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Adviser: Marlene B. Atinyao, Ph. D

ABSTRACT

The study was conducted to determine the effect of liquid yeast culture with plant herbal extracts as feed additive on the gain in weight, feed consumption and feed conservation ratio of pigs and to determine the profitability of raising pigs with the inclusion of Liquid Yeast Culture with Plant Herbal Extracts to the diets. This was conducted at Banig, Tawang, La Trinidad, Benguet from November 2011 to January 2012.

A total of ten 74 day old pigs were divided into two treatments. Each treatment was replicated five times with one pig serving as replicate. The treatments used were without Liquid Yeast Culture with Plant Herbal Extracts additive to their diets and with Liquid Yeast Culture with Plant Herbal Extracts additive to their diets.

Results revealed that adding Liquid Yeast Culture with Plant Herbal Extracts to the pig's diet had increased the gain in weight, however, it did not improved nor reduced the feed intake and feed conversion ratio as revealed by no significant differences between treatment means. The average total gain in weights, daily gain in weights, feed intake and feed conversion ratio of the pigs given diets with feed additive were 62.10 kg, 0.96 kg, 166

kg and 2.70, respectively compared to the pigs without the inclusion of Liquid Yeast Culture with Plant Herbal Extracts to their diet with a mean of 53.80 kg, 0.83 kg, 154.04 kg and 2.96 for the total gain in weights, daily gain in weights, feed intake and the ability of pigs to convert to nutrients in the feed to a unit gain in weight.

The pigs given diet with feed additive had a higher return on investments of 18.50% while 11.35% for the pigs given diet without the inclusion of Liquid Yeast Culture with Plant Herbal Extracts. The higher returns obtain from pigs given diet with feed additive was a direct result of higher gross sales and net income of the individual pigs from each treatment because of the higher gin in weights.

INTRODUCTION

Proper nutrition, health care, and good management practices contribute a lot to a successful piggery operation. PCCARD (2005) claimed that a well-nourished pig grows faster, attains market weight earlier and is more efficient in feed utilization, more resistant to diseases and stress, more prolific and has better mothering ability.

The current practice in ration formulation is to add non-nutritive substances referred to as feed additives. Feed additives are materials that are non-nutritive substances added in small amounts in rations to improve feed efficiency, promote faster gains, improve animal health, or increase production of animal products (Gillespie, 2002). They are often added to the basic feed mix and require careful handling and mixing.

One of the products that can be used as feed additives as recommended by the manufacturer is a Liquid Yeast Culture with Plant Herbal Extracts. Liquid Yeast Culture with Plant Herbal Extracts is a liquid yeast culture rich in fermentation metabolites and herbal extracts composed of organic acids and organic minerals. According to the manufacturer, Liquid Yeast Culture with Plant Herbal Extracts function is to protect the animal's digestive system from the harmful effects of toxins, parasites, and bacterial pathogens whether they are in water or in feeds. Liquid Yeast Culture with Plant Herbal Extracts unique combination of yeast/phototrophic culture and herbal extracts keeps the digestive system healthy for optimum absorption of feed nutrients. Ammonia emissions are dramatically reduced resulting in minimal upper respiratory challenges thus lowering antibiotics cost.

On the premise that feeds are complete in macro and micro nutrients, the use of Liquid Yeast Culture with Plant Herbal Extracts gives us the confidence to reduce the use of supplements to a minimum. Farms at lowland areas using the Liquid Yeast Culture with Plant Herbal Extracts reported increased livability of over 1%, decreased average harvest age, improved feed conversion ratios, and decreased use of supplements. All of the above logically results in better profits.

The manufacturer claimed characteristics of Liquid Yeast Culture with Plant Herbal Extracts which make the product economically viable when used in feeds or in water are as: probiotic, prebiotic, acidifier, metabolic activity enhancer, ammonia odor suppressant, immunity enhancer and as anti-parasitic agent. Liquid Yeast Culture with Plant Herbal Extracts has been successfully used in broiler, swine, cattle fattening and layer farms in lowland areas.

