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Research Article

USE OF LANDRACE BREED TO INCREASE THE MEAT PRODUCTIVITY OF THE EARLY PIG MEAT BREED (SM-1)

Vladimir Pogodaev¹, Alexander Ratoshny², Denis Osepchuk³, Igor Shcherbatov⁴,
Kirill Krivoschekov⁵

¹North Caucasus Federal Agricultural Research Center, Nikonov str. 49, Mikhailovsk 356241, Russia., ²Kuban State Agrarian University named after I.T. Trubilin, Kalinina str. 13, Krasnodar 350044, Russia, ³Krasnodar Research Center for Animal Husbandry and Veterinary Medicine, Pervomayskaya str., 4, Znamensky Village, Krasnodar 350000, Russia, ⁴Maykop State Technological University, Maykop 385000, Pervomayskaya str., 191, Russia, ⁵LLC «Premix», Timashevsk 352701, Transportnaya str., 5A, Russia.

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Abstract:

Improving the efficiency of pig breeding is impossible without a clear understanding of the productive qualities of domestic and foreign breeds, of their most effective combinations in obtaining hybrid offspring. Domestic pig breeds are somewhat inferior to foreign breeds in meat quality. On the basis of this, the development of new genotypes of pigs with high indicators of meat qualities is relevant and promising. The aim of the work is to study the meat productivity of hybrid pigs obtained on the basis of the Krasnodar type of early meat breed and landrace breed of French and Canadian breeding. As a result, it was established that crossbred animals differed by a higher value of meatiness and leanness indexes.

Keywords: *pig breeding, breeding, pork, crossing.*

Corresponding author:**Vladimir Pogodaev**

North Caucasus Federal Agricultural Research Center,
Nikonov str. 49, Mikhailovsk 356241, Russia.

E-mail: pogodaev_1954@mail.ru

QR code



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INTRODUCTION:

The actual problem in the Russian Federation is providing the population with meat products of domestic production. Therefore, the development of pig breeding is natural, objectively determined, economically beneficial and the most promising direction of the revival of the meat complex of Russia [1-3].

Improving the efficiency of pig breeding is impossible without a clear understanding of the productive qualities of domestic and foreign breeds, of their most effective combinations in obtaining hybrid offspring.

Domestic pig breeds are somewhat inferior to foreign breeds in meat quality. On the basis of this, the development of new genotypes of pigs with high indicators of meat qualities is relevant and promising.

In pigs of different directions of productivity, the morphological composition of carcasses is not the same in the process of fattening [4-7]. In animals of meat productivity, intensive synthesis of fat is shifted to a later period of development than in animals of meat and sebaceous type. Due to this, the yield of muscle tissue in the carcass of pigs at the end of fattening is much higher [8-10].

Interbreeding of pigs makes it possible to combine in the offspring the valuable qualities of the original breeds and significantly improve the productivity of crossbred young [11-14]. However, numerous studies

have found that not every combination gives a positive result [14].

Animals of foreign breeding, along with high fattening and meat qualities, have certain disadvantages, they are stress-sensitive and demanding to the conditions of feeding and housing, against the background of this they do not always give the effect that experts expect when buying these animals [15].

The aim of the work was to study the meat productivity of hybrid pigs, obtained on the basis of the Krasnodar type of early meat breed and landrace breed of French and Canadian breeding.

MATERIAL AND METHODS:

Scientific - production experience was carried out at the pig breeding complex LLC "Polyus" KCR.

For the experience, 30 purebred and 30 crossbred pigs were selected from the group of young stock, from which formed control and experimental groups. Animals were selected on the principle of analogues with a live weight of 135 - 140kg.

To selected pigs according to the scheme of crossing, boars were selected for mating. In the first group, purebred animals of the Krasnodar type of early ripening meat breed (SM-1) were used. In the experimental groups blood was used for interbreeding (50% SM-1 x 25% landras of French selection x 25% landras of Canadian breeding) (Table 1.)

Table 1: Scheme of experience

Group	Breed, type, breeding	
	sows	boars
I	SM-1, Krasnodar type	SM-1, Krasnodar type
II	50% CM1x25%LFx25%LC	50%SM-1x25%LFx25%LC
II	SM-1, Krasnodar type	50%SM-1x25%LFx25%LC
IV	50% SM1x25%LFx25%LC	SM-1, Krasnodar type

Fattening qualities were evaluated by the average daily gain, precocity, and feed costs per unit increase in live weight.

The control slaughter was carried out on the achievement of 100 kg of live weight by pigs. From each group 6 heads were killed (3 sows and 3 hogs).

RESULTS AND DISCUSSION:

Research has established that during the entire period of rearing, crossbred piglets of groups II, III and IV grew better, which were characterized by higher in comparison with the control (Group I) rates of

increase in live weight in 60 and 90 days: absolute by 1.24; 0.68 and 1.0 kg and 2.5; 1.0 and 1.4 kg, average daily for 41; 22 and 32g and 83; 33 and 46g.

