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Статьи, поступающие в редакцию, рецензируются. За достоверность сведений, изложенных в статьях, ответственность несут авторы. Мнение редакции может не совпадать с мнением авторов материалов. При перепечатке ссылка на журнал обязательна. Материалы публикуются в авторской редакции.

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Художник: Валегин Арсений Петрович
Верстка: Курпатова Ирина Александровна

Адрес редакции:
125040, г. Москва, Россия проспект Ленинградский, дом 1, помещение 8Н, КОМ. 1
E-mail: info@euroasia-science.ru ;
www.euroasia-science.ru

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EFFICIENCY OF PORK PRODUCTION AT DIFFERENT PERIODS OF PIGS REARING AND THEIR RESISTANCE

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Yaremchuk O.S.
Doctor of Agricultural Sciences, Professor
Vinnytsia national agrarian university

ABSTRACT

It was found that sows fed by Hliutam 1M for 3 days from the second day of insemination had 96.6% fertility, it was by 13.3% more than in the control.

The feed additive effect on energy metabolism of piglets in the period of weaning from sows was studied. It was found that the supplement Humilid causes an increased glucose concentration, increased activity of alkaline phosphatase and creatine kinase within the physiological norm in the blood plasma of experimental group animals. These data indicate the intensification of energy metabolism and stimulation of phosphorylation processes under the feed additive influence of the addition. The obtained results are relevant for increasing the adaptability of piglets.

The efficiency of soybean meal was proved due to the increase of its relative amount in the structure of the diet, it leads to an increase in the average daily gain of live weight of pigs by 1 kg or more reducing the time of their fattening.

Resistance and productivity of replacement pigs brought from other farms of Vinnytsia region and reared in the industrial complex is genetically feasible and increases the resistance of offspring and their productivity.

Key words: pigs, piglets, pregnancy, insemination, energy metabolism, diet, protein, rearing, productivity, resistance.

Introduction. Providing the population with high-quality food, and providing the processing industry with raw materials are the most acute modern problems of the world society. It is necessary to solve the problem of food security to ensure social stability and economic development of the state.

Literature review.

According to scientific standards of nutrition, the need for meat products is about 85 kg per capita per year [1]. That’s why the intensive development of pig farming will solve this problem, namely. The unique biological characteristics of pigs, i.e. their fertility, omnivorousness, precocity, high conversion of feed into products allow you to quickly increase production of cheap and high-quality meat [2, 3].

Economic indicators of industrial complexes, commodity and breeding farms are directly dependent on the main indicators of herd reproduction [4]. Reproductive capacity of sows is caused by the morpho-functional state of the female reproductive system; it indirectly depends on a large number of exogenous factors, i.e. housing conditions, full and quality feeding, climate, season and sows’ age, sperm quality and fullness, natural and artificial stimulation of reproductive function of females [5].

It is not always possible to organize and carry out full-fledged feeding, sometimes it requires a long period of time, it will inevitably affect the intensity of reproduction of the herd. That’s why, it is almost impossible to work without the application of various means of restoring and stimulating female fertility [6].

Researches [7, 8] found that intramuscular injection of the biologically active drug Hliutam 1M at a dose of 10 ml increased the level of fertility of sows by 10%.

Weaning is always stressful for piglets because they are transferred to an unfamiliar environment, connected with other piglets, it leads to changes in social and behavioral reactions; piglets are weaned from the sow; weaned piglets change liquid feed to solid; their body begins to change for the consumption of new feed, its digestion and breakdown into nutrients [3].

It is recommended [2, 6] to take into account the structure of the diet and its recipe organizing the feeding of pigs. Different components of the diet can have both positive and negative effects on product quality, animal health and productivity.

According to [3, 7], oilcakes and meal are rich in protein (30-40%) and vitamin B, but they are lack carotene and vitamin D, the amount of fiber depends on the preparation of seeds for feeding. The meal obtained from this raw material often contains different nutritional value. Meal and oilcake are characterized by a highly nutritious composition of phosphorus (6.5-13.0 g / kg) and potassium (9.5-17.5 g / kg).

