

# Production Operation Management of Hog Growers in Nueva Ecija

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**Abstract:** *The study focused on hog growers' operations management in the province of Nueva Ecija. In terms of selection of selection, facility needs, feeding practice, and breeding procedures, it specifically specified the farm profile and operation management practices. The descriptive survey method was employed in this study, which included both quantitative and qualitative data descriptions. The existing operation management methods were determined using interviews, questionnaires, and observations. Frequency, percentage, and weighted mean were utilized as statistical approaches. The study included 49 farm owners from different municipalities in Nueva Ecija as participants. The study revealed that the farm profile were mostly classified as commercial operation, with 1-2 male workers, were involved in sow-weaning-fattening operation, used the traditional type of rearing system, raised 151-200 heads of fattening, 31-40 sow level, 151-200 heads of suckling, and 1 boar. Most of the respondents had a capital of more than 500,000. It also reveals hog growers' common practices in terms of sow and boar selection, facility requirements, feeding, and breeding. Although the growers have established their own methodologies for their farm operation, it is strongly recommended that the growers receive strong government support in the form of trainings and seminars to stay up to date on the new technology required for breeding to produce genetically improved meat carcasses. Financial assistance is also required to purchase genetically improved gene stocks and improve housing facilities. To reduce production costs, they must be able to formulate their own feed. Finally, growers must shift their operations to contract growing in order to maximize their earning potential.*

**Keywords:** Operation management practices, Hog growers

## 1. Introduction

In the Philippines, hog farming is highly common and regarded as the most important contributor to the livestock sector of agriculture, and second only to rice production in terms of contribution to the country's food basket. The Department of Agriculture divided the hog-raising sector into two categories: backyard operations and commercial operations. The EPA defines backyard operations as any farm or household that raises at least one head of livestock. Any farm or household that meets at least one of the following criteria: a) at least 21 heads of adults and zero young, b) at least 41 heads of young animals, and c) at least 10 heads of adults and 22 heads of young.

It is not easy to get into the hog-raising business. To secure a profitable yield, a prospective farmer must examine various criteria before going into business. Breeder sow selection, equipment and facilities, nutrition and health management, and technology research are among them. "The performance of hog raising industries depends on genetic potential of pigs and varied management approaches," according to Univet Nutrition & Animal Health Company (n.d.). According to research, 30% of success is determined by genetic capacity, while 70% is determined by effective management of feeding, adequate housing, nutrition, and health."

Good animal care, on the other hand, is dependent on the facility's quality and the staff' management skills, according to Thompson et al, (2002). The design, maintenance, and operation of the structure and its equipment have a significant impact on its efficiency, economy, and smooth operation. Unless exceptions and exemptions are warranted and allowed, swine facilities should adhere to appropriate construction requirements (Muehling et al., 1989). The pigs' comfort will be determined by the management and quality

of facilities in each system. At all phases of the pig's life, every sort of housing system must provide conditions that promote comfort, excellent health, growth, and performance (Thompson et al., 2002).

Hog growers strive to provide consumers with high-quality, safe pork products. Over the last few years, hog growers have made significant improvements in overall swine management methods, which should be applauded. Today, hog farmers are working to improve the genetic potential of their pigs so that consumers may get the lean pork they want. Although hog growers have improved genetics and production methods, they still have a product that must be sold in a short period of time. This is due to the fact that hog farmers have no control over or influence over the price paid for market hogs. Because manufacturers have no control over market price, lowering production costs is the only method to increase prospective profit.

Swine require different handling techniques than other animals (Shapiro; 2001). Swine breeders employ a wide range of management techniques. "Regardless of the size of their operation, hog farmers must choose the type of production operation that best suits their needs." Hog farmers' operation activities are divided into four categories: grow-out production, sow-litter production, farrow-finisher production, and a combination of sow litter and farrow-finisher production.

Taylor and Field (2001), also mentioned stated that the important traits in farm animals, such as milk production, egg production, growth rate, and carcass composition, are controlled by hundreds of pairs of genes; therefore, it is necessary to expand one's thinking inheritance involving one and two pairs of genes. Most farm animals are likely to

have heterozygous and some homozygous pairs of genes, depending on mating system being utilized.

Understanding the factors affecting hog production at the micro-level is very important, because livestock production, with its linkages to rural economic growth, can be viewed as a means to improve farm household incomes. Knowledge of structural characteristics, adoption of practices, and new technologies for a more profitable hog industry, would be of great importance for farmers (Somwaru, A. et al.; 2003).

Aside from natural calamities and epidemic diseases on their animals, various hog growers associations in various parts of the country expressed their dissatisfaction with the high cost of production, low farmgate price, and increase in imported meats in the markets. They are concerned about the consequences for small backyard operators if the scenario continues. According to So, Director of the Swine Development Council, the backyard hog sector was decimated by rampant smuggling. He claimed that meat smuggling cost the backyard sector P28.5 billion in the last three years. The number of backyard hog breeders is decreasing every year. After experiencing losses in their enterprise, the hog farmers become frustrated (Bureau of Agricultural Statistics; 2011). Cost of production, marketing tactics, and competition from foreign beef products have all had a significant impact on their business. In fact, hog farmers are hesitant to continue their operations, and even potential investors are wary about investing in the hog farming industry.

