills and Experiences of the
Artificial Insemination Technicians

Table 3 shows the skills training attended by the AI Technicians.

AI related trainings attended. Training is an important intervention being conducted to equip agricultural technicians with the necessary skills and knowledge (Pasalo, 2008). To respond to the requirement of the Buffalo Upgrading Program, the Philippine Carabao Center conducted training activities for technicians. There were 96.2% of the AI Technicians attended AI training course; only 26.9% attended the semen processing. These findings shows that the technicians involved in AI know the basic principles of insemination. Indeed, technicians must be knowledgeable, well-trained and committed to serve as stated by Mamuad et al., 2008. Some of the technicians (46.1%) attended trainings from year 2006 to 2010. The rest attended as early in 1986-2005.

Number of years performing artificial insemination. Eight (30.7%) of the technicians have been conducting AI for more than 5 years while the rest had been performing AI for less than 5 years. This shows that a technician serving for a long period of time is expected to possess better skills and can effectively perform the task with efficiency.

Table 3. Training and experience of the AI technicians

Particulars	Frequency n= 26	Percentage %
1. AI related training attended		
AI training course	25	96.2
Semen processing	7	26.9
Embryo transfer	2	7.7
Pregnancy Diagnosis	1	3.8
2. Year attended		
1986 – 1999	8	30.8
2000 – 2005	6	23.1
2006 – 2010	12	46.1
3. Number of years conducting AI		
Less than 2 years	6	23.1
2 – 3	6	23.1
4 – 5	6	23.1
More than 5 years	8	30.7

* Multiple responses

Socio-demographic profile of farmers

Table 4 shows the profile of the farmer respondents who are beneficiaries of the Artificial Insemination Program

Sex, age and marital status. There were more male respondents (96.5%) than females (Table 4). Majority of the respondents were within the 40 to 49 years of age, which accounted for 34%. The next age group which accounted for 33.0 % belonged to 50-59 years old and the least group accounted for 7.5% belong to 29 years old and below. As to the marital status 186 or 93.0% of the farmers were married, 12 or 6.0% were single and while 2 or 1.0% were widow/separated.

Table 4. Socio-demographic profile of the farmer respondents

PARTICULAR	n	%
a. Sex		
Female	7	3.5
Male	193	96.5
b. Age		
60 and above	24	12.0
50 – 59	66	33.0
40 – 49	68	34.0
30 – 39	27	13.5
29 and below	15	7.5
c. Marital Status		
Single	12	6.0
Married	186	93.0
Widow/separated	2	1.0
d. Educational Attainment		
Elementary	46	23.0
High School	97	48.5
College	57	28.5
e. Approximate family income per annum		
More than 10,000 pesos	83	41.5
5,000 – 10,000 pesos	77	38.5
Below 5,000 pesos	40	20.0
f. Sources of income		
Government employee	11	5.5
Farming/banana plantations/laborers	173	86.5
Grocery store/business	4	2.0
Carpentry/construction work	4	2.0
Piggery	3	1.5
Barangay official	2	1.5
Pensioner	2	1.0
Tricycle driver	1	.5

Table 4. Continued…

a. Number of buffalo raised (heads)		
1 -5	155	77.5
6 – 10	34	17.0
11 – 20	6	3.0
Above 20	5	2.5
b. Number of years in raising buffalo		
1 – 5	47	23.5
6 – 10	50	25.0
11 – 20	61	30.5
Above 20	42	21.0
c. Uses of buffalo		
Draft	184	92.0
Milk	5	2.5
Meat	106	53.0
Breeder/sale/production	8	4.0

*Multiple answers

Educational attainment. Most of the farmer respondents, 97 or 48.5% finished high school; 57 or 28.5 % finished college, while 46 or 23.0% finished elementary education.

Approximate family income per annum. Of the 200 respondents, 83 or 41.5% indicated an income of more than 10,000.00 per annum; 77 or 38.5% were earning 5,000.00-10,000.00 while 40 or 20.0% indicated that their annual income was below 5,000.00. Other sources of income were as follows: 173 or 86.5% were engaged in farming, while 11 or 5.5% were government employees and others get

other income from business/grocery, carpentry, swine raising, pensioners and barangay officials.

Number of buffaloes owned. Out of the 200 respondents, 77.5% owned buffaloes ranging from 1-5 heads; 17.0% owned 6-10 heads; 3.0% owned 11-20 heads and only 2.5% owned more than 20 heads.

Number of years in raising buffaloes. Most (61 or 30.5%) of the respondents had been raising buffaloes for 11-20 years; 50 respondents (25.0%) claimed to have 6-10 years; other 47 respondents (23.5%) claimed to 1-5 years; and 42 (21.0%) with above 20 years' experience in raising buffaloes.

Uses of buffaloes. Most of the farmers (92%) claimed that their Buffaloes were mostly used for draft (plowing, hauling, transport), followed by used for meat (carabeef), 53%; for breeder 4%; and only 2.5% said who used for milk. When draft animals can no longer be useful for work, the farmers usually sold them for carabeef in the market.

Data Collection Procedures

The DA-Livestock Program of the DA-RFU-CAR provided the list of AI trained technicians/Village-Based AI Technicians and list of farmers with their animals already inseminated from years 2007-2009. BAS-CAR provided the inventory of buffalo population in the 5 provinces of the Cordillera. These data served as the basis in determining the respondents from the provinces. The farmer

respondents were randomly selected from the list of farmers submitted to the Livestock Sector. Said farmers had their animals that were artificially inseminated.

Letters were sent to the Provincial/City Veterinarians and Municipal Agriculturist asking permission to collect data and request for assistance from the trained AI technicians in floating the questionnaires and collecting the result from the farmer respondents.

Data Collection Instruments

A survey questionnaire was used to collect information comprising of structured questions. Guided questions were also used to gather important and relevant information. Secondary data were gathered from printed documents, internet and books to supplement the data that were collected.

The survey form or questionnaires were pre-tested in the Province of Abra. The questionnaires were revised according to the comments and responses of the respondents. Irrelevant and not appropriate items were removed while some of the questions were modified in such a way that the respondents could easily understand and give their answers.

Treatment of Data

The data gathered were tabulated, summarized and analyzed using appropriate statistical tools. Tables were used to present the data. The descriptive statistics included the frequency distribution, weighted means and percentage.

One sample t-test was used to test hypothesis 1 and 2 specifically on the attitudes factors affecting the implementation of AI Program, NGA & LGU support, hypothesis 3 and 4 specifically on the benefits and problems encountered in the implementation of AI Program as perceived by the AI Technicians.

Cochran's Q test was used to test the factors affecting the implementation of AI Program on Buffalo as perceived by the AI Technicians and farmers: knowledge and skills and awareness of the AI Program (hypothesis 2).

Chi-square (X^2) test was used to test the significant differences on the problems encountered by farmers in the implementation of AI Program of Buffaloes (hypothesis 4)

The values under the t-distribution served as basis for rejecting or accepting the hypothesis. Thus, the alternative hypothesis is accepted if tc is lesser than 0.05 level of significance otherwise, the hypothesis is rejected.

RESULTS AND DISCUSSION

Extent of Implementation of AI Program on Buffalo as perceived by AI Technicians and Farmers

Table 5 presents the extent of implementation of the AI Program on buffalo in CAR as perceived by the AI Technicians and farmer beneficiaries in accordance to its program components.

Extent of Implementation of the Training Component as Perceived by the AI Technicians

The Philippine Carabao Center, an attached agency of the Department of Agriculture provided free trainings for AI technicians to equip them with the necessary skills and knowledge. The topics included semen processing; embryo transfer and pregnancy diagnosis. Other topics such as anatomy and physiology of male and female buffalo, insertion, estrus synchronization, ovarian palpation, and basic nutrition were also included.

