



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE  
státní podnik, ÚSTRAŠICE

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## **THE COMPLETE REPORT**

**OF THE XLIX. INTERNATIONAL TEST  
OF BROILER BREEDERS AND THEIR PROGENY**

**2020 – 2021**

Ústrašice, August 2021



### 3 The rearing of pullets

#### 3.1 Samples and their location

Females were reared in three pens by 90 chicks, males in separate pens by 75 chicks (treatment No.10 only 50 chicks). Numbers of birds were reduced in 5<sup>th</sup> week of age to specified numbers. Females were reduced to 240 birds, i.e. 80 birds per pen, males to 45 birds in one entry. Small or too big birds, ill ones and sexing errors were culled. Females were graded to three pens with low, medium and high bodyweight. All three pens got to the same bodyweight level in a few weeks by using different feed amounts. Males were transferred to production house in 19 weeks of age according to the dedicated system; each entry was split to four pens (i.e. 9 males per pen). Females were mated to males by one week later. After the final culling at 22 weeks of age the numbers were 220 females and 28 males per entry. Males were reduced later to 20 birds.

#### 3.2 Housing system

Pullets were kept in windowless house with full control of the environment. There were used automated heating and ventilation. There is controlled ventilation in the houses which assures the air exchange 6 cubic metres/hour/1kg live weight in summer time with lower levels in winter. Relative humidity is 60-65%.

Manually filled tube feeders and nipple automatic drinkers were used.

#### 3.3 Conditions of the environment

##### Temperature

Age	Bird level (°C)	House (°C)
Week 1	32	27
Week 2	28	23
Week 3	25	22
Week 4	21	21
Week 5	20	20
From week 6	18	18

##### Stocking density

Age	♀	♂
1 – 35 days	10.7	8.9
36 – 126 days	9.5	5.3
127 – 154 days	4.8	4.8

### 3.4 Lighting programme

Pullets were kept in windowless house. All the birds were submitted to the following lighting programme.

Age	Light from - to	Hours of light
Day 1 - 3	7 <sup>00</sup> – 6 <sup>00</sup>	23
Day 4	7 <sup>00</sup> – 2 <sup>00</sup>	19
Day 5	7 <sup>00</sup> – 23 <sup>00</sup>	16
Day 6 - 7	7 <sup>00</sup> – 20 <sup>00</sup>	13
Day 8 - 14	7 <sup>00</sup> – 17 <sup>00</sup>	10
Day 15 - 154	7 <sup>00</sup> – 15 <sup>00</sup>	8

Light intensity in first three days was 60 lux/sq. m. and then till the end of rearing 5 lux/sq. m.

### 3.5 Feeding and watering

There were used four different feed mixtures in the test. Feed was produced in XXXXXXXXXX

Day 1 – 14: K1 – starter, pellets  
 Day 15 – 35: K2 – pellets  
 Day 36 – 105: KZK – pellets  
 Day 106 – 154: NP-0 – pellets

#### Diet formulas

	K1	K2	KZK	NP-0
<b>Components (%)</b>				
Wheat	41.10	51.50	45.90	45.20
Maize	22.50	18.00	15.00	23.00
Oat	1.00	1.00	9.70	2.00
Sunflower meal	1.00	3.00	4.50	5.00
Wheat bran	-	2.70	14.00	11.50
Soybean meal	29.70	19.80	7.20	8.90
Soybean heat-treated	1.27	0.75	0.20	0.76
Salt	0.23	0.20	0.15	0.21
Limestone	1.78	1.80	1.95	2.24
Monocalcium phosphate	0.63	0.65	0.49	0.33
Sodium sulphate	0.17	0.22	0.28	0.23
Vitamin premix	0.62	0.38	0.63	0.63
<b>Nutrient content (calculated values)</b>				
Protein	20.8	18.00	14.59	14.99
Fat	3.38	2.80	2.50	3.00
Lysin	0.95	0.72	0.54	0.56
Methionin	0.44	0.34	0.30	0.31
Calcium	1.05	1.05	1.07	1.15
Phosphorus	0.44	0.44	0.42	0.38
Metabolizable energy MJ/kg	12.10	12.10	11.40	11.80

### Feeding management

First week ad libitum. From 2<sup>nd</sup> week feeding was based on bodyweight. Chicks were weighed weekly (20% of the total number) and feed amount adjusted for each pen separately, depending on the development of bodyweight and comparison with the standard bodyweight.