In order to address these concerns, a study on production operation management of hog growers. The researcher deemed it wise to conduct a study on the assessment of hog raising industries in different municipalities in Nueva Ecija to discover the best practices in hog growing. Result of this study will provide the needed manual to guide the hog growers in improving their skills and enhancing the knowledge in production that will lead to sustain the hog growers' operation.

## 2. Problem Definition

The study focused on the assessment of production operation management practices of hog growing industries in the province of Nueva Ecija. It specifically answers the following questions.

- 1) Describe the farm profile in terms of;
  - a) Farm classification;
  - b) Number of workers;
  - c) Type of grower production
  - d) Type of facilities used;
  - e) Number of hog raised; and
  - f) Capitalization
- 2) How the growers select stoks for;
  - a) Sow; and
  - b) Boar;
- 3) Describe the breeding practices in term of;
  - a) Feed texture;
  - b) Frequency of feeding;
  - c) Type of feed used
  - d) Brand of commercial feed used;

- e) Manner of Shifting Used
- 4) Describe the breeding practices in term of;
  - a) Manner of breeding; and
  - b) Type of breed raise.

## 3. Methodology/Approach

The study used the descriptive research using the survey tool as the primary means of gathering. According Nassaji, H. (2015) descriptive research is an appropriate choice when the research aim is to identify characteristics, frequency, trends, and categories. To answer the aforementioned questions, the researchers devised a structures questionnaire based. The modified questionnaire was planned and created by researcher. Suggestions for modifications and improvements were done and it was set for a dry run and got tested by selected graduates.

The respondents of this study were 49 farms in Nieva Ecija who were engaged in different types hog raising activities. They were all registered with the Business Licensing and Permit Office within the municipality. Respondents were owners classified as sole proprietorship form of ownership.

The questionnaires were personally administered by the researcher through the help of the different Deans and Directors. The purpose and procedure on how to respond to the questionnaire were explained to the respondents.

All the data gathered through the use of questionnaire were tallied, tabulated, summarized and recorded properly. Frequency and percentage and weighted mean was used as statistical tools.

The Scale below was used by the researcher in validating the data gathered:

Numerical Responses	Mean Range	Verbal Interpretation
5	4.20 - 5.00	Highly Needed
4	3.40 - 4.19	Moderately Needed
3	2.60 - 3.39	Averagely Needed
2	1.80 - 2.59	Minimally Needed
1	1.00 - 1.79	Not Needed

## 4. Results and Discussions

**Table 1:** Distribution of Respondents According to Farm Classification

Classification	F	%
Commercial	22	44.90
Semi-Commercial	20	40.82
Backyard	7	14.28
<b>Total</b>	<b>49</b>	<b>100</b>

Table 1 shows the distribution of farm based on classification. As gleaned on the table, 22 or 44.90% belong to Commercial production, 20 or 40.82% belong to semi-commercial and seven or 14.28% belong to backyard operators.

This shows that there are more commercial operators who are sole proprietors in this business venture. Commercial farms (C) as mentioned by (Alawneh, J., 2014), defined by

BAS and used for the purpose of this study are farms which satisfy at least one of the following conditions (BAS, 2011): (1) at least 21 head of adult pigs; (2) at least 41 head of grower pigs; or (3) at least 10 head of adults and 22 head of grower pigs. The commercial production system represents 30% of the Philippine pig industry.

**Table 2:** Distribution of Workers in the farm

Amount	Ground			
	f	%	f	%
1-2	28	57.14	32	65.31
2-4	12	24.49	12	24.49
5-above	9	18.37	5	10.20
Total	49	100	49	100

Table 2 show the distribution of workers of farm owners. Male workers in the farm, 28 or 57.14% of the respondents have 1-2 male workers, 12 or 24.49% have 2-4 male workers, nine or 18.37% have 5-above male workers while female workers 32 or 65.31 of the respondents do not have female workers, 12 or 24.49% have 1-2 female workers, five or 10.20% have 5 above female workers.

Figure show that owners prefer male workers than female workers for the reason that males are expected to be more physically fit for the nature of work in the farm. Shoveling the manure, cleaning the lagoon, carrying sacks of feeds, and maintenance of equipments like power spray and water pump are work which requires masculinity. The number of males indicated the number of housing they had to maintained, that is one worker per housing for the maintenance.

Female workers are involved in the recording system, assist in the vaccination, assist in farrowing were they can show their motherly tender care for the piglets and sow, and others are wives who assist their husbands in feeding the animals.

