Lucrări ştiinţifice **Zootehnie şi Biotehnologii**, vol. **41 (2)** (**2008**), Timişoara

# COMPARATIVE RESEARCHES REGARDING THE BODY WEIGHT IN DIFERENT AGES OF NEW ZEALAND WHITE, GRAND CHINCHILLA RABIT BREEDS, AND THE F1 HIBRIDS OBTAINED AFTER THEIR CROSS-BREEDING

# CERCETĂRI COMPARATIVE PRIVIND DINAMICA MASEI CORPORALE LA DIFERITE VÂRSTE A RASELOR DE IEPURI DE CASĂ *NEOZEELANDEZ ALB, CINCHILLA MARE* ŞI HIBRIZII F1 OBŢINUŢI ÎN URMA ÎNCRUCIŞĂRII ACESTORA

TOBĂ (GOINA) DANIELA-MARCELA*, BURA MARIAN*, DRONCA DOREL*, PĂTRUICĂ SILVIA*, NICULA MARIOARA*, CĂLĂMAR CĂLIN*

** Faculty of Animal Sciences and Biotechnologies, Timisoara*

*In rabbits breeding, the amelioration processes have a high importance because they are aimed to continuously increase the productions concomitantly with the decrease of specific consumption and unit costs. Cross-breeding of two genetically distinguished breeds can produce the heterozis effect, meaning an increase of the possibility that allow a higher productivity. 53 young rabbits were used as biological material, 3 interlinear simple female hybrids of New Zealand White (NZ) being the maternal line and 3 interlinear simple male hybrids of Grand Chinchilla (CH) form the paternal line. The 53 young rabbits were raised in identical environmental conditions so that their genetic potential to determinate the phonotypical expression. The rabbits weighing was done daily, at the same time, in equal foraging and drinking conditions. The rabbits were weaned at 30 days old, and until 80 days old were raised for meat. The two breeds used in the cross-breeding chart, respectively New Zealand White as maternal line and Grand Chinchilla as paternal line, have a good combinative characteristic, and on their hybrids is manifested the heterozis effect. In all the experimental, the hybrids from NZ x CH cross-breeding registered a corporal dynamic higher then the parental breeds.*

**Key word:** New Zealand White, Grand Chinchilla, rabits hybrids, body weight, hybridation,

## Introduction

Globally, in the last decade, follow of the unanimous assessment of the reproduction characteristics of the rabbit, was made important efforts to improve the rabbit breeding, capable to quickly cover a large part of the animal protein need

of human population. [7] The necessity to produce larger and qualitative alimentation products has generated a strong impulse in animal sciences development, in which the animal amelioration is on a top place. [5, 6] The rabbit meat, organoleptically same to the white meat, is rich in proteins and substance, but low in fats. Beside this, the contained mineral salts and vitamins make the rabbit meat necessary in every human category alimentation. [3, 4]

In rabbits breeding, the amelioration processes have a high importance because they are aimed to continuously increase the productions concomitantly with the decrease of specific consumption and unit costs. These processes include high concernments to maximum improve the genetic potential of the existent population and to continuously raise this potential over generations in a way wanted by human. [2, 3, 4]

Cross-breeding of two genetically distinguished breeds can produce the heterozis effect, meaning an increase of the possibility that allow a higher productivity. [5, 6]

The cross-breeding substantially change the genetic structure of animal population. Cross-breeding animals with contrasting genotype are obtained heterozygote or hybrids. This is the first rule of character inheriting discovered by Gregor Mendel. It is valid for the characters determined by a single locus, also named qualitative, also for characters determined by more locus, named polygenic or quantitative characters. Hybrids obtained from cross-breeding individuals with genetically contrasting characters have two important characteristics: genetically are evenly (they all are heterozygote) and are displaying the hybrid vigor of heterozis effect. [1, 2, 6, 7]

## Matherials and Methods

53 young rabbits were used as biological material, 3 interlinear simple female hybrids of New Zealand White (NZ) being the maternal line and 3 interlinear simple male hybrids of Grand Chinchilla (CH) form the paternal line. The rabbits weighing was done daily, at the same time, in equal foraging and drinking conditions. The rabbits were weaned at 30 days old, and until 80 days old were raised for meat. The cross-breeding chart used to obtain F1 hybrids is presented in figure 1.

