The productive phenotypic traits with high heritability in domestic rabbits (*Oryctolagus cuniculus*)

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Abstract. Through this study we intended to estimate the coefficients of heritability in a uniformly phenotypically domestic population, but heterogeneous in origin, of domestic rabbits from Transylvania. A herd of 400 rabbits from two backyard farms in Transylvania was the biological material used in our study. The same male was mated with several randomly selected females. The data were collected in stages, over several years, evenly distributed over the seasons. Heritability was estimated from the regression of offspring phenotype on the average phenotype of the parents. The results show that the most faithful are transmitted productive and reproductive characters such as the number of nipples in doe, and kits weight at 90, 120 and 180 days. Prolificity and breastfeeding capacity seem to be traits which are largely influenced by the environmental factors.
Key words: *Oryctolagus*, phenotypic traits, heritable traits, European rabbit.

Introduction. Heritability coefficient (h^2) is a statistic used in the field of animal genetics and animal improvement that shows the degree of variation in a phenotypic trait in a population that is due to genetic variation between individuals in that population (Wray & Visscher 2008). It measures the extent of the variation of a trait can be attributed to variation of genetic factors, as opposed to variation of environmental factors (Wikipedia.org 2020). The concept of heritability expressed by the coefficient of heritability can be explained in the form of the following question: "What is the proportion of the variation in a given trait within a population that is not explained by the environment or random chance?" (Gazzaniga et al 2015).

Through this study we intended to calculate the coefficients of heritability in a uniformly phenotypically domestic population, but heterogeneous in origin, of domestic rabbits from Transylvania. Being a mixture obtained by crossbreeding, the results will illustrate the values characteristic of the species *Oryctolagus cuniculus* and not those specific to a certain breed. The characters followed are those presented in Table 1 and are the most important characters from a reproductive and productive point of view.

Material and Method. A herd of 400 rabbits from two family-type farms in Transylvania, Cluj County (Romania) was the biological material used in our study. The same male was mated with several randomly selected females. The data were collected in stages, over several years, evenly distributed over the seasons. Heritability (h^2) was estimated (see Table 1) from the regression of offspring phenotype on the average phenotype of the parents.

Results, Discussion and Conclusions. The results show that the most faithful are transmitted productive and reproductive characters such as the number of nipples in doe, and kits weight at 90, 120 and 180 days. Prolificity and breastfeeding capacity seem to

be traits which are largely influenced by the environmental factors. The results on the heritability of kits weight seem to be consistent with the results of Adeolu & Ogunnupebi (2019).

Knowing the coefficient of heritability, farmers can act by artificial selection on those characters that are highly heritable (Adeolu et al 2020).

Table 1

Coefficient of heritability of some traits of the domestic rabbit (*Oryctolagus cuniculus*)

Phenotypic trait	h^2
Prolificity	0.21
Breastfeeding capacity	0.32
The weight of the kits at birth	0.47
Kits weight at 60 days	0.55
Kits weight at 90 days	0.61
Kits weight at 120 days	0.60
Kits weight at 180 days	0.65
Maximum live weight of the breeder	0.54
Time required to reach maximum live weight	0.58
Number of nipples in doe	0.88

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