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GENOTYPIC ASSESSMENT OF KARAKUL RAMS BY FUR SKIN QUALITIES OF PROGENY

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Abstract

The research purpose was the comparative appreciation of different evaluation systems for fur skin characters and features at Karakul lambs and methods of rams testing by the progeny fur skin qualities, by emphasizing of those advantages and disadvantages. Research has been done on breeding sheep from experimental farm of INZMV Maximovca, Anenii Noi district, and CAP „Agrosargal" from Hânceşti district. As a result of research has been found, that, the category of rams amelioration obtained as a result of the application of the terminological system of fur skin characters and features assessment at lambs appreciation and of simple testing method by the progeny fur skin, will not be afterwards confirmed, in proportion of 85%, when the decimal system of scoring is applied in order to appreciate the characters and features of lamb fur skins and will be used the biometric method of scoring, by testing the rams after the progeny fur skin qualities. Moreover, some rams that were qualified as reducing (worsen), as a result of testing after the progeny fur skin qualities by the simple method, have become ameliorator breeders, as a result of their testing after the biometric scoring system of progeny fur skin qualities and, reverse, other rams, which were qualified as enhancers in testing result by simple method, became reducers, as a result of their testing by biometric scoring method. It was concluded, that only application of terminological system assessment of Karakul lambs and of the simple method of rams testing after the progeny fur skin qualities are not enough for an objective evaluation of breeders amelioration category. The conclusions made as a the result of testing with simple method application are offen unreliable and contradictory, The use of decimal scoring system at Karakul lambs assessment and of biometric scoring method at testing rams after the progeny fur skin qualities, permits objective, genotypic evaluation of breeders amelioration category by determining the certainty criterion of the conclusions regarding amelioration degree of each ram apart. As a result of research was proposed a classification of Karakul rams by the amelioration value in following categories: I degree ameliorator – whose progeny exceeds by score ranking, the flock level with $t_d \geq 3.3$ ($B \geq 0.999$). II degree ameliorator - whose progeny exceeds by score ranking, the flock level with $t_d \geq 2.6 – 3.2$ ($B \geq 0.99$). Ordinary ameliorator - whose progeny exceeds by score ranking, the flock level with $t_d \geq 2.0 – 2.5$ ($B \geq 0.95$). Relative ameliorator - whose progeny exceeds by score ranking, the flock level with $t_d \geq 1.6 – 1.9$ ($B \geq 0,90$). Neutral – whose progeny doesn't have a certain positive difference comparing to flock level. Certain reducer – whose progeny surrenders by score ranking, the flock level with $t_d \geq 1.6$. Relative reducer - whose progeny surrenders by score ranking, the flock level up to $t_d < .1.6$.

Keywords: *testing, genotype, rams, Karakul, method, biometric, score.*

INTRODUCTION

The assessment of Karakul rams genotype after the progeny fur skin qualities, has some advantages comparing to other races, since these qualities can be measured in a relatively short period (150-155 days after the fertile insemination of the sheep) and at a relatively early age (1-2 years) of the ram (Каримов, 2007). Taking into account the fact that, some ram lambs, with a good body development, can be used at the mount at an early age of 6-8

months, the term of their genotype determination, after the progeny fur skins qualities, can be reduced up to one year of age. In this case, the interval of the flock generations succession will decrease, also with an year. Therefore, profiting of results of an early definition of Karakul rams genotype after the progeny fur skins qualities, the coach can enhance the selection effect and accelerate the rate of the flock genetic amelioration.

Despite the fact that, according to instructions of the evaluation marc of Karakul sheep, with amelioration principles in Republic of Moldova (1996), testing the rams after the progeny fur skin qualities is mandatory only for breeding farms, we consider that this test is appropriate to be done at all farms, both the livestock breeding farms as well those for the goods production, whereas about genetic breeding true value on the fur skin qualities of the breeders can be deemed not only according to the own fur skin qualities of lambskin (at birth), or to ascendants or collateral relatives, indicated in the individual form, or the breeding certificate of the purchased animal, but after the progeny fur skin qualities. The purpose of genotypic testing of Karakul rams after the progeny fur skin qualities consist in identification of the most valuable breeders with (prepotent) predominant amelioration genotype for their intensive use at reproduction and removal from the flock of non-valuable rams, reducers of fur skin qualities.