The finding shows that the AI Technicians perceived that the training component was moderately implemented. Some AI Technicians were not able to attend all the said training components due to financial constraints by the LGUs and viewed by their Local Chief Executives as less priority. Failure of some AI Technicians to attend trainings would result to inadequate skills to perform their job. This result corroborates the findings of Batugan (2000) which he stated that AI Technicians were not fully confident because they feel that the necessary skills

Table 5. Extent of implementation perceived by AI technicians and farmers

PROGRAM COMPONENT	AI TECHNICIANS WEIGHTED MEAN (XW)	AI TECHNICIANS DESCRIPTIVE EQUIVALENT (DE)	FARMERS XW	FARMERS DE
AI Technicians Trainings	2.04	MP		
Farmer's Class			1.90	MP
Government Subsidy:				
National Government Agency				
• AI paraphernalia	2.49	MP	2.00	MP
• Cash Incentives	2.50	FI		
Local Government Units				
• Travelling allowance	1.69	MP		
• Manpower resources	1.90	MP	1.67	MP
Monitoring & Evaluation:				
• DA-RFU-CAR	1.88	MP	1.71	MP
• PVO	2.47	MP	2.22	MP
General Weighted Mean	2.13	MP	1.90	MP

tc = 13.718*	tc = 34.493*
prob <0.01	prob<0.01
Xw = 2.13	Xw = 1.90
*Significant	*Significant

Legend: 2.50 – 3.00	Fully Implemented	(FI)
1.50 – 2.49	Moderately Implemented	(M)
1.00 – 1.49	Poorly Implemented	(PI)

they acquired through training were not fully sufficient to fully implement the AI program. According to Battad (2001) as cited by Pasalo (2008) that training is mainly with the acquisition or development of knowledge, skills, techniques and attitudes; and is very useful in helping individuals develop their abilities.

Extent of Implementation of the Training Component
of AI Programs as Perceived by the Farmers

On the side of the farmer respondents, their training program was called Farmer's Class, which was conducted by the Office of the Provincial Veterinarian (OPVet), City Veterinarian Office (CVO) and Office of the Municipal Agriculturist (OMAG). Result shows that the conduct of farmer's class was moderately implemented with a weighted mean of 1.90. The farmers claimed that they gained additional knowledge specifically on the feeding management, prevention and control of pest and diseases, environmental management and animal reproduction. This finding conforms to the foremost reason of conducting farmers class by Palengleng (2009) is learning and sharing of knowledge and skills by farmers wherein their various views and experiences can complement each other. Thus, mutual satisfaction was attained during the classes.

Extent of Implementation of the Government Subsidy
for AI Program as Perceived by the AI Technicians

To fully implement the AI program, the National Government Agency was tasked to provide the AI paraphernalia, which includes: semen; liquid nitrogen (LN_2) tank; a kit containing: AI gun, insemination syringes, plastic shoulder length gloves, paper towels, alcohol, and others. Cash incentives were also provided. Finding shows that the provision of the AI paraphernalia was perceived by the AI Technicians as moderately implemented with a weighted mean of 2.49 and the provision of cash incentives as fully implemented with a weighted mean

of 2.50. The Department of Agriculture provided regular monthly cash incentives to all Agricultural Extension Workers (AEWs). In addition, the Bureau of Animal Industry, an attached bureau of the Department of Agriculture also provided cash incentive amounting P100.00 to the AI Technicians for every calf drop/offspring produced.

On the LGU counterpart to provide traveling allowances to their respective Agricultural Technician, it was perceived to be moderately implemented with a mean of 1.69. Due to financial incapability of some LGUs, traveling expenses were not provided to the AI Technicians. Thus, they could hardly reach all the intended beneficiaries.

Extent of Implementation of the Government Subsidy for AI Program as Perceived by the Farmers

On the other hand, the government subsidy (NGA) specifically the provision of AI paraphernalia was perceived by the farmers as moderately implemented with a weighted mean of 2.00. An interview with Culhi (2011), Village Based Technician of Baguio City mentioned that Liquid Nitrogen (LN_2) was not sufficient to cater to their respective coverage areas. He further added that only the Philippine Carabao Center in Muñoz, Nueva Ecija who provided LN_2. Considering many buffaloes and cattle to be inseminated in CAR including Regions 2 & 3, which caused the shortage of supply of LN_2 hence, resulted to the

delayed transport of semen. These would explain why the implementation was only moderately implemented.

The farmers perceived that manpower resources were moderately implemented with a weighted mean of 1.67. Though some farmers recognized that there were not enough AI Technicians to deliver the services to the remote areas thus causing low calf drop performance. Similarly, the AI Technicians viewed that provision of manpower resources was moderately implemented by the LGUs with a weighted mean of 1.90. However, the technicians employed by the LGUs were not only doing AI, but they are also performing other functions on the regular programs of the Department of Agriculture. Further, according to the Technicians, the program needs well-trained, proficient and committed technicians to ensure very satisfactory performance. The finding corroborates to what Ali (1997) had mentioned as cited by Palengleng (2009) that the constraints in the low adoption of the national government programs are the lack of full and continuous support from the local government units. The local government units were mandated to bear the costs of promoting and monitoring the basic needs program by providing travelling allowances to the Agricultural Technicians in their respective areas of jurisdiction (AFMA of 1997).

Extent of Implementation of the Monitoring and Evaluation as Perceived by the AI Technicians

The monitoring and evaluation is a vital mechanism to ensure the efficient implementation and continuous refinement of the program to achieve its objectives. This was designed to be a joint effort between Department of Agriculture-CAR, Provincial Veterinary Office/City Veterinary Office and Office of the Municipal Agriculturist. The results showed that monitoring and evaluation of the program was moderately implemented by DA-RFU and PVOs as perceived by the AI Technicians with a mean of 1.88 and 2.47 respectively. This may be attributed to the wider coverage areas of the regional and province/city offices that they cannot monitor all the remote areas coupled with financial constraints. The finding corroborates with the statement of Batugan (2000) that the ineffective conduct of monitoring and evaluation by implementers is due to insufficient financial support.

Extent of Implementation of the Monitoring and Evaluation as Perceived by the Farmers

Similarly, the farmers confirmed that monitoring and evaluation was moderately implemented by DA-RFU and PVO with a mean of 1.71 and 2.22, respectively. The farmers observed that the regional and provincial monitoring team visited them not too often and rarely visit the remote places due to lack of mobility and time of travel.

This corroborates with the findings of Tesoro (2002) that monitoring and evaluation activities were just satisfactorily implemented due to lack of personnel, budgetary limitations, bureaucratic procedures and attitudes of persons who were directly or indirectly involved in the implementation of the programs.

Generally, results shows in Table 5 that the extent of implementation of the program was moderate as perceived by the AI Technicians and farmers with a weighted mean of 2.13 and 1.9, respectively. Statistically, t-test result shows that there were significant differences on the responses in the extent of implementation which means the alternative hypothesis is accepted.

Perceived Factors Affecting the Implementation of the Artificial Insemination Program on Buffalo

The factors affecting the AI Program on Buffalo as perceived by AI Technicians includes the following: (1) technical knowledge and skills of AI Technicians in the conduct of AI; (2) attitudes of AI technicians; and (3) the support from NGAs and LGUs. Likewise, the perceived factors by the farmers includes: (1) their awareness and availment to the program; (2) technical knowledge; and (3) their attitudes towards the program.

