

Assessment and most common exterior faults in medium breeds of rabbits-part I: in position weight, type and shape

Abstract

Determination of breeding value by assessing the exterior of rabbits was each extensive problem. For this purpose, many rabbit breeders participate in exhibitions to find out the breeding value of their individuals. The aim of this work was to evaluate the qualities and exterior faults in selected medium breeds of rabbits according to a current Book of Rabbit Standards in the territory of Czech and Slovak Republic. From 11 exhibitions were selected and evaluated 1133 rabbits in weight category between 3.5 to 5.5 kg of different breeds and color varieties. Selected medium breeds included 308 pcs of Big Light Silver (BLS), 184 pcs of Chinchilla Giganta (ChG) and 641 pcs of Vienna group breeds (VB). The qualities and exterior faults of typical breed traits were evaluated in three positions: weight, shape and type. The results of the work show that in the most common exterior faults in all selected medium breeds of rabbits were in positions shape and type. In position shape were found the significant exterior faults as the slightly prominanted hips with slanting rump, worse legs position with bowed or splayed legs. Does often have very loose skin under the neck, which in some individuals of BLS and ChG was formed a dewlap. Especially in position type were often observed narrow chest, body too lean or too long, and more delicate head with finer structure of ears. On the other side were found individuals with very good body frame and standing position with muscle legs. The knowledge of the actual analyses of the exterior advantages and faults is essential for both the rabbit judges and rabbit breeders for optimization of techniques of judging system and methods of selective breeding, respectively.

Keywords: rabbits, standard, chinchilla giganta, big light silver, exterior faults

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Introduction

Rabbitbreeding has a long tradition in Central and Western European countries. Originally, rabbits were reared for meat production as a by-product, together with farmed cattle, and their function was to use surplus feed.¹ This led in the following years to gradual specialization and formation of new breeding discipline "rabbit breeding". The versatile production and sports use of rabbits served as a stimulus that resulted in increase of their numbers, improved breeding conditions and expanding of their exterior variability. The aim of the breeding activities was to create breeds that differ in size, colour, coat structure, adaptability and temperament.²⁻⁴

Today, across the breeding spectrum, the most common are rabbits of medium breeds that are also most frequently represented at the breeder exhibitions organized in the Czech and Slovak Republics.⁵ The medium breeds include rabbits with a live weight of adult animals from 3.5 to 5.5 kg. This group includes breeds with good meat production and fur quality as Chinchilla Giganta, Big Light Silver, Vienna, California, New Zealand, American Sable and others.²⁻⁶ From a wide range of medium-sized breeds of different color varieties, the gene pool listed below may be identified as the most widespread and utility breeds in the territory of Czech and Slovak Republic.⁵

Chinchilla Giganta has a graceful body, finely boned with head, ears and limbs all in due proportion to the size of the body. Dewlap to

be permissible in adult does. Adult bucks to be heavier boned with bold head. The maximum weight of adults is 5.44 kg (12lb) and minimum weight is 3.86 kg (8½lb). The under color shall be a deep blue slate as dark as possible from the skin to at least half the length of the fur (excluding black guard hairs). This to be followed by a clear band of pearl (off white) clearly defined, which shall not exceed a quarter of the length of the fur (excluding black guard hairs). The pearl band to be followed by a distinct black line, finishing upon the surface in alternating blue/grey and silver/white tapping's heavily intermixed with longer black-tipped guard hairs to give a well mixed 'mackerel'. Desired top color considerably darker grey than the Chinchilla rabbit. The color must be carried well down the sides of the belly, upon which the surface of the fur shall be white, except for the grey/blue groin streaks. The fur must be uniformly dense and silky in texture but with resilience. Desired length not less than 3.175 cm (1½in) but density to count more than mere length (Figure 1).⁷

The Big Light Silver breed belongs to popular rabbit breeds in the territory of east and central Europe. The standard live weight is 4.50 - 5.50 kg with well-proportioned, thickset cylindrical body and strong medium length limbs. The back is broad with well-rounded rump. Head is well developed, rounded and wide in whole its profile. The neck is almost not visible. A dewlap is permissible in does. The erected ears show a good substance and holding with ideal length 12 - 13 cm. The coat dense, elastic, rich in guard hairs and medium in length. The

top color is a typical breed trait. The overall impression is silver-milky with equally distributed dark tips of the firm guard hairs exceeding over the surface top color. This phenomenon forms so called black ticking. The under color is deep blue slate. The group of Vienna breeds

(VB) comprise of 5 recognized breeds, more specifically Vienna Blue (V-Blue), Vienna Black (V-Black), Vienna White (V-White), Vienna Agouti (V-Agouti) (Figure 2 & 3) and Vienna Opal (V-Opal).⁷



Figure 1 From left: Big Light Silver and Chinchilla Giganta.
Source: Foto by Mojcher J (2018) and Pokorný Z (2015).



