

Assessment of Farmer Livestock School on Goat Enterprise Management (FLS-GEM) As a Training Modality in Northern Mindanao, Philippines

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ABSTRACT

This paper focused on the assessment of the Farmer Livestock School on Goat Enterprise Management (FLS-GEM) as a promotional/training modality in improving goat farm performance in Northern Mindanao, Philippines. This assessment was made after FLS-GEM was implemented in the three provinces of Northern Mindanao namely; Bukidnon and Misamis Oriental, from January 2013 to December 2016. Only 10% of the FLS-GEM graduates and only those that had at least a year of adoption of a specific technology were considered in this assessment. To determine the degree of technology adoption, the adoption pattern and reasons for a shift or continuous adoption of a technology, the technology timeline method was used. The effect of FLS-GEM in the lives, community or in the groups where they belong was determined using the impact benefit matrix. Results revealed the following: 1. The degree of adoption of the FLS-GEM graduates varied. Majority of them were early adopters of the different technology or tech mixes such as proper housing, stall-feeding with grasses, strategic deworming, vitamin /antibiotic supplementation and upgrading of stock using either upgraded buck or artificial insemination, 2. The said training had a positive effect on their personal competence, farm productivity, and community assets and 3. Major crops in the area, availability of labor and number of goats the farmer kept had contributed significantly to the adoption pattern of the graduates.

Keywords: farmer livestock school, goat enterprise, participatory assessment

INTRODUCTION

There is a growing interest in the value of goats as domestic livestock in the Philippines. The role they played in food production had already been recognized particularly in areas where other ruminants had difficulty surviving. Goats can exist in a fragile ecosystem or in all types of environment. They are browsers and have the ability to withstand dehydration.

Generally, the goat industry in the Philippines is a smallholder type where 98% of the total goat population is in the hands of backyard raisers (PSA, 2016). It remains an integral part of smallholder mixed farming system (PCAARRD, 2004) providing farmers the opportunity to raise

income through meat and milk aside from alleviating the effect of malnutrition. The increasing demand for goats in several parts of the country can be an opportunity among affluent entrepreneurs. They are now willing to learn the rudiments of goat raising, started purchasing stocks, breeding them, learning about ways to improve management and gradually improving farm productivity.

The popularity of goat raising, however, is coupled with low productivity which is characterized by poor dam performance (longer kidding interval and kids with low birth weights) slow growth of kids, and relatively high weaning mortalities (NGFP,2013). Although fragmented, a lot of

research and development works related to goats have been done in the past that produced matured technologies, however, our goat farmers had not benefited from them. This was the jump-off point where PCAARRD initiated a program to bring technologies down to the ground thru the Farmer Livestock School on Goat Enterprise Management (FLS-GEM) modality. In this modality, technology mixes are introduced in a bite-size for the farmer to experiment in their own goat farm.

The training consisted of 12- week technical session (1 day per week) with the FLS-GEM facilitators. Only one technology is discussed per technical session. At the end of each session, farmers go back to their farms to test the technology discussed. Reactions, acceptance or modifications done to the technology are discussed upon resumption of the session the following week. When all the technical sessions are completed, each farmer is given 8 weeks to mix and match the options he likes and see for himself the effects of the tech-mix on his farm. All data related to his own farm trials are recorded.

FLS-GEM was introduced in Northern Mindanao, the Philippines around the middle part of 2013. After the community facilitator's manual was packaged, a regional facilitator's team was composed and participated in training conducted by the national team. The regional team then conducted 2 batches of training of trainers (ToT) with 42 graduates, majority of whom are from the Local Government Unit (LGU) and some from the academe and government research institutions. With this 42 graduates, 11 FLS-GEM trainings were held at farmer's level during the early part of 2016 and graduated 328 farmer co-operators.

This study opines that to ensure FLS-GEM modality served the intention upon which it is developed, an assessment of its effectiveness using a participatory approach must be done so that concerns can be addressed. It intends to analyze the

extent, pattern, and reasons for adopting specific technology mix.

METHODOLOGY

Project Site

This study was implemented in Northern Mindanao Region of the Philippines popularly known in the country as Region X. It is composed of 4 provinces but only 2 provinces (Bukidnon and Misamis Oriental) were considered in this study, as shown in Figure 1.



Figure 1. Sites of Implementation

Development of the Community Facilitator's Manual

A facilitator's manual was developed by Anna Marie P. Alo of DOST-PCAARRD. Results of previous initiative on goats were assessed and technologies generated were included in the curriculum of the Farmer Livestock School on Goat Enterprise Management or the FLS-GEM.

Training on social preparation of the team members

After the packaging of the Community Facilitators Manual, a national project team was created, and underwent training on problem analysis, participatory technology development, technology matching and participatory evaluation of adoption. This is to equip them of the needed skills.

Training of Regional Core Team and Community Facilitators

A regional core team was composed and participated in the National Trainor's Training on FLS-GEM in Central Luzon State University in Nueva Ecija, Central Luzon. The trained regional core team then

conducted trainings for community facilitators the way they were trained by the National Project Team. Participants in this training were from the Local Government Units (LGU's), research institution, and from the academe.