The study was conducted to verify whether using Liquid Yeast Culture with Plant Herbal Extracts as feed additives will be productive under highland condition. Furthermore, to find out whether Liquid Yeast Culture with Plant Herbal Extracts will really decrease the foul-smell of the animal's manure while promoting growth. Reduced fecal-odor will help alleviate pollution problem and will benefit not only animal raisers but also the surrounding community.

The result of the study will add to the post of knowledge in swine nutrition. Information generated from the study can be used by researchers, swine producers and students alike.

The experiment generally aimed to verify the effect of Liquid Yeast Culture with Plant Herbal Extracts as feed additives on the growth performance of growing-finishing pigs under highland condition. Specifically, it aimed to:

1. determine the effect of Liquid Yeast Culture with Plant Herbal Extracts as feed additives on gain in weight, feed consumption, and feed conversion ratio of pigs;

2. determine the profitability of raising pigs with Liquid Yeast Culture with Plant Herbal Extracts as feed additives; and

The study was conducted from November 2011 to February 2012 at Banig, Tawang, La Trinidad, Benguet.

REVIEW OF LITERATURE

Probiotic

Probiotics are beneficial microorganism (mainly lactic acid producing bacteria and yeast combinations) added to rations to improve the intestinal microbial balance of the animal (PCCARD, 2005). These bacteria exert their beneficial effects through "competitive exclusion" and lactic acid production. In addition to competitive exclusion is reduction in gut pH, which makes the intestinal environment unfavorable for certain pathogenic bacteria. There has also been increasing evidence that an acidic environment is conducive to increased enzymatic activity within the digestive system that leads to improved production performance (PCCARD, 2002).

Extensive investigation and research have been carried out on those probiotics approved for use and their benefits as stated by Sainsbury (1998) may be summarized as follows: (a) probiotics can promote growth and productivity in livestock in a natural way; (b) it may protect against salmonella infections; (c) it can protect against toxins produced by harmful forms of E. coli; (d) it stimulate immunity to infections by boosting interferon production, immunoglobin concentration and macrophage activity; (e) probiotic suppress clostridial infection which are often associated with intensive livestock production.

Over the last 10-15 years, probiotics have been proposed as an alternative to antibiotics (Jensen, 2010). On the other hand, Alberta and Close (2010) said that unlike antibiotics, probiotics introduce live beneficial bacteria into the intestinal tract. Accordingly, several authors have assessed the efficacy of probiotics as growth promoters for pigs. Most concluded that when results are averaged over several trials, there is an improvement in growth rate and in the efficiency of feed utilization. However, the results

are highly variable. The effects of the probiotics may be more consistent and positive in piglets than in growing-finishing animals. Kim *et al.* (2001) as cited by Stein (2011) claimed that supplementation of probiotics improved average daily gain and feed efficiency in finishing pigs.

Result from university studies and commercial farm trials have reported significant improvement in weight gain, feed conversion ratio in swine supplemented with probiotics (PCCARD, 2002).

Prebiotics

Prebiotics are non-digestible food substances that selectively stimulate the growth of favorable species of bacteria in the gut, thereby benefiting the host (Jacela *et al*., 2009).

Common examples of prebiotics used in research or on farms include oligosaccharides oligofructose, fructooligosaccharide (FOS), mannanoligosaccharides (MOS), dietary fibers and inulin. Oligosaccharides have been claimed as beneficial nutritional modifiers for monogastric farm animals and modify the balance of the microbial population by promoting the growth of beneficial bacteria and thereby provide healthier animals (McDonald *et al*., 2002).

Certain dietary fibers have shown to improve intestinal secretions and growth of the digestive mucosa (Mateos *et al*., 2000) and a number of different fiber fractions have been tested for their ability to enhance pig growth and suppress pathogenic bacteria colonization. The mode of action of the dietary fibers is believed to depend on the specific fraction in question readily fermentable non-digestible oligosaccharides (e.g. fructo-oligosaccharide, galacto-oligosaccharide, and Transco-galactosaccharides) are believed to improve pig performance by stimulating the proliferation of Bifidobacteria in the large

intestine, which in turn reduces colonic pH and increases the concentration of lactic acid (Houdijk *et al*., 2002).