According to researches [4], meal contains lots of easily digestible protein and essential amino acids, but its content differs from the protein characterized by high energy nutrition, i.e. 1.21-1.35 feed units per kg of feed. The meal contains 26-28 g of lysine, 11-12 g of methionine with cystine, it indicates the high biological value of the protein.

The rapeseed acreage has increased significantly in Ukraine, waste from the seeds processing into oil are used to satisfy livestock needs. However, meal is fed in limited quantities in mixtures with other feeds [1, 2].

Oilcakes and meal have the highest amount of digestible protein of all concentrated plant feeds, they are used as an additive in feed and mixtures, it is fed crushed in dry and soaked form. However, the crushed oilcake does not last long, because unsaturated fatty acids disintegrate under the action of bacterial and mold enzymes, the food becomes bitter and has an unpleasant odor.

Studies [3, 5] of industrial technology have little changes; they are characterized by the flow of pork production, and high frequency of veterinary treatments, concentrate type of pigs feeding, having two farrowing per year, viability and productivity of sows and boars are reduced.

It should be noted that there are species with high resistance, viability, and intense growth energy among pigs at specialized enterprises.

Significant differences have long been identified within one breed, technological group and even farrowing on resistance to environmental factors, infectious diseases in zootechnical and veterinary practice.

Resistance of animals to a number of infectious diseases is caused by genetic factors. The animal resistance is associated with heredity, this selection has a real biological basis; it is observed in the selection of individuals resistant to industrial technology [4, 7].

According to [6, 8], it is necessary to consider the conditions of detention, bactericidal background and immune status of the organism in order to improve the pigs' selection of against disease. The fertility, sow's milk yield, growth intensity, premature culling, absence of gastrointestinal diseases are breeding traits characterizing the viability of pigs.

Thus, the development of methods and schemes for the application of drugs increasing sow fertility and preventing embryonic mortality is relevant nowadays. They enhance their reproductive capacity increasing the economic efficiency of the industry and improving selection.

Thus, it has become important to find, develop and implement environmentally friendly, low-toxic and highly effective drugs based on domestic ingredients that can be used with food in order to mitigate the effects of various stresses in animal husbandry. Polyphenolic preparations derived from peat are known for their immunomodulatory, adaptogenic and antioxidant properties, normalization of metabolism in animals and poultry, the manifestation of synergism with vitamins and minerals [10]. The drugs are non-toxic, rapidly metabolized in animals, they have functional groups and are capable of chelation [9]. They are able to neutralize sharp fluctuations in physiological state and provide mobilization of the body to counteract its effects.

The purpose of research is the development of sows' fertility stimulating method by feeding different doses of the biologically active drug Hliutam 1M on different days of the sexual cycle.

The effect of biologically active feed additive Humilid on some indicators of energy metabolism in the blood of piglets in a weaning period has been researched.

The own young breeding is a promising direction in improving the efficiency of pig farming.

Research methodology. The experiments were conducted at pig farms of Vinnytsia region.

4 groups of large white breed sows were formed, each group has 30 heads. The sows in heat were selected into groups. The groups were formed by breed, live weight, fatness and farrowing number. Sows had an average fatness and live weight of 160 - 180 kg. Sows of the first experimental group were fed Hliutam-1M at a dose of 20 ml; the second experimental group were fed Hliutam-1M at a dose of 40 ml; third experimental group were fed Hliutam-1M at a dose of 20 ml. The control group was fed 20 ml of saline.

In farms, sows were fed twice a day (in the morning and in the evening) by compound feed of their own production according to a special recipe. The daily dose of liquid feed is 13.6 liters per day, it is 3-4 kg per head in terms of dry feed. The drugs were given to the experimental animals in the morning.