Feed was distributed daily to pan feeders in first three weeks, since four weeks of age pellets were spread on the litter.

Since 4<sup>th</sup> week oats was fed on the litter in following amount:

females – 1,25 g/bird/day

males – 2,20 g/bird/day

The oats was fed once a day.

If the bodyweight is over the weekly standard, the same feed level is used for one more week. If the actual bodyweight is below the weekly standard, feed level is increased by the same % as the % difference of bodyweight.

After the transfer to production house feeding was changed to separate sex feeding – female troughs with grids and male pan feeders. Oats was still fed on the litter.

### Drinking management

Nipples were used in rearing period. Water was available the whole day.

## 3.6 Veterinary precautions

The house was disinfected by [REDACTED]. As a prevention permanganate was given to the birds as well as vitamin – [REDACTED].

### Vaccination programme

Age	Vaccine
Day 1	[REDACTED]
Days 6	[REDACTED]
Days 13	[REDACTED]
Days 17	[REDACTED]
Days 22	[REDACTED]
Days 29	[REDACTED]
Days 35	[REDACTED]
Week 6	[REDACTED]
Week 7	[REDACTED]
Week 8	[REDACTED]
Week 9	[REDACTED]
Week 10	[REDACTED]
Week 11	[REDACTED]
Week 12	[REDACTED]
Week 13	[REDACTED]
Week 14	[REDACTED]
Week 15	[REDACTED]
Week 16	[REDACTED]
Week 17	[REDACTED]
Week 19	[REDACTED]

## 4 The production period

### 4.1 Samples and their location

Females were moved to production houses in the same number as were housed in rearing house, male were dynamically added to females only 9 birds in a box. By the beginning of lay the animals had time to become acquainted with the new environment and a different way of feeding and drinking.

Final selection before lay was done at 22 weeks. One sample was placed into four boxes in two halls according to the test station. To lay control was included in each sample 220 females and 28 males, therefore in each box were 55 females and 7 males (who were later reduced to 20 males, i.e. 5 males per box). Selections are carried out primarily by negative selection by health and exterior, as well as by live weight of each bird.

### 4.2 Housing system

Animals were kept in windowless house with full control of the environment. There were used automated heating and ventilation.

Manually filled tube feeders and nipple automatic drinkers were used.

### 4.3 Conditions of the environment

#### Temperature

Age	House (°C)
155 – 434 days	18

#### Stocking density

Age	♀ and ♂
155 – 434 days	4.2

### 4.4 Lighting programme

Age	Light from - to	Hours of light
Week 23 (Day 155 – 161)	6 <sup>00</sup> – 17 <sup>00</sup>	11
Week 24 (Day 162 – 168)	5 <sup>00</sup> – 17 <sup>00</sup>	12
Week 25 (Day 169 – 175)	5 <sup>00</sup> – 18 <sup>00</sup>	13
From week 26	5 <sup>00</sup> – 19 <sup>00</sup>	14

### 4.5 Feeding and watering

Feed was produced in XXXXXXXXXX

Day 155 – 245: NP-1 – crusher

Day 246 – 434: NP-2 – crusher

	NP – 1	NP – 2
<b>Components (%)</b>		
Wheat	43.70	44.60
Maize	25.00	25.00
Soybean meal	14.70	14.40
Oat	3.60	2.00
Soya oil	1.88	2.07
Monocalcium phosphate	0.37	0.27
Limestone	4.39	4.95
Limestone–roughly ground	3.00	3.00
Sunflower meal	2.20	2.70
Salt	0.26	0.27
Vitamin premix	0.90	0.74
<b>Nutrient content (calculated values)</b>		
Protein	15.10	15.01
Fat	4.00	4.14
Lysine	0.62	0.58
Methionine	0.35	0.33
Calcium	3.01	3.20
Phosphorus	0.36	0.34
Vitamin A (m.j./kg)	10000.00	10000.00
Vitamin D3 (m.j./kg)	3000.00	3000.00
Metabolizable energy MJ/kg	12.10	12.10

#### **Feeding management**

The flock was fed daily at 7 a.m. separately males and females. Females were using troughs with grids, males tube pan feeders hanging higher. Oats (3g/birds) was fed daily at 12 a.m. on the litter. In the afternoon he was flung out into the litter grit.

#### **Drinking management**

Nipples were used in production period. Water was available the whole day.