Acidifier

Acidifiers are made of organic acid or mixture of organic acids incorporated in the ration. They exert their effect on the gastrointestinal environment by lowering the stomach pH. Low stomach pH prevents the growth band proliferation of pathogenic microorganisms, thus promoting better feed efficiency (PCCARD, 2000).

A recent report summarizing several studies on acidifiers indicated that, in general they appear to improve pig growth performance. However, the magnitude and consistency of the response may vary, depending on inclusion rate and other dietary factors. The exact mode of action of acidifier has not been fully elucidated. However, acidifiers are commonly marketed as growth promoting products and as alternatives for in feed antibiotics (Jacela *et al*., 2009).

The inclusion of organic acids in diets fed to weanling and growing pigs has been reported in numerous papers (Stein, 2011). Although the exact modes of action of organic acids are not clear, their addition to pig diets has proved beneficial in terms of nutrient digestibility, growth and conversion efficiency. This is particularly for newly weaned pigs, when coupled with good feeding management procedures. Organic acids that have shown positive effects on growth performance in weaned pigs include citric, formic, fumaric, and propionic acids (McDonald *et al*., 2002).

Organic acids are generally less effective in grower –finisher diets than in weaner diets although they show beneficial effects depending on choice of acid and particular farm circumstance (Mroz, 2003) as cited by Miller (2007).

Anti-parasitic Agent

Plant extracts and essential oil have been exploited in animal nutrition, partially for their antimicrobial, anti-inflammatory, anti- oxidative and anti-parasites properties (Namkung *et al*., 2004).

Plant extracts and spices as single compounds or as mixed preparations can play a role in supporting both performance and health status of the animal (Manzanilla *et al*., 2001). Beneficial effects of herbal extracts or active substances in animal nutrition may include stimulation of appetite and feed intake, the improvement of endogenous digestive enzyme secretion, activation of immune response and antibacterial, antiviral, antioxidant and anthelminthic actions (Rahimi *et al*., 2011).

In monogastric species, the main effects of yeast supplementation are stimulation of brush border disaccharides, anti-adhesive effect against pathogens, stimulation of a specific immunity, toxin action inhibition and antagonistic effect against pathogenic micro-organisms (Auclair, 2001).

In nursery pig, yeast products have shown to improve the growth performance and health.Positive performance responses to the inclusion of yeast in diets fed to weanling pigs have been reported (Matthew *et al*., 1998).

Immunity Enhancer

Yeast metabolites have newly been introduced in swine diets. Yeast metabolites are also called yeast culture that includes concepts of both probiotics and prebiotics (Asian-Australian Association of Animal Production Societies, 2010). According to Islam *et al*. (2007), yeast culture are not fed as a source of live or viable yeast cells, but as a nutrition supplement to provide undefined fermentation factors which are recognized to stimulate bacterial growth in the digestive tract. These fermentation factors sometimes referred to as "nutrilites", added to be heat stable and are not significantly affected by high temperature or pelleting.

The growth of beneficial bacteria like Lactobacili and Bifidobacteria, is enhanced by Manna oligosaccharide (MOS) and fermentation metabolites. Likewise, the proliferation of bad bacteria is impaired due to the presence of MOS in yeast and competitive exclusion. The activation of intestinal immunity also reduces the effect of pathogenic bacteria (Agriculture Business Week, 2009).

Another claim often made of phylogenic/botanical feed additives is stimulation of immune functions; however, the specific experimental verification in monogastric agricultural livestock is rather limited (Windisch *et al*., 2007).

MATERIALS AND METHODS

The study was conducted using ten (10) Hampshire x Landrace crosses, Uno commercial feeds, weighing scale, Liquid Yeast Culture with Plant Herbal Extracts, sugar, water, pigpens, self-feeders, nipple drinkers and recording materials.

