

SLAUGHTER VALUE OF YOUNG RABBITS FROM FATTENING HYBRIDES AND PURE BREEDING ANIMALS

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Introduction

Fattening hybrides are increasingly used for the production of rabbit meat. The fattening animals are slaughtered at an age of 60-90 days and a live weight of 2.5-3.2 kilograms. Besides the hybrides there are also pure-bred and crossings used for the production of rabbit meat (LANGE 1990; RISTIC et al., 1990a). The fattening yield as well as the slaughter value is influenced by the different final fattening weights of the animals (BÖCKER et al., 1990; LANGE, 1990; RISTIC et al, 1990b; SCHILKEN, 1990).

This study compares the slaughter value of fattening hybrides (Hyla, Zika) with the pure-bred animals (Zika).

Material and Methods

As fattening hybrides, two genetic lines (Hyla and Zika) were available as well as one pure-bred population (Zika). The young animals were weaned at an age of 28 days. The fattening period lasted 84 days and 77 days, respectively. A balanced compounded ration (pellets) was feed ad libitum (16,8 % crude protein, 3,6 % crude fat, 14,0 % crude fiber, 10,5 % crude ash, 1,2 % Calcium, 0,7 % Phosphorus, 0,3 % Sodium and vitamin supplements). After the fattening period the animals were slaughtered, chilled, packed (PE), frozen at -30°C and stored for 3-4 weeks until investigation. After thawing for 24 hours at +4°C the carcasses were dissected and musculature of the back and leg examined. The following criteria have been recorded: Data of the slaughter value (slaughter weight, proportions of the cuts and primary offals), physical characteristics (pH-value, color, water-binding capacity, grill loss, objective tenderness - Warner-Bratzler-Device -), sensory scores (juiciness, tenderness, flavor and overall impression) as well as chemical composition (water, fat, protein, fatty acids).

Results

The Hyla hybrides reached higher slaughter weights than the Zika animals (tab. 1). The leg proportion was higher at the Zika hybrides and the pure-bred Zika. The back was not influenced by the genotype. The highest proportion of the belly and the legs revealed the pure-bred Zika.

The proportion of kidney fat was about 1,2 % until 1,9 % (tab. 2). The highest fat proportion showed the Hyla hybrides. The highest proportion of the primary offals (kidneys, liver) were

found in the Zika hybrides. The best meat-bone ratio was reached in the leg and back of the Hyla hybrides as well as in the pure-bred Zika.

The meat proportion of the leg was higher in the pure-bred Zika than in the Hyla carcasses (tab. 3). The Zika hybrides had a higher bone proportion, however the Hyla hybrides had a higher proportion of tendons and intramuscular fatty tissue. There were no differences in the meat proportion of the back (tab 4). The Zika hybrids revealed a higher bone proportion and the Zika pure-bred a higher tendon proportion. There were no differences found concerning the intramuscular fatty tissue.

The pH-values of the back were lower than those of the leg (tab. 5). The Zika hybrids had higher pH-values. The meat color, listed as lightness (GÖFO-Device) and red tint (+a, Hunterlab-Device), showed higher values in the Zika hybrids as well as in the Hyla hybrides. The red tint (+a) was lower in leg and back of the Zika carcasses. The juice-holding capacity of the leg musculature measured in cm² according the GRAU-HAMM method was equal in all three genotypes.

The leg musculatur of the Hyla hybrides and of the pure-bred Zika reached better sensory scores (tab 6). These differences were significant at juiciness and tenderness. Significant differences were not found concerning the flavor and overall impression.

The grill loss of the leg musculature was not influenced and showed in average 24,5 %. This value is identical with the former recorded values (RISTIC et al, 1990b). The objective tenderness, measured with the Warner-Bratzler device, showed better values at the Zika and Hyla hybrides.

Influence of the genotype was found at the water and ash content of the leg musculature, however these differences were small (tab. 7). The fat and protein content remained uninfluenced, and reached average values of 0,86 % and 22,7 %. The fatty acid composition of the fat and back musculature has been studied, too. Higher proportion of the oleic acid (C18:1) were found in the Hyla hybrides, and of the linoleic acid (C18:2) in the pure-bred Zika.

References

- BÖCKER, R., KREUZER, W. und K. FEILING (1990): Die chemische Zusammensetzung der Muskulatur von Hauskaninchen der Rasse Weiße Neuseeländer unter besonderer Berücksichtigung ihres Aminosäuregehaltes und -musters sowie deren Abhängigkeit vom Geschlecht, Alter und Fleischteilstücken. 7. Arbeitstagung über Haltung und Krankheiten der Kaninchen, Pelztier und Heimtiere. DVG, S. 197-186
- LANGE, K. (1990): Einfluß des Mastendgewichtes auf die Mastleistung und den Schlachtwert von Jungkaninchen unterschiedlicher genetischer Herkunft. 7. Arbeitstagung über Haltung und Krankheiten der Kaninchen, Pelztier und Heimtiere. DVG, S. 156-163