Perceived Factors by AI Technicians

Technical knowledge and skills in artificial insemination. As shown in Table 6, all the twenty six (26) AI Technicians confided that they have

Table 6. Knowledge and skills of AI Technicians in inseminating buffaloes

KNOWLEDGE and SKILL on	n	%
Inseminating buffaloes	26	100
Equipment and facilities used in AI	26	100
Buffalo synchronization	26	100
Best time to inseminate buffalo in heat	26	100
Practical way to thaw semen in the field	26	100
Thawing semen in the field	25	96.15
Semen evaluation	14	53.8
Preservation and storage of processed semen in straw	16	61.5
Best storage/preserving semen	15	57.7
Best preserving temperature	16	61.5
Type of liquid nitrogen tank to store semen in straw	21	80.79
Capacity of field tank used during insemination	16	61.5
Maintaining liquid nitrogen tank	15	57.7

Qc = 110.746 prob = <0.01 *significant

appropriate knowledge in inseminating buffaloes; identification of equipment and facilities used in AI (Figure 5); Buffalo synchronization; best time to inseminate buffalo in heat and practical way to thaw semen in the field. These knowledge and skills were acquired through training. This is an indication that they could perform the task with efficiency (Figure 3). To accelerate the genetic make-up of buffaloes, The AI Technicians must be knowledgeable, well-trained and committed to serve so that they can effectively perform their jobs with efficiency (Mamuad et al., 2008).

The results also show the inadequacies of knowledge by the AI Technicians on the evaluation of semen; best storage/preservation of semen and maintenance of the liquid nitrogen tank (LN2).

The findings supports the finding of Palengleng (2009) that AI technicians need knowledge for new advanced technology to effectively and efficiently deliver the needed services to the farmers and this can only be overwhelmingly achieved through constant conduct of trainings. Tiraieyari (2009) also stated that competent extension workers ensure the success of the extension services and extension organization as well. The findings further corroborates to the statement of Schwass et al., (1982) that to better accomplish their work satisfactorily, the extension workers must have great skill and high level of technological expertise.

Statistical analysis shows that the varied responses are significantly different from each other as shown in Cochran's Q-test at 110.746. Hence, the hypothesis that there are significant differences on the factors affecting the implementation of the AI Program on Buffalo in CAR as perceived by the AI technicians is accepted.

Attitudes of the AI Technicians towards the AI Program. The result shows in Table 7 that the AI Technicians strongly agreed that they have confidence on their knowledge and skills in the implementation of AI program with a weighted mean of 3.50. The attitudes they agreed on are: willingness to accept suggestion, 3.20; satisfaction for their job, 3.15; supportive to clients, 3.20; they enjoyed the

Table 7. Attitudes of AI technicians towards AI program

ATTITUDES	WEIGHTED MEAN (XW)	DESCRIPTIVE EQUIVALENT (DE)
Confidence on their knowledge & skills in the implementation of AI program	3.50	SA
Willingness to accept suggestion	3.20	A
Satisfaction to the job	3.15	A
Supportive to clients	3.20	A
Enjoyment in AI implementation	3.30	A
Enthusiasm/passionate to the job	2.90	A
Tiresome doing the job	2.07	D
Good working relationship with supervisor	2.81	A
General Weighted Mean	3.02	A

*tc = 13.160** *prob<0.01* *Xw = 3.02* **significant*

Legend:			
	3.50 – 4.00	Strongly Agree	(SA)
	2.50 – 3.49	Agree	(A)
	1.50 – 2.49	Disagree	(D)
	1.00 – 1.49	Strongly Disagree	(SD)

implementation of AI program, 3.30; they have passion for their job, 2.90; and they have good working relationship with their supervisor, 2.81. However, the AI technicians disagreed that their job is tiresome. Generally, the technicians at least agreed to have positive attitudes towards the implementation of the AI Program. The result implies that the farmers had positive attitudes which may have contributed to the implementation of the AI Program.

The finding corroborates the finding of the study of Batugan (2000) and Lapitan (1980) that the performance and advancement in the job is dependent on the attitude toward it. People who have a negative attitude toward their work will have a hard time advancing and making noticeable career advancements. On the other hand, people who adopts positive attitude traits at work will find their jobs to be enjoyable, rewarding and will enjoy all of the opportunities for advancement. In her study, Tubaňa (2000) cited that technical men should possessed good qualities that encourage farmers to trust them such as being trustworthy, resourceful, dedicated and knowledgeable.

The result of the t-test with a probability of <0.01 which is very much lower than 0.05, hence significant, means that the hypothesis, that there are significant differences on the attitudes of AI Technicians toward the AI Program is accepted.

Support from the government. Table 8 presents the support from the NGA & LGUs to the AI Program. Finding shows that the provision of personnel to assist the LGU staff in the conduct of AI, provision of incentives, adequacy of AI supplies and, conduct of trainings that were provided by the National Government Agency were perceived by the AI Technicians as moderately provided. While the provision of transportation/traveling allowances; conduct of field trips/lakbay aral and program advocacy information were perceived by the AI Technicians as poorly provided, giving an average mean of 1.53.

Table 8. Support from the government

SUPPORTS	LGU'S XW	DE	NGA'S XW	(DE)
Provision of personnel	1.81	MP	1.73	MP
Adequacy of AI supplies	2.02	MP	1.81	MP
Provision of incentives	1.31	PP	1.50	MP
Trainings for AI technicians	1.92	MP	1.77	MP
Transportation/travel allowance	1.64	MP	1.37	PP
Conduct of field trips/Lakbay Aral	1.35	PP	1.15	PP
Program advocacy information	1.78	MP	1.38	PP
General Weighted Mean	1.73	MP	1.53	MP

*significant *tc = 17.686** *prob. <0.01* *Xw = 1.73*

*tc = 20.226** *prob. . <0.01* *Xw = 1.53*

Legend: 2.50 – 3.00 Fully Provided (FP)
1.50 – 2.49 Moderately Provided (MP)
1.00 – 1.49 Poorly Provided (PP)

On the part of the Local Government Unit, findings show that all the support except the provision of incentives and conduct of field trips/lakbay aral were perceived by the AI Technicians as moderately provided with an average mean of 1.73. Provision of incentives was perceived poorly provided (1.31) because it's only the national government through the Department of Agriculture that provides such. The Local Government Units are also mandated to provide incentives to their technicians cover other expenses incurred in the field and to supplement the incentive given by the Department of Agriculture. But most of their respective

LGUs cannot provide such due to insufficient budget or the program is a less priority of their local executives as stated by the respondents.

Generally, the result of the study shows that the supports from the government were moderately provided as perceived by the AI Technicians and the farmer. This implies that when supports from both the national and local government were not fully provided will cause the ineffective and inefficient delivery of the AI services by the AI Technicians.

Basically, the implementation of the AI Program is a joint effort of the national government and the LGUs. Sustained supports are crucial to fully implement the AI program. The findings of the study of Pasalo (2008) support the results of this study stating the importance of the supports from NGA and LGU. When supports are fully provided to implementers and recipients, there is a great influence in the success of any program introduced by the government. The result also corroborates to what Werther et al., (1982) highlighted that a reward system will attract, retain and motivate extension workers to holistically deliver the needed services to farmers.

Statistically, the result of the t-test had a probability of <0.01 which is very much lower than 0.05, hence it is significant, therefore, the hypothesis is accepted.

Factors Affecting the AI Program as
Perceived by the farmers

Awareness and availment of the AI Program. Table 9 shows the awareness and availment of the AI program by the farmers. Of the 200 farmer respondents 99.00% revealed that they were aware of the artificial insemination program and the presence of the AI technicians in the locality, 90.5%. Furthermore, majority of the farmer respondents availed of the consultations provided by the AI Technicians, 87%; the basic AI services, 77.5%; and consultations provided by other bureaus and practitioners, 76.0%.

This implies that awareness on the AI Program and visibility of the AI Technicians have led to the availment of the services of the AI programs and consultations provided by the AI Technicians as well as services from other bureaus and practitioners. The findings corroborates to Pagtan (2006) mentioning that the knowledge the community gained is through their awareness about the community resources and their involvement and participation in all the activities undertaken within the community such as attendance to meetings, consultations and farmers' classes.

Generally, results show that farmers have varied perception on the awareness of the AI Program that affected its implementation as indicated in Cochran's Q-test of 80.556. With a probability of <0.01, which shows significance difference thus, the hypothesis is accepted.