Upon arrival of the piglets, they were reared for 30 days for them to adjust in the new weather and management before the study had started. They were fed with starter feeds until they have reached the weight ranging 19.30 kg-94 kg. At 74 days of age, before distributing them to the pigpens individually the experimental animals were weighed to obtain their initial weights. They were grouped into two treatments following the Completely Randomized Design (CRD). Each treatment was replicated five times with one pig serving as replicate. The treatments were as follows:

$T_{0=}$ Without Liquid Yeast Culture and plant Herbal Extracts Additive

$T_{1=}$ With Liquid Yeast Culture and Plant Herbal Extracts Additive

Analysis of Liquid Yeast Culture with Plant Herbal Extracts according to Gallali IZW Farm Products (2010) are the following: Yeast 370.000 per gram; Phototrophic 13.000 per gram; Ph 4.0-5.0; Ca 422 Mg/L; P 100 Mg/L; K 429 Mg/L; Mg 149 Mg/L; Fe 41 Mg/L; Mn 1.4 Mg/L; Se 0.0002 Mg/L; Cu 0.07 Mg/L and other traces minerals.

Liquid Yeast Culture and plant Herbal Extracts as a feed additive was mixed thoroughly. The dosages were as follows:

Feeds	Water	Sugar	Liquid Yeast Culture with Plant Herbal Extracts
1kg	2ml	1/8 teaspoon for 250 ml water	1 ml

The Liquid Yeast Culture with Plant Herbal Extracts was added to the 2ml water and was sprayed into the feeds. The addition of sugar was done for better uniformity of mixing the Liquid Yeast Culture with Plant Herbal Extracts to the feeds.

All of the experimental animals were subjected to the same care and management except for the kind of ration that was offered to them. The feeding regime was done for 65 days. Feeding was done *adlibitum*. Self-feeders were provided wherein feeds was available all the time on it. Nipple drinkers were provided also to ensure adequate drinking water for the animals.

To help maintain good health of the pigs, hygiene and sanitation were maintained to avoid the occurrence of diseases. Cleaning was done every day to protect the pigs from illness.

The following data were gathered:

1. Initial weight. This was taken by weighing the experimental animal at 74 days of age.

2. Final weight. This was taken by weighing the hogs at 139 days of age.

3. Amount of feeds offered. This was determined by weighing the feed offered to the swine from the start of the experiment until the end of the experimental period.

4. Amount of feed leftover. This was determined by weighing of spilled/wet/refused feed.

5. Cost of inputs. This was determined by recording all the expenses to be used in the study.

From the above observation, the following were computed:

1. Feed intake consumption

a. Total feed intake (TFI). This was determined using the formula

TFI = amount of feed offered- amount of feed leftover

b. Average Daily feed intake (ADFI). This was determined using the formula:

DFI = total feed intake/ number of days of the experiment

2. Gain in Weight

a. Total gain (TG). This was determined based on the formula:

TGW = final weight – initial weight

b. Average daily gain in weight (ADG). This was determined using the formula:

DGW = total gain in weight/ number of days of the experiment

3. Feed conversion ratio (FCR). This was determined based on the formula:

$$FCR = \frac{\text{Feed intake}}{\text{Total gain in weight}}$$

4. Feed cost/kg gain. This was determined using the formula:

Feed cost/kg gain = FCR x feed cost per kilogram of feed

5. Return on investment. This was determined using the formula:

$$ROI = \frac{\text{Gross Sales-Total Expenses}}{\text{Total Expenses}} \times 100$$

RESULTS AND DISCUSSION

Body Weights of the Pigs

The initial and final weights of the pigs used in the study are shown in Table 1. Statistical analysis showed no significant differences in the two treatments in the initial weights of the pigs at 74 days of age. The average initial weight of the pigs given diets with Liquid Yeast Culture with Plant Herbal Extracts additive was 23.50 kg while the pigs given diets without Liquid Yeast Culture with Plant Herbal Extracts additive was 23.80 kg .This means that experimental animals were more or less the same weight at start of the study.