**Table 3:** Distribution of Respondents According to Type of Grower Production

Production Activities	f	%
Pure Fattening	8	16.32
Sow-weaning	3	6.12
Sow-Fattening	7	14.28
Sow-Weaning- Fattening	18	36.74
Sow-Fattening-Breeding	13	26.54
Total	49	100

Table 3 shows the distribution of types of grower production activities. Based on the table, 18 or 36.74% were involved in sow-weaning-fattening, 13 or 26.54% were involved in sow-fattening-breeding, eight or 16.32% were involved in pure fattening production, seven or 14.28 were involved in sow-fattening, three or 6.12% were involved in sow-weaning production.

Figure shows operators of the business considered sow-weaning-fattening as their type of production. The farrow to wean operations were profitable only when market hog prices were high. Farrow to finish farms were profitable under most market conditions (Mcdougall, A., 2016). Weaned piglets can be sold to other growers who are in the fattening operations while piglets not sold were raised until

it had reached market size in which hog raisers do not need to buy piglets. Another reason based on unstructured interviews with owners of breeder farms, breeder farms have different practices in managing health of animals and to be an accredited breeder farm, they had to pass some standards in their production.

**Table 4:** Distribution of Types of Facilities Used

Type	Frequency	%
Modern	0	0
Traditional	44	89.80
Organic	0	0
Free Range	0	0
Other	5	10.20
Total	49	100

Table 4 shows the type of facilities used by the hog growers in Nueva Ecija. Based on the table, 44 or 89.80% of the respondents used traditional form and five or 10.20% used other form or combination of traditional and free range.

Figure shows that the respondents adopted the traditional type of facilities in rearing their hogs because modern facilities involve much capital. (Barroga, 2010) defined conventional building or traditional facility as one with open sided walls with cement flooring; and tunnel ventilation system or modern facilities. The big difference between the two housing system is that modern facilities used air-conditioned housing, with tunnel ventilation which maintained or controlled the temperature inside. They are not affected by the change of climate. Based on unstructured interview with Dr. Samuel Dullas, consultant of Mayor Boyito Dizon, there is less work for the workers because animals do not need to take a bath and animal feed is supplied by automatic feeder coming from conveyors. Monitoring of the control panel, conveyor of feed, temperature gauge and water supply are the nature of work of the caretaker, thus less workers are maintained even if thousand of heads are raised.

**Table 5:** Distribution of Number of Stock Raised

Quantity	Fattener		Suckling	
	f	%	f	%
50-100	8	16.33	8	19.05
101-150	13	26.53	3	7.14
151-200	20	40.82	24	57.14
201- above	8	16.33	7	16.67
<b>Total</b>	<b>49</b>	<b>100</b>	<b>42</b>	<b>100</b>

Table 5 shows distribution of respondents according to number of stock 20 or 40.82% raise 151-200 heads, 13 or 26.53% raise 101-150 heads, and eight or 16.33% got the same frequency for 50-100 and 201- above. For suckling, 24 or 57.14% have 151-200 suckling, eight or 19.05% have 50-100 suckling, seven or 16.67% have 201-above suckling and three or 7.14% have 101-150 suckling.

Figure shows that hog growers produces 151-200 heads of fatteners per month and this will contribute more profit for the business. Based on unstructured interviews with the growers who are dealers of feed, they need this number of heads to consume the quota given to them by the feed manufacturing company. They buy directly from the plant where they can avail discounts of up to P100 per sack. If

they had 200 heads and it consumed 2 kiols per day, total consumption is 400 kilos per day which is equivalent to eight (8) sacks per day or 240 sacks per month. Multiply this by the discount of P100 per sacks, they can save P24,000 a month in feeds. This creates a chain reaction with other inputs like medicines.

Data shows that most of the growers have enough number of sucklings to be weaned. If the growers need 151-200 heads of weaned piglets to fatten they need also to produce 151-200 or more sucklings for operational need. As discussed in the previous tables, Tables 12 and 13 are interrelated with one another. If 30 heads of sow were raised, multiply this by the number of heads born alive as parameter suggest of 9.5 heads equals 285 heads of suckling will be produced minus the number of weaned piglets of 255 as parameter suggested, computed as (30 heads of sow x parameter of 8.5 heads weaned piglets) so still there is excess of 30. Therefore if they only need 200 heads to sustain their operation they still have 85 heads to supply the needs of other customers.

**Table 6:** Distribution of Number of Hogs Raised for Sow

Quantity of Sow	Frequency	%
10-20	5	11.90
21-30	3	7.14
31-40	31	73.82
41-above	3	7.14
<b>Total</b>	<b>42</b>	<b>100</b>

Table 6 shows the distribution of sow raised per month. Based on the table, 31 or 73.82% have 31-40 sow, five or 11.90% have 10-20 sow, three or 7.14% have 10-20 and 41-above.

Data show that most of the respondents have enough number of sow to augment production of weanlings that will be fattened. From the discussion in table 12 they need to produce 151-200 heads of fatteners to consume their feed quota. Based on surveys, most of the respondents were able to achieve the parameter of 8.5 heads weaned. Therefore if they have 30 heads of sow they can produce 255 heads of weanling to be fattened. Maintaining this number of sow 31-40 is important. Thirty heads is a safe number for the reason that not all sow are productive and this number will augment mortalities.