Sows were kept in groups of 15 heads after weaning the piglets. Sows in heat were selected twice a day using a test boar. Selected sows were placed in individual cages and inseminated with artificially pre-diluted semen twice with an interval of 18 hours, using catheters "SCHIPPERS".

Two groups of 35-day large white breed piglets were formed, i.e. control and experimental; each group has 8-10 heads, live weight was 6-7 kg. 45-day piglets were weaned from sows. Then piglets were kept in cages for 8-10 heads (each group separately). Feeding was carried out with a standard diet with free access to feed and water.

35-day piglets of the experimental group have been fed a 1% solution of biologically active feed additive Hiumilid at the rate of 0.5 ml per kg of live weight for 21 days. The control group of piglets received a standard diet. Biologically active feed additive is an additive obtained by two-stage acid-base hydrolysis of peat, is a viscous liquid, dark brown in color with a specific odor.

The blood of piglets of both groups was the research material, it was obtained from the anterior vena cava at the age of 35 days (10 days before weaning) and 3, 12 (during feeding supplements) and 27 days after weaning and transfer of piglets to new premises (postpartum period). Glucose, alkaline phosphatase (LF) and creatine kinase (CC) activity were determined in the blood plasma of animals by well-known methods [5]. The obtained digital data were processed statistically.

Three types of meal (sunflower, rapeseed and soybean) were researched to determine the effectiveness of meal application for feeding pigs. Two experiments were conducted. The diet contained 25% of sunflower, rapeseed and soybean meal for the first experiment. The diet contained 25% of soybean meal, 35% of wheat bran, 35% of dry malted grains, and 5% of premix (control I); 35% of soybean meal, 35% of wheat bran, 25% of dry malted grains and 5% of premixes (experimental II); 45% of soybean meal, 35% of wheat bran, 15% of dry malted grains and 5% for premixes (experimental III).

Three groups of pigs were formed for the first experiment; each group had 12 heads; at the beginning of the experimental period the average live weight was 38.52 kg, 38.47 kg, and 38.41 kg. The experiment lasted for 30 days.

The conditions of experimental pigs keeping the were the same.

Replacement sows were reared according to our program. 30% of pigs were taken during the suckling period (at 14-20 days of age), they did not suffer from dyspepsia and bronchopneumonia. They were labeled with 4% aqueous solution of urzol and grown cages up to 60 days of age. Then they were grown in rooms for rearing up to 9-10 months of age with the culling of unfit pigs (stunted growth, diseases of the musculoskeletal system, and respiratory system). The animals enjoyed walking on the playgrounds at any time of the year.

9-10-month pigs (live weight 115-120 kg) were adapted to the concentrate type of feeding. 40 sows were selected, raised and fertilized under our program (experimental group).

Research results. The obtained data showed that pregnant sows of the third experimental group had higher fertility by 13.3% than in the control group. The fertility of sows was almost the same in the first experimental group, second experimental group and control group (Table 1).

Table 1.

Заплідненість дослідних свиноматок

Indicator	Group, n = 30			
	control	experimental		
		first	second	third
Pregnant, heads	25	25	24	28
Non-pregnant, heads	5	5	6	2
Fertility, %	83.3 ± 5.86	83.3 ± 5.72	80 ± 6.34	96.6 ± 4.33

Thus, feeding sows by Hluitam 1M at a dose of 20 ml for three days from the first day of the sexual cycle increases fertility compared to control and experimental groups.

There were 16.7%, 16.7% and 20.0% non-pregnant sows in the control, first and second experimental groups. The number of unfertilized sows after the first farrowing was 60%, 80% and 83.3%, respectively. It is important to establish the factor that caused the infertility of these sows after the first insemination, whether it is caused in the experimental groups by the drug.

