

FARMERS' CAPACITY IN LIVESTOCK PRODUCTION AND ITS RELATION TO PRODUCTIVITY: THE CASE OF GOAT PRODUCTION IN NORTHERN PHILIPPINES

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Abstract: Goats play a vital role in the Philippine rural economy. It has always been an integral part of every farmers' activity since time immemorial, hence, its potential of contributing to poverty alleviation, food security and employment generation in the rural is eminent. However, an account of this industry is few, particularly on the capacity of farmers on the proper goat production and management practices. This situation gives policy makers and extension workers limited information as to what direction or focus should be taken into consideration for the industry's development. Capacity is arguably correlated to productivity, hence, this paper aims to find out the status of farmers' capacity in goat production and management and relate it to productivity. Ilocos Region in northern Philippines was the study area considering that it is the third top goat producing region in the Philippines and is dubbed as goat-eating region. Stratified random sampling using proportional allocation was used to determine the number of samples per province. After which, the top ten goat producer municipalities per province were identified for data collection – 40 municipalities in total. In coordination with the local government agencies, a semi-structured interview was conducted to gather data on the current goat production and management practices of 1,493 goat producers in the region. Capacity evaluation score was computed as summation of raw score over maximum score multiplied by 100. Results showed that majority of

producers were in their late 30's and household income were below household poverty threshold. Majority were raising goat for more than 15 years, however, only 55.00% were able to attend goat seminars or training. In 15 years, they were able to attend only seminars/training three times. The mean heads of goat raised was 7 and majority (52.79%) were raising native goat having an average slaughter liveweight of 14kg at 8 months old and average mortality of 4 heads a year. The most common diseases and symptoms observed by farmers on their goats were diarrhea, respiratory diseases and bloat. Result of capacity evaluation score of farmers' production and management practices (PMP) was 48.02% out of 100.00%. This can imply that the capacity of farmers on the proper goat production and management is poor having it lower than the neutral score of 50.00%. In this case, it can be argued that result of goat's productivity in the area is linked to the poor capacity of producers on the proper goat production and management practices. Data shows that the average annual per capita consumption in the region was 1.76kg, the lowest among farm animals, however, majority of consumers (67.66%) answered that there is insufficient supply of goat in the market which can be due to the low mature weight of goat raised by farmers. In addition, goats are generally sold per head and price is determined based on the physical appearance and size. This pricing system can somehow put producers at the losing end. With the poor capacity of farmers in technical and marketing

of goat, they may not foresee the prospect and opportunities goat production can contribute to their economic status. This is an important issue that should be addressed if potentials of goat in contributing to poverty alleviation be realized. In the same manner, it should be understood that there are other factors related to why farmers have low capacity on goat PMP such as financial constrain and marginalized programs or projects of government intended for the development of the goat industry. It is then suggested that in order to improve the goat industry in northern Philippines and for farmers to reap the potentials goat production offers, developing the capacity of farmer in the proper production, management, forage development and marketing be an utmost importance. In the same manner, government policies favorable to goat producers such as goat price standardization, market price information, small scale entrepreneurial financial assistance and investing in providing available services of breeder goats of high genetic make-up should be considered.

Keywords: capacity, goat industry, production and management practices, producers/farmers, Northern Philippines

INTRODUCTION

Capacity development is one of the leading issues in the current development discussions [1]. It is believed that through capacity development, it leads to changes in skills, behaviors and attitudes in the individual level [2]. Education, training, formal and informal skills development to accomplish tasks and solve problems are among the core requirements for individual capacity development [3]. It is assumed that capacity constrain is a major obstacle in achieving better productivity, implying that capacity is linked to performance. However, the question is whether the existing capacities are being recognized and whether the existing capacities are capacities that enable individuals to perform well in what they want to achieve [4]. Before starting capacity development projects, it is best to know the existing capacity our target individual or entity has in order to address the capacity in question. Capacity is defined as the ability of people, organizations and society as a whole to manage their affairs successfully [5]. In this study, capacity is defined as the ability of farmers to raise goat in the proper production and management practices.

