

STUDY REGARDING REPRODUCTIVE ISOLATION IN ROMANIAN SPORT HORSE FROM JEGĂLIA STUDFARM

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Abstract

This study is a part of an ample research concerning influences factors in the competitive traits of Romanian Sport horse from Jegălia studfarm. The genetic analysis studies are a part of Animal Genetic Resources Management because just start of them we elaborate the strategies for inbreeding management. This study has as purpose to present one important aspect of genetic analysis: reproductive isolation. This parameters has a capital importance in animal breeding because there has a directly influence in animal population evolution.

The reproductive isolation situation was quantified using the relation elaborated by S. Wright in 1921.

Key words: sport horse, Jegălia, reproductive isolation.

INTRODUCTION

This study is a part of an ample research concerning the genetic analysis (history) of Romanian Sport Horse from Jegălia studfarm. The genetic analysis studies are a part of Animal Genetic Resources Management because just start of them we elaborate the strategies for inbreeding management (Popa R., 2005). This study has as purpose to present one important aspect of genetic analysis: reproductive isolation. This parameters has a capital importance in animal breeding because has a directly influence in animal population evolution.

The population acceptance criteria are four: reproductive isolation, morphological and physiological differences, environmental requirements and genetic size (Popescu-Vifor, 1990). The reproductive isolation level is the most important criteria for population acceptance, the other three being in according to them (Drăgănescu C., 1979). This parameter is very important because only reproductive isolated populations have an own evolution, in contrary they are influenced by evolving of immigrants populations.

MATERIALS AND METHODS

The biologic material are represented by 4 sire stallions and 52 mares, Romanian Sport Horse,

representing the entire reproductive nucleus from Jegălia stud farm at this time (December 2012).

The reproductive isolation level was quantified using the follow relation [1]:

$$C.I.R. = \frac{AA - (AI + II)}{AA + AI + II},$$

where: AA – number of individuals accepted for reproduction in analyzed interval with both autochthons parents; AI – number of individuals accepted for reproduction in analyzed interval with one autochthon and one immigrant parent; II – number of individuals accepted for reproduction in analyzed interval with both immigrants parents.

RESULTS AND DISCUSSIONS

The results regarding reproductive isolation coefficient (RIC or CIR) are showed in table 1. The moment of this study is approach to the last imports, and that is the reason who make easy for us the identification of immigrants parents.

Before analyzing dates presented in table 1 we must specificate some things. We can observe, from table 1, big number of fathers who activate in reproductive nucleus by two reasons: first because of the immigrants stallions imported and introduced in

reproductive nucleus, and second because of overlapping generation. All this make possible finding of current sire stallions also at the parents level, especially at the parents of reproductive nucleus level. Such notice a genetic persistence of immigrants in reproductive nucleus, as a following of maintaining of individs with minimum one immigrant parent, to create genetic variability necessary for selection and for changing some characters in the direction of immigrant populations.

Observing the sire stallion ascendance for analyze of R.I.C., we discover one immigrant individual (Condor stallion, recently imported). Regarding to the brood mares, we identify 16 mares with one immigrant parent (great proportion of father who belongs to another

horse population: Shagya, Furioso North-Star, Throughbreed).

Dates presented in table 1 relieve the fact that the Romanian Sport Horse livestock from Jegălia studfarm became a population with his own evolutive way (R.I.C.=0.3929). The sire stallion livestock have R.I.C. = 0.5, and the broodmares livestock (R.I.C. = 0.3846), is dominated by autochthon mares (N = 36) The situation is very different at the parents level (R.I.C. = -0.2069) and at the grandparents level (R.I.C. = -0.439), as we can see in table 1, where we observe a great weight of individuals with one immigrant parent (50% in parents of reproductive nucleus, 39% at the grandparents level) and imported (10.34% in parents of reproductive nucleus, and 32.93% at the grandparents level).

Table 1. The reproductive isolation coefficient values

Specification	No. AA	Immigrants (I)	Parents			R.I.C.	
			AI	II			
Reproductive nucleus (RN)	♂	4	1	3	-	1	+0.5
	♀	52	-	20	16	2	+0.3846
	Total	41	1	21	18	2	+0.3929
Parents of RN	♂	18	4	2	6	5	0
	♀	40	2	18	13	2	-0.3
	Total	58	6	20	19	7	-0.2069
Grandparents of RN	♂	33	18	5	7	19	-0.5758
	♀	49	9	26	6	9	-0.3469
	Total	82	27	31	13	28	-0.439

CONCLUSIONS

The Romanian Sport Horse from Jegălia stud farm became a population with his own evolution. The value of reproductive isolation coefficient, are inconstant in generations successions because of crossbreeding. The sire stallion number is too small to allow a good management of inbreeding, if will maintain Romanian Sport Horse as a population with reproductive isolation.

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