

**EFFICIENCY OF USE OF PIGS, BRED IN LITHUANIA,
IN HYBRIDIZATION SYSTEM****A. Klimienė, R. Klimas****Summary**

Boars of Landrace, Duroc and Pietrain breeds had positive influence on the vitality of delivered hybrids. Better growth of hybrids is defined in these combinations, where boars of Duroc breed were used. According to the data of *Piglog 105*, crossbreds of Yorkshire and Pietrain distinguished by the biggest muscularity (59.0%), and the least muscularity was indicated among crossbreds of Yorkshire, Landrace and Duroc (three breeds) and of Lithuanian White and Landrace (53.5 and 54.4% respectively). Lowest muscularity was indicated namely among hybrids of the combinations, having the highest daily gain. Combinations of hybridization, recommended in Lithuania, are presented in the table 1.

Key words: pig breeds, hybridization, performance traits.

Introduction

Pig breeding in Lithuania is a traditional branch of animal husbandry. By the 1st January 2005, the number of pigs in the country was 1073300, or by 1.5 % higher compared to the beginning of the year 2004. Farmers and household farms accounted 56 %, and agricultural partnerships and enterprises - 44 % of all pigs (<http://www.std.lt>). The number of pigs in the farms of all types is expected to be further increasing.

In Lithuania, as in other countries of developed pig breeding (Webb, 1994; Nicholas, 1996; <http://www.norsvin.com>), pig breeding is based on the pyramidal principle. On the top, there are elite breeding centres, in which pigs

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of various breeds are improved only by pure breeding. Lower, there are breeding centres, where purebred pigs are multiplied and first generation (F₁) of crossbred gilts and boars produced. At the bottom, there are large-scale pig production units and other commercial farms producing two- three – or more way crossbreds for meat. The breeding progeny is raised and distributed by 43 pig breeding centres. By the end of the year 2004, about 8 % of all pigs bred were in them. In the breeding centres about 21% of all purebred pigs consisted of Lithuanian White, 39 % - Large White (Yorkshire), 37% - Landrace, and 3 % - Lithuanian native pigs (gene pool), Duroc and Pietrain. (Pig breeding records, 2004). Besides that, there are six breeding enterprises where sires of the mentioned breeds are housed for semen collection. Thus, the genetic potential of pigs, bred in Lithuania, and the whole breeding system provides favourable conditions to pursue commercial crossbreeding (hybridization). In Lithuania there are 20 large-scale pig production units, in which from 12000 till 54000 pigs are being kept. The purpose of this work was to determine the most effective combinations of pigs hybridization.

Materials and methods

The work has been carried out in the year 2004. Influence of hybridization on reproductive traits of sows of Lithuanian White, Yorkshire, Large White, and Landrace breeds has been investigated in breeding centres, and intensity of growth and meatiness of hybrids of different combinations have been evaluated. Reproductive traits of 1530 sows, bred by pure breeding, were evaluated (among them: 269 Lithuanian White, 85 Large White, 381 Yorkshire, 765 Landrace, 18 Duroc and 12 Pietrain breeds), and of 978 sows, crossbred with the boars of other breeds. Analysis of litter size and milk yield (litter weight at 21 days of age, kg) has been fulfilled for 2508 sows in total. Evaluation of indicators of fattening performance and meatiness, using the method of control fattening, has been carried out in the State pig breeding station for purebreds Lithuanian White (n=111), Large Whites (n=85), Yorkshire (n=266), Landrace (n=309), Duroc (n=9), and for crossbreds Lithuanian White and Landrace (n=7), Large White and Landrace (n=245), Yorkshire and Landrace (n=29), Yorkshire, Landrace and Duroc (three breeds, n=12), Yorkshire and Pietrain (n=9). Totally 1082 pigs of different genotypes were fattened and evaluated after slaughtering. The investigation data were processed biometrically. The difference was considered significant when $p < 0.05$.

Results and discussion

It was determined, that litter size of Lithuanian Whites, crossing with the boars of Landrace, Duroc or Pietrain breeds, was similar, when of sows of Large White and Yorkshire breeds – slightly higher, than of sows, bred by pure breeding. Boars of Landrace, Duroc and Pietrain breeds had positive influence on vitality of delivered hybrids. Thanks to the effect of heterosis, litter weight of crossbreds at 21 days of age, depending on the combination of breeds, was by 1.3 – 14.0 kg bigger than of purebred piglets. Better growth of crossbreds was determined in these combinations, where boars of Duroc breed were used. Litter weight of crossbreds at 21 days of age of Lithuanian White and Duroc was 4.5 kg, of Landrace and Duroc crossbreds – 10.3 kg, and of Yorkshire and Duroc crossbreds – by 14.0 bigger, compared to purebred piglets of mentioned maternal forms ($p < 0.05-0.001$). Besides that, in many cases higher litter size sows are distinguished by better milk yield. When analysing influence of crossbreeding on the intensity of fattening of pigs, it was determined, that crossbreds of Yorkshire, Landrace and Duroc (three breeds) distinguished by the speediest growth and highest daily gain (994 g), and crossbreds of Yorkshire and Pietrain - by the least consumption of feed per kg gain (2.49kg), ($p < 0.01-0.001$).

Table 1. - RECOMMENDED HYBRIDIZATION COMBINATIONS

Hybrid	Breed combinations	
	Gilts, sows	Boars
Two-way breeds	Lithuanian White, Large White, Yorkshire	Landrace
	Lithuanian White, Large White, Yorkshire	Duroc, Pietrain
	Landrace	Duroc, Pietrain
Three-way breeds	Lithuanian White and Landrace, Large White and Landrace, Yorkshire and Landrace hybrids	Duroc, Pietrain
	Lithuanian White, Large White, Yorkshire	Landrace and Duroc hybrids

After finishing of control fattening, evaluation of muscularity by ultrasonic apparatus *Piglog 105* has been made for live pigs of approximately 95kg of weight. Crossbreds of Yorkshire and Pietrain distinguished by the biggest muscularity (59,0%) among the crossbreds, the least muscularity was determined among crossbreds of Yorkshire, Landrace and Duroc, and crossbreds of Lithuanian White and Landrace (53.5 and 54.4 % respectively). The least muscularity was noticed namely among crossbreds of those combinations, which had the highest daily gain ($p < 0.005-0.001$). Carcass traits

of investigated pigs approved results of phenotypic evaluation of muscularity made by apparatus *Piglog 105*. It should be noted, that the biggest weight of ham (12.2 kg) was determined for crossbreds of Yorkshire and Pietrain.

Referring on the data of investigation, recommended hybridization combinations are presented in table 1. Farms, planning to use boars of Pietrain breeds, must make especially good conditions of omni-valued feeding and keeping for received hybrids.

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