#### **4.6 Veterinary precautions**

The house was disinfected by [REDACTED], then treated against red mites and finally by [REDACTED] on litter before the placement of the flock.

During the laying has been given the vaccine [REDACTED]

## 5 The growing test of progeny

### 5.1 Samples and their location

Four progeny fattening test of 32 days were performed for each sample, with the 3<sup>rd</sup> fattening test extended to 39 days. In the prolonged test live weight and feed consumption were observed at 32 and 39 days of age.

Carcass analysis was performed on 20 cocks and 20 hens from each genotype. Breast muscles was weighed without the skin and the thigh muscles with the bone and the skin.

720 hatching eggs were set, 560 broilers were sexed and placed always 280 females (in two pens) and 280 males (in two pens). In 3<sup>rd</sup> part fattening test there were 520 birds – 260 females (in two pens) and 260 males (in two pens).

### 5.2 Housing system

Chickens were kept in windowless house with full control of the environment. There were used automated heating and ventilation.

Manually filled tube feeders and nipple automatic drinkers were used.

### 5.3 Conditions of the environment

#### Stocking density

	broilers per square meter
1 <sup>st</sup> , 2 <sup>nd</sup> and 4 <sup>th</sup> part fattening test	17.2
3 <sup>rd</sup> part fattening test	16.0

### 5.4 Lighting programme

	Age	Hours of light	Hours of darkness
1 <sup>st</sup> , 2 <sup>nd</sup> and 4 <sup>th</sup> part fattening test	Day 1 – 7	23	1
	Day 8 – 29	18	6
	Day 30 – 32	23	1
3 <sup>rd</sup> part fattening test	Day 1 – 7	23	1
	Day 8 – 36	18	6
	Day 37 – 39	23	1

### 5.5 Feeding and watering

Feed was produced in XXXXXXXXXX

1 <sup>st</sup> , 2 <sup>nd</sup> and 4 <sup>th</sup> part fattening test:	Day 1 – 10	Starter (BR1)
	Day 11 – 21	Grower (BR2-A)
	Day 22 – 28	Grower (BR2-B)
	Day 29 – 32	Finisher (BR3)
3 <sup>rd</sup> part fattening test:	Day 1 – 10	Starter (BR1)
	Day 11 – 21	Grower (BR2-A)
	Day 22 – 28	Grower (BR2-B)
	Day 29 – 39	Finisher (BR3)



	<b>Starter BR1</b>	<b>Grower BR2-A</b>	<b>Grower BR2-B</b>	<b>Finisher BR3</b>
Age	Days 1 - 10	Days 11 - 21	Day 22 - 28	Day 29 – 32 (39)
<b>Components (%)</b>				
Wheat	41.42	49.66	51.28	57.12
Maize	15.00	13.00	13.00	10.00
Soybean extr. groats	31.50	30.45	28.55	24.80
Soybean extr.	4.00	-	-	
Fish meal	1.50	-	-	-
Monocalciumphosphate	0.47	0.31	0.18	0.16
Calcium carbonate	1.47	1.21	1.20	1.13
Salt	0.28	0.24	0.23	0.26
Soybean oil	2.46	2.50	2.50	2.62
Animal fat	-	0.90	1.33	2.50
Sodium sulfate	0.13	0.10	0.11	0.08
Premixes of amino acid	0.85	0.86	0.86	0.86
Vitamin and mineral suppl.	0.92	0.77	0.76	0.47
<b>Nutrient content</b>				
Crude protein (g/kg)	23.36	21.17	20.48	19.15
Fat (g/kg)	5.16	5.24	5.66	6.86
Lysine (g/kg)	1.30	1.17	1.13	1.05
Methionine (g/kg)	0.63	0.56	0.54	0.50
Ca (g/kg)	0.94	0.78	0.75	0.70
P (g/kg)	0.45	0.39	0.36	0.35
Vitamin A (IU/kg)	15000	10000	10000	10000
Vitamin D3 (IU/kg)	5000	5000	5000	5000
ME (MJ/kg)	12.40	12.70	12.90	13.40

## 5.6 Veterinary precautions

The chicken house was disinfected by [REDACTED] before the chick placement. On the first days old chickens was applied to the water solution of permanganate. On days 1 and 12 chickens were vaccinated [REDACTED].

