THE APPRECIATION OF THE SPECIAL COMBINATIVE CAPACITY AT THREE RABBIT POPULATIONS FROM TIMIS COUNTY, FOR PROLIFICITY

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Abstract

Non additive genetic component that is the base of a quantitative character has no predictability, this is the reason for which the present paper is proposing to appreciate the special combinatory capacity for proliferative capacity in a specific crossing scheme combining three rabbit breeds common in Timis county breeders New Zealand White, Large Chinchilla and Californian. The data obtained, statistic presented prove a good special combinative capacity for this character, reason for which the crossing scheme is recommended for producing meat individuals destined for slaughterhouses. This scheme provides an exploitation of the high fervency of the heterozygote at maternal forms and at the final hybrids.

Key words: special combinative capacity, crossing, hybrids, prolificacy

INTRODUCTION

Breeding the domestic rabbits is a old occupation. In antiquity the rabbits were breed for sport, later they were breed for research animals or for meat, fur or hear [1].

In the last decades there were registered in most of the countries in the world special efforts for development of this economical branch because of the good reproductive capacities it can provide rapidly a large part of the meat necessary for human population.

Some breeders with experience have the entire necessary premise to be extremely profitable soon, because the rabbit meat is not affected by the diseases that affect all the other (cows, pigs. poultry), more common, domestic species. Plus the rabbit meat is easy, tasty and different from the other meat types more commonly consumed.

The structure of the production shows that on an world scale, 40% of the rabbit meat is produced in traditional farms, 33% with intermediary rise and 27% is produced in commercial farms [1].

The highest production of meat in Europe, is produced by Italy. France the county with the oldest traditions in the production and the consumption of meat, and Spain is the second in production, according to FAO STAT.

In Romania in 1990 the rabbit meat production was 10625 tones, and this dropped rapidly, so in 2000 it was 71.77% lower, in 2007 it was 97.5% lower comparative to the production registered in 1999 [FAO, 2009].

In breeding domestic rabbits, the amelioration genetic presents a great importance because they target the continuous increase of the production, and reducing the specific consumption and the costs with the production. This works include complex preoccupations for maximum usage of the genetic potential of the populations and for continuous improvement of this potential in the succession of the generations.

The crossing constitute the main way to determine the manifestation of the heterosis effect, tidily depended of the existence of the interactions between the nonaditive genetic and the genetic diversity pronounced by the populations that are crossed [2].

The aim of the present paper was to appreciate the special combinative capacity

for prolificity, of a crossing scheme, from the three rabbit breeds common used by the breeders in Timis county: New Zealand White (NZW), Large Chinchilla (CHL), Californian (CAL) and their hybrids.

MATERIALS AND METHODS

The biologic material used in the experiment was represented by domestic breeds from the New Zealand White (NZW), Large Chinchilla (CHL) and Californian (CAL) breeds, randomly purchased from different breeders. The animals were representative for the genetic structure of the three pure breeds from Timis county.

The crossing scheme used in the experiment had the following formula: the first generation of hybrids F1 (NZWxCHL) resulted from the crossing of the New Zealand White (NZW) as mother breed and Large Chinchilla as paternal breed, the second generation F2 (F1xCAL) had resulted from F1 hybrid as maternal component and Californial breed (CAL) as paternal breed. There were special attention given to assure a fairly comfort state for all individuals taken into study thought the entire study period, in order to fully express the genetic potential. There were also taken measurements to reduce at minimum the special environment influence, so that the differences noticed will be due to the different genetic structure of the individuals in the 5 lots.

All the rabbit acquired ere vaccine and treated for parasitizes, and all were selected from micro farms with no contagious dieses.

The data recovered was statistically analyzed.

RESULTS AND DISCUSSIONS

It is known that the general combinative capacity due to the additive genetic can be predicted with a degree of probability in function of the information sources used. The combinative special capacity has no such quality reason for which it appreciation can be performed only by trial crossing between the populations taken into study [3].