The interval from the first insemination to the second one was 20.8 days in the control group, it was the same as the duration of the normal sexual cycle. The eggs were not fertilized. Since the animals were inseminated by the same experimental techniques, feeding and keeping are identical, it can be assumed that infertility was due to lack of ovulation.

The interval from the first insemination to the second one was longer by 5.5 days (20.9%) ($p < 0.05$) for the first experimental group and 2.2 days (9.6%) for the second experimental group in comparison with the control one.

The longer interval between inseminations in the first and second groups is caused by positive effect of the drug on sows' ovulation. The sows of the first group ovulated more follicles than the second one. Lysis of corpora lutea and preimplantation embryos led to longer interval between experimental sows' inseminations.

Non-pregnant sows were characterized by a significant difference in the duration of the period from weaning to insemination. This period was shorter by 3.7 days (25.2%) and 5 days (35 %) in the control and second experimental groups. This figure for non-pregnant sows was 4 days longer (24.1%) than for pregnant ones in the first experimental group. It should be noted that this indicator has large coefficients of variability, it varies from 79.5% to 144.8% for both non-pregnant and pregnant sow. The duration limit for non-pregnant sows is 4-25 days in the control group, 3-35 days in the first experimental group, 3-30 days in the second experimental group. The duration limit for pregnant sows is 3-73 days, 3-51 days, 3-37 days respectively. The variability in the groups of non-pregnant and pregnant sows was almost the same, so we can assume that it had a negative impact on female fertility.

The difference in age, live weight, fertility, period from farrowing to insemination and the period from weaning to insemination was insignificant in the control group between pregnant and non-pregnant sows. That is, these signs could not cause infertility after the first insemination (Table 2).

Non-pregnant sows were probably ($p < 0.01$) by 10% less fertile. The nest weight and was by 14.6% less in the first experimental group. The period from farrowing to the first insemination was longer by 4.1 days (10.2%). Thus, their recovery period was longer with less milk. The difference for pregnant and non-pregnant sows may indicate a violation in the reproductive system of single females after previous farrowing, which led to their infertility.

Table 2.

Characteristics of pregnant (P) and non-pregnant (N) experimental sows

Characteristics	Group					
	control		experimental			
			first		second	
	P	N	P	N	P	N
Age, months	16.8±0.34	16.4±0.74	16.8±0.34	16±0.77	17±0.32	16±0.63
Live weight, kg	194.9±1.10	191.4±4.19	195.4±0.96	190.4±3.18	194.6±1.20	187.8±*1.99
Number of farrowings	1.5±0.10	1.4±0.24	1.6±0.10	1.2±0.10	1.5±0.10	1.2±0.16
Fertility, heads	10.1±0.42	10.8±0.75	10.9±0.26	9.8±0.20*	10.89±0.47	10.2±0.90
Period from farrowing to insemination, days	37.8±3.62	39.6±4.15	38.6±2.65	43.0±6.95	39.2±2.52	34.2±5.32
Period from weaning to insemination, days	14.7±4.26	11±3.91	12.6±2.79	16.6±7.18	14.3±2.32	9.3±3.85
Number of piglets at weaning, heads	9.6±0.63	10.8±0.58	9.8±0.50	10.0±0.70	9.6±0.80	10.2±0.75
Nest weight during weaning, kg	70.8±5.60	76.8±7.00	76.8±1.82	65.6±6.9	68.8±4.9	69.7±6.74

Note: *p < 0.01

Non-pregnant sows had lower live weight by 3.5% (p <0.01) than pregnant sows in the second experimental group. The number of piglets at weaning was by 5.9% higher than in pregnant animals. However, the weight of the nest at weaning was almost the same. These females also had a shorter duration from farrowing to insemination by 5 days (12.8%).

It is considered that morphological and functional processes are associated with reproduction, they require certain energy and plastic metabolites, they compete with the processes of growth of live weight through neuroendocrine regulation, it adversely affects the engraftment of embryos and could cause infertility [7].