**Table 7:** Distribution of Number of Hogs Raised for Boar

Quantity	Frequency	%
1	10	52.63
3	6	31.58
6	2	10.53
7 above	1	5.26
<b>Total</b>	<b>19</b>	<b>100</b>

Table 7 shows the distribution of boars raised by hog growers. Based on the table, 10 or 52.63 have 1 boar, six or 31.58% have 3 boars, two or 10.53% have 6 boars and one or 5.26% have 7 – above boars. Only 19 respondents answered this part because 30 of the respondents used Artificial Insemination method of breeding.

Figure shows that growers were using the new technology in breeding for their production. The used of the boars as a teaser for sow to hasten their heat period. Most of the

respondents preferred AI or artificial insemination in breeding. Artificial insemination in pigs has been used since the early 1930s, but its true development and wide commercial application in the pig industry did not take place until the 1980s (Bortolozzo, et. al., 2015). The use of pig AI was highly stimulated by the Dutch Animal Health Services and together with the public body for agriculture, large emphasis was put on the development of pig AI. Main reason was to prevent the spread of contagious diseases, since it was common practice that breeding boars were transported from one breeding farm to another breeding farm to mate sows.

**Table 8:** Distribution of Respondents According to Capital

Amount of Capital	Frequency	%
500,000- above	24	48.98
300,000-499,999	6	12.24
100,000-299,999	12	24.49
Below 100,000	7	14.29
<b>Total</b>	<b>49</b>	<b>100</b>

Table 8 shows the distribution of capitalization of respondents. Based on the table, 24 or 48.98% started with a capital of Php 500,000 above, 12 or 24.49% started with have 100,000 -299,999, seven or 14.29% started with below 100,000 and six or 12.24% started with 300,000-499,999 capital.

Most of the respondents were belong to semi-commercial operation. Considering the number of stock as defined by BAS and used for the purpose of this study are farms which satisfy at least one of the following conditions (BAS, 2011): (1) at least 21 head of adult pigs; (2) at least 41 head of grower pigs; or (3) at least 10 head of adults and 22 head of grower pigs the capitalization requirement for buying this stock will almost reach the range amount with the combination of their housing requirement.

**Table 9:** Selection of Sow Practices

	I choose sow based on::	Weighted Mean	Verbal Description
1	Having atleast six to seven pairs of properly functions tests and well space	4.40	HN
2	Having long and good body shape and ark on the back	4.51	HN
3	Has uniform width from front to rear	4.44	HN
4	Having good shape of nails	4.63	HN
5	Having strong and medium size of legs	4.10	MN
6	Choose the biggest among the litter	4.27	HN
7	Has right size and placement of genitals	4.34	HN
8	No sibling which has defect	2.39	MN
9	From to 2 <sup>nd</sup> parity or 3 <sup>rd</sup> parity of sow	4.39	HN
10	Do not undergo disease and sickness	4.12	MN
11	Second and 2 months thereafter selection	4.20	MN
12	Buying from accredited breeder farm	4.24	HN
13	From litter size of atleast 9 piglets per farrowing	4.46	HN
	<b>Average Weighted Mean</b>	<b>4.18</b>	<b>MN</b>

**Legend: 5- Highly needed (HN), 4- Moderately needed, 3- Averagely needed, 2- Minimally needed (MinN), 1-Not needed (NN)**

Table 9 shows the practices for Selection of Sow. It can be seen that Item 1 “Having a good shape of nails” got the



highest with a weighted mean of 4.63 meaning “highly needed”, followed closely by item 2 “having a long and good body shape and arc on the back with a weighted mean of 4.51 meaning “highly needed”, followed by item 3 “from a litter size of at least 9 piglets per farrowing” meaning “highly needed”. Item 8 “No sibling which has defect” got the lowest weighted mean of 2.39 which means “minimally needed”. Overall the averaged weighted mean is 4.18, meaning “moderately needed”.

Based on unstructured interviews, with the hog growers, the shape of nails needs to be pointed so that it can bend during gestation period. Having long shape and body is important for a sow specially when nursing where in piglets can have enough space; and ark on the back is important for the reason when the pregnant sow became heavier, the arc on the back tend to bend to hold the weight of the piglets.

**Table 10:** Selection of Boar Practices

	I choose based on:	Weighted Mean	Verbal Description
1	Body with uniform width from front to rear	4.65	HN
2	The heaviest at birth (1.8 and above)	4.13	MN
3	From litter with no physical abnormalities	4.61	HN
4	Masculine character and appearance	4.65	HN
5	Equal and well descended testicles	4.90	HN
6	Primary organs are clearly visible	4.81	HN
	Average Weighted Mean	4.63	HN

**Legend:** 5- Highly needed (HN), 4- Moderately needed, 3- Averagely needed, 2- Minimally needed (MinN), 1-Not needed (NN)

Table 10 shows the practices on the selection for boar. It can be seen that Item 1 “Equal and well descended testicles” got the highest weighted mean of 4.90 meaning “highly needed” followed by item 6 “Primary organs are clearly visible” with a weighted mean of 4.81 meaning highly needed. Item 2 “The heaviest at birth” got the lowest weighted mean of 4.13 meaning moderately needed. Overall the average weighted mean is 4.63 meaning “highly needed”.