## 6 The results

Tab. No.	1	Rearing period
	2	Mortality during rearing period
	3a	Statistical analysis – cocks at 154 days of age
	3b	Statistical analysis – hens at 154 days of age
	4	Body weight – rearing
	5	Laying control
	6	Egg weight in period
	7	Mortality – hens in the laying period
	8a	Statistical analysis – cocks at 434 days of age
	8b	Statistical analysis – hens at 434 days of age
	9	Hatchability
	10a	Broiler results at the age of 14 days
	10b	Broiler results at the age of 32 days
	10c	Broiler results at the age of 39 days
	11a	Mortality during growing period at the age of 32 days
	11b	Mortality during growing period at the age of 39 days
	12a	Results of carcass analysis at the age of 32 days
	12b	Results of carcass analysis at the age of 39 days
	13a	Statistical analysis – cocks at 32 days of age
	13b	Statistical analysis – hens at 32 days of age
	13c	Statistical analysis – cocks at 39 days of age
	13d	Statistical analysis – hens at 39 days of age
	14a	Real and alive fertility – 1 <sup>st</sup> part fattening test
	14b	Real and alive fertility – 2 <sup>nd</sup> part fattening test
	14c	Real and alive fertility – 3 <sup>rd</sup> part fattening test
	14d	Real and alive fertility – 4 <sup>th</sup> part fattening test

Rearing period

Tab. No. 1 (page 1)

Breed	Treat. No.	Sex	Number of birds at			Average live weight at		Feed consumption per 1 bird and day		
			1 day	36 days	154 days	1 day	154 days	1-35 days	36-154 days	1-154 days
			birds	birds	birds	g	g	g	g	g
[REDACTED]	1	♂	75	45	28	43.7	3779.3	50.9	71.9	65.0
		♀	270	240	220	40.1	2555.9	41.8	62.2	57.1
[REDACTED]	2	♂	75	45	28	43.2	3810.7	51.3	73.3	66.0
		♀	270	240	220	38.6	2645.5	41.4	61.6	56.6
[REDACTED]	3	♂	75	45	28	41.5	3678.9	50.8	64.1	59.7
		♀	270	240	220	38.1	2780.4	40.1	66.8	60.1
[REDACTED]	4	♂	75	45	28	42.5	3610.4	49.8	72.4	65.0
		♀	270	240	220	38.7	2587.0	38.1	61.6	55.7
[REDACTED]	5	♂	75	45	28	46.0	3686.1	50.0	65.8	60.6
		♀	270	240	220	42.3	2843.1	39.6	66.4	59.7
[REDACTED]	6	♂	75	45	28	40.3	3786.1	50.2	65.5	60.5
		♀	270	240	220	38.5	2883.0	40.5	67.0	60.4

Rearing period

Tab. No. 1 (page 2)

Breed	Treat. No.	Sex	Number of birds at			Average live weight at		Feed consumption per 1 bird and day		
			1 day	36 days	154 days	1 day	154 days	1-35 days	36-154 days	1-154 days
			birds	birds	birds	g	g	g	g	g
[REDACTED]	7	♂	75	45	28	49.5	3628.2	50.7	72.1	65.1
		♀	270	240	220	38.7	2664.3	38.4	63.5	57.3
[REDACTED]	8	♂	75	45	28	45.2	3507.1	49.9	66.3	60.9
		♀	270	240	220	42.3	2836.5	39.3	66.9	60.0
[REDACTED]	9	♂	75	45	28	45.5	3589.6	49.8	64.3	59.5
		♀	270	240	220	37.1	2792.7	39.6	67.0	60.1
[REDACTED]	10	♂	50	45	28	50.0	3686.4	52.7	70.8	66.3
		♀	270	240	220	41.0	2661.5	38.8	62.0	56.2
[REDACTED]	11	♂	75	45	28	45.5	3517.9	49.8	65.6	60.4
		♀	270	240	220	41.8	2750.6	40.4	67.1	60.5
[REDACTED]	12	♂	75	45	28	41.9	3659.3	50.6	71.7	64.7
		♀	270	240	220	40.9	2682.1	37.9	62.2	56.2

Mortality during the rearing period

Tab. No. 2 (page 1)