In table 1 there are presented the absolute values, average values and the dispersion indicators for the number of offspring/ studied lot.

Table 1
The absolute values, average values and dispersion indicators regarding the number of born alive descendants/lot

No crt.	Offspring / parturition [heads]				
	NZW	CHL	CAL	F1	F2
	Absolute values				
1	7	9	6	7	8
2	8	8	5	9	11
3	8	8	7	10	8
4	7	8	7	7	7
5	8	7	6	8	9
6	7	7	7	-	-
7	9	6	8	-	-
8	9	8	6	-	-
9	8	7	7	-	-
10	6	7	-	-	-
11	10	-	-	-	-
Total heads	**87**	**75**	**59**	**41**	**43**
Average values and the dispersion indicators					
n [cap.]	**87**	**75**	**59**	**41**	**43**
$\overline{X}$ **head/ parturition**	**7,91**	**7,50**	**6,56**	**8,20**	**8,60**
Sx	0.34	0.27	0.29	0.58	0.68
S	1.14	0.85	0.88	1.30	1.52
S^2	1.29	0.72	0.78	1.70	2.30
CV%	14.37	11.33	13.45	15.90	17.63
Sx%	4.33	3.58	4.48	7.11	7.89
Min.	6.00	6.00	5.00	7.00	7.00
Max.	10.00	9.00	8.00	10.00	11.00

From the analysis of table 1, it can be noticed that the highest prolificacy was registered at New Zeeland White 7.91 ± 0.34 respective offspring/ parturition, followed by Large Chinchilla 7.5 ± 0.27 offspring/ parturition. The Californian breed showed the lowest prolificacy, mean number of offspring/ parturition was 6.56± 0.29. In respect to the prolificacy of the F_1 hybrids (NZWxCHL) this was 8.2±0.58 offspring/ parturition, and for F_2 hybrids this was 8.6 ± 0.68 offspring/ parturition.

The prolificacy of the five lots is graphical represented in figure 1.

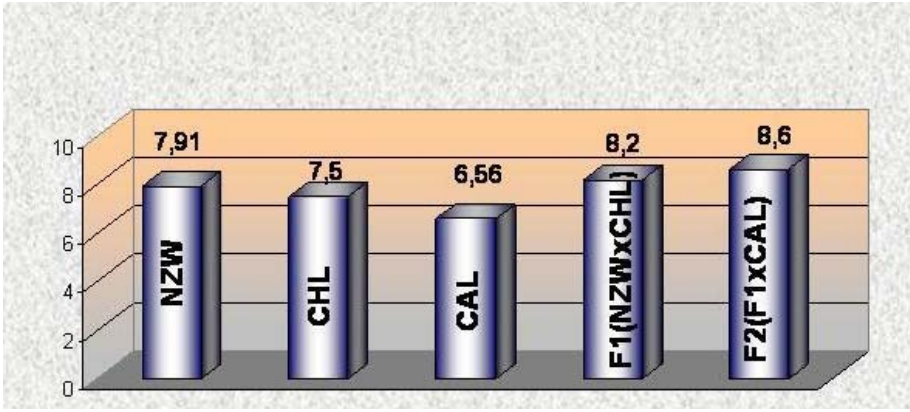

Figura 1. Graphic representation of the prolificacy for the five lots of rabbits that were study

To analyze if there is a good combinative capacity for prolificacy we performed the estimation of the heterosis effect at the 2 hybrids studied.

So ay F_1 hibrids (NZWxCHL), the heterosis value was 6.42%and for the lot formed by F_2 hybrid (F_1xCAL) was 16.53%. The prolificacy of the F_2 hybrids was higher than the parental forms with 4.65% compared to the maternal form (the F_1 hybrids) and with 23.72% compared with paternal form Californian breed.

CONCLUSIONS

The three rabbit breed used in our study, New Zealand White, Large Chinchilla and Californian crossed according the hibridation scheme used in experiment, has a good special combinative capacity for prolificacy and can be efficiently used in production, for producing individuals for slaughterhouses

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