Goats play a vital role in the Philippine rural economy. Its potential of contributing to poverty alleviation, food security and employment generation in the rural cannot be ignored. Goats are important in development because of their ability to convert forages and crops and household residues into meat,

fiber, skins and milk [6] which is significantly contributing to the nutrition of the rural poor. The small size of goats enables easy slaughter of animals, thereby making readily available sources of fresh meat for immediate consumption [7]. Likewise, as tangible financial assets, goat product consumption and sales enhance economic stability of households in times of crop failures. However, despite its potentials, growth and development of this industry remained low in the past decades [8].

Given the importance of goat in the socio-economic status of the rural folks, growth and development of this industry should be given utmost attention. An account of this industry, specifically on the capacity of farmers on the proper production and management practices should be taken in consideration as a baseline in conceptualizing a sound policies and plans for the development of this industry and for farmers to benefit from what this industry offer. A new project need to be realistic about the existing capacity constraints/ limitations in setting agenda for action [9]. This study then aims to investigate the status of farmers' capacity in goat production and management and how it is related to goat productivity in the area.

MATERIALS AND METHODS

The study was conducted in Region I, Northern Philippine, covering four provinces. Stratified random sampling using proportional allocation was made to determine the number of samples per province. The total number of respondents was 1, 493 distributed as follows: Pangasinan, 500; La Union, 343; Ilocos Sur, 400; and Ilocos Norte, 250. The top ten goat municipalities per provinces were identified using the data from the Department of Agriculture, 2004. Questionnaires were directed to know the current goat production and management practices of farmers. The 1, 493 respondents were randomly selected for interview.

Frequency counts, percentage, ranks, and mean were used to describe the individual characteristics, production, management and marketing practices and current goat production problems of respondents. Data on the consumption of chevon was also asked to consumers. Secondary data was gathered from the office of the Municipal Agriculturist. These data includes the list of semi-commercial goat raisers, population and supply of goat per municipality.

In computing for the PMP score, four determinant factors were identified - housing, feeding practices, breeding practices and health practices. Each determinant has indicators with a yes or no answer and score is either 0 or 1. Farmers' PMP evaluation score then was computed as summation of raw score over maximum score multiplied by 100.