In karaculture are known several methods of rams testing, after the progeny fur skin qualities (Buzu et al., 1994; Buzu, 2000; Iliev, 1992; Pascal, 2007; Дъячков, 1980; Дюсегалиев, 2010; Нел, 1975; Рахманов, 1978). The main of these methods contain comparing the progeny fur skin qualities of the ram, which will be tested, with other ram groups, as are:

-comparing the fur skin qualities of the tested rams progeny to contemporary progeny qualities;

-comparing the fur skin qualities of the tested rams progeny to mothers fur skin qualities of same progeny;

-comparing the fur skin qualities of the tested ram's progeny to the race standard;

-comparing the fur skin qualities of the tested rams progeny to fur skin qualities of all new-born lambs in the flock.

Given that, the latter method is more thorough and practical in application, it was included in the official instructions (1996) as the basic method of genotypic testing of Karakul rams after the progeny fur skin qualities.

At the same time, regardless of comparing method of the progeny fur skin qualities with other progeny groups, an important problem remains the assessing of genotypic value, on the basis of statistical analysis of the data obtained in the test. In the old instructions (1967), of testing the Karakul rams after the progeny fur skin qualities, statistical processing of data was done by a simple method, which provided only percentage calculation of the share of valuable classes progeny (elite + I class). In case when this share at the tested ram was higher comparing to flocks progeny, this ram was considered as ameliorator. The conclusions done on the basis of these calculations not always confirmed in subsequent practical mating of the ewes with this ram, because the conclusions done on the basis of simple method of appreciation did not have a support of genetic certainty. Subsequently, some researchers (Кошевой, 1975; Нел, 1975) tried to undertake some tentative to apply the scoring system of appreciation of some fur skin characters and features, taken apart, without generalizing these into a synthesis system. Therefore, these attempts have not succeeded their real implementation in practice of breeders testing after their progeny qualities.

For these reasons, further, we have proposed in the new Instruction (1996), the use, at evaluation marc, of decimal scoring system for fur skin qualities assessment (characters and features), generalized in a synthetic character, as the lambs ranking at evaluation is, and the application of the biometric statistic method of processed data, obtained in testing the Karakul rams coats after the progeny fur skin qualities, as well as the determination of the certainty coefficient of the conclusion regarding the amelioration value of the ram.

However, the decimal scoring system of fur skin characters and features assessment at Karakul lambs evaluation marc and biometric statistics method of processing data obtained by testing Karakul rams after the progeny fur skin qualities, have not gained spread among

Karakul sheep keepers, in our country, partly due to insufficient scientific information and technology transfer in this field and, partly from lack of importance awareness of these methods by the Karakul sheep keepers specialists, both from the breeding farms, and, even more so, those from production farms.
In this context, we proposed a comparative assessment of different test methods for Karakul rams after their progeny fur skin qualities, of fur skin characters and features evaluation through a synthetic character at lambs evaluation marc, as well as various statistical processing techniques of obtained data, as a result of lambs evaluation marc and rams testing, highlighting the advantages and disadvantages of these methods.