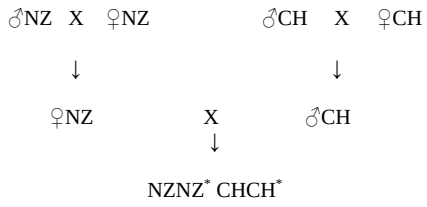



**Fig. 1** Cross-breeding chart used to obtain rabbit offspring

The 53 young rabbits were raised in identical environmental conditions so that their genetic potential to determinate the phonotypical expression. . The rabbits weighing was done daily, at the same time, in equal foraging and drinking conditions. The rabbits were weaned at 30 days old, and until 80 days old were raised for meat.

## Results and Discussions

In graph 1 we can see the average weights of the first experimental variant.

It can be seen that on birth, average weight of hybrids is of 75g, 20% higher then in case of pure breed kidling. At one week old, the products of NZ x NZ cross-breeding had an average weight of 84.3g, much lower in comparison with the values registered in CH x CH products (103 g) and respectively NZ x CH products (131.8g).

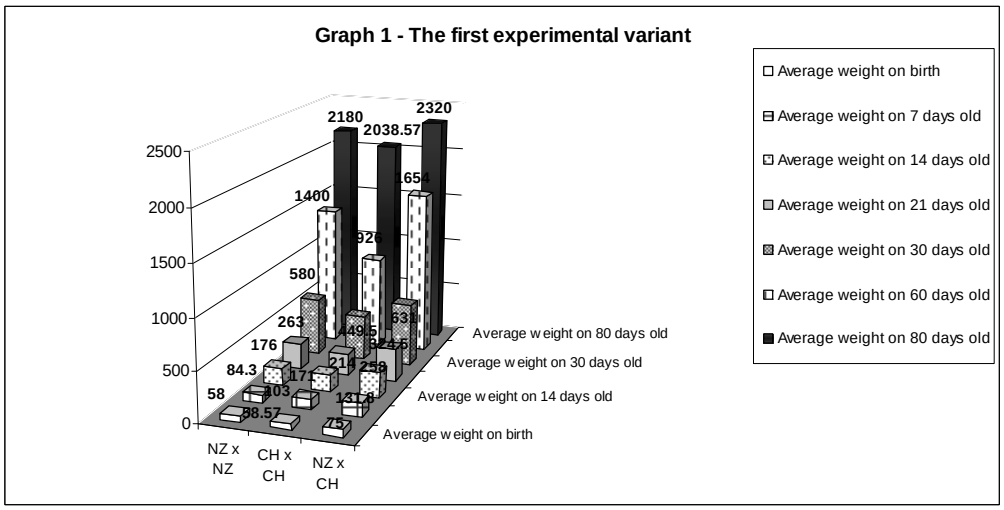
At 14 days old, average weight of hybrids was almost twice compared to NZ breed products.

At the end of the milk alimentation period, the hybrids have an average weight much higher then the pure breed, of 324.5g compared to 263g on Ch and respectively 282.5g on NZ.

On weanling, the corporal dynamic of pure breeds was 8%, respectively 40% lower then hybrids.