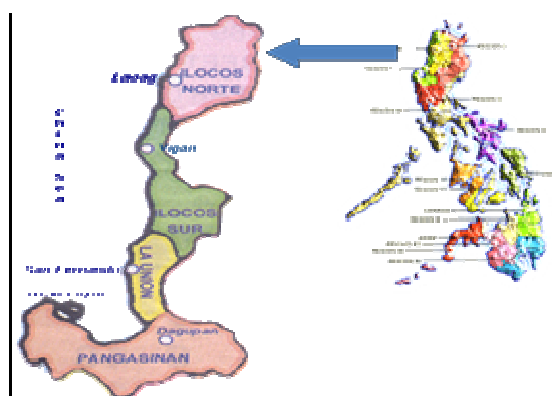


Figure 1: Study area

Table 1: Goat production and management practices of farmers

Particulars	N (1493)	%
Type of housing		
~ Temporary	817	54.72
** Semi-permanent	322	21.57
*** Permanent	171	11.45
No housing	183	12.26
Is housing elevated from ground		
Yes	474	31.75
No	836	55.99
No answer	183	12.26
Reasons of elevating goat's house		
Appropriate type of goat housing	219	46.2
Prevent animals from getting dirty	151	31.86
Lessen diseases	104	21.94
Not elevated		
Lack of capital	409	48.92
Do not know appropriate housing	339	40.55
No answer	88	10.53
Feeding practices		
Continuous grazing	401	26.86
semi-confinement	434	29.07
Total confinement	177	11.86
Tethering	476	31.88
No answer	5	0.33
Estimate daily forage consumption		
Depends on body weight	98	6.56
Do not know	1395	93.44
Forage area		
With forage area	1092	73.14
Without forage area	254	17.01
No answer	147	9.85
Provision of supplements		
Yes	820	54.92
No	410	27.46
If No, why		
Additional expense	273	66.59
Not available	137	33.41
Supplement used		
UMMB / Salt	757	92.32
Concentrates	63	7.68
Breeding practices		
Breeds of goat		
Native	1068	52.79
Saanen	30	1.48
Anglo Nubian	22	1.09
Upgrades	003	44.64
System of breeding		
Cross breeding	307	20.56
Upgrading	839	56.2
Inbreeding	284	19.02
Do not know	63	4.22
Age of breeding		
< 7 mos	20	1.34
7 -9 mos	650	43.54
10-12 mos	341	22.84
> 1 year	77	4.87
No answer	410	27.46
What to do when animal is sick		
Consult veterinarian/husbandman	707	47.35
Dutcher if animal is mature	786	52.65

~ made up of bamboo and nipa; ** made of off bamboo, wood, galvanized roofing;

*** made of cement, wood, galvanized roofing

Table 2: Farmers' goat PMP score

Indicators	PMP score (%)
Housing	44.73
Feeding practice	33.08
Breeding practice	66.90
Health practice	47.35
Σ of PMP/4	48.02

Table 3: Production and marketing information

Specification	
Mean number of stock (hd)	7
Mean mature weight (native, 8mos. old) (kg)	14
Mean mature weight (upgrade, 8mos. old) (kg)	18
Average mature weight of stock (8mos. Old) (kg)	16
Mean mortality per year (hd)	4
Mean age of selling goat/yr (mo)	11
Mean number of head sold/yr (hd)	5
Mean price per head (P)	1300
Mean price dressweight per kilogram (P)	181
Average liveweight farm gate price from 2003, 2004 & 2005 prices (BAS data) (P)	90

RESULTS

Demographic profile of goat farmer producers

Majority (71.13%) of farmer producers are male with mean age of 38. They are mostly (36.10%) elementary graduates and farming (59.54%) is the main occupation. The mean household annual income is P85, 753.00 (\$1,559.14) wherein goat raising is one of their sources of income. Majority of them (39.45%) have been raising goat for more than 15 years. In 15 years of raising goat, almost half (45%) of them do not have any training on goat production. For those who were able to attend training, they were able to attend three times only in 15 years. They knew only of few (1-3) goat production trainings/seminars which were conducted in their area as compared to swine and poultry production. The mean number of children was 5 with mean age of 16.4 years. They help also in taking good care of the goat like pasturing the animal or gathering forage by means of cut and carry.

Production and management practices

Table 1 shows some of farmers' production and management practices. Majority (54.72%) has temporary goat housing which is made up of bamboo and nipa and is directly built on the ground without any elevated platforms like stair type flooring. This is because of insufficient capital (48.92%) and insufficient technical knowledge (40.55%) on the appropriate housing for goat. Tethering (31.88%), semi-confinement (29.07%), continuous open grazing (26.86%) and total confinement (11.86%) were the main feeding practices. When farmers go to their field early morning, they bring with them their goat to graze in an open area or tether them just near their working area. Majority (54.92%) was giving feed supplement to their animals in terms of concentrate and minerals in the form of urea molasses mineral block (UMMB) and salt. Feed concentrate is not given in a regular basis but only given to animals that are pregnant and with newly kids. The same through with UMMB, farmers were not giving it in a regular basis, it depends on the financial availability the

farmer have. When asked about the estimate weight of forages their goat consume a day, almost all do not know because they are not conscious of the weight of forage their goat consume. This can mean that they do not know if they are satisfying the daily required feed for their animals.