MATERIALS AND METHODS

Research has been carried out on the Karakul sheep from agricultural farms: Experimental Section of the National Institute of Zootechny and Veterinary Medicine, from Maximovca, district of Anenii Noi and agricultural cooperative "Agrosargal" Hancesti district.
To the genotypic testing, after the progeny fur skin qualities, have been submitted main ram breeders, especially, breeders which proved, in previous testing, neutral amelioration results and required repeated testing to confirm the amelioration value, as well as some younger rams of 1.5 years, recently purchased or grown up in own household for breeding purpose. To do this, in mount season, were applied, the method of artificial insemination of females (at farms with a number of over 1000 sheep jellies), or their controlled mount (at farms with a number of under 1000 sheep jellies). The average load of insemination at a ram was around 50-70 sheep, but not less than 15-20 sheep.
Determination of lambs fur skin qualities was performed at their evaluation marc by applying both terminological system, according to the old instructions (1967), as well as decimal scoring system, according to the new evaluation instructions of Karakul sheep with amelioration principles in Republic of Moldova (1996).
Terminological system of Karakul lambs characters appreciation at evaluation marc, at the age of 1-2 days after birth, is to express the development value of the character in words (for example, very good, good, not so good and insufficient). Lambs class shall be determined according to the development degree of the fur skin characters and features on the whole, and is expressed in following classes: class I, class II, defect. Decimal scoring system, along with the characters and features of lambs fur skin appreciation, in the above mentioned terminology, provides also the application of the scoring system from 1 to 10, including: lambs of the elite class can be appreciated, at the sight of evaluator, with 8, 9 or 10 points, class I - with 5, 6 or 7 points, class II - with 3 or 4 points, defect category (brac)- with 1 or 2 points.
The genotypic testing of Karakul rams after the progeny fur skin qualities was done, both by simple and biometric scoring methods.
The first method - the simple one, is less objective, and consists in reporting of obtained indices at progeny evaluation marc of each breeder taken apart, as a percentage comparing to the totals obtained from all flock. According to this method, if the tested ram exceeded the flock level after the share of high class lamb descendants (elite + class I), it was considered ameliorator, and, reverse, if the yield was below the level of the flock, the ram was considered a reducer (worse). In case when the share of high classes' descendants was at the level of the flock, the breeder was considered neutral. The second method - biometric scoring, consists in appreciation of lambs' fur skin qualities by decimal scoring system and data processing, according to biometric statistics, with the determination of certainty coefficient (td), of the difference (dd-t) of the average value of the descendant characters of the tested ram, compared to the average of the flock. Evaluation of the ram genetic value, according to this method, was done according to the average score of the descendants ranking, compared to the average of flocks ranking. In case of need to specify, the evaluation of breeders genotype features is done on any characters or traits of fur skins taken apart. In order to determine the rams genetic value (the amelioration category) after the progeny fur skin qualities, were calculated the main genetic parameters of lamb descendants of the breeder

and of the flock, as a whole as follows: M_d - the arithmetic average of ranking score of the lamb descendants; M_t - the arithmetic average of the ranking score of the lambs for entire flock; σ - the average of square deviations of the score (characters variability); m - arithmetic average error; d-the difference between the arithmetic average and rams descendants scoring and flocks average; t_d - the certainty coefficient of the difference between the arithmetic averages;
The data obtained as a result of research, were statistically processed using computer software „STATISTICA – 6" and appreciated their certainty, according to variation biometric statistics, the methods of Плохинский Н. А. 1969.

RESULTS AND DISCUSSIONS

Analysing the results of Karakul rams testing after their progeny fur skin qualities, through the simple method, we have found (Table 1), that, after the share of higher class rams (elite + Ist class) in the progeny, the most valuable breeder is the ram with registration number 6356, which has the highest share of progeny (88.9%) of this kind of lambs and, after this point, exceeds the average level of the flock with 22.6%.

Table 1. Karakul rams testing after the progeny fur skin qualities by simple method

N. o/o	Rams registration no.	Progeny, N	inclusive:									
			Elite class		Ist class		IInd class		Brac (defect)		Elite + Ist class, %	Amelioration category
			head	%	head	%	head	%	head	%		
1	7823	50	10	20.0	30	60.0	10	20.0	-	-	70.0	Ameliorator
2	8144	35	2	5.7	18	51.4	14	40.0	1	2.9	57.1	Reducer
3	1668	30	3	10.0	17	56.7	9	30.0	1	3.3	66.7	Neutral
4	9125	50	1	2.0	35	70.0	10	20.0	4	8.0	72.0	Ameliorator
5	6502	13	1	7.7	8	61.5	2	15.4	2	15.4	68.2	Ameliorator
6	3745	10	-	-	7	70.0	1	10.0	2	20.0	80.0	Ameliorator
7	4907	10	2	20.0	5	50.0	3	30.0	-	-	70.0	Ameliorator
8	6356	9	1	11.1	7	77.8	1	11.1	-	-	88.9	Ameliorator
9	6218	12	2	16.7	7	58.3	-	-	3	25.0	75.0	Ameliorator
10	3982	29	2	6.9	8	27.6	16	55.2	3	10.3	34.5	Reducer
11	5422	36	10	27.8	11	30.6	15	41.7	-	-	58.4	Reducer
12	0073	25	8	32.0	8	32.0	8	32.0	1	4.0	64.0	Reducer
etc	. . .	. . .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. . . . .
Total on the flock		**652**	**67**	**10.3**	**365**	**56.0**	**200**	**30.7**	**20**	**3.0**	**66.3**	**x**

