



Research Article

BACKYARD GOAT FARM PERFORMANCE IN THE PHILIPPINES (2008-2010; 2013-2015)

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Abstract- Goat raising is gaining popularity as an enterprise in the Philippines, however, very few have taken the initiative to gather data from backyard goat farmers and to analyze their farm performance to understand the viability of the enterprise. In 2008-2010, a research program that was conducted on a national level entitled *Goat Farm Production Performance in the Philippines*^[1] was tasked to establish a national goat farm production performance monitoring system for goat farms to gather and evaluate productive and reproductive performances of locally raised goats without introducing management interventions to the raisers. In 2013-2015, the farmers were trained the technologies of goat production using the Farmer Livestock School-Goat Enterprise Management (FLS-GEM) extension modality primarily to determine the effects of the management interventions on the performance of the goat farms. The Farmer Livestock School-Goat Enterprise Management Modality is an extension modality in which the farmers were trained the goat management interventions by attending barangay classes at their most convenient time.

The data were gathered from purposively selected goat raisers with five or more does. Monthly monitoring of the data on productive and reproductive performances were done, analyzed and results were fed-back to the goat raisers. In 2013-2015, in 2008-10 the farmers were trained the management interventions using the FLS-GEM extension modality. Initially, a curriculum was developed by a group of experts in the Philippines. This curriculum served as the material in training the 21 national facilitators coming from Regions 1, 2, 3, 8, 10 and 12 in the Philippines. After the national training, each set of regional trainers trained 25 regional facilitators the way they were trained during the national training. These trained regional trainers in turn trained at least 25 farmers on a scheduled basis based on the most convenient time of the farmers, preferably once a week for 4 hours. The training modality allows simultaneous trainings in the six regions, thus allowing more trainees at a specific time. To assess the effects of the extension modality, 10% of the trained farmers served as cooperators in which monthly monitoring of their goat farm performance was done.

Based from the data gathered, with technological interventions adopted by the backyard goat raisers who had undergone the FLS-GEM training, conception rate increased from 75%(2008-2010 data) to 82%(2013-2015 data); kidding interval was shortened from 251 days to 246.85 days, thereby increasing kidding index from 1.45 to 1.48 kiddings per doe/year. With the inclusion of proper feeding and health regimen, pre-weaning mortality significantly dropped from 21.4 % to 1.60% in the participating sites. Considering the infusion of quality genetic materials either through Artificial Insemination or through natural breeding, there was an increase in average birth weight from 1.7 kg to 2.12 kg and slaughter weight from 16.5 kg to 22.30 kg. In addition, the farmers were able to engage in goat enterprises as waste utilization converted into organic fertilizer, forage enterprise and there were artificial inseminators trained.

Based on these findings, it is concluded that backyard goat farm performance significantly improved with appropriate trainings and technology interventions through the Farmer Livestock School- Goat Enterprise extension modality. It is therefore recommended that the FLS-GEM modality be used in training goat raisers to reach more goat raisers at a specific period.

Keywords- Backyard goat farm performance, Monitoring data, Farmer Livestock Goat Enterprise Management, Training.

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Introduction

Over the years, the popularity of goat raising in the Philippines as an economic enterprise intensifies as evidenced by the efforts to improve its production and the indulgence of affluent entrepreneurs making goat raising as an investment. Consumers also realized the benefits of eating chevon [3] due to its lower

saturated fat and cholesterol but higher protein compared to the other meats. Goat inventory in the Philippines was 3.67 Million heads [4] with 98% of goats found at the backyard level. Furthermore, slaughtering of goats was at 108% higher than the kids born [4] indicating that goat raising is a viable enterprise in the Philippines.

Despite the popularity of goat raising, very few have taken the initiative to monitor, quantify and record farm performances to understand the viability of the goat enterprises. In 2008-2010, a national program called *Goat Farm Production Performance in the Philippines* [1] was implemented in five regions of the country (Regions 1, 2, 3, 8, and 10). This program was tasked to establish a national goat farm production performance monitoring system for backyard and commercial farms and gather and evaluate productive and reproductive performances of locally raised goats in these sites.

Goat raisers that were trained the management practices performed better in just two years [6]. URED pre-weaning mortality was on average 10.7% while slaughter weight was 24.6 kg. URED kidding interval was 237 days and conception rate, 91%. This showed that with proper technological interventions and training, goat raisers can really improve farm performance.

Thus, to address the problems of goat management at the backyard level, several specific management practices have been identified. Specifically, to improve genetic make-up of the kids, infusion of good genetics through natural or artificial means was recommended. In addition, improvements in feeding and nutrition and health management were spelled out. To increase dam performance, an appropriate breeding plan (to include proper selection of foundation and replacement stocks and timing of breeding) was recommended. These management interventions can reach the goat raisers through a training modality known as the Farmer Livestock School-Goat Enterprise Management [2]. The objective of this project was to document the backyard goat farm performance without management interventions and the improvement of the goat farm performance with the introduction of the management interventions at the backyard level.