Figure 2 From left: Vienna Black (V-Black), Vienna Blue (V-Blue).
Source: Foto by Šimek V (2018).

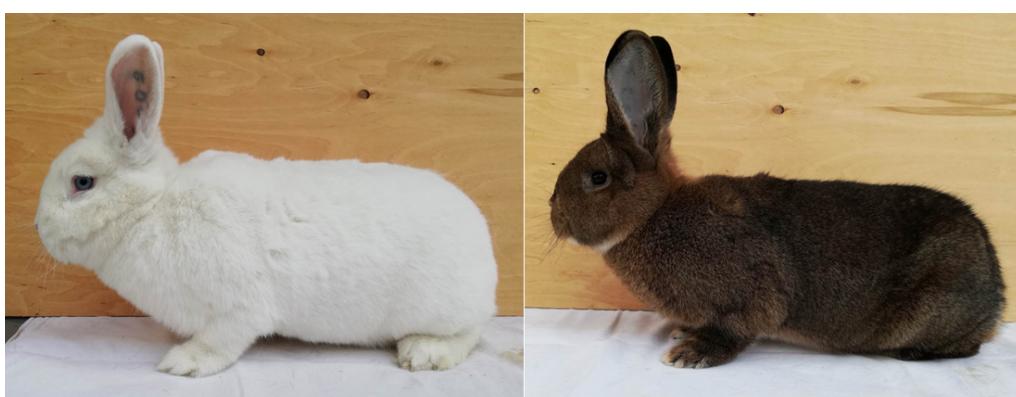


Figure 3 From left: Vienna White (V-White), Vienna Agouti (V-Agouti).
Source: Foto by Zigo F¹¹

Vienna breeds have similar body construction with live weight 3.5 – 5.25 kg. They have cylindrical body with well developed muscles. The chest is broad and deep. The back follows the same line from the nape to a well muscled rump. The legs are strong and of medium length. The head is bold and prominent. The ears are of good substance, well furred, rounded, and carried erect and of a length (approximately 13 cm, which is in good balance with the body. The coat is exquisitely dense, silky and lustrous and rich in guard hairs. It is of medium length 3.2-3.8 cm (1¼ to 1½ in).⁸ The color of Vienna Blue is dark slate blue and uniform over the whole body. The belly color and under tail may be less lustrous. The eyes are grey-blue, the nails are dark and the whiskers match the body colour. Under color is a slightly lighter blue and extends to the roots of the fur. The top color of Vienna Black must be an even jet-black. Under color is dark blue as possible extending to the skin. Eyes are hazel or black. The top colour of Vienna Agouti is rich chestnut shade with black ticking over an intermediate orange band. Ears laced black, eye circles, underside of tail and belly white with slate under color. The coat of Vienna White is exquisitely dense, silky and lustrous and rich in guard hairs. It is of medium length 2.5-3.2cm (1-1¼ in). The pure white color is uniform over the whole body, very lustrous. The belly color and under tail may be less lustrous. The eyes have a pure pale blue iris, the nails are white and the whiskers match the body color.⁶

The aim of the investigation was to study the standard exterior characteristics of the selected medium breeds of rabbits. The specified features were compared with the faults and advantages indicated on the rabbit's show remark cards, which were assessed at pre-selected exhibitions in the Czech and Slovak Republics. The observed changes

were evaluated in individual groups that correspond to the specified positions at the evaluation of individual animals.

Material and methods

Selection of rabbit breeds

A total of 11 rabbit's exhibitions organized in the Czech Republic and Slovakia under the auspices of the Rabbit breeders' associations were visited for the purpose of this study. For the statistical evaluation of exterior faults and advantages were selected 1133 rabbits in medium weight category between 3.5 to 5.5 kg of different breed and color varieties (Table 1). Of medium sized breeds of rabbits were evaluated Big Light Silver (BLS; 308 pcs), Chinchilla Giganta (ChG; 184 pcs) and group of Vienna breeds (VB; 641 pcs) including 5 recognized breeds, more specifically Vienna Blue (V-Blue), Vienna Black (V-Black), Vienna White (V-White), Vienna Agouti (V-Agouti) and Vienna Opal (V-Opal). Due to the similarity of VB were in this work merged into one group.