Likewise, there were no significant differences observed between treatment means in the final weights taken at 139 days of age. The average final weight obtained from pigs given diets with Liquid Yeast Culture with Plant Herbal Extracts additive was 85.60 kg and 77.60 kg from the pigs fed without Liquid Yeast Culture with Plant Herbal Extracts additive.

Table 1. Average initial and final weights of pigs

TREATMENT	INITIAL WEIGHT AT 74 DAYS OF AGE (kg)	FINAL WEIGHT AT 139 DAYS OF AGE (kg)
Without Liquid Yeast Culture and Plant herbal Extracts Additive	23.804[a]	77.600[a]
With Liquid Yeast Culture and Plant herbal Extracts Additive	23.500[a]	85.600[a]

Means with the same letter are not significantly different at 5% level DMRT

The result of the study implies that the inclusion of Liquid Yeast Culture with Plant Herbal Extracts to the pig diets did not adversely affect nor improved the final weight of

the pigs. However, there was a tendency to be significant at (Pr= 0.08). It is possible that significant difference may be observed with more replicates.

Feed Consumption of the Pigs

Presented in Table 2 is the total and daily feed intake of the pigs raised from 23.50 kg 85.60 kg for 65 days.

Statistical analysis revealed that no significant differences were observed on the feed consumption of the animals. This implies that addition of Liquid Yeast Culture with Plant Herbal Extracts to the pig's diet did not reduced nor improved the appetite or feed consumption of the animals. The average total feed intake in 65 days for the pigs without Liquid Yeast Culture with Plant Herbal Extracts additive was 154.04 kg compared to the pigs given diet with Liquid Yeast Culture with Plant Herbal Extracts additive with a mean of 166.65 kg.

Table 2. Average total and daily feed intake of pigs

TREATMENT	TOTAL FEED INTAKE FOR 65 DAYS (kg)	DAILY FEED INTAKE FOR 65 DAYS (kg)
Without Liquid Yeast Culture and Plant Herbal Extracts Additive	154.04[a]	2.37[a]
With Liquid Yeast Culture and Plant Herbal Extracts Additive	166.65[a]	2.56[a]

Means with the same letter are not significantly different at 5% level DMRT

The daily amount of feeds consumed by the pigs to gain weight has a mean of 2.37 kg for the pigs given a diet without Liquid Yeast Culture with Plant Herbal Extracts additive while pigs given a diet with Liquid Yeast Culture with Plant Herbal Extracts

additive was 2.56 kg. The result of the study collaborates with the study conducted by Kritas and Morrison (2010) where they observed no difference in the average daily feed intake of the pigs given probiotics even though they had start it with weanlings.

Gain in Weights of the Pigs

The total and average gains in weights of the pigs raised from 23.50 kg to 85.60kg for 65 days are shown in Table 3. It reveals that there are significant differences between the treatments, statistically. This means that the gain in weights of the pigs in the treatments were not homogenous. The total gain in weight and average daily gain in weight of the pigs given diets without Liquid Yeast Culture with Plant Herbal Extracts additive has a mean of 53.80 kg and 0.83 kg, respectively. On the other hand, the pigs given diets with Liquid Yeast Culture with Plant Herbal Extracts additive have a mean of 62.10 kg and 0.96 kg for total gain in weight and daily gain in weight, respectively.

Table 3. Average total and daily gain in weight of pigs

TREATMENT	TOTAL GAIN IN WEIGHTS (kg)	AVERAGE DAILY GAIN IN WEIGHTS (kg)
Without Liquid Yeast Culture and Plant Herbal Extracts Additive	53.79[a]	0.83[a]
With Liquid Yeast Culture and plant herbal Extracts additive	62.10[b]	0.96[b]

Means with the same letter are not significantly different at 5% level DMRT

The result of the study indicates that the inclusion of Liquid Yeast Culture with Plant Herbal Extracts to the pig diets improves the gain in weight or had a better growth performance. The components of the Liquid Yeast Culture with Plant Herbal Extracts such as organic acids and minerals have stimulated the higher gain in weights of the pigs.