Materials and Methods

The training modality: The Farmer Livestock School-Goat Enterprise Management (FLS-GEM) extension modality is a technology transfer that was developed by PCAARRD for teaching adults with goat as subject for training [7]. It focuses not only on the technologies of raising goats but also on building enterprises. The curriculum consists of the following topics: (1) Production management and housing, (2) Feeding management, (3) Breeding management, (4) Health management, (5) Ecological and nature management and (6) Enterprise management. It is a long-season process of teaching adults and involves "bit-sizes" of technologies to enable the learners to understand fully the rudiments of goat raising. It allows the adult learners to have take-home assignments and experimentation in their own farms. This allows the farmers to have hands-on experiences in testing alternative technologies and assessing their relevance to his needs. This extension modality acknowledges the farmers' ability to mix-match options suited to the farmers' endowments.

The management technologies that have been proven effective in the previous Science and Technology endeavors were identified and packaged in the modules that were developed for the conduct of the FLS-GEM. Initially, a group of national trainers were trained who in turn trained 400 regional trainers. These regional

trainers trained at least 25 farmers. This extension modality allowed the regional trainers to train farmers simultaneously, thus having more farmers trained at a specific period of time.

Project site identification and assessment

Two provinces were identified initially per region. From these sites, the backyard farms were selected based on the following criteria: To identify the specific sites, a 2-stage selection process was employed. Initially, the top 2-3 provinces with the highest goat population based on BAS records were considered. From these provinces, the top 2-3 municipalities were short-listed and visited to assess their suitability to the set criteria, which included the municipality (1) having the most number of goat raisers with at least 5 does and contiguously located for easily monitoring; (2) accessible; and (3) without peace and order problems. These were firmed up through discussions with the Municipal Agricultural Offices. Depending on the number of suitable farmers present, the team had also considered 1-2 municipalities from which to select the needed 35 backyard raisers to constitute the regional sample.

Possible goat farm cooperators were evaluated based on the following criteria:

- Willingness to participate in the project (previous co-operators, who have religiously and seriously recorded the needed data before will be the priority);
- Goat farm owners who are directly managing their stocks;
- Willingness to provide counterpart resources such as improved housing, equity during exposure trips, etc;
- With the ability to eloquently communicate and articulate the recording system and the technology options to other farmers; and
- An existing member of a goat raisers' association (optional but preferred).

Results and Discussion

From the 3-year data analyzed in 2008-2010, it was seen that across regions, productivity was very low, characterized by poor dam performance, slow growth of kids and relatively high pre-weaning mortalities. Kidding interval at backyard farms stood at 251 days. This relatively long kidding interval resulted in lower kidding index of 1.45, a less productive cycle for the does. However, with technological interventions on upgrading either through natural breeding or through artificial insemination, the kidding index slightly increased at 1.44 in 2013-2015. Furthermore, the kid size increased from 1.6 kg to 1.69 kg and the incidences of twinning increased from 46.6% to 53.16% while the incidence of having one kid decreased. Kid mortality at birth decreased from 5.8% to 2.68%. Low dam performance in 2008-2010 was attributed to either unavailability of quality breeder bucks or improper breeding management by goat raisers. It was also noted that in some areas of the six participating regions, buck was not available when the doe got in-heat. For most backyard raisers in the Philippines, the goat is sold when the farmer needs cash. The improvement of the dam performance with the adoption of management interventions confirm the findings of Cerbito et al. [5, 6].

Table-1 Mean dam performance of goats (2008-2010; 2013-2015)

PARAMETER	R	E	G	I	O	N	R	E	G	I	O	N
	(2008 To 2010)						(2013 TO 2015)					
	1	2	3	8	10	MEAN	1	2	8	10	12	MEAN
Kidding index	1.3	1.2	1.6	1.6	1.6	1.45	1.43	1.40	1.50	1.43	1.51	1.44
Kidding interval	272	287	233	229	235	251	256	261	231.00	245	241.27	246.85
Kid size	1.6	1.5	1.7	1.6	1.4	1.6	1.70	1.69	1.60	1.73	1.62	1.69
%Female	45.2	52.7	46.7	52.1	50.7	49.3	54.33	48.1	51.45	50.24	45.4	50.35
%Male	54.8	47.3	53.3	47.9	49.3	50.7	46.67	51.9	48.55	49.76	54.55	49.65
%Singleton	43.9	64.8	31.8	46.9	60.3	48.0	38.75	40.43	44.95	50.24	39.26	40.57
%Twin	49.5	32.1	56.2	47.7	36.6	46.6	56.25	51.06	49.54	44.15	58.52	53.16
%Triplets	5.90	2.9	11.5	5.4	3.1	5.0	4.00	8.51	5.50	4.18	2.22	5.06
%Quadruplets	0.7	0.3	0.5	0.0	0.0	0.4	1.00	0	0	1.43	0	1.21
%Alive	94.8	98.4	87.1	96.2	98.9	94.2	91.91	97.47	94.44	96.00	0	97.32
%Dead	5.2	1.6	12.9	3.8	1.1	5.8	8.09	2.53	2.87	4.00	0	2.68