Table 9. Awareness and availment of the AI Program by farmer respondents

PARTICULAR	n	%
Aware on the:		
AI Program of the government	198	99.0
Presence of AI technicians in the locality	181	90.5
Availed of the:		
Consultation provided by technicians	174	87.0
AI services	155	77.5
Consultations provided by other bureau & practitioners	152	76.0

Qc = 80.556* prob. = <0.01 *significant

Technical knowledge and skills factor. Farmers must be equipped with the necessary knowledge and skills on feeding management; environmental management and animal reproduction. This can only be attained through participation to farmers' classes conducted by the PVO/CVO, OMAG and even from the staff of the Livestock Sector of the Department of Agriculture. The skills that were assessed were the following: feeding management, environmental management and animal reproduction.

One of the technical factors that were considered is the farmers' knowledge and skills on feeding management of buffaloes. As shown in Table 10, majority of the farmers, 60% have a general knowledge on feeding practices of buffaloes. Most of the farmers were knowledgeable and skilled on: the manner of feeding buffalo, 82.5%; feeding colostrum to newly born calf, 86.5%; forage crops, 73.5% and, farm by-products, 73%. However, only a few of the farmers have adequate

Table 10. Knowledge and skills on feeding management by farmers

KNOWLEDGE/SKILL	n	%
General knowledge on feeding practices	120	60.0
Adaption of feeding practices for animals	88	44.0
Feeding concentrate mix	52	26.0
Farm-by products	146	73.0
Forage crops	147	73.5
Manner of feeding buffalo	165	82.5
Feeding colostrum to newly born calf	173	86.5

1/some respondents failed to supply answers to some variables

Qc = 514.321* prob. = <0.01 *significant

knowledge on the feeding of concentration mix, 26%, hence, adaption of the feeding practices was low, 44%. The knowledge and skills that most the farmers have, could have been gained from the trainings or farmers' class that they have attended and their experiences in raising buffaloes as indicated in their profile. However, the results show that they have little knowledge on the feeding of concentration mix. This could be attributed to their claim that they had no adequate training on nutrition and formulation of a balanced ration. This result affirms the statement of the Food and Fertilizer Technology Center (FFTC), 2010 that the development of local livestock industry is dependent on the production of good quality forages and adaption of food feeding practices.

Statistical analysis show that farmers have varied perception on the technical knowledge and skills on feeding management as indicated by the computed Q-value of 514.321 with a probability of <0.01, hence the hypothesis that there are

significant differences on the factors affecting the AI implementation perceived by the farmers, accepted.

The knowledge of the farmers on the environmental management of buffaloes is another factor that was considered in this study that can affect the implementation of the AI Program. Table 11 shows that 94% of the farmer respondents claimed that they have general knowledge on the environmental management of buffaloes. Most of the farmers claimed to have knowledge and skills on: the management of high temperature 97%; bathing buffaloes, 76%; animal illness, 96%; other stress signs observed, 97.5%; control and treatment of diseases, 92%; and prevention to be used, 93%. Result shows that the farmers are very much knowledgeable on how to manage the environment of their buffaloes.

This implies that they are capable of or raising buffaloes under a well-managed environment. It also shows that the farmers are knowledgeable on how to control and prevent illness of their animals. The findings corroborates to the statement of Moe (2000) that knowledge and skills make the difference in how an individual performs and also makes the difference in how well projects are to be implemented. Further, the findings also corroborate to the findings of Jamsawat (1998) that farmers should be provided with necessary trainings and farmers' classes. They realized that they needed the know how to provide their animals the technical assistance during the absence of a veterinarian.

Table 11. Knowledge and skills on environmental management by farmers

KNOWLDEGE AND SKILL	n	%
General knowledge on environmental mgt.	188	94.0
High temperature	195	97.0
Bathing buffalo	152	76.0
Animal illness	192	96.0
Signs on illness observed	195	97.5
Control and treatment of diseases	184	92.0
Prevention used	186	93.0

Qc = 118.916* prob. = <0.01 *significant

Statistically, the Cochran's Q-test indicates a significant difference on the responses of the farmers which means that the alternative hypothesis is accepted.

Table 12 shows the factor on animal reproduction that affected the implementation of AI on Buffaloes. Results indicated that (81.0%) of the farmers has knowledge on the puberty age of buffalo. They cited that the breeding age of buffalo is two years old. According to Cruz (2000), buffalo shows the sign of in heat every 21 days and last for about 5 to 36 hours. Findings show that most the respondent farmers are familiar when does heat period of the buffaloes occur, (94.5%) and the signs of in heat buffalo (95%).. They said that the common signs observed were: mounting other animals; copious vaginal discharge; swollen vulva; animals remain stand still when mounted by other animals and very restless. Producing disturbing sound and frequent urination are secondary signs.

Table 12. Technical knowledge on animal reproduction by farmers

KNOWLEDGE/SKILL	n	%
Age of puberty of buffalo	162	81.0
Heat period observation	189	94.5
Signs of in heat buffalo	190	95.0
Recognizing pregnant buffalo	174	87.0
Signs of pregnant buffalo	191	95.5
Recognizing giving birth	167	83.5
Signs of giving birth	167	83.5

Qc = 79.957* prob. = <0.01 *significant

Majority (87.0%) of the farmers claimed that they can recognize well a pregnant have knowledge on the signs of a pregnant buffalo (95.5%). According to them, the most common signs are enlargement of the abdomen, no estrus cycle for several months and enlargement of the teats. Among others are enlargement of the udder and heavier in weight.

The gestation period of buffaloes is average 310 days. Most of the respondents (83.5%) claimed that they know how to recognize a buffalo who is about to give birth. According to them, the many signs of near parturition that they observed were as follows: udder contains milk, swollen vulva, and frequent vaginal secretion. Others were restlessness, frequent urination, mucus and water discharge from the vulva. Accordingly, the animal tends to isolate herself from the heard and can be recognized through the number of months. The farmers further mentioned the importance of close monitoring their animals when

initiating to show signs of both estrus and parturition. The findings conform to the statements of Batugan (2000) and Jamsawat (1998) that because farmers typically are in close contact with their animals, and will likely be the first to notice signs of breeding and reproduction, they have the crucial role in triggering investigations. Consequently, it is important that they be knowledgeable about all these concerns. By maintaining familiarity with the signs and symptoms and knowing when and whom to call for help, farmers can speed detection of and response to occurrences'.

The statistical analysis shows that farmers have varied perception on the technical knowledge on animal reproduction affecting AI implementation as indicated by the computed Q-value of 79.957 with a probability of <0.01, that the hypothesis is accepted.

Attitudes of the farmers towards the AI Program

Table 13 shows the farmers' attitudes identified by farmers that affected the implementation of AI Program on Buffalo, which they agreed on were; confidence on the objectives of the project, 3.11; courageous in asking questions, 3.05; satisfaction of the program, 3.0; good working relationship which the AI Technicians, 2.92; and good working relationship with other animal raisers, 2.88. Generally, the farmers agreed to have positive attitudes towards the implementation of the AI program with a general weighted mean of 2.97. The result implies that the farmers showed their interest in the AI program as they

Table 13. Farmers' attitudes towards AI Program

ATTITUDES	WEIGHTED MEAN (XW)	DESCRIPTIVE EQUIVALENT (DE)
Confidence in the objectives of the program	3.11	A
Courageous asking questions	3.05	A
Satisfaction to the program	3.00	A
Good working relationship with AI Technicians	2.92	A
Good working relationship with other animal raisers	2.88	A
General Weighted Mean	2.97	A

tc = 28.125 *prob. = <0.01* *Xw = 2.81* **significant*

Legend: 3.50 – 4.00 Strongly Agree (SA)
2.50 – 3.49 Agree (A)
1.50 – 2.49 Disagree (D)
1.00 – 1.49 Strongly Disagree (SD)

have confidence that their animals can be upgraded. These was manifested with their courage in asking questions or consulting their AI Technicians and establishing a good working relationship with other animal raisers in their area, that eventually led to their satisfaction on the program. Satisfaction on the program shows that they appreciated the effects of artificial insemination as a way of upgrading their animals.