The average daily gains for the entire fattening period in the young of the experimental groups were 920.0-997.0 g and were higher compared to the controls by 106.0-183.0 g (11.6-18.36%).

A higher average daily gain in live weight of 997 g was noted in youngsters II of the experimental group, its indicator was significantly ($P > 0.999$), exceeding

the gains of this period in the fattening young of the control group by 183 g (18.36%), and III, IV experimental groups did not 154 g (15.91%) and 106 g (11.52%), respectively.

When analyzing data on the absolute increase in live weight of animals during the fattening period, the minimum difference of this indicator between experimental and control groups was revealed. At the same time, the duration of the fattening period in the local animals was the shortest in the second experimental group (69.2 days), and in the gilt III, IV experimental groups 70.6 and 74.1 days, respectively. The difference compared with the indicators in the control group was 15.6; 14.0 and 11.0 days at a confidence level ($P > 0.999$).

Crossbred animals grew with greater intensity. The lowest rate of early maturity, in numerical terms equal to 155.93 days, was observed in animals of the II-experimental group, and in gilts of the III and IV groups, respectively, 157.03 and 160.43 days, this indicator significantly exceeded the rate of maturity of the fattening young of the control group by 15, and 11 days.

Production tests revealed that the most effective was the feeding of animals II experimental group, which recorded the minimum feed consumption per unit increase in live weight. Feed costs for this group amounted to 2.42 kg, in Group III, IV, 2.50 and 2.57 kg, respectively. The difference between peers of the experimental groups and the control group varied in the range of 0.46-0.31 kg

The study of the slaughter qualities of the experimental pigs showed that there were no statistically significant differences between the groups in all the studied parameters (Table 2). However, crossbred pigs of group II, III, IV showed a tendency to increase of slaughter qualities. They were superior to their counterparts of the first control group in mass of the legs, mass of the carcass and inferior in mass of the head and internal fat.

The main components of the slaughter mass of pigs is the mass of ink of the head, skin, and internal fat. The young slaughter II, III was characterized by a greater slaughter mass. Group IV, they surpassed purebred animals in this indicator by 0.29, 0.11, 0.14 kg.

Table 2: Slaughter qualities of experimental gilts

Indicator	Group			
	I	II	III	IV
Pre-slaughter weight, kg	99,95±0,15	100,08±0,11	100,02±0,23	100,05±0,17
Foot weight, kg	1,69±0,03	1,71±0,02	1,72±0,03	1,72±0,03
Head weight, kg	4,52±0,05	4,41±0,05	4,32±0,03	4,40±0,05
Mass of internal fat, kg	1,80±0,04	1,74±0,04	1,75±0,03	1,76±0,04
Carcass weight, kg	68,10±0,32	68,54±0,25	68,43±0,20	68,37±0,24
Slaughter weight, kg	76,11±0,33	76,40±0,35	76,22±0,37	76,25±0,30
Slaughter yield,%	76,15	76,34	76,20	76,21

Crossbred animals had a higher slaughter yield and surpassed the gilts of the control group by 0.19, 0.05, 0.06 absolute percent.

Thus, we can conclude that the gilts of all studied genotypes have approximately the same lethal yield,

crossing does not affect the improvement of lethal qualities.

The results of our studies showed some differences in measurements of carcasses (Table 3).

Table 3: Promera, the area of "muscle eye" and the mass of the posterior third of the half carcass of pigs (n = 6)

Indicator	Group			
	I	II	III	IV
Half carcass length, cm	97,00±0,37	99,30±0,43	98,90±0,32	98,10±0,44
Thickness of lard over 6-7 thoracic vertebrae, mm	22,33 ±0,49	20,12± 0,48	20,33±0,33	20,50 ±0,43
The area of the "muscular eye", cm ²	35,26±0,54	42,48±0,58	41,57±0,77	40,25±0,72
Mass of the back third of the half carcass, kg	11,20±0,14	11,75±0,13	11,64±0,11	11,46±0,13

It was established that hybrids of the II, III, IV experimental groups had longer half carcasses and exceeded their purebred counterparts in length of the half carcass by 2.30, ($B > 0.999$) and 1.90 ($B > 0.99$), 1.10 cm, ($B > 0.90$).

It has been established that a thinner and smoothed layer of fat was in hybrid animals. They were inferior to their purebred counterparts in the control group in fat thickness over 6-7 thoracic vertebrae by 2.21 ($B > 0.95$), 2.00 ($B > 0.95$), 1.83 mm.

The smallest area of the "muscular eye" was in purebred animals of the early meat breed. They were inferior to animals of II, III, IV experimental groups by 7.57, 6.31, 4.99 cm² ($B > 0.999$).

