

Effect of Bioenzyme on the Performance of Weaned Piglets

1. Experiment objective

The aim of this experiment is to test the effect of different dosage of Bioenzyme on the production performance and diarrheal of weaned piglets.

2. Material and method

2.1 Experiment animals and experiment design

A total of 48 healthy weaned piglets (Duroc×Landrace×Yorkhire, average weight 7.8kg) were randomly divided into 3 treatment groups. Each group has 4 replicates with 4 piglets (2 boars, 2 sows) in each replicate. The pigsty is 2 m × 2.5 m. The experiment lasted for 42days, free access to water and feed.

Table 1.The experiment group

Group	日粮
The control group	Basal diet
Experiment group I	Basal diet +100g/t Bioenzyme
Experiment group II	Basal diet +200g/t Bioenzyme

2.2 Experiment diet

Test feed points 1 to 14 days, 15-42 days two phase, composed of corn, defatted soybean meal, full-fat soybean meal .See table 2 for the experiment feed composition.

Bioenzyme contains β -mannanase (5×10^3 U/kg) and other associated enzyme. Stepwise mixing method was used to make sure the enzyme was mixed evenly in feed. Free trial period to gather the food, drinking water.

Table2. Experiment feed composition

Ingredients (kg)	Stage I (day1-14)	Stage II(day15-42)
Corn	571.3	652.2
Defatted soybean flour	160	220

Whole soybean flour	100	50
Fish meal (65%)	50	25
Whey powder (11%)	25	
Milk replacer (38%)	25	
Soybean oil	35	15
Lysine	2.5	3.0
Methionine	1.4	1.5
Threonine	1	1.5
Calcium powder	7	10
Monophosphate	10	10
Choline	1	1
Vitamin	1	1
Mineral	1	1
Salt	4	4
Mycotoxin binder	1	1
Organic acid	2	2
Prevision medicine	1.8	1.8
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Nutrient content		
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Metabolic energy (kcal/kg)	3,390	3,300
Crude protein (%)	19.6	18.2
Total lysine(%)	1.33	1.24
Total methionine (%)	0.74	0.68
Total threonine (%)	0.82	0.83
Total tryptophan (%)	0.22	0.21
Calcium (%)	0.82	0.74
Total phosphate (%)	0.68	0.62

2.3 Measurement items

Record the weight at the beginning of the experiment, day14 and day 42 meanwhile recording the feed consumption to calculate the average feed intake, average daily gain and feed consumption ratio. Record the survival rate and diarrhea index. Diarrhea index system according to the daily individual pig feces score accumulated. The scoring criteria are normal stool 0, soft stool 1, mild diarrhea 2, and severe diarrhea 3. The calculation formula: diarrhea index= fecal score sum/ the total number of pigs.

2.4 Data analysis

The data in the column as a unit, using the statistical software (SAS, SAS Inst. Inc., Cary, NC, USA) of the general linear model (GLM) for analysis of variance, and then to Student-Newman-Keuls test to compare the two differences between processing.

3. Result and discussion

3.1 Growth performance

Table 3 Effect of Biofenzyme on the performance of weaned piglets

	Control group	Biofenzyme 100 g	Biofenzyme 200 g
Initial weight, kg	7.88	7.85	7.9
Day14 weight, kg	11.25	11.2	11.65
Day42 weight, kg	21.05	21.15	22.00*
Average daily feed intake, g/day			
Day 1-14	315	329	354
Day15-42	573	573	578
Day1-42	487	492	503
Average daily weight gain, g/day			
Day 1-14	241	239	268
Day 15-42	350	355	370
Day 1-42	314	317	336

Feed conversion ratio, Daily feed intake / Daily weight gain			
Day1-14	1.309	1.375	1.322
Day15-42	1.637	1.612	1.564
Day 1-42	1.553	1.554	1.498
Survival rate, %	93.8(15/16)	100 (16/16)	100(16/16)
Diarrhea index (Day1-14), %	9.37	10.86	8.34

(* , P<0.05)

The results show that compared with control group, the pigs taking high doses of Biofenzyme (100 g), improve the production performance, feed conversion ratio reduced by 4.44% and 1.03% in 1-14 days and 1 to 42 days, feed conversion rate by 5.07% in 1-14 days. Pigs taking high doses of feed Biofenzyme (200 g), increased feed intake, weight also increased, in 1-14 days and 15-42 days increased by 11.28% and 5.61% respectively, the whole period of daily gain was also increased by 7.06% ($P > 0.05$), feed conversion rate by 3.53%. After 42 days trial, feeding a high dose Biofenzyme (200 g) pig weight 0.93 kg increase than the control group ($P < 0.05$), while the Biofenzyme (100 g) adding amount on body weight did not significantly improve effect.

3.2 The incubation rate and diarrhea index

During the experiment, the control group had killed a pig; the incubation rate was 93.8%. Feed add separate Biofenzyme (100 g or 200 g) without loss of pigs, the incubation rate of 100%. Pig diarrhea occurred mainly in the experiment of two weeks (1-14 days).

The test results show, weaning piglet feed Biofenzyme with high dose (200 g) can promote the pig feed, improved weight gain performance, compared with the control group increased 0.93 kg, the ratio of feed and meat decreased 3.53%, diarrhea rate reduced by 11.00%, and increases the incubation rate of weaned piglets.