This finding supports the statement of Tubana (2000) that good qualities of technical men could encourage the farmers to trust on them and ensure that the thrust of the government could be delivered effectively and efficiently to the intended beneficiaries. The result of the t-test with a probability of <0.01 which is

very much lower than 0.05, hence significant, which means that the hypothesis is accepted.

Advantages/Benefits from using the
Artificial Insemination Program

Table 14 shows the three major expected benefits acquired from using the AI program as agreed on by the AI technicians and farmers: high income/production; more convenient/suitable in semen handling & more manageable behavior of animals.

Advantages/Benefits of the AI Program
as Perceived by the AI Technicians

The result of the survey shows that the AI Technicians were amenable on the benefits that AI Program with a general weighted mean of 2.91. They have agreed on that offspring of buffaloes produced through AI had increased the farmer's income and productivity with a weighted mean of 3.17. According to Limson (2009) the Unified National Artificial Insemination Program (UNAIP) Coordinator of DA-BAI, buffaloes produced through Artificial Insemination are 20 to 50 kilos heavier than those produced through the traditional method or natural breeding. He further elaborated that calf drop through AI grows 40 percent faster and can calve at three years of age than a natural breeding born calf drop (Figure 4).

Table 14. Advantages/benefits from using the AI Program

ADVANTAGES/BENEFITS	AI TECHNICIANS XW	DE	FARMERS XW	DE
Higher Income/production	3.17	S	3.19	S
More convenient to handle the semen	2.96	S	2.96	S
More manageable behavior of animals	2.26	D	2.84	S
General Weighted Mean	2.91	S	3.06	S

tc = 9.322
Xw = 2.91
prob =<0.01
**significant*

tc = 22.925
Xw = 3.06
prob=<0.01
**significant*

Legend:		
3.50 – 4.00	Strongly Agree	(SA)
2.50 – 3.49	Agree	(A)
1.50 – 2.49	Disagree	(D)
1.00 – 1.49	Strongly Disagree	(SD)

AI Technicians also agreed with the statement that AI technique is more convenient to handle with a weighted mean of 2.96. This is because the AI Technicians will only carry the semen stored inside the Liquid Nitrogen Tank (LN2) to the areas where they perform the insemination while in natural breeding they have to bring the bull to the insemination areas which is more difficult. The finding corroborates with the statement of Cruz (2009), PCC Executive Director that Artificial Insemination technique is convenient to handle and easy to access or ready available. Semen stored in LN2 tank is easily transported to longer distances thus, minimizing the transport of a bull to do natural breeding.

On the other hand, AI Technicians disagreed that offspring produced through AI possessed manageable behaviors with a weighted mean of 2.26. They have observed that calf drops produced from artificially inseminated buffalo are difficult to feed, tame and not industrious to do agricultural activities in the field. However, according to Mr. Pagadut (2008), DA-RFU Artificial Insemination Coordinator (RAIC), the behavior of the animals is dependent on the kind of breed where semen was collected. He further mentioned that calf drops of Bulgarian Buffaloes had possessed adverse behavioral characteristics such as difficult to feed, difficult to tame and not industrious to do the activities in the farm. This is the reason why the Philippine Carabao Center had stopped the distribution of semen of this breed to AI technicians; and now, they are providing more semen of the Indian Buffalo which possesses a more manageable behavior and is preferred by farmer respondents. However, AI technicians are still mandated to perform insemination using the Bulgarian Buffalo semen mainly for milk purposes.

Statistically, the result of the t-test had a probability of <0.01 which is very much lower than 0.05, which means that the perceived benefits from using the AI Program is significant, hence, the hypothesis is accepted.

Advantages/Benefits of AI Program as Perceived by the Farmers

The farmers generally agreed on the stated benefits that AI Program could

provide with a general weighted mean of 3.06. They agreed that offspring produced through AI had increased their income and productivity. In an interview done by the researcher with Mr. Sotero Domingo in 2010 stated that his income increased when selling a three (3) years old offspring produced through AI than selling same age produced from natural breeding. The result is in support to the findings of Jamsawat (1998) that calves born through AI from proven sire was sure to grow faster and were expected to produce good quality meat. The quality of meat of improved buffaloes demanded a higher price. He further mentioned that a native buffalo weighed 200 kg at mature weight while improved buffalo weighed 300 kg at mature weight showing 50% more in weight. This is a very convincing indication that AI Program can increase farmers' income and productivity guided with good management practices such as feeding, health care and breeding practices.

Similarly, the farmers have agreed with the statement that AI is more convenient to handle with a weighted mean of 2.96. Since, semen was collected from bulls bearing desirable traits and exhibiting good health condition, animal health is rest assured. It is also very important that all breeding bulls are evaluated for their suitability in breeding operation. Convenience in handling semen from a bull can be easily transported to longer distances without being hindered by geographical boundaries. Liquid nitrogen (LN_2) tanks preserved and stored semen for insemination thus, minimizing the transport of a bull to do natural breeding. A

farmer can have access to relatively inexpensive variety of bulls without having to purchase the bulls themselves. According to Cruz (2009), Artificial Insemination is convenient to handle and easy to access or ready available.

In an interview by the researcher with Mr. Benedict Pagadut (2008), he mentioned that appropriate timing of AI is assured. In addition, Limson (2009) mentioned that handling and hygiene of semen is assured when highly technical individuals are equipped with suitable trainings related to the program can establish and manage Semen Processing Laboratory (Mamuad et al., 2008).

The farmers agreed that calf drop is more manageable with a weighted mean of 2.84. Interviews with various farmers claimed that taming the offspring to adapt to existing environment and utilizing them in doing agricultural activities were not difficult. When subjected to statistical test, the result of the t-test had a probability of <0.01 which is very much lower than 0.05, which means that the perceived benefits from using the AI Program is significant, hence, the hypothesis is accepted.

Problems Encountered in the Implementation of the Artificial Insemination Program on Buffalo

Problems Encountered by the AI Technicians

Table 15 presents the problems encountered by AI technicians in the implementation of the Artificial Insemination Program on Buffalo. The problems

encountered during the implementation of the AI program as shown in Table 19 were: negative attitudes of the farmers, lack of AI technicians, farms have no access roads, inadequate dissemination to farmers and insufficient program support. These problems were rated by the AI Technicians as moderately serious with a general weighted mean of 2.06.

The negative attitude of farmers towards the AI program is moderately serious as perceived by the AI technicians with a mean of 2.22. This finding indicates that some farmers seem not to believe or are not interested on the artificial insemination. This may be attributed to the lack of confidence of the farmer on the technology. Moreover, the farmers do not find time in reporting to the AI technicians when their animal is in heat, and it is inconvenient for them to bring their animals to the pooling place for artificial insemination. This finding, affirms the statement of Jamsawat (1998) that farmers' lack of confidence and faith as to the viability of the technology due to low conception rate thus, makes them refuse to have their animals inseminated.

The AI technicians felt that their number is not sufficient to cover all their assigned service area, which they rated as moderately serious with a mean rating of 2.15. This implies that the AI technicians cannot fully deliver that AI services to their customers in their assigned areas for the reason that they have other work assignments or mandates, which is to do services for other livestock under the various programs of the Department of Agriculture.

Table 15. Problems encountered by AI technicians

PROBLEMS ENCOUNTERED	XW	DE
Negative attitude of farmers	2.22	MS
Lack of AI Technicians	2.15	MS
No accessible roads to the farm	2.08	MS
Lack of info dissemination to farmers	2.04	MS
Insufficient program support by LGU	1.90	MS
General Weighted Mean	2.06	MS

*tc = 12.126** *prob<0.01* *Xw = 2.06* **significant*

Legend:		
2.50 – 3.00	Highly serious	(HS)
1.50 – 2.49	Moderately serious	(MS)
1.00 – 1.49	Not serious	(LS)

In most farm areas, there is no access road, this is considered by the AI technicians as a moderately serious problem, with a mean rating 2.08. Transportation is very essential in the delivery of efficient service to its client in due time. The technicians can only service limited number of clients because they spend most of their time walking to and from their work station. In like manner, the farmers have a difficulty of reporting to the technicians when their animals exhibit estrus/heat symptoms.