Book of standards for rabbits

The selected breeds of BLS, ChG and group of VB were evaluated by trained persons – judges (Figure 4) according to relevant Book of standards for rabbits issued by associations in the Czech⁶ and Slovak Republic.⁷ Each Standard book for rabbits consists of a general and a special part. The first part describes the general conditions of the seven positions in which the exterior of the rabbits is evaluated. Special section – second part, includes standards of individual breeds and their minor or major exterior faults.

Table I The number of medium breeds rabbits included in individual exhibitions

Slovak Republic				Czech Republic			
Exhibitions	BLS	ChG	VB	Exhibitions	BLS	ChG	VB
	pcs	pcs	pcs		pcs	pcs	pcs
Barca	17	38	22	V. Pavlovice	10	8	20
Michalovce	17	14	20	Přerov	31	22	125
Poprad	7	4	16	Brno	45	12	64
Barca	1	30	13	V. Bílovice	6	/	16
Žilina	/	/	169	Břeclav	20	8	23
Nitra	154	48	153				
Total	196	134	393		112	50	248

Note: BLS - Big Light Silver, ChG - Chinchilla Giganta, VB - group of Vienna breeds



Figure 4 Exhibition of rabbits and their assessment on the Show Remark Card.

Source: Foto by Mojcher J and Šimek V (2018).

Evaluation of rabbits

All exposed individuals should be in a perfect state of health and bodily condition, free from all soiling, particularly on the feet, ears and genital parts. The coat should reflect the overall good health of the exhibit, which should appear alert and vigorous. The qualities and exterior faults of typical breeding marks were evaluated in six exterior positions: weight, shape, type, coat, top color (eventually markings) and under color. However, the remaining seventh position of condition and health was not evaluated in this work as it does not include breed exterior traits. In the first part of this study are evaluated first three positions:

Weight: Before any assessment of a rabbit, its weight must be determined and recorded. Either the weighing is carried out when taking the rabbits for the exhibition, or the farmer will do so at home, just before the transport to the exhibition (according to the instructions of the organizer). The assessing person has the right to check the weight determined. In case of any doubt, he is obliged to verify it or to adjust it upwards, max. However, by 10%.

Shape: The following body criteria are considered in this position: the back line formation, position of the limbs, position of the tail, skin on the body and external genital organs. The backline begins at the first cervical vertebra and ends at the base of the tail. It should be even, nicely rounded at the back of the body without slanting rump or prominuted hips. The scapula must not be clearly visible in the nape. The forelegs must be straight, their step is to be called cat. The length and thickness of the limbs are part of the type position. The hind legs must also be straight; the feet should lie close to the body as parallel as possible. With the correct position of all limbs, the abdominal line should not touch the mat. The tail must be complete, straight, erect, adjacent to the body in the direction of the spine, palpable to the full length. The skin should be elastic and adhere firmly to all parts of the body. The external genitalia should be prominent, undistorted. In males, the testicles must be as close to the body as possible.

Type: In this position we consider the body proportions of the rabbit, the ratio of body width to its length, the thickness and length of the limbs, the proneness of the neck and in some breeds also the temperament in the form of the required so-called exhibition stand on upright forelegs. Especially in the case of rabbit meat breeds, we

assess the muscles in this position. In addition to white breeds we also assess the head and ears of the rabbit in this position.⁷

Scoring system

Each exterior position is assigned a certain number of points recorded by the assessor on the Show remark cards. The maximum sum of all positions equal to 100 points, therefore the exterior ideal animal. The distribution of points on rabbit's Show remark cards is as follows: Weight (10 points), Shape (20 points), Type (in Slovakia is 20 and Czechia is 15 points), Coat (in Slovakia is 15 and Czechia is 20 points), Top color or Markings (20 points), Under color (10 points) and Health care (5 points).

The minor faults are resolved by deduction of points in the positions. The disqualification fault excludes the animal from breeding for the supposed hereditary defect. The rabbit may also be non-classified because of an acquired character faults as injury, hair contamination and other.⁸ Evaluation of exterior faults and advantages from the rabbit's show remark cards was summarized and statistically compared selected medium breeds of rabbits in the position of Weight, Shape and Type.

Statistical analysis

Using Chi square test were evaluated the relationships between selected breeds of rabbits. Comparison of individuals' faults and advantages in positions Weight, Shape, Type of the rabbit's Show remark cards were summarized the statistical differences between groups of ChG, BLS and VB. The minimum criteria for statistical significance was set at $P \leq 0.05$ for all compared faults and advantages in evaluated positions.

Results and discussion

The exterior faults and advantages listed below are categorized according to the individual positions on the rabbit's Show remark cards.