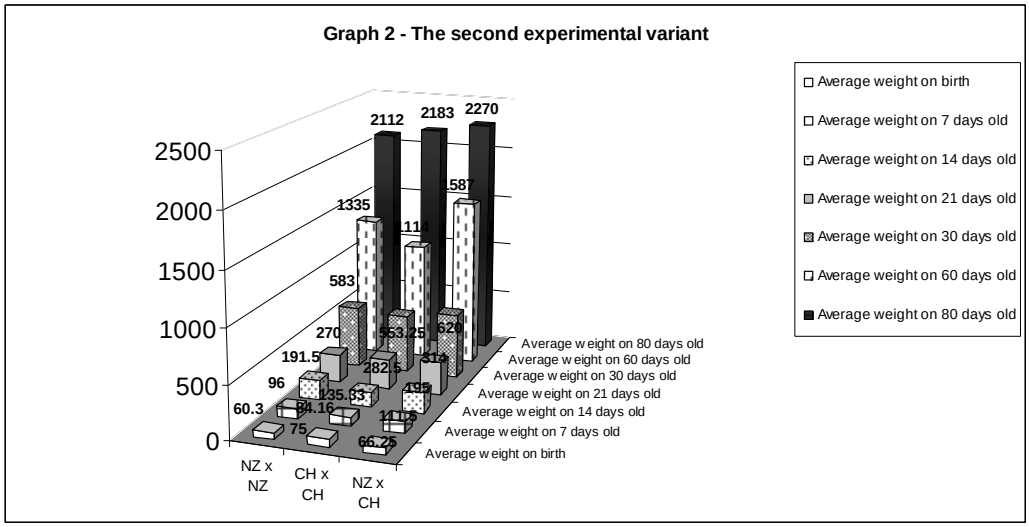
At 80 days, hybrids have a 2320g average weight, over 10% higher then the pure breeds.

**Graph 1 - The first experimental variant**




From graph 2 is observed that on birth, medium weight of hybrids is 66.2g, higher then NZ but lower then CH. At one week, the CH x CH products had a

average weight of 84g, much lower then NZ x NZ products (96g), respectively 111.5g on NZ x CH.




At 14 days, the average weights of the three nests have close values. At the end of milk alimentation period, hybrids raise in weight compared to parental breeds.

On weanling, the corporal dynamic of pure breeds was lower in comparison with the hybrids. At 80 days, the hybrids had an extra weight of 100g compared to pure breeds.

In graph 3 can be observed that CH product registered the highest value (61.5g) on birth. At one week, hybrids have the highest weight, of 102g. At 14 days, medium weight of hybrids is lower compared to pure breeds.

At the end of the milk alimentation period, hybrids register again high values compared to pure breeds. The extra weight of hybrids is kept all along the experiment, till 80 days old.

## Conclusions

The two breeds used in the cross-breeding chart, respectively New Zealand White as maternal line and Grand Chinchilla as paternal line, have a good combinative characteristic.

In all the experimental, the hybrids from NZ x CH cross-breeding registered a corporal dynamic higher then the parental breeds.

Hybrids obtained by cross-breeding New Zealand White as maternal line and Grand Chinchilla as paternal line, in equal environmental conditions, manifest the heterozis effect.

## Bibliography


1. **Baselga M., (2004),** Genetic improvement of meat rabbits. Programmes and diffusion. *Proceedings of the 8th World Rabbit Congress, Puebla (Mexico)* Sept. 2004, WRSA ed.,1-13*;*
2. **Brun J. M. şi colab., (2002),** Evidence for heterosis and maternal effects on rabbit semen characteristics. *Animal research* 51: 433-442
3. **Bura M.,** Rabbit breeding guide, Editura Eurostampa, Timişoara, 2006
4. **Bura M., I. Bencsik**, Genetic amelioration of rabbits, Editura Mirton, Timişoara, 2000
5. **Dronca Dorel,** Animals and plants amelioration, Editura Mirton Timişoara 2004.
6. **Dronca Dorel**, Genetic amelioration of animal populations, Editura Mirton, Timişoara, 2007
7. **Popescu-Micloşanu Elena, Iuliana Neagu**, Amelioration pragrammes in animal sciences, Editura Ceres, Bucureşti, 2005