However, this finding cannot be considered properly correct as the testing of this ram was done on a reduced number of progeny (9 heads). The old instructions for rams testing after their progeny qualities by the simple method, has shown, that the testing result can be considered valid, only if it has been obtained on a flock of at least 15-20 descendants. Thus, due to insufficient number of descendants, in our example, these cannot be considered real results obtained from testing the rams with registration number 6502, 3745, 4907 and 6218. Despite the fact, that all of these breeders are appreciated by the simple method as ameliorators, their testing cannot be considered as one performed.

Second place in rank of tested breeders was occupied by the ram with registration number 3745, whose progeny has a share of 80% of elite + I class lambs. According to this index, his progeny exceeds the average flocks level with 13.7%. At the same time, we specify, that in the progeny of this breeder completely are lacking he lambs of the highest assessment class, such as elite class, and there are, in a significant quantity (20%) individuals of the worst quality of assessment namely the brac.
The third place in the rank of tested breeders, is taken by the ram with registration number 6218 in whose progeny is 75% share of elite + Ist class lambs, which exceeds the average level of the flock with 8.7%. But in the progeny of this

ram persists the biggest share of brac-lambs, constituting 25%.

Continuing the description of ameliorators features of the ram-breeder from the fourth place, in the ranking of breeders mentioned in the table, we can observe that this male with registration number 9125, which has a sufficient number of descendants (50 lambs), does not distinguish a lot from first three breeders, but by a lower rate after the share of lambs of elite + I^{st} class, compared to the flock's average, what is only 5.7%.

And, only the fifth breeder (no. 7823) of the breeders ranks, tested after their progeny fur skin qualities, is really an ameliorator, because, despite the fact, that it doesn't exceed much (3.7%) the average flock after the share of elite + I^{st} class descendants share class I, has a significant share from elite upper class lambs (20%) and has no progeny with bad qualities of brac fur skin.

Analysing the amelioration value of breeders, determined by the simple method, just after the share of elite + I^{st} class lambs, we conclude, that male enhancers do not significantly differ between them, than by this share level.

This is explained by methodological imperfection statistical processing of testing data by this simple method, which consists in the fact that at the conclusion deduction regarding rams amelioration value after the fur skin qualities, will not be taken into account the value importance of Elite class lambs, as well as those from I, II and brac classes.

For example, after the share of elite + I^{st} class lambs, the ram no. 9125 (which has a sufficient number of descendants - 50 heads) is considered an ameliorator, because exceeds the flocks average with 5.7%. At the same time, comparing the indices of this rams progeny fur skin qualities with the progeny of the first breeder (no. 7823), we note that they are more inferiors, referring to the share of elite lambs. At the progeny of ram no. 9125, there is a share of lambs with unsatisfactory fur skin qualities (brac – 8.0%). But, these special features of progeny fur skin qualities are not taken into account at the general genotypic assessment of the breeder after the progeny qualities.

Such effects are produced over the rams, which have obtained, the category of neutral or reducer, tested by the simple method, because the reducer-rams can differentiate clearly one from each other, such as in our example reducer-ram no. 3982, in whose progeny are only 34.5 % share of elite + I^{st} class lambs, and rams reducers no. 5422 and 0073, which have in their progeny also 27.8 and 32.0%, of elite class lambs.