Determination of the degree of adoption of technology or technology mixes

Extent, pattern, and reasons for adopting, shift or continues adoption of specific technologies or tech mixes were determined using the technology testing timeline method. The timeline was clustered into three such as; before joining the FLS-GEM training, during the training and a 2 years after FLS-GEM graduation. Only those who had been adopting technology or technology mixes for 2 years from FLS-GEM graduation and had maintained the required number of does of not less than 5 were included in this study. On the other hand, the impact benefit matrix was used to determine the effect that FLS-GEM had in their lives and on the community or organization where they belonged. Meanwhile, the eventual pattern was clustered into 5 major production systems like free grazing, tethering, partial confinement complete confinement, and rapid rotational grazing.

Research Design

Extent, pattern, reasons for adopting specific technology or tech mixes and factors affecting adoption pattern were analyzed using descriptive research design.

Analysis

Data were analyzed using descriptive in combination with inferential statistics. Frequency, mean and percentage were used to analyze the pattern, extent, reasons for adoption and the benefits gained from the training while Stepwise regression analysis following the statistical procedures on Microsoft excel 2013 was used to analyze the factors affecting adoption pattern.

RESULTS AND DISCUSSION

As presented in Table 1, thirty (30) farmers which is equivalent 90.90% were early adoptors indicating that 6 or 18.18% maintained the practice of free grazing with salt and concentrate supplementation, 4 or 12.12% is still in tethering with salt and concentrate feeding while 20 or 60.60% are in partial confinement with concentrate, mineral supplementation and strategic deworming. There is only 1 or 3.03% who shifted to complete confinement. This can be considered late adoptor as he was still developing his pasture and constructed a better animal pen during the duration of the season-long FLS- GEM training. On the other hand, two (2) were considered non adoptors as they have practiced most of the technology mixes which were introduced to them during the previous training they had in goat production. This can mean that as a participant in the technology development, they are convinced of the advantages or benefits in adopting a suitable technology mixes.

Table 1. Frequency distribution of types of adaptors and technology mixes adopted.

Types of adaptors and technology mixes adopted	Frequency N = 33	%
1. Early adoptors		
Free grazing (with salt, concentrate supplementation)	6	18.18
Tethering (with salt, concentrate supplementation)	4	12.12
Partial confinement (stall fed when in confinement, concentrate, and mineral supplementation, strategic deworming)	20	60.60
2. Late adoptors		
Complete confinement (stall-fed with strategic deworming, mineral and concentrate supplementation, vitamins, deworming)	1	3.03
3. Non-adoptors	2	6.06

Reasons for Adopting a Technology

Reasons for shifting or continuous adaption of the basket of technology options

are shown in Table 2. The results revealed that preservation of the relationship among neighbors, improve productivity and ease of

operation were the primary concerns in adopting the technologies with 66.66, 63.63 and 60.60% respectively% and were followed by the safety of the animals from

thieves, predators and inclement weather with 57.57%. Better income had 48.48 while resource endowment (availability of land, labor, and capital) had only 45.45%.

Table 2. Frequency distribution of reasons for shifting or continuous adoption of technology mixes

Reasons	Frequency (n=33)			Total	%
	Lantapan (n=18)	Impasug-ong (n=6)	Cag. de Oro (n=9)		
Ease of operation (can do other; viands simultaneously anytime)	11	2	7	20	60.60
Safety of animals from thieves, predators, inclement weather	11	2	6	19	57.57
Resource endowment (availability of land, labor and capital)	7	3	5	15	45.45
Preservation of relationships among neighbors (prevents annoyances)	11	3	8	22	66.66
Improved productivity of goats (improved weights, increase resistance to illness)	11	3	7	21	63.63
Better income/financial security from goat proceeds.	3	6	7	16	48.48

Factors Affecting Adoption Pattern

Factors affecting the pattern of adoption were assessed using the stepwise regression analysis following the statistical procedure of Microsoft Excel 2013 with the adoption pattern as the dependent variable (Table 4). This was found to have been affected by the major commodity, availability of labor, and the number of

goats owned. The regression equation is $y=306.42x-55.682$ and the coefficient of determination (R^2) is 77.08%. This could mean that 77.08% of the variation in the adoption pattern is being attributed to the three (3) significant factors mentioned, while 22.98% was due to errors or other factors.

Table 3. Regression analysis of the factors affecting the adoption pattern.

	Coefficient	Standard Error	t-statistics	P-value
Intercept	94.36364	87.85973	1.07403	0.28281
Major Commodity	-30.090909	37.42205	-8.04096	0.000
Availability of labor	-10.090909	16.53030	-6.10449	0.0000
Number of goats kept	99.72727	33.06059	3.01650	0.00256

The average land holdings of farmers in Northern Mindanao are 4 hectares with rice and corn as the major crops. This provided enough pasture for the goats to graze after harvest. Animals are let loose for half a day then usually confined late in the afternoon till the morning of the next day. During harvest time, backyard raisers tend to practice free grazing creating an inverse relationship between adoption of technology and availability of established pasture. Similarly, the availability of farm labor showed an inverse relationship with the pattern of adopting technology because raisers naturally choose to implement a less laborious practice in tending animals.