Similarly, the AI technicians felt that there is insufficient information dissemination of AI technologies to the farmers, with a mean rating of 2.04. This may be caused by the above mentioned problems that the AI technicians can hardly reach all the intended beneficiaries of the AI program due to distance. On

the other hand, insufficient information can cause negative attitudes of the farmers because they are not fully aware of the benefits or advantages of the AI technology.

Insufficient support for the AI program was identified by the AI technicians as a problem with a mean rating of 1.90. The AI technicians claimed that the national government lacks support for field trips/lakbay aral to other areas to see the success and failures of other AI program. This implies that the AI technicians were not given enough chance to be motivated or inspired by visiting other areas that were successful in implementing similar program. Other support system that the AI technicians claimed as insufficient is the provision of cash incentives by their local executives. Statistically, the result of the t-test had a probability of <0.01 which is very much lower than 0.05, hence it is significant, thus the alternative hypothesis is accepted.

Problems Encountered by the Farmers

Likewise, the farmers have encountered several problems during the implementation of the AI program on buffaloes as presented in Table 16.

The common problem identified by the farmers (25%) is lack of AI technicians. This affirms the claims of the AI technicians that they are lacking in number. Accordingly, many buffaloes were ready for insemination but there were no sufficient AI technicians to perform the insemination. This implies that the intended beneficiaries of artificial insemination were not fully served by the AI

technicians. This finding affirms that statement of the technicians that they are not only mandated to do artificial insemination but they also service other livestock concerns of their area of responsibility. Seemingly, LGUs cannot hire additional technicians due to financial incapability.

Dystocia or difficulty in giving birth of AI calves was also encountered by the farmers (16%) This happens when native breeds are inseminated with semen from purebred bulls causing oversized and heavy in weight offspring.

The farmers (13.5%) themselves admitted that they have negative attitude towards AI program. They claimed that they are not fully confident about the AI technology that not everybody was convinced on the advantages and benefits of the program. Some also claimed that they don't have time to confine their animals for insemination activities. This implies that some farmers would still prefer the natural breeding since most of their animals is for draft purposes and probably they are contented with the performance of their animals.

Insufficient support for the AI program was identified by 26% of the farmers. This was perceived by the farmers as a factor that causes inadequate supply of semen and unavailability of AI technicians when they are needed. Added to this factor is the absence of access roads to the farms as felt by 25% of the respondent farmers, which is similarly felt by the AI technicians. This shows that there are no means of transportation to reach most farms in the region that

Table 16. Problems encountered by the farmers

PROBLEMS ENCOUNTERED	n	%
Lack of AI technicians	50	25.0
Dystocia	33	16.5
Negative attitude of animal raisers	27	13.5
Insufficient program support	26	13.0
Not accessible road	25	12.5
Lack of info dissemination	17	8.5
Low conception rate	12	6.0
Poor monitoring & follow-up of inseminated animals	10	5.0

*$X^2c = 21.78^*$ prob. = <0.01 *significant*

which hampers the delivery of services on time especially when the animal is in heat.

There were few farmers (8.5%) who still claim that there was inadequate information dissemination regarding the program. This means that not all farmers have gained enough knowledge and skills on artificial insemination techniques. This may be due to conflict of schedule with the farmer that they were not able to attend the farmer's class or other factors that where earlier identified.

Only 6% of the farmers claimed that there was a low conception rate of artificially inseminated buffaloes, this means that the AI technology is not 100% sure of conception rate. This may be accounted to the handling and skills of the technician performing the AI.

Poor monitoring and follow-up of inseminated animals was also mentioned by 5% of the respondents. These respondents claimed that their animals were poorly monitored by the AI technicians assigned in their area. This could be attributed to the earlier mentioned problems that limit the services of the AI technicians, which includes absence of access roads, lack of manpower, and lack of coordination between the AI technicians and farmers.

Statistically, result shows that the farmers have diverse perception on the problems as indicated in the Chi-square test of 21.78 with a probability of <0.01, which means that there is a significant difference on the perceived problems by the farmers that affect the implementation of the AI program. Thus, the hypothesis is accepted.

AI Technician performing Pregnancy Diagnosis

AI Technician performing artificial insemination

Figure 3. AI Technicians performing pregnancy diagnosis and artificial insemination

Figure 4. Calf drops produced through natural breeding and artificial insemination

AI Paraphernalia

Liquid Nitrogen Tank (LN2)

Figure 5. AI Paraphernalia

Summary

The salient findings of the study are the following:

1. The extent of implementation of the different components of the Artificial Insemination Program of Buffalo in CAR were all moderately implemented as perceived by both the AI technicians and farmer respondents. The project components were: training of AI technicians which provided them knowledge and skills in implementing the program; the farmer's classes that were attended by the farmers to help them understand and accept the AI technology; the government subsidy from the national and local government unit that provided the paraphernalia, cash incentives and travel allowances that were used in the implementation of the AI program, and the monitoring and evaluation system that were done by the DA-CAR and Provincial/City Veterinary Offices and the Municipal Agricultural Offices to ascertain the effective and efficient implementation of the program.

2. The factors that affected the implementation of the program as perceived by the AI Technicians were: knowledge and skills on artificial insemination, which made them effectively and efficiently deliver the needed services to the farmers, positive attitudes of AI Technicians towards the program which gave them more enthusiasm in implementing the program, support from the National and their respective LGUs in a form of needed materials, provision of trainings, travel expenses were used in the implementation of the program.

On the other hand, the factors perceived by the farmers that have affected the implementation of the program were: their awareness of the program, which motivated them to attend farmers' classes and avail of the services of the program; their technical knowledge and skills in managing their buffaloes made them realize the benefits of the program, and their positive attitudes towards the program made them receptive of the services of the A program.

3. The advantages and benefits of using the AI Program were strongly agreed by both the AI Technicians and farmers that it is more convenient to handle the semen than the bull in breeding their buffalo and the farmers had higher income, due to the better quality of the offspring. Further, the farmers strongly confirmed that the offspring of buffaloes through artificial insemination had more manageable behavior, though the AI Technicians have disagreed on this.

4. The problems encountered by the AI Technicians during the implementation of the program were all moderately serious, these are: negative attitudes of the farmers, as shown by their lack of interest in the program; lack of AI Technicians to service all the demands of farmers in the far flung areas; no accessible roads to the farm, which limits the services of technicians to the farmers; lack of information dissemination to farmers due to limited access and IEC materials; and insufficient program support by the LGUs due to budgetary constraints and lack of interest of local chief executives on the AI Program. On

the other hand, the problems that were identified by most of the farmers were: lack of AI Technicians, dystocia or difficulty of giving birth of AI calves due to oversized and overweight offspring; negative attitudes of animal raisers; insufficient program support and inaccessible roads to the farms.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the findings the following conclusions are drawn:

1. Generally, the extent of implementation of the Artificial Insemination Program was moderately implemented with all components to wit, training of AI technicians, farmer's classes, government subsidy from the national and LGUs, and monitoring and evaluation by the DA-CAR, PVOs/CVO and MAOs.

2. Knowledge and skill on artificial insemination technologies and positive attitudes of the AI Technicians and farmers are important factors that affect the implementation of the program. Awareness of the program by the intended beneficiaries equally affects its implementation because the farmers were motivated to participate. The implementation of the AI program could not have been started without the presence of government support.

3. Artificial insemination is more advantageous to the farmers and technicians over the natural breeding because semen is more convenient for them to handle than bringing the bull to the animals for breeding considering the terrain of the Cordillera Region. The offspring of artificial insemination have better quality and manageable behavior due to upgraded breeds, which provides the farmers more benefits of higher income.

