

Reproduction performances, growth and slaughter traits analysis of rabbit of Nitra breed

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The aim of the research was to analyse the Rabbit of Nitra in terms of its reproduction and production performance. All rabbits used for research were raised within a home environment (4 breeding sources). The research was focused on reproduction parameters (the number of live born kits, the number of weaned kits), growth parameters – growth performance (1st day, 21st day, 42nd day to 119th day), slaughter parameters (dressing out percentage, the weight of individual parts of carcass body). Detected live weight in adult males weight was 5,291.48 ±546.39 g. In adult females average live weight was 4,623.10 ±458.41 g. The weight of live born pups of rabbits on day 1 was 57.84 ±1.08 g, weight on 21st day 310.09 ±7.21 g, weight on 42nd day from 1,034.26 ±50.70 g up to 1,128.13 ±30.78 g, 77th day from 2,126.48 ±85.49 g up to 2,243.70 ±47.07 g and 91th day from 2,379.29 ±31.22 g up to 2,653.53 ±37.86 g. An average dressing out percentage was 62.47±0.23%.

Keywords: dressing performance, growth performance, meat production performance, rabbits

1 Introduction

The Rabbit of Nitra is the 3rd Slovak national breed. The goal was to create a white rabbit for traditional home-farming and for intense-farming also. Three basic breeds were used in the process of breeding. In the first step were used Argente de Champagne and Himalayan rabbits. By coincidence, at that time, the Californian rabbits were imported into the territory of Slovakia and were involved in process of breeding as a third breed. In an attempt to characterize the two rabbit breeds (Rabbit of Nitra – Ni and Zobor Rabbit – Zo) concerning the shift on the genetic level Vašíčková et al. (2016) studied microsatellite and genetic markers associated with coat color. This authors described, that overall population size of Ni and Zo rabbit breeds is very low. Stability of these two breeds is constantly eroded by cross-breeding efforts. The aim of the research was to analyse (selected utility properties) the Slovak national breed – Rabbit of Nitra.

2 Materials and methods

The data for the analysis were obtained (data was collected between 2016 and 2018) from four home-farming holdings (fancy breeders) of the Rabbit of Nitra.

The animals were stabled in outdoor wooden warrens with a compact floor and straw. Composition of the feed dose: hay, complete feed mixture + barley (50 : 50%) and water. We monitored growth parameters, reproduction parameters and slaughter parameters. Weighing was done on scales with an accuracy of 1 g. The rabbits were slaughtered at a relatively old age (91–119 days) and high body weight (2,785–3,612 g) because this is typical for small studs (home-farming). The carcass was processed according to the methodology reported by Blasco-Ouhayoun (1996). For statistical analyses the computer program Microsoft Excel has been used.

3 Results and discussion

Weight of the Rabbit of Nitra 1st day was 57.84 ±1.08 g and 21st day after birth 310.09 ±7.21 g.

Number of live born kits in litter (41 litters) was 6.88 ±0.28. Number of dead born kits in litter was 0.09 ±0.06. Number of weaned kits in litter was 5.98 ±0.29. Topczewska et al. (2013) showed the effect of breed on reproductive performance. These authors found the litter size 6.27 kits in the Californian breed and 8.49 in Popielno white. Kits weight at 35 day of age ranged from 603.21g (Alaskan)