The simple evaluation method of rams genotype after the progeny fur skin qualities, is not taken into account the certainty degree of the difference (td) between the progeny value and the flock's average, which give to conclusions a suspicious aspect of low-probability.

To demonstrate the essential differences that occur between the simple and the scoring biometric methods at testing of breeding rams after the progeny fur skin qualities, we will examine the results of genotypic of same rams in the second version, compared to the first method. (Table 2).

As a result of obtained data analysis, we found that from those seven rams, that were tested by the simple method and have obtained the category of ameliorator, only one ram with the registration number 7823 confirmed this category as a result of genotypic testing after the progeny fur skin qualities by the second biometric scoring method.

Two other rams, with no. 4907 and 6356, were appreciated by the simple method as ameliorators, becoming just neutral, as a result of testing after the progeny fur skin qualities by second biometrical scoring method. This is explained by the fact, that, the positive difference between average score of the progeny of these two rams, taking apart, and the average score of the flock, were not certain (t_d = 0.77 and 1.61; P > 0.1).

Surprising is the fact, that the other 4 rams (no. 9125, 6502, 3745 and 6218) that have obtained the category of ameliorator, as a result of testing by simple method, became relative reducers as a result of genotypic testing after the progeny fur skin qualities, by second biometric scoring system. The name of relative reducer is linked with the fact that negative differences between the average score of the progeny of these 4 rams, taken apart, and the average score on the flock, were not certain (t_d = 0.46-1.33; P > 0.1).

Table 2. Genotypic testing of Karakul rams after the progeny fur skin qualities, according to biometrical scoring method

No. o/o	Rams registration number	Descendants, **N**	Arithmetical average **(M)**	Square deviation **(σ)**	Average error **(m)**	$M_t - M_d$ **(d)**	$t_d = d/\sqrt{m_t^2+m_d^2}$	Share of lambs **elite+I$_{st}$ class, %**	Amelioration category	
									Biometrical method	Simple method
1	7823	50	6.04	1.80	0.25	**+0.70**	**2.69**	70.0	Amel. II degree	Ameliorator
2	8144	35	4.94	2.02	0.34	-0.40	1.14	57.1	Relative reducer	Reducer
3	1668	30	5.37	1.87	0.34	+0.03	0.08	66.7	Neutral	Neutral
4	9125	50	5.02	1.64	0.23	-0.32	1.33	72.0	Relative reducer	Ameliorator
5	6502	13	5.08	2.06	0.57	-0.26	0.46	68.2	Relative reducer	Ameliorator
6	3745	10	4.90	2.13	0.67	-0.44	0.66	80.0	Relative reducer	Ameliorator
7	4907	10	5.80	1.89	0.60	+0.46	0.77	70.0	Neutral	Ameliorator
8	6356	9	6.00	1.22	0.41	+0.66	1.61	88.9	Neutral	Ameliorator
9	6218	12	4.58	2.21	0.64	-0.76	1.19	75.0	Relative reducer	Ameliorator
10	3982	29	4.17	1.65	0.31	**-1.17**	**3.65**	34.5	Relative reducer	Reducer
11	5422	36	6.14	2.29	0.38	**+0.80**	**2.11**	58.4	Ordinary amel.	Reducer
12	0073	25	6.16	2.30	0.46	**+0.82**	**1.78**	64.0	Relative amel.	Reducer
etc	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . . . .	. . . .
Total on the flock		**652**	**5.34**	**1.71**	**0.07**	**x**	**x**	**66.3**	**x**	**x**

where:
N – number of rams descendants;
M_d – arithmetical average of ranking score of lamb-descendant;
M_t – arithmetical average of ranking score of lambs on whole flock;
σ – average of square deviation of the score (characters variability);
m – arithmetical average error;
d – difference between arithmetical average of rams progeny score and flocks average;
t_d –certainty coefficient of difference between arithmetical averages.