Position 1: Weight. Body weight is one of the basic and very important features of each breed.⁹ The optimal body weight of Big Light Silver is a range 4.50 to 5.50 kg, Chinchilla Giganta in range 4.50 – 5.50 kg and in group of Vienna breeds is as follows: Vienna Black and

Vienna Blue in range 4.25 – 5.25 kg, Vienna White, Vienna Agouti and Vienna Opal in range (4.0 – 5.0 kg).⁸

According to Šimek¹⁰ the individual proportions of certain body parts of the rabbit which form its overall size or body frame depend on its weight. In this position, a reduced weight of evaluated breeds was observed, which was resulted in point reduction on the rabbit's show remark cards. The most common weight deficit was noted in a group of Vienna breeds. In total, 20.4% of V-Black, 13.3% of V-Blue, and 9% of V-agouti had inadequate weight. Of the other medium breeds, lower weight was recorded for BLS (6.2%) and the smallest deviations from the standard weight were shown by ChG (1.4%). A shorter body, narrow chest and a thin neck were other typical deficiencies that were associated with lower weight in evaluated individuals.

Position 2: Shape determines the five general signs forming the exterior as the course of the top line, the position of the limbs, the position of the tail, the skin and the external genital organs.⁷ Zadina⁸ identifies slightly prominent hips as the most common general fault found during evaluation of rabbits of all breeds. It involves protrusion of hip tubers above the sacrum line. A high incidence of this basic exterior deficiency was observed in BLS (21.4%), ChG (22.3%) and a group of VB (13.4%). Next most common exterior faults were slightly slanting rump and worse standing position with bowed or splayed legs (Table 2). The lowest number of individuals with slightly prominent hips were reported in Vienna group of rabbits (13.4%). On the contrary, this group has recorded the highest number of individuals with worse standing position (Figure 5).

Table 2 Summary of the most common exterior faults in position - Shape

Minor faults	BLS		ChG		VB		P
	pcs 308	%	pcs 184	%	pcs 641	%	
slightly prominent hips	66	21.4	41	22.3	86	13.4	P<0.05
slightly slanting rump	8	2.6	2	1.1	4	0.6	NS
worse standing position -bowed or splayed legs	23	7.5	6	3.3	64	10.3	P<0.05
loose skin on the body	119	38.7	80	43.4	234	36.5	P<0.05
dewlap (does)	92	29.9	16	8.5	41	6.4	P<0.05
Major and disqualification faults							
missing scrotum	11	3.5	2	1.1	12	1.9	NS
dewlap (bucks)	6	1.9	2	1.1	35	5.5	NS

Note: Percentual and statistical significance (P<0.05) are calculated from all selected breeds of 308 pcs of Big Light Silver (BLS), 184 pcs of Chinchilla Giganta (ChG) and 641 of Vienna breeds (VB), NS – non significant

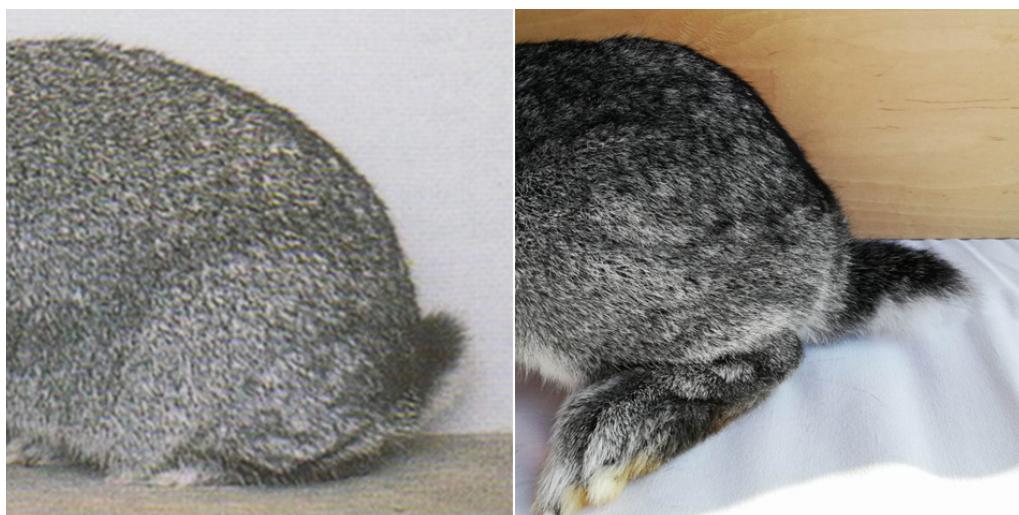


Figure 5 Exterior ideals and faults in position Shape. From left:Very good formed back line with curved rump, prominent hips with slanting rump in Chinchilla Giganta.