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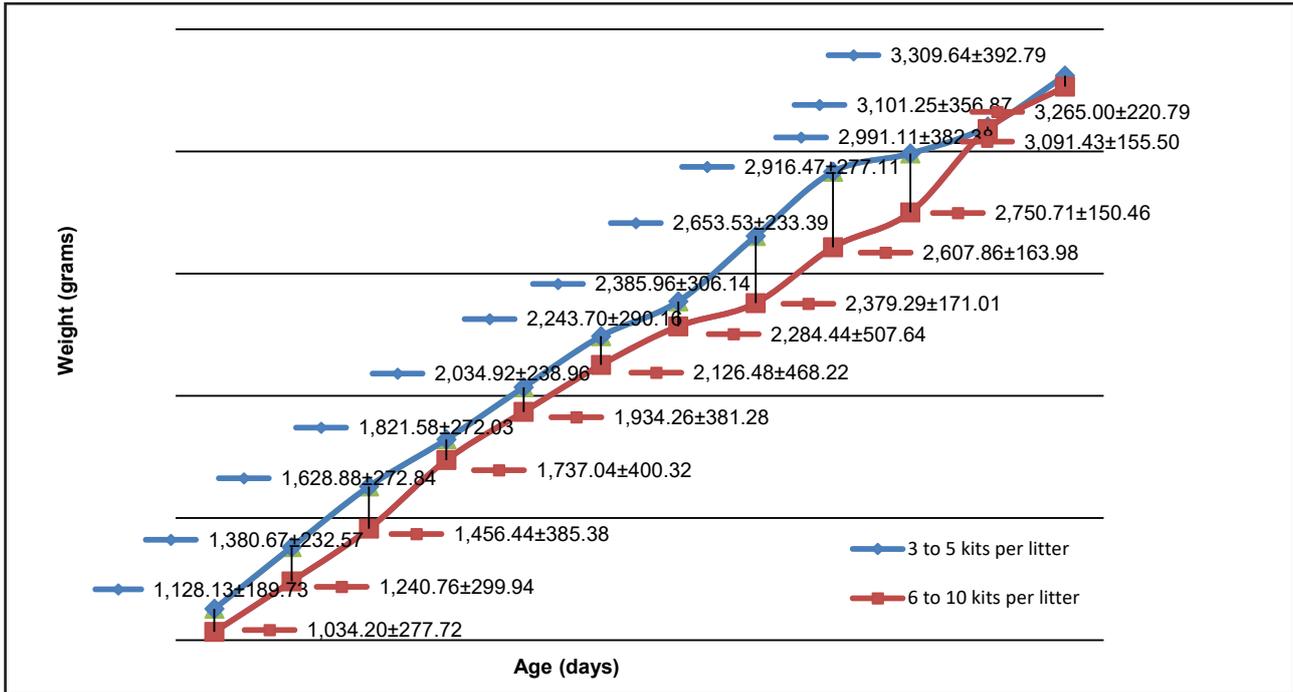


Figure 1 Growth performance (litter size 3–5 and 6–10 kits) n = 32

to 736.10g (Giant Chinchilla). Average live weight in adult males (31 pcs) over 12 months of age was 5,291.48 ± 546.39 g (3,740 to 5,862 g). In adult females (38 pcs) over 10 months of age, average live weight was 4,623.10 ± 458.41 g (3,820 g to 5,352 g).

Dalle Zotte (2002) described perception of rabbit meat quality and major factors influencing the rabbit carcass and meat quality. The quality of the rabbit carcass defines (Dalle Zotte, 2000). All these features should reach a certain level to accomplish the economic aim, especially in broiler rabbit farming, but also in some minor breeding conditions (Bianospino et al., 2004). Mach et al. (2006) mention for broiler rabbits a dressing out

percentage 58%. Jenisová (2013) came in broiler rabbits from home-farming holdings slaughtered between 2,470–3,425 g to dressing out percentage 54.89–55.18%. Dressing out percentage 57.03–60.81% detected Šmechl (2010). The closest values to our recognized Dokoupilová et al. (2006), an average dressing out percentage 61.81% with genotype includes 75% of traditional breeds and 25% of broiler rabbits. Skřivanová et al. 2000 found out an average dressing out percentage from 60.9% for Zika rabbits to 62.4% for HY2000 rabbits. Bízková and Tůmová (2009) detected an average dressing out percentage for medium breeds of rabbits 59.50%. They also detected thighs percentage from the carcass body 31.30%. Back

Table 1 Slaughter parameters of the Rabbit of Nitra

Indicator	n	\bar{x}	s	s_x	v
Live weight (g)	56	3051.25	429.30	52.45	0.14
Weight of skin (g)	32	538.10	63.79	7.79	0.12
Weight of gastrointestinal tract (g)	32	497.05	64.91	7.93	0.13
Weight of intestines (g)	32	126.55	23.69	2.89	0.19
Weight of head (g)	32	167.35	17.56	2.15	0.10
Weight of back (g)	32	444.25	85.97	10.50	0.19
Weight of thorax (g)	32	396.60	88.17	10.77	0.22
Weight of shoulder blades (g)	32	232.75	29.01	3.54	0.12
Weight of thighs (g)	32	542.80	99.97	12.21	0.18
Dressing out percentage (%)	56	62.47	1.92	0.23	0.03