Breed	Treat. No.	Sex	Mortality - days								Mortality according causes														
			1 - 14		15 - 35		36 - 154		1 - 154		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
			birds	%	birds	%	birds	%	birds	%															
[REDACTED]	1	♂	0	0.0	0	0.0	3	4.0	3	4.0					2					1	1				44
		♀	0	0.0	1	0.4	5	1.9	6	2.2					1						4				44
[REDACTED]	2	♂	0	0.0	0	0.0	3	4.0	3	4.0					3										44
		♀	0	0.0	0	0.0	4	1.5	4	1.5					3						1				46
[REDACTED]	3	♂	0	0.0	0	0.0	4	5.3	4	5.3					3						1				43
		♀	0	0.0	0	0.0	0	0.0	0	0.0															50
[REDACTED]	4	♂	0	0.0	1	1.3	0	0.0	1	1.3											1				46
		♀	0	0.0	3	1.1	2	0.7	5	1.9					3						2				45
[REDACTED]	5	♂	0	0.0	0	0.0	4	5.3	4	5.3					2						2				43
		♀	0	0.0	0	0.0	1	0.4	1	0.4					1										49
[REDACTED]	6	♂	0	0.0	0	0.0	2	2.7	2	2.7					2										45
		♀	0	0.0	2	0.7	2	0.7	4	1.5					1						3				46

**Causes:** 1 - Viral diseases      4 - Parasitary diseases      7 - Digestive tract diseases      10 - Locomotion apparatus diseases      13 - Diverticulus inflammation.  
 2 - Bacterial diseases      5 - Culling      8 - Respiratory tract diseases      11 - Sudden death syndrome      14 - Stock reduction  
 3 - Fungal diseases      6 - Injuries      9 - Reproductory tract diseases      12 - Cannibalism

Mortality during the rearing period

Tab. No. 2 (page 2)

Breed	Treat. No.	Sex	Mortality - days								Mortality according causes															
			1 - 14		15 - 35		36 - 154		1 - 154		1	2	3	4	5	6	7	8	9	10	11	12	13	14		
			birds	%	birds	%	birds	%	birds	%																
[REDACTED]	7	♂	0	0.0	1	1.3	2	2.7	3	4.0					2					1						44
		♀	0	0.0	0	0.0	1	0.4	1	0.4											1					49
[REDACTED]	8	♂	0	0.0	1	1.3	2	2.7	3	4.0					1					1	1					44
		♀	0	0.0	2	0.7	0	0.0	2	0.7					1						1					48
[REDACTED]	9	♂	0	0.0	1	1.3	8	10.8	9	12.0					4						3	2				38
		♀	0	0.0	1	0.4	2	0.7	3	1.1					1					1	1					47
[REDACTED]	10	♂	0	0.0	2	4.0	5	10.4	7	14.0					4						3					15
		♀	0	0.0	1	0.4	2	0.7	3	1.1					1					1	1					47
[REDACTED]	11	♂	1	1.3	0	0.0	3	4.1	4	5.3					1					1	2					43
		♀	0	0.0	1	0.4	1	0.4	2	0.7											2					48
[REDACTED]	12	♂	0	0.0	1	1.3	5	6.8	6	8.0					4						2					41
		♀	0	0.0	2	0.7	2	0.7	4	1.5					1						3					46

**Causes:** 1 - Viral diseases      4 - Parasitary diseases      7 - Digestive tract diseases      10 - Locomotion apparatus diseases      13 - Diverticulus inflammation.  
 2 - Bacterial diseases      5 - Culling      8 - Respiratory tract diseases      11 - Sudden death syndrome      14 - Stock reduction  
 3 - Fungal diseases      6 - Injuries      9 - Reproductive tract diseases      12 - Cannibalism

Statistical analysis - Cocks at 154 days of age

Tab. No. 3a

Breed	Treat. No.	Treat. size	Average live weight	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/ks	g/ks	%	g/ks	%	%
██████████	1	28	3779.29	318.07	8.42	60.11	1.59	1.15
██████████	2	28	3810.71	288.87	7.58	54.59	1.43	1.04
██████████	3	28	3678.93	321.37	8.74	60.73	1.65	1.20
██████████	4	28	3610.36	301.48	8.35	56.98	1.58	1.14
██████████	5	28	3686.07	350.01	9.50	66.15	1.79	1.30
██████████	6	28	3786.07	447.63	11.82	84.59	2.23	1.63
██████████	7	28	3628.21	324.69	8.95	61.36	1.69	1.23
██████████	8	28	3507.14	317.85	9.06	60.07	1.71	1.24
██████████	9	28	3589.64	314.30	8.76	59.40	1.65	1.20
██████████	10	28	3686.43	201.26	5.46	38.03	1.03	0.75
██████████	11	28	3517.86	243.10	6.91	45.94	1.31	0.94
██████████	12	28	3659.29	427.46	11.68	80.78	2.21	1.61