The result of the study agrees to Alberta and Close (2010) who stated that supplementing or adding probiotics (which is one of the claimed characteristics of Liquid Yeast Culture with Plant Herbal Extracts) to pig's diet can improves the growth rate of pigs. However, he added that probiotics may be more consistent and more positive in piglets than in growing-finishing animals. Likewise to Stein (2011) who stated that supplementation of probiotics improves average daily gain of pigs particularly weanlings. The results also confirm the claims of the manufacturer of Liquid Yeast Culture with Plant Herbal Extracts that adding it to livestock or poultry diet could result to faster growth rate.

Feed Conversion Ratio and
Feed Cost per Kilogram Gain in Weight

Table 4 presents the feed conversion ratio (FCR) of the pigs. No significant differences were observed between the treatments as revealed by the statistical analysis. Feed Conversion Ratio or the ability of the animals to convert feed into gain was determined by dividing the total feed consumption by the total gain in weights of the pigs. The pig given diets with Liquid Yeast Culture with Plant Herbal Extracts additive has a Feed Conversion Ratio 2.72 while 2.96 for the pigs given diets without feed additive.

Table 4. Feed conversion ratio and feed cost per kilogram gain in weights of pigs

TREATMENT	FEED CONVERSION RATIO	FEED COST/ KG GAIN (Php)
Without Liquid Yeast Culture and Plant Herbal Extracts Additive	2.96[a]	64.368
With Liquid Yeast Culture and plant herbal Extracts additive	2.72[a]	57.312

Means with the same letter are not significantly different at 5% level DMRT

This result indicates that the inclusion of Liquid Yeast Culture with Plant Herbal Extracts to the swine diets raised from 23.50 kg to 85600 kg did not improved nor decreased the efficiency of the swine to convert nutrients in the feeds into a unit of gain in weight or animal product. This is not consistent with the findings shown in Table 3 where the result was significantly different because higher gain in weight was obtained from the pigs given diet with feed additive. However, it is consistent with the result on the feed intake of the animals shown in Table 2 where there is no difference between the two treatments because both of the pigs given diets with feed additive and pigs given diets without feed additive have consumed almost same amount of feeds.

The results of this study did not support the conclusion of PCCARD (2002) that the use of probiotics (one component of Liquid Yeast Culture with Plant Herbal Extracts) as feed supplement improves the feed conversion ratio of swine.

Furthermore, the result also of the study did not support the claims of Stein (2011) who stated that addition of organic acid (one component of Liquid Yeast Culture with Plant Herbal Extracts) to pigs diets can improved conversion efficiency but are generally less effective in grower-finisher diet .The difference may be attributed to the age of the experimental animals used .

The average feed cost to produce a kilogram gain is also shown in Table 4. Cost was based on prevailing price during the conduct of the study. The addition of Liquid Yeast Culture with Plant Herbal Extracts to swine diets incurred the cheaper feed cost to produce kilogram gain in weight with a mean of Php57.31 as compared to the pigs given diet without the inclusion of Liquid Yeast Culture with Plant Herbal Extracts with a mean of

Php64.368. The cheaper cost of feeds for the pigs with feed additive was a direct result of the better efficiency of the pigs to convert feed into body gain in weight.

Return on Investment

Table 5 presents the return on investment (ROI) of the pigs. This was taken by subtracting the total cost of production from the sales of the pigs. Cost of expenditures was based on the prevailing prices during the conduct of the study. The cost per kilogram of the pig was based on the live weight Php120.00 per kilogram and 24.00 per kilogram for the feeds. The total cost of production includes: housing, medication, water and electricity, feeds, labor, repairs and maintenance and miscellaneous.