Thus, experiments have shown that feeding sows by the drug after the first insemination on different days of the sexual cycle did not cause their infertility.

Individual studies have shown that three experimental animals (one in each group) could have early embryonic mortality because the period from the first to the second insemination was 30-37 days.

It is important to determine the dynamics of gonadotropic and sex hormones of content to develop a scheme for the biologically active drug Hliutam 1M application.

The positive effect of Humilide on the energy metabolism in the body of piglets was observed. We found an increase in the concentration of the key metabolite of this metabolism, i.e. glucose in animals of the experimental group in 1.4 times (p <0.01) on the third day after weaning relative to the control group. The higher blood glucose content of piglets in the experimental group by 1.4 times (p <0.01) relative to the control on the 27th day after weaning from sows is evidence of prolonged action of the studied additive and intensive gluconeogenesis under its influence.

It should be noted that we found a low concentration of glucose in the blood of control group piglets after weaning, it did not reach the level before weaning which on the 27th day after weaning. It confirms the negative impact of stress on animals at this time. The glucose content of the experimental group animals did not change relative to the period before weaning and remained at a fairly high level due to the positive effect of Hiumilid.

The activation of energy processes and additional phosphate level increase in the body under the influence of Hiumilid is evidenced by the alkaline phosphatase activity increase within the physiological norm in the blood plasma of experimental group piglets. Thus, we found a higher activity of the enzyme in 1.5-1.7 times (p <0.05; p <0.01) on the third and twelfth day after weaning, it indicates an increase in phosphorylation processes. On the third and twelfth day after weaning control group piglets had a decrease of alkaline phosphatase activity by 1.5 times (p <0.05; p <0.01), it indicates a decrease in phosphate levels and energy stress under the influence of weaning stress.

As for the QC activity, we found a statistically significant decrease in its activity on the third day after weaning in both control and experimental groups of piglets by 1.2 times (p <0.05 p <0,01) relative to the period before weaning, which corresponds to the stressful state of the body. Lower QC activity was in the control group of animals throughout the subsequent period (on the 12th and especially on the 27th (p <0.01) days after weaning without reaching the level before weaning). These data indicate a low level of ATP-dependent processes in piglets of the control group. In the experimental group of animals, the QC activity in the blood was significantly higher both in terms of control and in relation to the period before weaning on the 12th and 27th day by 1.3 times ($p < 0.05$; $p < 0.01$).

Thus, we can say that the studied biologically active feed additive Huimilid added to the standard diet of piglets in the critical period of weaning from sows causes increased energy and anabolic processes within the physiological norm. We found that the researched drug has a prolonged effect, it maintains energy metabolism at the highest level even after the cessation of feeding, it is positive for piglets in the period of increased exposure to various stressors.

The specificity of the amino acid composition of different feeds and growing animals need aren't taken into consideration composing diets, it reduces the intensity of live weight gain and increases nutrient consumption in breeding and fattening pigs. That's why, it is not possible to realize the genetic potential of different genetic types of pigs. In particular, the requirements for the number of limit amino acids: lysine, methionine, threonine are different in the recipes of most diets for rearing and fattening; it does not allow to meet the needs of growing animals.

According to research, they are quite different in comparison with the ideal composition in the protein of rapeseed, soybean and sunflower meal (Table 3).

Table 3.

The structure of the amino acid composition and the level of protein balance of different types of meal, % in protein

