

Swine Production with Using of Seafood Meal Such as *Carbicula japonica* Meal

Z.V. Tsoy and U.P. Nikulin

Primorskaya State Agricultural Academy, Ussuriisk, Russia

Abstract: It is known, there is provision deficit in many countries all over the world. The solution of meat problem is development of pig breeding branch. Swine are the main source of meat and fat in most countries of the world. Pig breeding efficiency depends on number factors. The main factors are feed conversation and gain weight. In present using untraditional feed additions of sea food origin (such as feed concentrate from *Carbicula japonica*) economically is more profitable than traditional ration and feeds. The Far East is rich with marine bioresources which use with feeding agricultural animals. The purpose of our activity is to study the influence of doses of a feeding *Carbicula Japonica* on increasing of living weight of animals. For research there were picked out 3 groups of pigs in 2 months age. Experiments were conducted at farm “Ariran”; place Borisovka, Ussuriiskiy region on landrace pigs.

Key words: Swine breeding • Feeding • Feed concentrate from *Carbicula japonica* • Ration

INTRODUCTION

The one of the most important problem of animal husbandry is increasing meat production, mainly increasing of pork and poultry. Solution of this problem can be whole genetic realization of animals and improvement feeding system which can allow obtaining high productive level with minimum outlay of food and labor [1-4].

One of the main factors which influenced on production and quality of animal products is feeding of farm animals, providing diet with adequate nutrients [5-7]. According to some researchers animal husbandry is based on canned feed and dry feeds [8-10].

Russian and world experience of swine production increasing shows that last years increasing of animals production attained 60-65% by means improving of nutrition system and progressive technology of management, also 35-40% - by means selection, genetic and breeding [11].

Meat problem is very important because meat subcomplex is one of the main and life-supporting sectors of native agricultural production. This one influences on level of country food provision and determines people health [12-17].

At present for swine breeding improvement a large amount of untraditional feeds and biological active additions are used; this feed additions can use like mixed addition of each other. Nowadays search of untraditional feeds are continuing.

Recently there is a big variety of feed additions of different origin, such as waste of fishing and seafoods. The most famous among seafood are bivalve (mussels, oysters, scallops and others), then cephalopoda (squid, octopus, cuttlefish) and gastropoda (rapana and others) [18,19]. The main reserve of increasing of energy ration usefulness is using different feed addition which have a regional value and provide adequate level of biological usefulness of diet or ration. This reserve improves growth and evolution of piglets, meat and fattening abilities of swine [20].

In Far East region there are capabilities for improving of ration (diet) for piglets and fattening animals by means using protein additions. Protein additions can increase gain ability and more rationally using main feeds. The most usefulness protein additions for all kinds of farm animals are waste of fish and seafood recycling.

Goal and method of research work.

Research goal is studying dose (portion) from *Carbicula japonica* meal and influence on growth ability of swine.

Table 1: Scheme of research work method

Name of animals	Group of animals	Amount of animals	Length of research	Feeding system
Piglets 2 months age	Control group	10	5 months	Basic farm ration
	1 experimental group	10	5 months	BFR + 2 g of feed concentrate from Carbicula Japonica per 1 kg of weight
	2 experimental group	10	5 months	BFR + 5 g of feed concentrate from Carbicula Japonica per 1 kg of weight

BFR – basic farm ration

Research experimental activity was conducted at agricultural farm “Ariran” (Borisovka, Ussiriiski district, Primorsky region, Russia). We formed 3 groups of swine at 2 month age and each group contained 10 heads of swine. The 1 group piglets got basic diet, which is common in farm. The 2 group piglets are fed basic farm diet and 2 g of feed concentrate from Carbicula Japonica per 1 kg of weight. The 3 group piglets are fed basic farm diet and 5 g of feed concentrate from Carbicula Japonica per 1 kg of weight (Table 1).

RESULTS AND DISCUSSION

At the beginning of research work all animals have approximately the same weight (Table 2). But 1 month later after fattening animals showed some differences.