Selected boars contribute 80-90% of the genetic components. Based on interviews, equal and well descended testicles of males produce sex cells or gametes or sperms. The well developed the testicles, the mare sperms they can produce. The heaviest at birth got the lowest weighted mean because this trait is hereditary, so there is a chance to increase the size of litter.

**Table 11:** Frequency for facilities requirements

	I used Facilities/ Equipment like:	Weighted Mean	Verbal Description
1	Separate housing for sow and fattening	4.53	HN
2	Right decision of roofing	4.45	HN
3	Gestating pen	4.49	HN
4	Farrowing cage	4.67	HN
5	Brooder or heat lamp	4.71	HN
6	Flat deck	4.51	HN
7	Pen for grower and finisher	4.63	HN
8	Tunnel Ventilation	1.55	NN
9	Nipple Drinker	4.69	HN
10	Blower	1	NN

11	Wallowing pool	1	NN
12	Water sprinkle	1.88	NN
13	Building Insulator	2.98	AN
14	Flooring with ideal slope	4.65	HN
15	Appropriate floor area for the pig	4.55	HN
16	Having hospital pen	4.27	HN
17	Use of Automatic feeder	2.67	AN
18	Installation of thermometer	2.45	AN
	Average Weighted Mean	3.54	MN

**Legend:** 5- Highly needed (HN), 4- Moderately needed, 3- Averagely needed, 2- Minimally needed (MinN), 1-Not needed (NN)

Table 11 shows the practices for facilities needed. It can be seen that Item 5 “brooder of heat lamp” got the highest weighted mean of 4.71 meaning “highly needed”, followed closely by item 2 “Nipple Drinker” with a weighted mean of 4.69 meaning “highly needed, followed closely by item 4 “Farrowing cage” with a weighted mean of 4.67 meaning “highly needed”. There are two items with lowest weighted mean of 1, “blower” and “wallowing pool” which mean “not needed”. Overall the average weighted mean is 3.54 “moderately needed”.

Based on interviews, growers considered the use of brooder lamp as the most important facility to lessen the mortality of piglet especially during rainy days. Second important facility is the use of nipple drinker because pigs always need water to avoid stress. Augenstein, M.L. et. al. (1997) stated that water is the most important nutrient for pigs. Water makes up about 80% of the pig's body at birth and 50% of the market hog's body. Third consideration is the use of farrowing cage to lessen the mortality of the piglets. Some other item like right design of roofing, gestating pen, flat deck, pen for grower and finisher, flooring with ideal slope, appropriate floor area for pigare also considered as “highly needed”. *Thompson et al., (2002)* Management and quality of facilities in each system will determine the pigs’ comfort. Every type of housing system must provide conditions that are conducive to comfort, good health, growth and performance at all stages of the pig’s life. This means that hog growers should provide these kinds of facilities to assure the growth and health of their animal which will definitely mean that this business needs high financing. To ensure the health and growth of hogs they must be placed in a housing unit with right design which is suited for their age and needs.

**Table 12:** Distribution of Respondents on Feeding Practices

Frequency Practice	Suckling		Fattening		Sow		Boar	
	f	%	f	%	f	%	f	%
Dry	39	79.59	43	87.76	33	67.35	16	84.21
Wet	8	16.33	1	2.04	11	22.45	3	15.79
Mixed	2	4.08	5	10.20	5	10.20	0	-
<b>Total</b>	<b>49</b>	<b>100</b>	<b>49</b>	<b>100</b>	<b>49</b>	<b>100</b>	<b>19</b>	<b>100</b>

Table 12 shows the feeding practices for suckling of growers. Based on the table, 39 or 79.59 of the respondents use dry feeding, eight or 16.33% use wet feeding and two or 4.08% use Mixed feeding. For feeding practices in fattening. 43 or 87.76% use dry feeding, five or 10.20% use Mixed and one or 2.04% use wet feeding. The practices for feeding sow. Based on the table, 33 or 67.35 use dry, 11 or 22.45% use wet and, five or 10.20% used mixed. And lastly, the

feeding practice for boar the table showed 16 or 84.21% use dry and 3 or 14.79% used wet and no grower used mixed.

Figure shows that growers use dry feeding for their suckling. The feed represent over 65% of production costs, so should be established as a priority. It is not enough that a diet meets the nutritional needs of pigs, the ration formulation must right with official regulations governing each country for the use and manufacture of feed. Also, the feed should be easy to preserve and supplying, taking into the wide variety to installations (feeders and drinkers) used in various stages of pigs. (Garcia, Contreras A.C., et. al. 2012).