With regards to the breeding practices, more than half (56.20%) was practicing upgrading however, majority (52.79%) still have native goats in their backyard. The source of breeder animals is from their own neighbors (65.07%) who do not have pedigree record of their animals, auction market (10.11%) and only 5.24% from accredited farms. According to the livestock technician, farmers prefer to buy their stocks from their neighbors because it is cheaper and is readily available for them rather than going to an accredited farms or auction market. The common age of breeding their animals is from 7-9 months old, however, there were 27.2% of respondents who do not know the age when they breed their animals.

The common symptoms that farmers observed on their animals were diarrhea (41.38%), bloat (28.54%), respiratory symptoms (28.00%) and orf (2.08%). During the occurrence of symptoms and or diseases, majority (52.65%) does not consult veterinarian or husbandman because it is an additional expense for them (72.26%) while 27.74% answered that they know how to treat their animals when they experienced such diseases. Likewise, almost all the respondents deworm their animals however majority (70.22%) deworm only their goats when they observed that their goat is heavily infected with parasites through the animal's feces or physical appearance. Insufficient pasture area was ranked number 1 as the main production problem followed by, occurrence of diseases and parasites, insufficient technical knowhow, feed/forage, and market outlet .

Considering the capacity of farmers, four main pillars of practices were identified – housing, feeding, breeding and health. Result showed that only the breeding practice was higher than 50.00%. The overall computed score for their PMP was 48.02% which is below neutral score of 50.00%. (Table 2).

Production and marketing information

Table 3 shows farmer's production and marketing information. Result showed that the mean number of goats raised was 7 heads where in majority was native having mean mature weight of 14kgs and with mean mortality of 4 heads per year. Result further showed that more than half (64.75%) of farmers sold their goat directly to consumers. Others were directly sold to other market channels such as auction market (15.56%); wholesalers (5.93%) and retailers/restaurants/*carinderias* (3.58%) and within producer/ contract growers themselves (10.18%).

Majority (51.73%) sell their goat when it is more than 13 months old, the mean age for selling is 11 months old. Almost 100% sell their goats as a whole or per head wherein pricing is based on the size of the animal (82.79%) while others (11.65%) by weight. The mean number of goat sold per year is 5 heads and the mean price per head was P1,300.00 and P 181.67 per kilogram dress weight (Table 3). Likewise, result showed that the mean annual per capita consumption was 1.76kg, the lowest among farm animal, however, more than half (67.66%) of consumer respondents stated that there is a shortage of chevon in the market. Lack of market information was ranked first as the marketing problem of farmers followed by lack of transportation and seasonality of demand. Income derived from goat production was used to buy basic needs (62.49%) and to augment their childre's tuition fee (33.62%).

DISCUSSION

Goat production, though typically a backyard scale, is still undeniably important economic activity of farmers in northern, Philippines. Income derived from goat is generally used to buy basic needs and to augment tuition fee of their children during enrolment. Goat production is commonly perceived as male adult activity while females are for household activities only, however, mothers, including their children help also in taking good care of the goat. This makes goat production more viable because it is an activity where family members share the responsibility of taking good care of the animal. At most, farmers have been raising goat for 15 years, however, data shows that farmers have insufficient capacity in terms of proper goat production and management practices. As shown in the result, there are capacity issues in housing, feeding, breeding and health practices of farmers towards their goats.

In animal husbandry, animal housing is very important to protect them from rain, heat, cold, thunder and wind. As much as possible, it should be built in the appropriate way to make the animals comfortable. In this study, majority have the provision of housing for their animals, however, it is temporary housing made up of local resources such as nipa and bamboo. Using local resources is not a problem, however the question is if it was built in a way that can protect and give comfort to the animals. Goats are afraid of rain and wetness as they make them prone to pneumonia which is one of the top causes of goat mortality [10]. Without proper housing to protect them from rain, pneumonia will likely be one of the major causes of mortality. In the same manner, goats need nutrients such as protein, carbohydrates, water and minerals for their growth and development, however, current feeding practices like tethering and open grazing early morning in a