Especially important and unexpected is the fact that other 2 rams with registration numbers 5422 0073, being from reducers category, as a result of testing by simple method, have become ameliorators, as a result of genotypic testing after the progeny fur skin qualities, by second biometrical scoring method, where first ram obtained the category of ordinary ameliorator, with the first threshold certainty of the theory of probability forecasts without error according to Student ($t_d = 2.11$; $P < 0.05$) and the second breeder obtained the category of relative ameliorator, because the certainty of the difference between the average score of the rams progeny fur skin qualities and average of the flock is to zero threshold ($t_d = 1.78$; $P < 0.1$).

If by determining the amelioration category of tested males after the progeny fur skin qualities, by the simple method, is influenced by only one key factor - the difference between the share of elite + Ist class descendants of the ram and average of the flock, then by determining the amelioration value of tested rams after the progeny fur skin qualities, by biometrical scoring system, are influenced by several factors, such as:

- **d_{t-d}**, difference between fur skin qualities of the tested rams lamb progeny, expressed by average ranking score and this index value at lambs from whole flock;
- **t_d**, difference certainty coefficient (d_{t-d}), which allows the formulation of a certain conclusion about amelioration value of the tested ram and which by its deduction formula depends on:
- **m_t** and **m_d**, the error of arithmetical average (M_t) and ranking score of the lambs over the flock and this characters of the tested rams progeny (M_d);
- **σ**, the average deviation of the lambs ranking score squares (characters variability);
- **N,** number of rams descendants, or of lambs on whole flock.

We would like to mention that, while genotypic determining of breeders amelioration category by the second processing method of test

materials after the progeny qualities, each descendant class value, taken apart, has influence in determining the average score of the tested rams descendants (M_d). Thus, the descendants of the elite class contribute to the formation of the average ranking and genotype value with 8-10 points, those of I^{st} class - with 5-7 points, those of II^{nd} class - with 3-4 points, and those of brac - category with only 1-2 points. Therefore, the data from examined examples (Tables 1 and 2), indicates that as the tested rams progeny contains several individuals of higher classes with high score, as thereof average score is bigger and, vice versa, as the breeder has as descendants less lambs of higher classes and more lambs of inferior classes, as more the average value of ranking score of ram's descendants is lower.

The characters variability (σ) of the ranking score influences directly the value of the arithmetical average error (M) of this character. In Table 2, we see that as more the ranking score variability is higher, as more the ranking average error increases, and vice versa, as less the ranking variability is, as less is the average error.

The progeny number of the tested ram (N), influences also, directly and inversely, the arithmetical average error by its determining formula ($m = \sigma / \sqrt{N}$). From the results examined above, we see that as bigger is the number of descendants, as lower is the arithmetical average error, and, vice-versa, with the decrease of the descendants number, the arithmetical average error of the ranking score increase.

And finally, all these factors up-nominated (d_{t-d}, m_t, m_d, σ, N), taken all together, influence the certainty coefficient (t_d) of the difference between the average score of the lamb descendant ranking and average of this character on the flock by its determining formula ($td = d_{t-d} / \sqrt{m_d^2 + m_t^2}$), based on which can be made a definite conclusion concerning the rams amelioration value tested after the progeny fur skin qualities by biometrical score method.

The analysis of research results (Tables 2 and 3) shows that, with the increase of the certainty coefficient value of the difference (M_d-M_t) of selected character value, increase respectively also the rams amelioration degree tested after the progeny fur skin qualities by biometric score method.

Thus, we have concluded that the category and amelioration degree of Karakul rams, tested after progeny fur skin qualities, by biometric score method, may be defined, depending on the certainty criterion size (t_d) of difference between arithmetical averages of lambs ranking score.

Based on this conclusion, as a result of rams testing after the progeny fur skin qualities by biometric score method, we assigned (classified, split) the rams in different value groups depending on the category and amelioration degree (Table 3).