These imply that respondent commonly used dry feeding their hogs. Dry feeding is also used to avoid spoilage and it is easy to manage. Most of the farms do not have feeders especially for gestating stalls. Hogs are fed directly on the floor so that after eating they can be easily cleaned with water. Therefore no feed remains, thus no rats and other insects that might bring harmful disease to hogs go to the pens.

**Table 13:** Distribution of Respondents on Frequency of Feeding

Frequency of feeding	Suckling		Fattening		Sow		Boar	
	f	%	f	%	f	%	f	%
Twice	19	38.78	26	53.06	38	77.55	46	93.88
Thrice	8	16.33	9	18.37	9	18.37	3	6.12
Alibitum	22	44.98	13	26.53	-	-	-	-
Restricted	-	-	1	2.04	2	4.08	-	-
<b>Total</b>	<b>49</b>	<b>100</b>	<b>49</b>	<b>100</b>	<b>49</b>	<b>100</b>	<b>49</b>	<b>100</b>

Table 13 shows the frequency of feeding suckling. Based on the table, 22 or 44.98% use Adlibitum 19 or 38.78% feed twice a day, eight or 16.33% feed thrice a day; and no respondents answered restricted.

For the frequency of feeding for fatteners, 26 or 53.06% feed twice a day, 13 or 26.53% use adlibitum, 9 or 18.37% feed thrice a day and one or 2.04% use restricted feeding.

For the frequency of feeding for sow. Based on the table, 38 or 77.55% feed twice a day, nine or 18.37 feed thrice a day and two or 4.08 used restricted feeding an no respondents answered Adlibitum.

For the frequency of feeding boar. Based on the table, 46 or 93.88 feed twice a day and three or 6.12 % feed thrice, and no respondents answered for Adlibitum and Restricted feeding.

Table show that feeding their suckling is adlibitum. Based on unstructured interviews, growers preferred feeding on a continuous basis so that smaller pigs can have access on food always especially when there are many piglets in the pen. Based on growers' experience piglets fed adlibitum tend to grow fast and at almost the same size.

It is also shown in the data shows that the common practice of feeding fatteners ,sow and boars is twice which is in the morning and afternoon. Growers believes this practice result to more lean meat. It is known to grower that pigs have maximum feed intake per day and any excess intake will

become waste. The maximum amount of feed intake is divided into two and given to the pig in the morning and afternoon.

Growers believe that sow should become overweight. They are fed twice a day on the same hours to develop eating habits. The maximum amount of feed intake for a sow should be not more than 2kilos per day. The diet should meet the nutritional needs of the pigs and fit the purpose for which it is being fed maintenance, growth, and reproduction or lactation.

According to National Pork Board of USA, boars allowed access to free-choice feed would become obese. Restriction of feed intake is recommended for boar's optimal health and welfare. Based on interviews, growers feed their boar twice to avoid increase of fat.

**Table 14:** Table of Feed Used

Brand	Frequency	%
Home made	4	8.16
Commercial	45	91.84
<b>Total</b>	<b>49</b>	<b>100</b>

Table 14 shows the type of feed used by growers. Based on the table 45 or 91.84% use commercial brand and four or 8.16% have their own formulation.

These imply that most of the growers preferred commercial feed that is available to market. Based on unstructured interviews most of the respondents preferred commercial feed because aside from being more convenient to use, they can avail of financial credit, and they lack knowledge in formulating feeds. According to National Pork Board in USA "the diet should meet the nutritional needs of the pigs and fit the purpose for which it is being fed (i.e., maintenance, growth, reproduction or lactation)". A grower should have knowledge in diets of animal at each stage of production. Lack of knowledge of feed stuff and right measurements of nutrients to formulate their own mixture in the reason why only few grower make their feed formulation.

**Table 15:** Frequency of Brand of Commercial Feed

	Method	Frequency	%
1	Bmeg	9	20
2	Purnia	3	6.67
3	Selecta	2	4.44
4	Legend	2	4.44
5	Pigrolac	7	15.56
6	Mayo's	2	4.44
7	Agri- Chexer	1	2.22
8	Ace	12	26.67
9	Atlas	1	2.22
10	Philmico	4	8.89
11	Jester	1	2.22
12	Bounty Fresh	1	2.22
	<b>Total</b>	<b>45</b>	<b>100</b>

Table 15 shows the distribution of commercial feed used by respondents. It can be seen that Item 8 "Ace" got the highest frequency with 12 or 26.67% number of respondents, followed by item 1 "BMEG" with frequency of nine or 20% of the total respondents.

Based on the interviews conducted, respondents chose ACE as brand because they are given big discounts per bag of feeds. It has been proven by growers that ACE has good feed conversion ratio. BMEG ranks second because among the well known feeds like Philmico, Pigrolac, and ACE, it has the lowest retail price in the market.