Meanwhile, the number of goats a farmer kept positively affected the adoption pattern. Goats are browsers and their feeding habits are perceived to be destructive to any plants. They seem to

relish on anything that comes their way including neighbor's crops. This condition will further worsen if animal inventory increases, thus the value of preserving relationship among neighbors are compromised. Any measure that would deter goats from damaging neighbor's crops is highly adopted.

Impact of FLS-GEM

The impact benefit matrix was used to assess the impact of FLS-GEM as a training/extension modality on the graduates, organizations and in the community. As shown in Table 4, fourteen (14) or 42.42% claimed that their personal competence had improved due to their knowledge gained from FLS- GEM training which opened them the opportunity to be invited as a speaker in seminars and enable them to earn National Competency (NC) certificates. Some 23 or 69.69% likewise

mentioned that their sphere of friends had expanded making them feel (36.36%) that they are now a distinguished member of the

community. All of them (100%) agreed that exposure trips widened their knowledge in goat production.

Table 4. Frequency distribution of the benefits of the FLS-GEM.

Level	Key words to use to measure "Changes"	Frequency n=33				
		Lantapan (n=18)	Impasug-ong (n=6)	Cag de Oro (n=9)	Total	%
Personal	Improved personal competence	1	5	8	14	42.42
	- Improved knowledge on goat raising					
	- Became speaker during seminars					
	- 2 farmers became NC2 passers					
	Now a distinguished member of the community	2	3	7	12	36.36
	Increased sphere of friends and influence	7	4	12	23	69.69
	Improved regard for goat	7	11	7	25	75.75
	- Changed paradigm from goat merely for festivities/celebrations to goat as a business undertaking					
	Improved financial security due to income from goat	4	8	9	21	63.63
	- additional income for daily needs					
- financed children schooling						
- able to pay the debt						
- increased buying capacity						
Widened perspectives due to field trips	18	6	9	33	100	
More time for family due to a better system of production						
Negative	0	0				
- Technology adoption meant more expenses						
Farm	Stocks on the farm increased	0	2	2	4	12.12
	Maximum utilization of farm	5	0	5	10	30.30
	An area is now devoted to forage establishment	2	2	4	8	24.24
	Utilization of goat manure produced better crops and greater saving on fertilizers	3	0	3	6	18.18
Community	Increased number of goat raisers in community	2	2	4	8	24.24
	Increased number of goats in community	2	2	4	8	24.24
	Increased number of buyers coming to community	4	2	6	12	36.36
	Goat raisers now organized into a cooperative	18	1	8	27	81.81
	Availability of new business options	3	3	7	13	39.39
Work (for facilitators)	Improved internal competence	2	5	7	14	42.42
	- widened perspectives due to exposure trips & other training					
	Increased linkages	7	0	7	14	42.42
	Better interaction with farmers	7	0	7	14	42.42
	Improved social competence	0	2	3	5	15.15
	Negative	1	1	2	4	12.12
	- increased workload					

*Multiple Responses

There is also a change or a paradigm shift (75.75%) from goat merely for festivities or for family celebration to goat production as a business endeavor. Eighty-nine percent (63.63%) claimed that their financial security had improved due to income from a goat which increased their buying capacity, able to pay debt; finance their children education and financial assurance for future needs. The contribution of FLS-GEM in the improvement in their farm was also felt. Two (2) or 6.06% mentioned about increased in their stocks due to reduced mortality of now healthier stocks than before, while 10 or 30.30% had

engaged in crop-livestock integration thereby maximizing the use of their farm lot. Furthermore, 8 (24.24%) had now an area devoted to forage establishment and had utilized goat manure (18.18%) as soil ameliorant/enhancer, therefore, better harvest with less expense on fertilizers.

Benefits in the community were also noted. Majority of the FLS-GEM graduates (81.81%) become members of cooperative, and there is an increase in the number of buyers coming due to the increased goat population of the community which encourages the planting of introduced new

forage species and some went to the extent of opening a goat allied enterprises.

The extent of adoption of the technology mixes by the FLS- GEM graduates varied. Majority of them were early adaptors of the different technology or tech mixes such as the provision of concentrates, salt, vitamins, and housing. Shift to stallfeeding with improved grasses, strategic deworming, vitamin/antibiotic supplementation came later as this entails additional expense on the part of the farmer. Major crops or commodity in the area, availability of labor and the number of goats a farmer kept were the major contributory factors in adopting a technology mixes aside from ease of operation.

This training modality had a positive impact on their personal competence, farm productivity, and community assets.

CONCLUSION

Based on the results of the study, it can be concluded that the FLS-GEM modality had influenced the adoption pattern of the majority of the FLS-GEM graduates. From tethering, it had improved to partial confinement in combination with housing, stallfeeding, forage establishment and upgrading. Utilization of manure as fertilizers had now been practiced. The top 3 reasons for the adoption of technology mixes were the major crops in the area, availability of labor and the number of goats raised by the farmer. The modality may not be that popular at this time, but its potential can be great if it can be supported by a policy.

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