4.The problems identified by the AI technicians and farmers which were perceived as moderately serious are: negative attitudes of the farmers, lack of AI technicians, inadequate accessible roads to the farms, lack of information dissemination, insufficient support from the LGUs, dystocia or difficulty of giving birth due to oversized and overweight offspring. It may be inferred that the implementation of the AI program is difficult because these problems are threats to the sustainability of the program.

Recommendations

The following recommendations are formulated based on the findings and conclusions:

1. Artificial Insemination Program need to be enhanced. The provision of training for AI Technicians and farmers classes, government supports and more intensive monitoring and evaluation should always go together in order the full implementation of the program and attain its objective.

2. Trainings should be provided for the devolved LGU technicians to increase their knowledge and skills on the technology for them to effectively and efficiently deliver the needed services to the farmers.

3. The LGUs should support the AI Technicians by providing them with additional incentives, transportation and incidental expenses. LGUs should also hire additional and competent Agricultural Extension Workers (AEWs).

4. Semen and liquid nitrogen and other AI paraphernalia should always be made available by the DA-PCC and DA-BAI.

5. The identified problems should be addressed in order to ensure the sustainability of the program. These problems are threats to the implementation of the program.

6. To come up with a better assessment of project/programs quantifiable baseline data should be established before a new project is implemented in order to determine the changes brought about by each project.

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APPENDIX A

Sample Letter to the Respondents

Republic of the Philippines
Benguet State University
GRADUATE SCHOOL
La Trinidad, Benguet

April 10, 2010

Provincial Veterinarian/Municipal Agriculturist
Municipality of _____ Province of _____

Dear Ma'am/Sir:

The undersigned is currently working in a research entitled **"ASSESSMENT OF THE ARTIFICIAL INSEMINATION PROGRAM ON BUFFALO IN THE CORDILLERA ADMINISTRATIVE REGION"** as one of the requirements for the degree Doctor of Philosophy at Benguet State University, La Trinidad, Benguet.

I decided to conduct the research with anticipation that the results can contribute in the improvement and development of upcoming activities of the Artificial Insemination Program with mandate to improve and upgrade the existing native breeds of Buffalo.

In this regard, I earnestly request your assistance through the AI Technicians to accomplish the questionnaires and assist the identified farmers to also accomplish the appropriate questionnaires. The data to be gathered will serve as vital inputs in my study. Rest assured that your answers will be treated with utmost confidentiality.

Respectfully yours,

(Sgd) ROSEMARIE B. TESORO
Student Researcher

APPENDIX B

Questionnaire for AI Technicians/VBAITs

Part I.

A. Socio-demographic profile

1. Name _____
2. Address_____
3. Sex: ( ) Female ( ) Male
4. Age (of last birthday)_____
5. Marital Status: ( ) Single ( ) Divorce
   ( ) Married ( ) Widow
6. Educational Attainment:
   ( ) Certificate ( ) MS
   ( ) Diploma ( ) Ph.D
   ( ) BS ( ) Others (specify) _____.
7. Field of Specialization in degree: _____
8. Position in the government office (if employed):_____
   Are you a Village Based AI Technician (VBAIT)? ( ) Yes ( ) No
9. For government employee, what is the current designation in office: as coordinator
   ( ) RAIC ( ) GIP
   ( ) PAIC ( ) Others, specify
   _____
10. Length of service in the government:
    ( ) 20 years up ( ) 1-4 years
    ( ) 10-20 years ( ) 5-10 years
    Others, specify _____
11. For Village Based AI Technicians: How many years as VBAIT?
    ( ) 10 years up ( ) 1-4 years
    ( ) 5-9 years ( ) Others (specify) _____

B. AI Experiences:

1. AI related training attended:
   ( ) AI training course ( ) Embryo transfer
   ( ) Semen processing ( ) Others (specify) _____

2. Year attended: _____
3. Number of years you had been conducting Artificial Insemination: _____ years

Part II.

A. Extent of implementation of AI Program by AI Technicians. Please rate the following using the scale.

3.0	Fully Implemented
2.0	Moderately Implemented
1.0	Poorly Implemented

PROGRAM COMPONENT	HOW DO YOU FEEL?		
	3	2	1
AI Technicians Training			
Government Subsidy Non-Government Agency • AI paraphernalia • Cash incentives Local Government Units • Travelling allowance • Manpower resources			
Monitoring & Evaluation • DA-RFU-CAR • PVO			

B. Factors affecting the Artificial Insemination Program on Buffalo:

I. Technical knowledge and skills in Artificial Insemination

Do you have appropriate knowledge in inseminating buffalo?
( ) Yes ( ) No
Do you have knowledge on the equipment and facilities used in AI?
( ) Yes ( ) No
Do you have knowledge on the practical way to thaw semen in the field?
( ) Yes ( ) No
Do you have knowledge on buffalo synchronization?
( ) Yes ( ) No
Do you have knowledge in thawing semen in the field? ( ) yes ( ) no
Do you have knowledge in semen evaluation? ( ) yes ( ) no
Do you have knowledge in the preservation and storage of processed

semen in straw? ( ) Yes ( ) No

Do you have knowledge to what are the best storage/preserving semen at present? ( ) Yes ( ) No

Do you have knowledge to what is the best preserving temperature? ( ) yes ( ) no

Do you have knowledge on the types of liquid nitrogen tank used in storing semen in straw? ( ) Yes ( ) No

Do you have knowledge to what capacity of field tank commonly used while doing insemination on buffalo? ( ) yes ( ) no

Do you have knowledge in maintaining liquid nitrogen tank to maintain the higher motility of sperm? ( ) Yes ( ) No

II. Attitudes of AI Technicians towards AI Program

Please read each statement below, check the appropriate number that you think corresponds to your feeling.

4.0 - strongly agree 3.0 – agree 2.0 – disagree 1.0 – strongly agree

ATTITUDES	HOW DO YOU FEEL?			
	4	3	2	1
Confidence on the knowledge & skills in the implementation of AI Program				
Willingness to accept suggestion				
Satisfaction to the job.				
Supportive to clients				
Enjoyment in AI implementation.				
Enthusiasm/Passionate to the job.				
Tiresome doing the job				
Good working relationship with supervisor				

III. National Government Agency (NGA's) and Local Government Unit (LGU's) Support for AI Implementation

Please read each statement below, check the appropriate number that you think corresponds to your feeling:

Fully provided (FP)	-	3.0
Moderately provided (MP)	-	2.0
Poorly provided (PP)	-	1.0

SUPPORTS	LGUs				NGAs			
	4	3	2	1	4	3	2	1
Provision of personnel								
Adequacy of AI supplies								
Provision of incentives								
Trainings for AI Technicians								
Transportation/travel allowance								
Conduct of field trips/lakbay aral								
Program advocacy information								

Part IV. Advantages/benefits from using the AI Program:

Please read each statement below then mark (x) the appropriate number which corresponds to your feeling. The equivalent as follows:

Strongly agree 3.50 - 4.00 Agree 2.59 – 3.49
Disagree 1.50- 2.49 strongly disagree 1.00 – 1.49

ADVANTAGES/BENEFITS	HOW DO YOU FEEL ABOUT?			
	4	3	2	1
Higher income/production				
More convenient/suitable in semen handling				
More manageable behavior of animals				

Part V. Problems encountered by AI Technicians/VBAITs

Below are the problems encountered in the implementation of the Artificial Insemination Program on Buffalo. Kindly rate the seriousness of these problems.

3.0 - Highly serious 2.0-Moderately serious 1.0-Not serious

STATEMENTS	HOW DO YOU FEEL ABOUT?		
	3	2	1
Negative attitude of animal raisers			
Lack of AI Technicians			
Not accessible road going to the farm			
Lack of info dissemination to farmers			
Insufficient program support			

APPENDIX C

Questionnaire for farmers

Part I.