common pasture land, where other ruminant animals are also grazing, can be a cause for their animals to be infected of parasites and diseases. In these feeding practices, there is high possibility that goats will be able to ingest grasses of high moisture and large amount of succulent feed which can cause bloat [11] and diarrhea. Likewise, there is high probability that goats grazed in a common pasture area early morning, when grasses are still wet with dew, be able to ingest forages infected with worm egg/larvae [12]. Though, majority of farmers deworm their goats, probability of being parasite free or minimizing parasites can be negligible because they deworm only when they observed that their animals is infected without knowing exactly what specific internal parasite the goat is infected to. The frequency of deworming again reflects farmer's financial constrain. The usual administration of dewormer varies from 3-12 times a year to protect them from heavy infestation of internal parasites. Strategic deworming is done at least twice a year (before the onset and during the peak of rainy season) if fecalysis reveals no internal parasites already [13]. In the same manner, breeding practices matters in achieving higher productivity. Without reliable source of breeder buck and technical knowhow on puberty period and best breeding age, there is always probability that offspring will be weak and small in size [14]. Majority of farmers consider their neighbor as the source of their breeder buck without pedigree record. Since breeder buck demands high price in the market, there is possibility that farmers prefer to borrowing the buck of their neighbors.

In this case, it can be argued that farmers' PMP is link to the poor health and low productivity of goat in the area. Diseases and symptoms such as diarrhea, respiratory diseases and bloat which were commonly observed by farmers on their goat, low average mature weight of 16kgs at 11 months old and mortality of 4 heads a year can be arguably attributable to their low PMP. On the other hand, farmer's financial constraints and lack of government and or other entities' support in developing the goat industry are factors arguably attributable to the low PMP of farmers. Insufficient breeding services and few training programs and projects on goat production were evident implying that projects/activities for this industry's development were marginalized as compared to other farm animals such as swine and poultry.

Marketing on the other hand is important in any livestock system. It provides the mechanism whereby producers exchange their livestock and livestock products for cash [15]. The average mature body weight of Philippine native goat ranges from 15-30kg [16] and mature age of goat for breeding and selling ranges from 8-12months. This suggests that 8-

12month old goat can weigh 15-30kg. (22.5kg mean weight) of which, can have a mean price of P2,025.00 (\$36.83) considering P90.02 (\$1.64) per kilogram liveweight as farm-gate price [17]. The marketing system of goat then has somehow caused farmers to lose around P725.00 (\$13.18) per head of goat they have sold considering that they were selling at 11 months old for only P1,300.00 (\$23.63). Farmers only relay on physical appearance as the basis for pricing due to lack of goat price standardization and most often traders make good guesses about weight and their ability to guess the weight helps them in making good bargain to the farmers [18]. Having very minimal gain from goat, this may not give them an incentive to improve their production and may not be able to see the full potential of goat in improving their economic status.

With poor farmers' capacity in technical and marketing, they can not foresee the prospect and opportunities goat production can contribute to their economic status. In order then to improve the existing capacity of farmers and improve productivity of existing stocks, capacity development on goat PMP is necessary through trainings on housing, goat production, forage area development and entrepreneurial trainings, coupled with policies favorable to goat producers such as accessible market price information, price standardization, small scale entrepreneurial financial assistance and investing in providing available services of breeder goats of high genetic make-up.

CONCLUSION

Farmers' low capacity on the proper goat PMP is linked to the low productivity of goat in northern Philippines, however, this is coupled with financial constrain and insufficient breeders with high genetic make-up and lack of goat price standardization. It is then suggested that improving the capacity of farmers through technical and entrepreneurial trainings, coupled with policies favorable to goat producers such as price standardization, market price information, small scale entrepreneurial financial assistance and investing in providing available services of breeder goats of high genetic make-up should be an utmost consideration if an improved goat industry is to be realized and for farmers to benefit from what this industry offers.

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