- RISTIC, M., KROGMEIER, D. und V. DZAPO (1990a):
 Schlachtkörperwert von Jungkaninchen der Rasse Weiße
 Neuseeländer und Helle Großsilber sowie deren F₁-Kreuzungen.
 7. Arbeitstagung über Haltung und Krankheiten der Kaninchen,
 Pelztier und Heimtiere. DVG, S. 164-170
- RISTIC, M., SCHLÖLAUT, W. und K. LANGE (1990b):
 Schlachtkörperwert und Fleischbeschaffenheit von
 Jungmastkaninchen: Welchen Einfluß haben unterschiedliche
 Mastendgewicht? DGS 42, 889-893
- SCHILKEN, E (1990): Untersuchungen zur Ermittlung des
 Fettsäuremusters und Cholesteringehaltes in Fettgeweben von
 Schlachtkaninchen in Abhängigkeit von Alter, Rasse,
 Geschlecht und Fütterung. 7. Arbeitstagung über Haltung und
 Krankheiten der Kaninchen, Pelztier und Heimtiere. DVG, S.
 192-198

Summary

The slaughter value of a material of fattening hybrides (Hyla and Zika) and of pure-bred animals (Zika) has been studied. The animals were slaughtered at an age of 84 and 77 days respectively (n=60). The Hyla hybrides showed higher slaughter weights. The proportion of the leg as well as its meat proportion was the highest in the Zika animals. The fattening hybrides reached a better color compared with the pure-bred animals. The sensory characteristics of the Hyla hybrides and pure-bred Zika were in favor of the other animals. No strong differences concerning the genotype were found at the chemical composition.

Tab. 1: Slaughter data - as percent of the slaughter weight
 (n = 3x20)

Genotype	Slaughter- weight, g	Back	Belly	Hind leg ¹⁾	Fore leg ²⁾
Zika (hybrid)	1232,9	23,3	8,6	33,2	11,7
Hyla (hybrid)	1655,4	22,6	8,0	31,3	11,2
Zika (pure-bred)	1527,4	22,8	9,4	34,0	12,8
Signif.	***	n.s.	***	***	***

- *) 1) Including hip
 2) Including shoulder

Tab. 2: Proportion of the primary offals - as percent of the slaughter weight - and meat bone ratio (n = 3x20)

Genotype	Kidney Fat	Kidneys	Liver	Meat-Bone-Ratio	
				Hind leg	Back
Zika (hybrids)	1,2	1,2	7,2	4,2	3,4
Hyla (hybrids)	1,9	0,9	3,8	4,5	4,4
Zika (pure-bred)	1,5	1,0	5,1	4,5	3,8
Signif.	**	***	***	*	***

Tab. 3: Tissue proportion of the hind leg - as percent of the weight of the cut (n = 3x20)

Genotype	Muscle	Bone	Tendon	Intramuscular
				fatty tissue
Zika (hybrids)	76,7	18,4	1,3	1,7
Hyla (hybrids)	74,8	16,6	2,9	3,0
Zika (pure-bred)	77,4	17,2	2,2	1,7
Signif.	***	**	***	**

Tab. 4: Tissue proportion of the back - as percent of the weight of the cut (n = 3x20)

Genotype	Muscle	Bone	Intramuscular	
			Tendon	fatty tissue
Zika (hybrids)	70,2	20,7	3,6	2,4
Hyla (hybrids)	71,5	16,6	4,4	3,1
Zika (pure-bred)	69,5	18,6	6,3	3,0
Signif.	n.s.	***	***	n.s.

Tab. 5: Physical Characteristics (n = 3x20)

Genotype	B a c k			H i n d l e g			
	pH- value	light- ness	red tint (+a)	pH- value	light- ness	red tint (+a)	Juiciness (area)
Zika (hybrids)	5,72	62,9	8,6	5,87	60,5	8,5	7,7
Hyla (hybrids)	5,42	55,8	8,3	5,65	54,7	8,2	8,4
Zika (pure- bred)	5,59	50,9	6,5	5,74	62,4	6,8	8,4
Signif.	***	***	***	***	***	**	n.s.

Tab. 6: Sensory data - hind leg (n = 3x20)

Genotype	Juici- ness	Tender- ness	Flavor	Overall Impress.	Grill loss (%)	Warner-
						Bratz- ler(N)
Zika (hybrids)	3,4	3,6	3,6	3,5	25,3	11,6
Hyla (hybrids)	3,9	4,2	3,5	3,4	24,6	11,0
Zika (pure-bred)	3,9	4,2	3,7	3,8	23,7	14,1
Signif.	**	***	n.s.	n.s.	n.s.	**

Tab. 7: Chemical Composition - as percent of the fresh weight
(n = 3x20)

Genotype	H I N D L E G				F A T		B A C K	
	Water	Ash	Fat	Protein	C18:1	C18:2	C18:1	C18:2
Zika (hybrids)	74,6	1,37	1,02	22,9	23,4	24,5	23,3	21,5
Hyla (hybrids)	75,4	1,29	0,76	22,5	26,7	24,5	25,4	21,8
Zika (pure- bred)	75,6	1,33	0,81	22,8	24,5	30,1	22,9	27,7
Sign.	***	***	n.s.	n.s.	***	***	***	***