Table 3. Distribution of rams tested by the amelioration category

No. o/o	Rams registering No.	Descendants **(N)**	Arithmetical average **(M)**	Square deviation **(σ)**	Average error **(m)**	Difference $M_t - M_d$ **(d)**	Certainty coefficient **(td)**	Certainty threshold **(B)**	Amelioration category of the ram
1	9031	79	6.14	1.98	0.22	+0.86	3.74	0.999	**I_{st}** degree ameliorator
2	8235	117	5.85	2.19	0.20	+0.57	2.71	0.99	**I_{st}** degree ameliorator
3	8148	60	5.90	2.06	0.27	+0.62	2.21	0.95	Ordinary ameliorator
4	9115	55	5.80	2.07	0.28	+0.52	1.79	0.90	Relative ameliorator
5	8071	143	5.36	2.02	0.17	+0.08	0.44	-	Neutral
6	9235	88	4.48	2.00	0.21	-0.80	3.64	0.999	Certain reducer
7	2683	43	5.09	2.21	0.34	-0.19	0.54	-	Relative reducer
8	3372	12	6.58	2.02	0.58	+1.30	2.24	0.95	Ordinary ameliorator
9	8705	18	5.61	1.91	0.45	+0.33	0.71	-	Neutral
etc.		. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . . . .
Total on the flock		**1226**	**5.28**	**2.02**	**0.06**	**x**	**x**	**x**	**x**

As the basic argument, or landmark, for this classification, have served the four thresholds of probability forecasts without error after Student (zero-threshold - $B_0 = 0.90$ or $P < 0.1$; $B_1 = 0.95$ or $P < 0.05$; $B_2 = 0.99$ or $P < 0.01$; $B_3 = P < 0.001$). Depending on the classification of certainty coefficient of arithmetical average (M_t-M_d) of the ranking score of the descendant lambs and lambs on whole flock, Karakul rams were classified by the amelioration value in following categories:

Ist degree breeder - is conferred to rams whose progeny exceeds, by the average ranking score, the flocks level, with the highest certainty level of forecasts without error ($t_d \geq 3.3$; $B \geq 0.999$). As a rule, the difference between the descendants value and average on the flock is very high. These rams are most valuable by the genotype of fur skin qualities and submit constantly their qualities through heritability to their progeny.

IInd degree breeder - is conferred to rams whose progeny exceeds, by average ranking score, the flocks level, with second degree of certainty threshold of forecasts without error. The coefficient value of the difference certainty (t_d) is located within the limits of 2.6-3.2 ($B \geq 0.99$). The difference, between the progeny value and the average on the flock, is also quite large. This kind of rams is also valuable and transmits by heredity constantly their fur skin qualities to descendants.

Ordinary breeder - is conferred to rams whose progeny exceeds, by the average ranking score, the flocks level with first degree certainty threshold of forecasts without error. The value of the certainty coefficient of the difference (t_d) is located within the limits of 2.0-2.5 ($B \geq 0.95$). The difference between the progeny value, and the flocks average is moderate, but definite.

This kind of rams is quite valuable and transmits through heredity to their progeny the fur skin qualities.

Relative ameliorator – is conferred to rams, whose progeny has a pattern above, by average ranking score, to exceed those of the flock, with certainty of zero thresholds of forecasts without error. The coefficient value of difference certainty (t_d) is located within limits 1.7 – 1.9 ($B \geq 0.90$). The difference between the progeny value and flocks average is not quietly sure, that's why it is considered that it has only a pattern above. Relative ameliorator rams are less valuable and certainly do not transmit through heredity to their progeny the fur skin qualities. These breeders need a repeated testation to check their amelioration value.

The neutral category - is assigned to rams, whose difference between the progeny average ranking score, and the flock's level is positive, but not significant, and the value of the certainty coefficient (t_d) is located within the limits of 0.0-1.6. This kind of rams do not represent a genotypic value, that's why, they cannot be used for breeding within the flock where were tested, than as triers. These rams may be tested by progeny fur skin qualities in other flocks.

The category of certain reducer - is assigned to rams, whose progeny yields, by the average ranking score to the flock's level, with the certainty coefficient of the difference, at least $t_d = 1.6$. Such rams represent a genetic danger for the flock, having a genotypic value lower than that of the flock, that's why, is recommended to be sent to the slaughter for meat.