Indicator	Complete protein	Rapeseed meal		Soybean meal		Sunflower meal	
		norm	± norm	norm	± norm	norm	± norm
Lysine	7	5.4	-1.6	6.8	-0.2	3.6	-3.4
Leucine	7	6.9	-0.1	7.7	0.7	6.2	-0.8
Valine	4.9	5	0.1	4.8	-0.1	4.6	-0.3
Threonine	4.2	4.3	0.1	3.9	-0.3	4	-0.2
Phenylalanine	3.9	3.6	-0.3	4.5	0.6	4.4	0.5
Isoleucine	3.8	4	0.2	4.6	0.8	4	0.2
Arginine	3.3	6.4	0.31	7.8	4.5	7.8	4.5
Tyrosine	2.8	2.5	-0.3	3.4	0.6	2.7	-0.1
Histidine	2.3	2.9	0.6	2.9	0.6	3	0.7
Methionine	1.9	1.5	-0.4	1.4	-0.5	2	0.1
Cystine	1.6	1.9	0.3	1.7	0.1	1.8	0.2
Tryptophan	1.3	1.4	0.1	1.3	0	1.3	0
Protein, % APC		38.3		44.5		41.8	

Using highly nutritious protein feeds as mandatory ingredients in complete feeds, the industry should aim to eliminate the deficiency of essential amino acids, which is based on the amino acid composition of meal.

According to table 3, the soybean meal has got the optimal amino acid composition with eight amino acids corresponding to the complete protein norm, rapeseed meal and sunflower meal have got seven amino acids.

We have researched the effectiveness of the different meal types application, we can conclude that the most effective is soybean meal with a probable difference at $P < 0{,}001$ (Table 4).

Table 4.

Comparative assessment of live weight and average daily gain of pigs (M±m)

Type of meal	Number of animals in the group, heads	Live weight at the beginning of the period, kg	Live weight at the end of the period, kg	Average daily gains, g
Sunflower, 25% (experiment)	12	27.9±0.34	53.1±0.11***	840
Rapeseed, 25% (experiment)	12	28.1±0.17	51.8±0.66***	790
Soybeans, 25% (control)	12	27.8±0.36	56.6±0.41	960

Note: ***P<0.001

According to Table 4, soybean meal is the most effective, as the average daily gain in pigs is the highest (960 g0, which is by 170 g higher than when rapeseed meal is fed and 120 g higher than sunflower meal is fed.

The second experiment was conducted using soybean meal. According to it, the highest gains and live weight of pigs were obtained.

The group of pigs raised on soybean meal of 12 heads was divided into three subgroups; each group had 4 heads. The experiment lasted for 11 days. The structure of the diet was changed for two experimental groups, and it remained unchanged for the control one (Table 5).

The experimental diet for the control group includes 25%of soybean meal, 35% of wheat bran, 35% of dry malted grains, 5% of premixes (lysine + methionine); the experimental diet for the second experimental group includes 35% of soybean meal, 35% of wheat bran, 25% of dry malted grains, 5% of premixes (lysine + methionine + threonine); the experimental diet for the third experimental group includes 45% of soybean meal, 35% of wheat bran , 15% of dry malted grains, 5% of premixes (lysine + methionine + threonine).

Table 5.

Live weight of pigs in the final period of the experiment, n=4 (M±m)

Group	Live weight, kg		Average daily gain, g
	at the end of the experiment	at the beginning of the experiment	
Control group (I)	67.26±0.36	56.5±0.37	978
Experimental group (II)	68.66±0.44*	56.7±0.49	1,087
Experimental group (III)	68.85±0.23**	56.6±0.39	1,095

Note: *P<0.05; **P<0.01.

Thus, exporting soybeans, rapeseed and sunflowers abroad, we supply cheap raw materials for biofuels. However, we also leave our animals with complete feeds. It should be mentioned; it is possible to achieve extremely high live weight gain of pigs and shorten their rearing period using the above-mentioned feeds.

The organism natural resistance was judged by the indicators of humoral and cellular protection, morphological and protein spectrum of blood serum (Table 6). The quality of offspring obtained from sows, manifestations of gastrointestinal and respiratory diseases were also taken into account.

The increase in hemoglobin, erythrocytes, leukocytes, total protein and albumin was not significant (P <0.05), although the tendency to increase these indicators was clear.