percentage from the carcass body they recognized the value 19.5%. Tůmová and Hrstka (2013) detected in Czech white rabbit breed dressing out percentage with head 60.18% and thighs percentage from the carcass body 33.42%. Volek et al. (2013) recognized in Czech white rabbit breed dressing out percentage 59.80%. Šmehýl (2017) figured out the live weigh in 1st day after birth 56.92–93.23 g and live weight in 21st day after birth 325.50–552.20 g. In our research of the Rabbit of Nitra were these values lower in both cases. Šmehýl (2010) shows the number of weaned kits 4.10 to 7.93 pcs and the average mortality values until weaning 8.90–32.20%. Our average number of weaned kits was 5.98 pcs and we recorded weaning mortality 13.79%, which is a relatively low value. The authors Tůmová et al. (2013) described selected performance characteristics of Czech local breeds and to compare these breeds with a commercial hybrid. Czech White breeds grew non-significantly faster than Hyplus. The highest daily weight gain was observed in Czech white. Slaughter characteristics mostly correlated with live weight; the highest dressing out percentage was in the small breed Czech Gold (62.0%) and the lowest in the Hyplus rabbit (57.0%). Volek et al. (2013) said in analysis of Czech white breed live weight at 42 days of age – 882 g, 63 days of age – 1,715 g, 70 days of age – 2,018 g a 91 days of age – 2,704 g. Compared to Czech white rabbit breed has the Rabbit of Nitra higher growth performance to 70 days of age and from this age is the intensity compared to that breed considerably lower. These authors Tůmová et al. (2011) described that litter size of medium breeds (Czech white and Moravian white of brown eye) was 6.83 (Czech white) and 5.72 (Moravian white of brown eye) kits, weaned of kits per litter 6.46 (Czech white) and 5.22 (Moravian white of brown eye) and mortality till weaning 5.38% (Czech white) and 8.32% (Moravian white of brown eye). In this work the mortality till weaning was 13.08%. Tůmová et al. (2011) reported growth of national breed rabbit. Czech white day 42–889 g, day 77–2,265 g, day 91–2,747 g. Moravian white of brown eye day 42–873 g, day 77–1,868 g, day 91–2,210 g. Zawiślak et al. (2015) showed mean body weights in New Zealand White (2,422–2,456 g) and Blanc de Termonde rabbits (2,471–2,364 g) on the 90th day of fattening (feed type – farm made). These results are in agreement with findings of Lukefahr et al. (1983), Mach (1992) or Bolet et al. (2004). Bolet et al. (2004) in a study of fertility of the European Rabbit Genetic Resources stated that higher number of weaned kits was in medium size breeds in comparison with giant or small breeds. Roberts, Lukefahr (1992) or Bolet et al. (2004) describe that litter size of medium breeds is between 6 and 7.3.

4 Conclusions

Results of the study show the data of Rabbit of Nitra national breed. The preliminary data of fertility and growth revealed that Rabbit of Nitra is breed which may be a source of traits suitable for meat production, especially for traditional rabbit breeds (home-farming). On the other hand, there is the need for further studies of all production characteristics Slovak national rabbit breeds.

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References

- BIANOSPINO, E., WECHSLER, F.S., MOURA, A.S.A.M.T., FERNANDES, S. (2004) Growth traits and dressing percentage of straightbred and crossbred rabbits. In: *Proceeding 8th World Rabbit Congress*. [Online] Available at: <https://world-rabbit-science.com/WRSA-Proceedings/Congress-2004Puebla/Papers/Meat%20Quality/Q-Bianospono-2.pdf> [Accessed 1 September 2017].
- BÍZKOVÁ, Z., TŮMOVÁ, E. (2009) Evaluation of rabbit meat yield. *Maso*, vol. 20, no. 5, pp. 48–50.
- BLASCO, A., OUHAYOUN, J. (1996) Harmonization of criteria and terminology in rabbit meat research. *Revised proposal. World rabbit science*, vol. 4, no. 2, pp. 93–99. DOI: <https://dx.doi.org/10.4995/wrs.1996.278>
- BOLET, G., BRUN, J.M., LEVECHESTRIER, S., LOPEZ, M., BOUCHER, S. (2004) Evaluation of the reproductive performance of eight rabbit breeds on experimental farms. *Animal Research*, vol. 53, no. 1, pp. 59–65. DOI: <https://dx.doi.org/10.1051/animres:2003043>
- DALLE Zotte, A. (2000) Main factors influencing the rabbit carcass and meat quality. In: *Proceeding of 7th World Rabbit Congress*. [Online] Available at: <https://world-rabbit-science.com/WRSA-Proceedings/Congress-2000-Valencia/Papers/Growth&%20Meat/Q00-DalleZotte.pdf>. [Accessed 1 September 2017].
- DALLE Zotte, A. (2002) Perception of rabbit meat quality and major factors influencing the rabbit carcass and meat quality. *Livest. Prod. Sci.*, vol. 75, pp. 11–32. DOI: [https://dx.doi.org/10.1016/s0301-6226\(01\)00308-6](https://dx.doi.org/10.1016/s0301-6226(01)00308-6)
- DOKOUPILOVÁ, A., MACH, K., MAJZLÍK, I., ZAVADILOVÁ, L. (2006) Use of traditional breeds for breeding and hybridization of broiler rabbit. In: *Current trends in broiler rabbit breeding*. Nitra: Research institute for animal production Nitra, pp. 31–38.
- JENISOVÁ, E. (2013) *Quality of broiler rabbit carcass from small stud*. Nitra: Slovak University of Agriculture.
- LUKEFAHR, S.D., HOHENBOKEN, W.D., CHEEKE, P.R., PATTON, N.M. (1983) Appraisal of nine genetic groups of rabbits for carcass and lean yield traits. *Journal of Animal Science*, vol. 57, pp. 899–907. In: Tůmová, E., Martinec, M., Chodová, D. Analysis of Czech rabbit genetic resources.