Source: Foto by Zigo F¹¹

Author Šimek¹⁰ observed very good formation of back line with musculature legs in the evaluated group of Vienna breeds and Chinchilla Giganta. In contrast, does occasionally showed loose skin on the breasts and dewlap. From our results looser skin on the body passing into dewlap in some individuals of Big Light Silver (29.9%) and Chinchilla Giganta (8.5%) was a typical exterior fault seen in does. Our results allowed us to conclude that less than 31% of analyzed BLS and 48% of ChG does had skin on breasts without apparent deficiencies and lobes. In the monitored breeds, very good to excellent formation of the back line was observed, particularly in LSS and in Vienna breeds.

On the contrary, due to distortion of genital organs such as missing scrotum, several individuals from selected breeds have been excluded from breeding. Very serious was also the occurrence of loose skin under the neck or indication of dewlap in bucks of selected breeds such as VB (5.5%) and BLS (1.9%). Individuals with such severe exterior fault were excluded from assessment as well as from further breeding.

Position 3. – Type. According to our previous study,¹¹ type is a very important position when the characters that define the exterior nature of the breed itself are evaluated. By type is mean the overall balance and coherence or integrity of individual body parts. The partial proportions of the body that make up the overall body frame of the rabbit are evaluated. We recognize several variants of the

body frame, which may be characteristic of certain breeds, but may be an undesirable defect in other breeds. The standard of each breed indicates the required type of body, including defects. Strength of the neck and strength and length of forelegs are assessed. We also focus on shape of the head and ears. Ears should be well coated and carried upright. Ideally, all breeds should be fleshy, spoon-shaped and open. Their length is specified in the standard of each breed. It is necessary to consider the so-called gender expression, which must always be clearly distinguishable between male and female. The results of our study showed that in all rabbits of medium-size breeds the most common defect in this position was a narrow chest or weak body frame. In individuals with narrow chest, a less delicate head with thin or softer auricles was often observed (Table 3).

According to Neirurerova et al.¹² Chinchillas in this position must have long and graceful body, finely boned with head, ears and limbs all in due proportion to the size of the body. Adult bucks to be heavier boned with bold head. The minimum weight of an adult doe should be 4.07 kg and an adult buck 3.86 kg; the maximum weight of an adult of either sex is 5.44 kg. During the National Animal Exhibition in Nitra authors observed individuals with a very well shaped head and sexual expression. The length of the ears was also optimal, but in many cases observed finer and thinner ears. In our study, up to 37.4% chinchillas showed thinner, softer or finer ears and 5.3% had delicate head (Figure 6).

Table 3 Summary of the most common exterior faults in position –Type

Minor faults	BLS		ChG		VB		P
	pcs 308	%	pcs 184	%	pcs 641	%	
Narrow chest / shorter / longer body	34	11.0	13.8	7.5	46	7.2	P<0.05
More delicate head	19	6.2	10	5.3	44	6.9	NS
Thinner, softer or finer ears	60	19.5	69	37.4	71	11.1	P<0.05
Finer structure of front legs	16	5.2	12	6.4	23	3.6	NS
Exterior ideals and advantages							
Very good head and ears	82	26.6	32	17.6	196	30.6	P<0.05
Very good standing position with muscle legs	38	12.3	31	17.0	106	16.6	P<0.05

Note: Percentual and statistical significance (P<0.05) are calculated from all selected breeds of 308 pcs of Big Light Silver (BLS), 184 pcs of Chinchilla Giganta (ChG) and 641 of Vienna breeds (VB), NS – non significant



Figure 6 From left: Ideal and good formed head, thinner and finer ears in ChG, Ideal and good formed head, thinner and finer ears in V-Black.
Source: Foto by Pyskatý O¹¹

According to Kolaček and Šimek,¹³ ChG must have a wide head and optimal body frame in terms of type. Many ChG today have a wide but flat head. Wide head is important especially in males also with regard to the development of secondary sexual characteristics and overall gender expression. Our evaluation showed that the most frequent type defects in ChG included the occurrence of thinner, finer ears (37.4%) and narrow chest (7.5%).

Conclusion

In conclusion, it can be clearly stated that each breed of rabbits included in this study had certain exterior deficiencies, but also strengths, especially in the shape and type positions. The difficult task the breeders will face in the coming years will involve breeding and selection of rabbits of these, but also of other breeds, that will allow them to strengthen as much as possible the typical exterior signs and reduce defects to the maximum extent. This is the only way how to sustain a large number of rabbit breeds with a varied world gene pool for generations to come.

Conflicts of interest

Authors declare that there are no conflicts of interest.

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