A large mass of the posterior third half carcass had crossbred pigs of group II, III, IV, and surpassed the first control group by 0.55 ($B > 0.95$), 0.44 ($B > 0.95$), 0.26 kg.

Thus, it can be concluded that the crossing of pigs of the Krasnodar type SM-1 and the breed of landras of the French and Canadian breeding contributes to the improvement of meat qualities.

The results of our research have shown that the morphological composition of the half carcasses in pigs of experimental groups varies considerably (Table 4).

Table 4: Morphological composition of the half carcass (n = 6)

Indicator	Group			
	I	II	III	IV
Mass of chilled half carcass, kg	34,00±0,11	34,24±0,14	34,20±0,10	34,14±0,14
Contained in half carcass:				
meat, kg	20,66±0,17	22,11±0,18	21,78±0,21	21,32±0,10
%	60,76	64,57	63,68	62,45
fat, kg	9,61±0,13	8,29±0,08	8,61±0,20	9,02±0,18
%	28,27	24,21	25,18	26,42
bones, kg	3,73±0,08	3,84±0,07	3,81±0,06	3,80±0,07
%	10,97	11,22	11,14	11,13
The amount of fat per 1 kg of meat in the carcass, g	465	375	395	425
Meat index (meat / bones)	5,54	5,76	5,72	5,61
Lean Index (Meat / Fat)	2,15	2,67	2,53	2,36

Crossbred pigs contained in the half carcass more meat and less fat than the purebred animals of the early ripening meat breed.

The mass of chilled half carcass in all groups was about the same.

In the absolute output of meat in half carcasses, crossbred pigs of the II, III, IV groups exceeded the purebred animals SM – 1 by 1.45 ($B > 0.999$), 1.12 ($B > 0.99$), 0.66 ($B > 0.99$) kg, and the relative yield, respectively, by 3.81, 2.92, 16.69 absolute percent.

According to the fat content in the half carcass, a reverse pattern is observed. In the half carcass of pigs I group contained more by 4.06, 3.17, 1.85 absolute percent fat, than in the II, III, IV groups.

There were no statistically significant differences between the groups in bone output in the half-carcass.

The amount of fat per 1 kg of meat in the half carcasses of pigs II, III and IV of the experimental groups was less than in the control group, respectively, by 90, 70 and 40 g.

The calculations show that the hybrids of the II, III, IV groups surpass the control group by 4.72, 3.25, 1.26% by meat index, and by the post index by 24.18, 17.67, 9.77%, respectively.

A study of the morphological composition of the posterior third part of the half-carcass showed a similar pattern (Table 5).

Table 5: Morphological composition of the posterior third of the half carcass (n = 6)

Indicator	Group			
	I	II	III	IV
Mass of the back third of the half carcass, kg	11,20±0,14	11,75±0,13	11,64±0,11	11,46±0,13
Including :				
meat, kg	7,74±0,14	8,49±0,18	8,37±0,18	8,15±0,15
%	69,11	72,26	71,88	71,12
fat, kg	2,32±0,18	2,04±0,08	2,07±0,08	2,12±0,10
%	20,71	17,36	17,75	18,50
bones, kg	1,14±0,07	1,22±0,05	1,20±0,07	1,19±0,05
%	10,18	10,38	10,37	10,38
The amount of fat per 1 kg of meat in ham, g	300	240	247	260
Meat Index (Meat / Bone)	6,79	6,96	6,97	6,85
Lean Index (Meat / Fat)	3,34	4,16	4,04	3,84

Mixtures of II, III and IV experimental groups differed in the highest output of meat in the back ham. They exceeded the purebred counterparts of control group I in absolute meat output by 0.75 (B> 0.99), 0.63 (B> 0.95) and 0.41 kg, and in relative output, by 3.15, 2, respectively. , 77, and 2.01 absolute percent and were inferior to them in relative yield of fat by 3.35, 2.96 and 2.21 absolute percent.

On the output of the bones in the ham, the difference between the groups was insignificant and not statistically significant.

In the back third of the half carcass of the II, III and IV group hybrids, per 1 kg of meat accounted for 60, 53 and 40g less fat than in the I control group.

Crossbred animals differed by a higher value of meatiness and leanness indexes. So purebred animals of the Krasnodar type of early ripening meat breed (I group) were inferior to their peers of the II, III and IV groups in the meatiness index by 2.50, 2.65 and 0.88%, and in the lean index by 24.55, 20.96 and 14.97%.

CONCLUSION:

On the basis of the scientific and production experience, it can be concluded that pigs with blood $\frac{1}{2}$

SM-1 + $\frac{1}{4}$ LF + $\frac{1}{4}$ LC possess the best meat qualities.

Thoroughbred animals of the Krasnodar type of early ripening meat breed are inferior and mixed with blood $\frac{3}{4}$ SM-1 + $\frac{1}{8}$ LF + $\frac{1}{8}$ LC in terms of meat productivity.

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