Statistical analysis - Hens at 154 days of age

Tab. No. 3b

Breed	Treat. No.	Treat. size	Average live weight	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/ks	g/ks	%	g/ks	%	%
██████████	1	220	2555.86	246.54	9.65	16.62	0.65	0.47
██████████	2	220	2645.55	244.11	9.23	16.46	0.62	0.44
██████████	3	220	2780.41	321.91	11.58	21.70	0.78	0.56
██████████	4	220	2586.95	238.35	9.21	16.07	0.62	0.44
██████████	5	220	2843.09	308.25	10.84	20.78	0.73	0.52
██████████	6	220	2882.95	448.24	15.55	30.22	1.05	0.76
██████████	7	220	2664.32	250.52	9.40	16.89	0.63	0.45
██████████	8	220	2836.45	256.69	9.05	17.31	0.61	0.44
██████████	9	220	2792.68	267.44	9.58	18.03	0.65	0.46
██████████	10	220	2661.50	280.12	10.53	18.89	0.71	0.51
██████████	11	220	2750.59	259.26	9.43	17.48	0.64	0.45
██████████	12	220	2682.14	278.19	10.37	18.76	0.70	0.50



**Body weight - rearing**

**Tab. No. 4 (page 1)**

Breed	Tr. No.	Sex	weeks																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[REDACTED]	1	♂	197	298	464	620	827	1010	1210	1360	1550	1650	1840	1880	1960	2160	2420	2530	2600	2650	3030	2950	3380	3780
		♀	168	248	391	516	601	697	793	897	1000	1050	1153	1243	1407	1477	1573	1620	1807	2013	2163	2293	2370	2563
[REDACTED]	2	♂	187	303	460	595	823	1000	1210	1350	1500	1630	1830	2020	2150	2210	2420	2480	2650	2680	3010	2980	3320	3810
		♀	176	257	412	508	609	730	817	903	1027	1090	1203	1290	1400	1470	1603	1647	1787	1980	2163	2300	2447	2643
[REDACTED]	3	♂	184	301	490	657	828	1010	1170	1340	1450	1550	1760	1910	2050	2140	2320	2370	2480	2500	2790	2770	3200	3680
		♀	156	249	365	462	597	690	790	890	983	1067	1210	1287	1417	1533	1667	1690	1923	2060	2213	2337	2467	2780
[REDACTED]	4	♂	160	294	461	615	791	990	1220	1350	1480	1670	1830	1920	2200	2280	2440	2470	2660	2700	2990	2970	3300	3610
		♀	175	256	381	501	572	670	777	873	963	1050	1170	1280	1383	1467	1530	1617	1827	2037	2187	2307	2390	2573
[REDACTED]	5	♂	200	299	477	620	826	1010	1180	1350	1480	1580	1670	1900	2100	2210	2380	2420	2480	2550	2780	2850	3170	3690
		♀	163	256	379	495	581	710	807	897	1020	1100	1237	1330	1450	1547	1693	1740	1937	2117	2200	2380	2507	2830
[REDACTED]	6	♂	179	287	456	621	781	990	1160	1340	1440	1560	1740	1890	2120	2180	2350	2420	2490	2520	2730	2830	3240	3790
		♀	153	232	357	460	567	693	797	903	1010	1113	1213	1273	1447	1523	1683	1727	1950	2077	2220	2360	2460	2880

Body weight - rearing

Tab. No. 4 (page 2)