It is connected with using feed concentrate from Carbicula Japonica. The most rapidly gained weight piglets were 2 experimental group piglets (1.71 kg or 7.1% more than control animals and 0.36 kg or 1.4% more than 1 experimental animals) and 1 experimental animals have weight on 1.35 kg or 5.6% more than control piglets. The same difference was observed all age periods. Analyzing age dynamics and group daily gained weight we established absolute gained weight and weight changes (Table 3).

After first fattening month gained weight in 2 experimental group was on 14.1 g (3.8%) more than 1 experimental group and 53.2 g (15.9%) more than control group, after second fattening month – 27.6 g (5.3%) and 99.7 g (22%), third fattening month - 3,6 g (0,6 %) è 109,2 g (21,2 %), after 4th fattening month - 14,7 g (2,2 %) è 80,5 g (13,1 %) and after last month - 101,7 g (16,1 %) è 164,4 g (29 %).

Table 2: Monthly weight dynamics

Age, days	Control group		1 experimental group		2 experimental group	
	X ± T	Cv (%)	X ± T	Cv (%)	X ± T	Cv (%)
60	13.9± 0.12	2.5	13.92±0.11	2.5	13.99±0.08	1.7
90	23.93±0.35	4.0	25.28±0.31	3.66	25.64±0.32	3.78
120	37.95±0.42	3.3	41.55±0.24	1.73	42.76±0.41	2.91
150	53.54±0.54	3.2	59.96±0.47	2.35	61.46±0.44	2.1
180	0.62±0.54	2.3	78.86±0.52	2.0	83.41±. 47	1.69

Table 3: Feed concentrate influence on daily gained weight

Group of animals	60-90		90-120		120-150		150-180		60-180	
	X±T	Cv (%)	X±T	Cv (%)	X±T	Cv (%)	X±T	Cv (%)	X±T	Cv (%)
Control group	335.1± 9.85	8.81	452.7± 5.46	3.61	513.8± 10.66	6.22	567.4± 1.07	0.56	467.3± 4.7	3.02
1 experimental group	374.2± 7.99	6.41	524.8± 2.79	1.59	619.4 8.76	4.24	630.1± 2.23	1.1	537.13± 4.0	2.3
2 experimental group	388.3± 9.23	7.13	552.4± 3.63	1.97	623± 4.24	2.04	731.8± 2.9	1.2	573.88± 3.53	1.9

Table 4: Efficiency of swine production and feed conversion

Group of animals						
Age, days	Control group		1 experimental group		2 experimental group	
	Amount of feed units	Feed units per 1 kg of gained weight	Amount of feed units	Feed units per 1 kg of gained weight	Amount of feed units	Feed units per 1 kg of gained weight
60	36.3	2.8	34.53	2.7	35.6	2.7
90	62.5	6.2	60.3	5.3	60.6	5.2
120	90.6	6.5	90.9	5.6	87.9	5.1
150	109.4	7.0	111.3	6.0	109.9	5.9
180	117.5	6.9	113.1	6.0	113.7	5.2
An average		5.88		5.12		4.82

Efficiency of swine production and feed conversion are showed in table 4.

Analyzing costs of feed units per 1 kg of gained weight we can concluded that:

- The lowest costs of feed units were in 2 experimental group, 1.06 feed units less than in control group.
- Animals of 1 experimental group had index, which was on 0.76 feed units lower than the same index in control group and on 0.3 feed units lower than 2 experimental animals.
- The most highest costs of feed units were in control group and equivalent 5.88 feed units.

CONCLUSIONS

Our research work showed that:

- Using feed concentrate from Carbicula Japonica as a feed addition to basic ration influenced on weight gaining. 2 experimental group of animals had daily gained weight on 2.2% higher than in 1 experimental group and on 13.1% higher than in control group.
- Costs of feeds per 1 kg gained weight in control group were higher than 1 and 2 experimental group on 0.76 and 1.06 feed units.
- Including of feed concentrate from Carbicula Japonica in piglet ration influenced on growth of animals and the most optimal dose (portion) was dose 5 g per 1 kg of weight.