**Table 17: Manner of Breeding Practices Used**

Method	Frequency	%
Artificial Insemination	30	61.22
Natural	13	26.53
Mixed	6	12.24
<b>Total</b>	<b>49</b>	<b>100</b>

Table 17 shows the breeding practices used by hog growers. Based on the table, 30 or 61.22% use Artificial method, 13 or 26.53% used natural method, six or 12.24% used mixed.

Data shows that growers prefer artificial insemination as breeding method. (Whittemore, 1998) cited that it is no longer remarkable for all mating to be AI and the only boars on the breeding unit to be “teaser” to help identify sows in estrus and chasers’ to mate recalcitrant females. Whittemore and (Kyriazakis, 2006) also stated that artificial insemination (AI) was used mostly in genetic programs, but now is normal commercial practice in many herd, as well as helping to extend the boar base and to handle peaks of boar requirement. Base on unstructured interviews, the main reason for using AI method is it is more convenient. They can also prevent the transmission of diseases and avoid injury to the sow during mating. For commercial farms, both method is used because the number of boar raised is not enough to accommodate the number of sow.

**Table 18: Type of Breed Raise for Sow**

Breed	Frequency	%
Landrace	-	-
Largewhite	-	-
Durok	-	-
Petrain	-	-
Humpires	-	-
Berkshire	-	-
Combination of Landrace and Largewhite	35	83.33
Crossbreed	7	16.67
<b>Total</b>	<b>49</b>	<b>100</b>

Table 18 shows the distribution of breeds raised for sow of the growers. Based on the table, 35 or 83.33% of the respondents used landrace or large white as breeder and seven or 16.67% used crossbreed as their sow.

Figure shows that growers prefer landrace and large white as breed for sow. The large white pig is a breed particularly appreciated by breeders because it combines very good maternal qualities with equally interesting fattening abilities without showing any noticeable defects. It is an early and prolific breed that produces an average of 24.9 piglets per sow per year. In addition, it has a good growth behavior (a young neutered male reaches 100 kilograms in 145 days) and consumption rate. (Laguardia, F. 2012).

**Table 18: Type of Breed Raise for Boars**

Breed	Frequency	%
Landrace	9	21.43
Largewhite	7	16.67
Durok	19	45.23
Petrain	7	16.67
Humpires	-	-
Berkshire	-	-
<b>Total</b>	<b>42</b>	<b>100</b>

Table 19 shows the distribution of breed raised for boar of hog growers. Based on the table, 19 or 45.23% chose Durok, nine or 21.43% choose landrace, seven or 16.67% for both Petrain and Largewhite.

Figure shows that growers chose durok as breed because of the characteristics that can be inherited. National Agriculture Extension and Research cited some characteristics of Durok. It is a fast growing stock, with good meat production meaning it has ability to grow heavier in weight without depositing too much fat. This breed is well known for its hardiness and resistance to stress with lower levels of mortality. It has good crossbreeding ability.

## 5. Conclusion

The study revealed that the farm profile were mostly classified as commercial operation, had workers of 1-2 male workers, were involved in sow-weaning-fattening operation, used the traditional type of rearing system, raised 151-200 heads of fattening, 31-40 sow level, 151-200 heads of suckling, and 1 boar. Most of the respondents had a capital of more than 500,000. Most of the hog growers select sow based on having a strong and medium size of legs, having a long and good body shape and ark on the back, from a litter size of at least 9 piglets per farrowing; has uniform width from front to rear; having at least six to seven pairs of properly function teats and well space, from second to 3<sup>rd</sup> parity of sow, has right size and placement of genitals and choose the biggest among the litter. Most of the hog growers select boars based on equal and well descended testicles, primary organs are clearly visible, masculine in character and in appearance and body with uniform width from front to rear; and from litter with no physical abnormalities. On facilities requirements most of the farms provided or used brooder lamp, nipple drinker, farrowing cage, flooring with ideal slope, pen for grower and finisher, separate housing for sow and finisher; flat deck, gestating pen; hospital pen and observed right design of roofing. On feeding practices most of the farms used dry feeding for suckling, fattening, sow and boar, frequency of feeding ad libitum for suckling, and twice for fattening, sow and boar; and use Ace as the brand of commercial feed.

## 6. Future Scope

The study about the hog growers is very timely with the government campaign to boost the agricultural sector including the livestock section for food sufficiency. Giving importance to the study may result to a positive solution that may help the hog growers will be aware of the latest technology used by hog growers in the country that will improve production. Also this will open door to study the

how control diseases to ensure the profitability of each hog growers.