According to table 6, sows of the experimental group had a significant (P <0.02) increase in bacterial and lysozyme activity of serum. The growth of bactericidal activity was higher by 10%, lysozyme by 32.87%, phagocytic activity by 20.67%, phagocytic index by 24.13% (P <0.01-0.02).

Table 6.

Indicators of humoral and cellular protection, morphological composition and protein spectrum of sows' blood

Indicator	Groups		D	Ratio of the experimental group to the control one, %
	control	experimental		
Average NBA, %	44.7±1.8	49.2±0.76	0.02	110.06
Lysozyme activity, %	36.5±2.1	48.5±1.2	0.01	132.87
Phagocytic activity, %	28.6±1.3	34.5±0.79	0.01	120.67
Phagocytic index	2.9±0.28	3.6±0.11	0.02	124.13
Hemoglobin concentration, g / l	89.6±0.81	91.4±0.25	0.5	102.00
Number of erythrocytes, g / l	5.73±2.54	7.96±0.26	0.5	138.91
Number of leukocytes, g / l	10.84±0.62	12.76±0.23	0.5	117.71
Total protein, g / l	67.0±0.92	71.0±0.27	0.5	105.97
Albumin, %	59.76±3.8	53.21±0.61	0.5	89.05
Total globulins, %	40.25±1.03	46.79±0.84	0.2	116.24

We compared the natural resistance higher indicators of the experimental group with the control one. It is confirmed by data on the animals' productivity (Table 7).

Table 7.

Zootechnical indicators of piglets born by sows with different resistance

Indicator	Groups	
	control	experimental
Number of born piglets, heads	440	450
Live weight of born piglets, kg	1.0±0.15	1.0±0.18
Piglets not suffering from gastrointestinal diseases, heads	136±3.6	380±4.1*
Live weight of piglets that did not get sick, kg	15.2±0.51	16.5±0.34**

* P<0.001, **P<0.05.

According to table 7, 303 piglets (69.1%) born by sows with low resistance (control group) fell ill with dyspepsia; it is by 53.5% more than in the experimental group (sick 70 piglets). Piglets from highly resistant sows had a live weight of 1.3 kg more, and are less prone to dyspepsia (Table 8).

Table 8.

Morbidity and mortality of piglets born by sows with different resistance

Days of illness after farrowing	Groups			
	experimental		control	
	heads	%	heads	%
1 – 3	28 8	6.4 1.7	83 38	18.8 8.6
4 – 6	20 3	4.4 0.6	75 27	17 6.1
7 – 9	11 1	2.4 0.2	61 21	13.8 4.7
10 – 12	7 0	1.6 0	47 14	10.6 3.1
13 – 15	3 0	0.7 0	39 11	8.6 2.5
Total	70 12	15.6 2.5	304 111	68.8 25

Note: The numerator shows the number of sick, and the denominator shows the death number of piglets.

According to Table 8 data, piglets of experimental group had the dyspepsia appeared at the first days after farrowing. Thus, for the indicator was 6.4% at 1-3 days after birth, 4.4 % at 4-6 days, 1.6-2.4% at 7-12 days.

Piglets suffering for dyspepsia didn’t want any food for 1-2 days, they fever up to 39-40.1^{0}C. 70 piglets fell ill in the experimental group, while 304 piglets fell ill in the control group.

Conclusions.

1. Sows fed by Hliutam 1M for 3 days from the second day of insemination had 96.6%, it is by 13.3% more than in the control group.

2. The higher activity of alkaline phosphatase was observed in the blood of piglets additionally fed by Humilid, creatine kinase and an increase in glucose concentration in animals kept on a standard diet.

3. The obtained data indicate the activation of energy processes in the body of piglets under the drug action in the critical period of weaning.

4. The increased soybean meal amount in the structure of the diet by 35-45% leads to an average daily gain increase by more than 1 kg and live weight of pigs with a balanced amino acid composition of the diet.

5. It is advisable to adapt imported pigs at an industrial complex and then use them to reproduce livestock.

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