Table 5. Return on investment

TREATMENTS	GROSS SALES (Php)	TOTAL EXPENSES (Php)	NET INCOME (Php)	ROI (%)
Without Liquid Yeast Culture and Plant Herbal Additive	9,312.00	8,135.762	1,172.862	11.35
With Liquid Yeast Culture and Plant Herbal Extracts Additive	10,270.00	8,348.950	1,923.010	18.50

Giving pig Liquid Yeast Culture with Plant Herbal Extracts as feed additive resulted in higher average return on investment of 18.50 % compared the pigs given diet without the inclusion of Liquid Yeast Culture with Plant Herbal Extracts with an average ROI of 11.35% .The higher returns obtain from pigs given diet with feed additive was a direct result of higher gross sales and net income of the individual pigs from each treatments because of higher gain in weight.

Other Observations

During the carcass evaluation of the animals used in the study, it was observed that the pigs given diet with Liquid Yeast Culture with Plant Herbal Extracts additive have a lesser fecal odor (one of the claimed characteristics of the Liquid Yeast Culture with Plant Herbal Extracts which is ammonia odor suppressants) compared to those pigs without feed additive. Furthermore, the fecal color in the intestines of the pigs given diets with feed additive when it was cleaned was brownish while it was black for the pigs given diets without Liquid Yeast Culture with Plant Herbal Extracts additive.

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The study was conducted to verify the effect of liquid yeast culture with plant herbal extracts as feed additive on the growth performance of growing pigs under highland condition and to determine the profitability of pigs with the inclusion of liquid yeast culture with plant herbal extract.

A total of ten 74 day old pigs were divided into two treatments. Each treatment was replicated five times with one pig serving as replicate. The treatments used were without Liquid Yeast Culture with Plant Herbal Extracts additive to their diets and with Liquid Yeast Culture with Plant Herbal Extracts additive to their diets.

Results showed that adding Liquid Yeast Culture with Plant Herbal Extracts to the pig's diet had increased the gain in weight, however, it did not improved nor reduced the feed intake and feed conversion ratio as revealed by no significant differences between treatment means. The average gain in weights, daily gain in weights, feed intake and feed conversion ratio of the pigs given diets with feed additive were 62.10kg, 0.96 kg 166.65kg and 2.72, respectively compared to the pigs without the inclusion of Liquid Yeast Culture with Plant Herbal Extracts to their diets with a mean of 53.80 kg, 0.83 kg 154.04 kg and 2.96 for the total gain in weights, daily gain in weights, feed intake and the ability of pigs to convert the nutrients in the feed to a unit gain in weight.

The inclusion of Liquid Yeast Culture with Plant Herbal Extracts resulted to cheaper cost of feeds to produce a kilogram in weight with a mean of Php57.31 compared to the pigs given diet without Liquid Yeast Culture with Plant Herbal Extract with mean of Php64.37. The cheaper cost is a direct effect of better feed efficiency of the pigs to convert

feed into body gain in weight. Likewise to the return on investment (ROI), the treatment with feed additive had a higher ROI of 18.50% while 11.35% for the pigs without the inclusion of Liquid Yeast Culture with Plant Herbal Extracts. The higher ROI obtained from pigs given diet with feed additive was a direct result of higher gross sales and net income of the individual pigs from each treatment because of the higher gin in weights.

Conclusion

Based on the result of the study, it is concluded that adding Liquid Yeast Culture with Plant Herbal Extracts to pig's diet raised from 23.50 kg to 85.60 kg improves the growth rate of pigs particularly gain in weights thereby, giving a better profit.

Recommendation

Significant difference was revealed in the total and average daily gain in weights of the pigs raised from 23.50 kg to 85.60 kg. It is therefore recommended that Liquid Yeast Culture with Plant Herbal Extracts may be used as feed additive for growing pigs. Further studies may be conducted starting from weanlings to compare it to growing pigs with more replicates and to further verify the other benefits or characteristics of Liquid Yeast Culture with Plant Herbal Extracts as claimed by the manufacturer especially the claim that it can be as a probiotic, immunity enhancer and ammonia odor suppressant and as an anti-parasitic agent.

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