## References

- [1] Alawneh, J., Barnes, T.S; Parke, C.; Lapuz, E.; David E.; Basinang, V. Baluyot, A.; Villar, E.; Lopez, E.L.; Blackall, P.J. (2014)Description of the pig production systems, biosecurity practices and herd health providers in two provinces with high swine density in the Philippines. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S016758771400035X>
- [2] Augenstein, M.M. L., Johnston, L. J. , Shurson, G. C , Hawton , J. D. and Pettigrew, J. E., (1997) edition, Formulating Specific Farm Swine Diets , University of Minnesota , Retrieved from <http://www.extension.umn.edu/distribution/livestocksystems/di6496.html>,
- [3] Barroga, Antonio J., Swine Production Manual, 2012 , pp 77-79
- [4] Bortolozo, F.P. et.al, 2015, New Artificial Insemination for Swine. Retrieved from <https://onlinelibrary.wiley.com/doi/full/10.1111/rda.12544>
- [5] García-Contreras AC, De Loera Ortega YG, Yagüe AP , Guevara González JA y García Artiga C. (2012) Feeding Practices for Pig. Retrieved from [https://d1wqtxts1xzle7.cloudfront.net/50015320/Alimentacion\\_practica\\_del\\_cerdo-with-cover-page-v2.pdf?Expires=1648203923&Signature=RxIz0JqEwzU-LnfK6JXwtttQd9d~HFM3pVXrBcU~7gWHIyOWxKdX3qaTI8RxGwlfNAZjN0~nC9LA8oO7aMugJHEUbgFSiEw2gqZcvIXIHfLtmWTIeq48jGDBXuck4p0~kGlcAtxDyE7~Ak5S2mWp2Y3nNjiTppcQw~1X1xPVA2~4CFh0qNAH17SIGDnEnCuyk8tKtilhtqeYOwzR~6TJ6UUya94T7UUTO~4bzyOTcSpN4PHToZgLNx0v8vhtNpsN8TWC-t6OawsGdew4jXDzJ2fX2Y2Q1GafAEHfE62N~2AbONx5p-3zQwWPf~bREw6sxa2ULfALxZQRUECMk~Xw\\_\\_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA](https://d1wqtxts1xzle7.cloudfront.net/50015320/Alimentacion_practica_del_cerdo-with-cover-page-v2.pdf?Expires=1648203923&Signature=RxIz0JqEwzU-LnfK6JXwtttQd9d~HFM3pVXrBcU~7gWHIyOWxKdX3qaTI8RxGwlfNAZjN0~nC9LA8oO7aMugJHEUbgFSiEw2gqZcvIXIHfLtmWTIeq48jGDBXuck4p0~kGlcAtxDyE7~Ak5S2mWp2Y3nNjiTppcQw~1X1xPVA2~4CFh0qNAH17SIGDnEnCuyk8tKtilhtqeYOwzR~6TJ6UUya94T7UUTO~4bzyOTcSpN4PHToZgLNx0v8vhtNpsN8TWC-t6OawsGdew4jXDzJ2fX2Y2Q1GafAEHfE62N~2AbONx5p-3zQwWPf~bREw6sxa2ULfALxZQRUECMk~Xw__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA)
- [6] Feitsma, Hanneke; (2009); Artificial insemination in pigs, research and developments in The Netherlands, a review; Acta Scientiae Veterinariae. 37 (Supl 1): s61-s71, 2009 retrieve from <https://www.redalyc.org/pdf/2890/289060015008.pdf>
- [7] Laguardia, L. (2012) Large White Pig Breed Facts and Characteristics Retrieved from <https://putakputak.com/livestock/swine/large-white-pig-breed-facts>
- [8] Mcdougall, Anthony, 2016.; Effects of size and business arrangement on the profitability of hog farrowing operations in Manitoba. Retrieved from <https://mspace.lib.umanitoba.ca/handle/1993/2502>
- [9] Muehling A. J., Curtis, S. E., R. J. Hurst, H. W. Gonyou, and A.H. Jensen, (1989). The physical space requirement of the sow. J. Anim. Sci. 67:1242-1248.
- [10] National Pork Board (2002), Swine Care Handbook, Retrieved from <http://www.antwifarms.com/docs/swinecarehandbook.pdf>, March 29, 2013, 2:00 pm
- [11] Nassaji, Hossein (2015); Qualitative and Descriptive Research: Data type versus data analysis. Retrieve from <https://journals.sagepub.com/doi/full/10.1177/1362168815572747>
- [12] Somwaru, A.; Xiaohui, Z. and Tuan, F.; (2003).China's Hog Production Structure and Efficiency. Retrieved from <https://ageconsearch.umn.edu/record/22003/>.
- [13] [13]Shapiro Leland S., Introduction to Animal Science, 2001 Prentice-Hall, Inc., Charles E. Stewart Jr., Upper Saddle River, New Jersey
- [14] Taylor, Robert E. and Field , Tomas G., Scientific Farm Animal Production and Introduction to Animal Science, 7th edition, 2001 Prentice-Hall, Inc., Upper Saddle River, New Jersey , U.S.A. page 507,213,239
- [15] Whittemore, Colin T. and Kyriazakis, Ilias 2006. Whittemore's Science and Practice of Pig Production. 3rd edition. Blackwell Science Ltd., USA
- [16] Whittemore, Colin T., (2008) Pig Production: The Scientific And Practical Principles, 1989, Longman Handbook in Agriculture, page 210.
- [17] Univet Nutritional and Animal Healthcare Company, Swine Management Learning Kit, 2008