- MACH, K., MAJZLÍK, I., ZAVADILOVÁ, L. (2006) The fattening and slaughter value of the final hybrids ♂PS59x♀PS19 depending on slaughter weight. In: *Current trends in broiler rabbit breeding*. Nitra: Research institute for animal production Nitra, 21–30.
- MACH, K. (1992) *Selected genetic and production aspects of rabbit meat production*. Association professor thesis. Prague: Faculty of Agronomy, Czech University of Life Sciences.
- SKŘIVANOVÁ, V., MAROUNEK, M., TŮMOVÁ, E., SKŘIVAN, M., LAŠTOVKOVÁ, J. (2000) Performance, carcass yield and quality of meat in broiler rabbits: a comparison of six genotypes. *Czech Journal of Animal Science*, vol. 45, pp. 91–95.
- ŠMEHÝL, P. (2010) *The breeding of specialized broiler rabbit lines for intensive farming*. Nitra: Slovak University of Agriculture.
- ŠMEHÝL, P. (2017) *Growth traits of synthetic broiler rabbit lines*. Nitra: Slovak University of Agriculture.
- TOPCZEWSKA, J., ROGOWSKA, A., GACEK, L. A. (2013) The effect of breed on reproductive performance in commodity rabbit production. *Journal of Central European Agriculture*, vol. 14, no. 2, pp. 828–835 DOI: <https://dx.doi.org/10.5513/jcea01/14.2.1271>
- TŮMOVÁ, E., MARTINEC, M., CHODOVÁ, D. (2011) Analysis of Czech rabbit genetic resources. *Scientia agriculturae bohemica*, vol. 42, no. 3, pp. 113–118. <https://www.researchgate.net/publication/292703080>
- TŮMOVÁ, E., HRSTKA, Z. (2013) Comparison of the quality of nutria meat and rabbit. *Maso*, vol. 24, no. 5, pp. 47–50.
- TŮMOVÁ, E., MARTINEC, M., VOLEK, Z., HÄRTLOVÁ, H., CHODOVÁ, D., BÍZKOVÁ, Z. (2013) A study of growth and some blood parameters in Czech rabbits. *World Rabbit Science*, vol. 21, no. 4, pp. 251–256. DOI: <https://dx.doi.org/10.4995/wrs.2013.1320>
- VAŠÍČKOVÁ, K., ONDRUŠKA, L., BALÁŽI, A., PARKÁNYI, V., VAŠÍČEK, D. (2016) Genetic characterization of Nitra rabbits and Zobor rabbit. *Slovak Journal of Animal Science*, vol. 49, no. 3, pp. 104–111.
- VOLEK, Z., VOLKOVÁ, L., TŮMOVÁ, E., CHODOVÁ, D. (2013) Vliv restrikce krmiva na úžitkovost, kvalitu masa a jatečného těla králíků plemene český albín. *Maso*, vol. 24, no. 2, pp. 55–57.
- ZAWIŚLAK, J., ŚWIECICKA, N., SURMA, D., BERNACKA, H. (2015) Analysis of factors affecting the final body weight in selected rabbit breeds. *Journal Central European Agriculture*, vol. 16, no. 2, pp. 28–37. DOI: <https://dx.doi.org/10.5513/jcea01/16.2.1582>