NOTES: UPGRADING THE PHILIPPINE CARABAO THROUGH ARTIFICIAL INSEMINATION: AN EXTENSION ACTIVITY OF ViSCA

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ABSTRACT

This project adopts hormonal estrus synchronization in order to conduct artificial insemination (AI) in caracows using frozen semen from Murrah bufallo and Nili Ravi. In 1990-1993, a total of 578 caracows were inseminated and 225 caracows became pregnant with a conception rate of 39.93%. In the same years, there were 289 caracows brought by the owners for pregnancy diagnosis and 105 caracalves were produced.

The carabao is an integral part of Philippine agriculture and millions of crop farmers rely on the animal as the main source of draft power. Of the total carabao population in the Philippines, over 90% are raised by backyard producers (FFTC, 1980). In the last 10 years, researches have shown that the body size of carabaos has steadily decreased (Advisory Committee on Technology Innovation, 1981), mainly due to poor management including breeding practices of owners and the unrecognized importance of the species as milk and meat source. Therefore, the improvement of the carabao as draft animal in particular, and as potential source of meat and milk has become a national concern to help the smallhold farmers.

In order to improve the performance and genetic make-up of the Philippine carabao, a breeding scheme of mating caracows with Murrah buffaloes to produce the crossbreeds is developed. For lack of trained buffalo bull to mate in-heat native caracows, frozen semen is being used through AI which had produced crossbred calves expected to exhibit hybrid vigor (Nicholas, 1987).

Since the caracows are dispersed in wide areas of the villages, not to mention the difficulty of detecting caracows in heat, the application of AI per se was not practical. Thus, this carabao action project adopted estrus synchronization technology to improve the viability of AI as a tool in crossbreeding the caracows. At the same time, it aimed to establish the support services necessary in the implementation of the National Carabao Development Program (1987-1992) through AI. Most importantly, this project hoped to produce genetically superior crossbreed work animals to meet the farm power requirement of the smallhold farmers.

Data from the Philippine Carabao R and D Center (PCRDC) showed that at 24 months old, the crossbreeds were 42% heavier than the Philippine carabaos. Because of this superiority in size, the crossbreeds proved to be equal if not better as draft animals particularly under upland condition. Available data likewise showed that crossbreeds produce more meat and milk compared with the native animals (FFTC, 1980).

Project sites

In Leyte, twenty-five barangays with the highest number of caracows were selected as pilot sites. The availability of transport facilities and willingness of farmers to participate in the project were likewise considered. A wider coverage of the project was envisioned to produce the breeding base of crossbreed carabaos in as many barangays as possible to create an impact and accelerate the genetic improvement of the Philippine carabaos.

Farmer-cooperators and target crop farmers

Farmers with at least one non-pregnant caracow that has given birth to a calf were eligible as cooperators. A one-day seminar was conducted in every barangay to inform the farmers about the project, their roles, and the responsibilities of the project staff. Lectures on improved carabao management practices were delivered by either the Department of Agriculture (DA), Region VIII or the DASVM, ViSCA staff.

Estrus synchronization

Prostaglandin ($PGF_2-\alpha$) preparations were administered to a group (20-50 animals) of apparently normal caracows which were not pregnant and with active ovaries through rectal palpation. About 50% of these caracows came in heat after 3-4 days and were inseminated with fresh/frozen buffalo semen. Those that did not show signs of estrus were given a second injection

of $PGF_2 -\alpha$ on the 11th day of the first injection and were inseminated on the third day after the injection of the hormone. A conception rate of 35% was reported by a similar project implemented in the provinces of Cagayan and Isabela.

Number of caracows palpated and inseminated

In 1990-1991, a total of 92 caracows were inseminated and 49 became pregnant. This figure increased in 1992 and 1993 with 156 and 330 caracows inseminated and 56 and 120 became pregnant, respectively. The overall conception rate was 39.93% (Table 1).

The area of coverage widened also covering Baybay, Inopacan, Hindang, Matalom, Albuera and Ormoc City.

Number of caracalves produced

A total of 105 caracalves were produced from 1990-1993. On percentage basis, the success rate for 1990-1991 was 16.30% (15); 28.21% (44) for 1992 and 13.94% (46) for 1993 excluding the expected calf drop for November and December, 1993. The overall calf drop was 18.17% (Table 1).

Other accomplishments

The upgrading program had conducted 21 sessions of farmer trainings with 989 farmers being trained on the rudiments of carabao management and disease control. Similarly, it extended a refresher course to 18 technicians and trained 11 technicians from DA and the Department of Science and Technology (DOST).

Table 1. Number of caracows inseminated, conception rate and calf drop.

Year	Number of Caracows Inseminated	Number of Pregnant Caracows	Conception Rate[1]	No. of Calf Dropped	Calf Drop (%)[2]
1990-91	92	49	53.26	15	16.30
1992	156	56	35.90	44	28.21
1993	330	120	36.36	46	13.94
Total	578	225	39.93	105	18.17

[1]Conception rate = (No. pregnant/No. inseminated) x 100.
[2]Calf drop = (No. calf dropped/No. inseminated) x 100.

Table 2.   Cost and return analysis of the project for 3 years.

	Cost, ₱	Total, ₱
Income from 105 calves produced	15,000/calf	1,575,000
Less: Expenses		
Gasoline	32,352	
Salary of staff	252,404	
Hormones, liquid N, etc.	82,568	
		(367,324)
Net income		₱ 1,207,676

Simplified cost and return analysis of the project

In Table 2, it can be seen that computing operating expenses (including salary of staff) against the income of the 105 F_1 caracalves produced, a net income of ₱1,207,676 was generated, showing that the project is earning money for the farmers. Now with a 10-month old F_1 calf which costs ₱15,000, farmers are willing to pay ₱250-300 if only their animals will get pregnant through AI. Aside from increasing the body size, milk production capability and draft power of native carabao, overall AI technology can also increase farmers' income.

Factors affecting conception rate and percent calf drop

Artificial insemination is successful with a conception rate and percent calf drop of 39.93% and 18.17%, respectively, and a net income of ₱1,207,676. The success could have been increased had it not been for intervening factors such as inability of farmers to report on scheduled dates and unavailability of motor vehicles for the individual AI technicians.

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