A. Socio-demographic Profile

1. Name _____
2. Address_____
3. Sex: ( ) Female ( ) Male
4. Age: _____
5. Marital Status: ( ) Single ( ) Divorce
   ( ) Married ( ) Widow
6. Educational Attainment:
   ( ) Elementary ( ) College
   ( ) High School ( ) Others (specify) _____
   .

1. Approximate family income per annum:
   ( ) More than 10,000.00 pesos
   ( ) 5,000.00 – 10,000.00 pesos
   ( ) below 5, 000.00 pesos
2. Other source of income: (please identify)
   _____
3. Number of buffalo raised: _____ heads
4. Number of years raising buffalo. _____ years
5. Roles of buffaloes: ( ) draft
   ( ) milk
   ( ) meat
   ( ) Others, specify _____

Part II. Extent of implementation of AI Program by farmers. Please rate the following using the scale.

3.0	-	Fully Implemented
2.0	-	Moderately Implemented
1.0	-	Poorly Implemented

PROGRAM COMPONENT	HOW DO YOU FEEL?		
	3	2	1
Farmers Class			
Government Subsidy: National Government Agency • AI paraphernalia Local Government Units • Manpower resources			
Monitoring & Evaluation • DA-RFU-CAR • PVO			

Part III. Factors affecting the AI Program on Buffalo.

1. Awareness and availment of the program
   1. Have you heard of the Artificial Insemination Program? ( ) Yes ( ) No
   2. Are there AI technicians in your locality? ( ) Yes ( ) No
   3. Did you consult you technicians about your animals? ( ) Yes ( ) No
   4. Have you requested technical assistance? ( ) Yes ( ) No
   5. What other agency aside from your municipal technician you come in contact for consultation?
      ( ) DA-RFU-CAR staff ( ) BAI staff ( ) PVO staff
      ( ) others, specify _____

2. Technical Knowledge and Skills Factors

   a. Knowledge and skills on Feeding Management
      1. Do you have knowledge about feeding practices? ( ) Yes ( ) No
      2. Do you adopt any feeding practices for your animals? ( ) Yes ( ) No
      3. Do you give concentrate mix to your animal? ( ) Yes ( ) No
      4. Do you have knowledge on farm-by-products? ( ) Yes ( ) No)
      5. Do you have knowledge of forage crops? ( ) Yes ( ) No
      6. Do you have knowledge on how to feed your buffalo? ( ) Yes ( ) No
      7. Do you have knowledge about colostrum feeding to newly born calf?
         ( ) Yes ( ) No

   b. Knowledge and skills on environmental management
      1. Do you have knowledge on environmental management affecting your buffalo? ( ) Yes ( ) No
      2. Do you have knowledge on the signs of high temperature?
         ( ) Yes ( ) No
      3. Do you have knowledge to why you bath your buffalo?

( ) Yes ( ) No

4. Do you have knowledge in animal illness? ( ) Yes ( ) No
5. Do you have knowledge on the signs of illness that are observed ( ) Yes ( ) No
6. Do you have some knowledge in controlling or treatment of diseases? ( ) Yes ( ) No
7. Do you have knowledge on the prevention to be used? ( )Yes ( ) No

c. Knowledge and skills on Animal Reproduction

1. Do you have knowledge what is the age of puberty of buffalo? ( ) Yes ( ) No
2. Do you observed heat period? ( ) Yes ( ) No
3. Do you recognize in heat buffalo? ( ) Yes ( ) No
4. Do you recognize the frequency of buffalo in heat? ( ) Yes ( ) No
5. Do you recognize pregnant buffalo? ( ) Yes ( ) No
6. Do you recognize the signs of a pregnant buffalo ( ) Yes ( ) No
7. Can you recognize a buffalo going to give birth)? ( )Yes ( ) No
8. Do you know the signs of near parturition? ( )Yes ( ) No

3. Attitudes towards AI Program

Please read each statement below, check the appropriate number that you think corresponds to your feeling.

4.0 - strongly agree 3.0 – agree 2.0 – disagree 1.0 – strongly agree

ITEMS	HOW DO YOU FEEL?			
	4	3	2	1
Confident to the program				
Courageous asking question				
Satisfaction to the program				
Knowledgeable to the AI program.				
Good working relationship				

Part IV. Advantages/benefits from using the AI Program:

Please read each statement below then mark (x) the appropriate number which corresponds to your feeling. The equivalent as follows:

Strongly agree	-	4.0	Disagree	-	2.0
Agree	-	3.0	Strongly disagree	-	1.0

ADVANTAGES/BENEFITS	HOW DO YOU FEEL ABOUT?			
	4	3	2	1
Higher income/production				
More convenient/suitable in semen handling				
More manageable behavior of animals				

Other benefits, (specify)

_____

_____

Part V. Problems encountered by farmers

Please enumerate problems you encountered in AI Program

1._____
2._____
3._____
4._____
5._____

ACRONYM

AEWs	Agricultural Extension Workers
AI	Artificial Insemination
AIP	Artificial Insemination Program
BAI	Bureau of Animal Industry
DA	Department of Agriculture
GMA-LP	Ginintuang Masaganang Ani-Livestock Program
LGUs	Local Government Units
LN_2	Liquid Nitrogen Tank
PAIC	Provincial Artificial Insemination Coordinator
PCC	Philippine Carabao Center
PVO	Provincial Veterinary Office
RAIC	Regional Artificial Insemination Coordinator
UNAIP	Unified National Artificial Insemination Program
VBAITs	Village Based Artificial Insemination Technicians

BIOGRAPHICAL SKETCH

The author was born on the 9th of September in Barangay Pawa, Lagangilang, Abra to Mr. Esmenio Blasé Tesoro and Mrs. Serenia Nisperos Besas. She finished her elementary and high school education at Holy Cross School, Lagangilang, Abra with honors in 1977 and 1981, respectively. She finished her Bachelor of Science in Agriculture major in Animal Husbandry and minor in Agronomy in March 1985 at Abra State Institute of Sciences and Technology and graduated honor student. Also finished her Master in Public Administration on March 2002 at Benguet State University, La Trinidad Benguet with her study "The Influence of Devolution in the Implementation of the Agricultural Programs in Abra."

After graduation in college, she was hired as sales manager by the ASIST College Department Cooperative while waiting for a more stable and permanent position in said institution. Unfortunately, for one and a half years she waited to no avail so she decided to apply to another agency. She worked as a contracted staff at the Department of Environment and Natural Resources, Lagangilang, Abra for less than one year before deciding to apply at the Department of Agriculture, a national agency with office address at Calaba, Bangued, Abra. She was hired as Agricultural Technologist on August 1989 with the Municipality of Baay-Licuan as her area of coverage. Her transfer to the Municipality of Tineg was the effect of devolution caused by the varied perceptions of the local chief

executives relative to the local government code, which to them is a loaded gun that could not yet prove a panacea for their organization to go autonomous.

Since the implementation of the local government code, the shortcomings, discontentment and dissimilarities of analysis among the key players, a reduction of benefits and unfair distribution of resources pushed her to seek for a better and greener pasture in other countries year 1995. She believed on the saying “pera na naging bato pa” when her working visa for Japan was denied. Amidst such disappointment she still hopes to pursue her desire to earn yen if it’s the will of God but the researcher had already entrusted everything to the Lord. Hence, to overcome her frustration and not to be bored and jobless, she applied at the Department of Agriculture, Cordillera Administrative Region and assigned at the Planning and Monitoring Division from 1999-2003, then transferred to the livestock division where she was designated the planning/report officer of said sector from CY 2006 – 2011 and the Regional Genetic Improvement Program Coordinator. From March 15, 2010 to present, the researcher was designated as the Provincial Coordination Officer (PCO) for Abra of the Second Cordillera Highland Agricultural Resource Management Project (CHARMP2), a special project of the Department of Agriculture; and likewise, designated as the Provincial Agricultural Program Coordinating Officer (APCO) of the Department of Agriculture for the said Province.

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