The category of relative reducer - is assigned to rams, whose progeny yields, by the average ranking score, the flocks level, but the certainty coefficient of the difference is less than 1.6. Such rams also represents a genetic danger to the flock, having a genotypic value lower than that of the flock, so it is recommended to be removed from the flock.

From above mentioned example, is obvious, that the largest amelioration category has the ram no. 9031, whose progeny exceed the arithmetical average value of the lambs ranking score on whole flock with 0.86 points, or with 16.3% ($P<0.001$). The certainty coefficient of the difference is quite big - $\mathbf{t_d} = 3.74$. Therefore, the deduced conclusion is, that, to this breeder will be conferred the category of I_{st} degree ameliorator, and it is certain with highest probability threshold of forecasts without error.

The breeder no. 8235 has a progeny, which exceeds, by fur skin qualities score, the flocks average with 0.57 points, or 10.8%, with the certainty coefficient of this difference of $t_d = 2.71$ ($P < 0.01$) is, also, of high genotypic value, with the certainty of second degree

threshold probability of forecasts without error, and has the II[nd] degree breeder's category.

It is interesting the example of ram no. 8148, whose progeny exceeds, by fur skin qualities score, the flocks level with 0.62 points or 11.7%. At first view, this breeder, has a difference of average score of the progeny fur skin qualities, compared to the flock, bigger than that of ram no. 8235, it would seem that it has a better amelioration value, but due to a lower certainty coefficient of this difference (t_d = 2.21; P < 0.05), this ram is assigned in a lower category of ordinary breeder.

The ram with registration no. 9115 has a progeny that exceeds, after fur skin qualities score, the flocks average with 0.52 points or 9.8%, with the certainty coefficient of this difference of only t_d = 1.79, has a lower genotypic value, compared to its fellows. This breeder is assigned in the category of relative ameliorator, which means that after the testing of progeny fur skin qualities it is required an iteration to specify the amelioration category.

At the same time, from the same table, we can observe that the ram no. 8705, although exceeds the flocks average by progeny average ranking score with 0.33 points, or 6.3%, cannot be considered an ameliorator, because the difference by this index is not definite according to the probability threshold of forecasts without error (t_d = 0.71; P > 0.1), therefore, he was assigned to the neutral category. In case if, the data processing of tested rams by progeny fur skin qualities, would be done, according to the first method, this breeder would be considered ameliorator.

The breeder no. 9235 of this table, is an example of a true certain reducer, because its progeny yields, by fur skin qualities score, the flocks average with 0.80 points or 15.2%. The certainty coefficient of this difference constitutes t_d = 3.64 (P < 0.001). Therefore, the conclusion regarding the amelioration category of this ram is certain with the highest probability threshold of the forecast without error.

And the most interesting example of this table is the ram no. 3372, which managed to get into the category of ordinary ameliorator, with a low number of progeny (only 12 lambs), which exceeded the flocks average by ranking score with 0.58 points or 24.6% (t_d = 2.24; P <0.05). The example demonstrates that by applying the scoring biometric method at Karakul rams testing by progeny fur skin qualities, in some cases, can be obtained certain results, on a small number of descendants (10-12 lambs).

These aspects of rams genotypic testing by progeny fur skin qualities have a major importance in identifying the real amelioration breeders, which contributes to the genetic amelioration of the flock. Only real ameliorators, with a high certainty coefficient of the value difference of progeny fur skin qualities, compared to the flocks average, can be used as founders, or genealogical lines continuers of high performance, for the genetic amelioration of the flock, for the improvement of the genetic structure of interracial type or of the breed as a whole.

CONCLUSIONS

1. Only the application of the terminological system of Karakul lambs assessment and of simple method of testing the rams after the progeny fur skin qualities, are not sufficient for an objective evaluation of breeders amelioration category. The conclusions made on the basis of the test results with the implementation of this system and this method is often unreliable and contradictory.

2. The use of decimal scoring system at Karakul lambs assessment and of scoring biometric method by rams testing after the progeny fur skin qualities allows the objective genotypic evaluation of breeders amelioration category with the determination of the conclusions certainty criterion regarding the amelioration of each ram, taken apart.

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