REFERENCES

1. Baranikov, A.I. and U.A. Kolosov, 2007. Intensification of pork production in Russian Federation. In the proceedings of the 2007 International Scientific Conference, pp: 3.
2. Gorlov, I.F., A.V. Randelin and M.S. Velskii, 2006. Herald of Russian Academy of Agricultural sciences journal, 1: 19.
3. Kaidalov, A.F., E.K. Sheverev and O.V. Stepanova, 2012. Conversion of feed energy in growing turkeys. Journal of Kuban State Agricultural University, 1(34): 197-201.
4. Kolosov, U.A., I.V. Zazemchuk and P.S. Kobilyatskii, 2012. Improvement of fat breed sheep. Journal of sheep breeding, 3: 13-15.
5. Kostrov, V.D. and I.F. Gorlov, 2012. Technology of production, recycling and using pumpkin. National Agricultural Library (United States of America) NAL/USDA 10301 Baltimore Avenue. Submission Date: 2012.
6. Nelepov, I.U.N., I.M. Volokhov and I.F. Gorlov, 2012. Biological and productive particular qualities of golshin cattle of Povoljjiya. National Agricultural Library (United States of America) NAL/USDA 10301 Baltimore Avenue. Submission Date: 2012.
7. Gorlov, I.F., V.E. Korchevskij, S.G. Meliksetyan, S.G. Aloyan and V.G. Petrosyan, 2012. Prophylaxis and treatment of young animals. Journal of Veterinary medicine, 3: 99-101. Submission Date: 2012.
8. Gorlov, I.F., Creating of system technology for animal products, 2010. Journal of Meat cattle breeding, 1(63): 9-15.
9. Gorlov, I.F., M.I. Slojenkina and A.V. Giro, 2010. Effective using of new organic addition in cattle diet. Journal of Meat Industry, 10: 58-61.
10. Gorlov, I.F. and L.A. Breustova, 2013. Trends of world animal husbandry development. Journal of Russian Academic agricultural sciences, 1: 30-31.
11. Misik, A., 2006. Pig breeding branch development in countries all over the world. Journal of Pig Breeding, 1: 18-20.

12. Gorlov, I.F., 1982. Zoo-hygiene assessment of different cow management ways. *Journal of Animal Husbandry*, 4: 27-29. Submission Date: 2012.
13. Ron'shin, V.G., I.F. Gorlov, 2012. Long-term plan of selection activity in agriculture in Volgograd region on 1996-200. National Agricultural Library (United States of America) NAL/USDA 10301 Baltimore Avenue. Submission Date: 2012.
14. Gorlov, I.F. and I.U.N. Nelepov, 2012. Management system of cattle fattening in "Volgogradskii miasokombinat" zone farm. National Agricultural Library (United States of America) NAL/USDA 10301 Baltimore Avenue. Submission Date: 2012.
15. Gorlov, I.F., A.M. Miroshnikov and A.V. Randelin, 2007. Growing heifers of Kazakh Belogolovoi breed in different management technology. *Journal of practices*, 5: 87.
16. Gorlov, I., 2012. Evaluation of cattle meat production of Kazakh Belogolovoi, Kalmitskoi breed and crosses. *Journal of Milk and Meat Cattle Breeding*, 2: 23.
17. Grigoryan, L., O. Lelunova, A. Kaidulina, N. Philippov and I. Gorlov, 2012. Organization of productive cattle quality of specific and mixed breeds. *Journal of Milk and Meat cattle Breeding*, 5: 21-22.
18. Kupina, N.M., 2002. Processing of bivalve mollusks. In the proceedings of the 2002 Science Conference, pp: 116-119.
19. Slutskaya, T.N., 1972. Comparative characteristics of dried sea cucumbers and sea kukumariya. *Journal of Technology Research*, 3: 139-146.
20. Piters, H., 1997. Feeding of farm animals. *Journal of Feed Technology*, 1: 33-34.