In 2008-2010, birth weight was 1.70 kg and the kids that survived weighed on average 16.5 kg. As to regional performance, the kids in Regions 3 and 8 had comparable birth weights with the other regions; however, the weights at 8 months were lower than the weights observed in the other regions. These data represented the actual performance of majority of goat farms that have not been reached by technological interventions. Poor kid performance was due to poor genetic make-up, poor nutrition and health conditions of both doe and kids. With technological interventions, birth weight increased to 2.03 kg while the weight at 8 months was 22.3 kg. The ADG at 8 months significantly increased from 51g/day to

73 g/day with the adoption of improved genetics that was performed by the trained artificial inseminators at the local government units and the interventions of improved feeds and feeding like feeding stall feeding, supplementation with multi-purpose trees and locally available farm by-products and the use of vitamin/minerals that are available in the locality. The data implies that if there were management interventions, the goats performed better in just two years. These findings confirm the findings of Cerbito et al. [5] (2010) and Cruz et al. (2010) [6].

Table-2 Kid performance from 2008-2010; 2013-2015

PARAMETER	REGIONAL DATA (2008-2010)						REGIONAL DATA (2013-2015)						
	1	2	3	8	10	MEAN	1	2	3	8	10	12	MEAN
Wt. at birth	1.5	1.7	1.6	1.7	2.2	1.7	2.3	1.8	1.7	2.2	1.7	2.5	2.03
Wt. at 3 mo	10.4	9.6	8.0	7.6	9.9	9.1	9.5	9.4	7.8	11.2	12.1	11.9	10.32
Wt. at 8 mo.	17.8	17.4	14.6	14.5	18.0	16.5	24.6	17.6	23.4	23.6	19.6	25.0	22.3
ADG at 3 mo	98.8	87.8	70.9	65.6	85.6	82.2	83.0	77.0	87.0	No Data	67.0	105.0	83.8
ADG at 8 mo	49.3	52.0	53.7	46.0	54.0	51.0	102.0	66	91.0	No Data	50.0	56.0	73.0

[Table-3] shows the health records of goats at the backyard level from 2008-2010 and 2013-2015. As shown in the table, there was a significant decrease in the percent mortality of goats in all physiological ages. Pre weaning mortality decreased from 21.40% to 1.6%. Across regions, Regions 2 and 8 still observed mortalities inspite of the management interventions that could be attributed to natural calamities like typhoons and extreme hot temperature. This implies that backyard goat raisers had already addressed the problems of mortality of goats

due to scientific and technological interventions taught to them through the FLS-GEM extension modality, particularly on health management interventions like strategic deworming, administration of medicines if their goats got sick and proper maintenance of the goat house. In addition, the provision of a goat house is a must intervention to be adopted by the backyard goat raiser if they enrolled in the training.

Table-3 Per cent mortality of goats at the backyard level, 2008-2010 and 2013-2015

Age Level	Regional Data (2008-2010)						Regional Data (2013-2015)					
	1	2	3	8	10	MEAN	1	2	8	10	12	MEAN
< 1 mo	4.5	11.3	15.3	9.2	3	8.7	0.88	0.60	0.76	0	0.70	0.44
1-3 mos	13.4	13.8	7.6	5.3	0.5	8.1	0.48	0.03	0	0	0.87	0.28
Weaning	9.3	8.9	1.4	1.5	2.0	4.6	0	4.40	0	0	0	0.88
Adult	3.3	13.9	6.4	1.5	1.4	5.3	0	2.44	6	0	0	1.69
TOTAL	30.5	47.9	30.7	17.5	6.9		1.36	7.47	6.76	0	1.57	

Conclusions

With the adoption of the management, interventions that were introduced through the Farmer Livestock School-Goat Enterprise Management (FLS-GEM) extension modality, the dam performance slightly improved by having a higher conception rate from 75% to 82%, increased kidding index and had reduced kidding interval. Based on the results of the study, kids had higher birth weights and slaughter weights with interventions on upgrading and improved feeds and feeding while the pre weaning mortality and adult mortality significantly decreased with the interventions on health and improved feeds and feeding. It is therefore recommended that the FLS-GEM modality being an effective tool in training goat raisers the interventions of goat raising be used to reach more farmers at a specific period of time.

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Conflict of Interest: None declared

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