Breed	Tr. No.	Sex	weeks																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
[REDACTED]	7	♂	194	296	451	616	797	1000	1200	1360	1470	1690	1800	1890	2200	2290	2330	2410	2540	2800	2880	2910	3320	3630
		♀	174	260	378	469	571	640	737	837	973	1077	1160	1267	1387	1473	1597	1640	1787	2053	2173	2270	2397	2663
[REDACTED]	8	♂	186	285	470	646	787	1000	1150	1230	1400	1550	1650	1870	2000	2120	2270	2320	2550	2600	2810	2730	3190	3510
		♀	159	271	375	481	606	703	810	883	1013	1130	1220	1313	1430	1533	1670	1720	1923	2077	2233	2313	2553	2837
[REDACTED]	9	♂	189	300	452	647	790	990	1150	1280	1420	1570	1720	1830	2130	2230	2390	2400	2610	2660	2710	2780	3160	3590
		♀	146	245	367	474	569	683	790	897	967	1107	1190	1327	1423	1493	1720	1743	1910	2087	2207	2313	2520	2793
[REDACTED]	10	♂	207	340	540	636	786	1010	1200	1360	1510	1620	1720	1850	2180	2250	2450	2500	2590	2730	2880	2870	3210	3690
		♀	174	249	399	501	608	723	820	903	1017	1110	1213	1313	1427	1473	1620	1667	1857	2033	2113	2293	2487	2657
[REDACTED]	11	♂	212	329	494	674	776	1020	1170	1350	1500	1560	1760	1820	2080	2140	2370	2400	2550	2570	2740	2800	3110	3520
		♀	181	252	375	466	575	687	813	910	1023	1127	1210	1337	1413	1490	1707	1743	1857	2057	2247	2383	2493	2750
[REDACTED]	12	♂	181	300	473	625	792	990	1190	1350	1480	1630	1750	1900	2160	2210	2380	2450	2530	2810	2910	2920	3230	3660
		♀	164	248	372	489	551	660	780	873	993	1087	1177	1277	1410	1480	1603	1687	1800	2013	2137	2293	2407	2667

## Laying control

Tab. No. 5

Breed	Tr. no.	Initial flock	Fertility	Hatchability		Average number of eggs per bird-housed			Average egg weight	Nr. of chicks hatched per 1 hen	Days at percentage of laying		Average live weight at the end of laying		Feed consumption during laying per		
				set	fert.	total	hatching eggs				30%	50%	cocks	hens	bird/day	egg	chick
		birds	%	%	%	number	number	%	g	days	days	g	g	g	g	g	
	1	220	90.4	78.7	87.0	164.0	143.3	87.3	63.8	112.7	178	182	5198.2	4298.2	177.9	282.4	411.1
	2	220	94.6	84.9	89.8	188.9	169.7	89.8	64.3	144.1	171	174	5193.5	4458.0	178.3	249.5	327.1
	3	220	94.1	84.0	89.2	159.7	146.9	92.0	65.8	123.4	182	186	5226.1	4424.6	165.4	283.9	367.4
	4	220	94.0	85.3	90.7	201.7	181.9	90.2	64.0	155.1	173	176	5013.8	4249.4	171.2	230.4	299.6
	5	220	92.5	82.0	88.6	162.6	148.6	91.4	66.3	121.8	181	185	5081.2	4450.0	164.5	277.6	370.4
	6	220	93.9	83.4	88.8	175.4	161.6	92.1	66.3	134.7	180	183	5254.4	4230.8	163.9	259.5	337.9
	7	220	94.9	84.3	88.8	195.0	174.8	89.6	64.1	147.3	174	178	5149.4	4321.5	174.1	241.5	319.8
	8	220	94.1	82.6	87.8	179.7	163.9	91.2	65.6	135.4	180	185	5254.1	4286.0	167.2	258.1	342.3
	9	220	94.6	82.9	87.7	165.0	150.4	91.2	64.3	124.8	180	184	5227.6	4162.2	163.7	272.4	360.2
	10	220	92.2	79.4	86.1	184.8	168.7	91.3	65.1	133.9	178	180	5045.0	4383.3	174.8	261.3	360.4
	11	220	93.1	80.9	86.9	169.5	155.2	91.6	66.1	125.5	180	183	5179.4	4291.4	164.4	265.2	358.0
	12	220	91.9	79.9	87.0	178.8	163.1	91.2	65.1	130.3	178	179	4998.1	4366.9	169.3	259.2	355.8

Egg weight in period (period = 28 days)

Tab. No. 6

Breed	Treat. No.	Period										Cumulate
		1	2	3	4	5	6	7	8	9	10	
██████████	1	51.7	57.6	61.4	63.4	65.1	66.9	68.3	68.4	69.7	70.0	63.8
██████████	2	54.5	58.9	62.1	63.8	65.5	66.5	67.5	69.3	70.2	70.8	64.3
██████████	3	52.1	58.2	62.1	65.0	67.6	69.5	70.7	71.3	71.8	73.8	65.8
██████████	4	54.2	58.3	61.6	63.2	64.7	66.3	67.2	68.4	69.8	70.6	64.0
██████████	5	53.3	58.1	62.4	65.3	68.2	69.3	70.7	71.6	73.0	73.6	66.3
██████████	6	53.1	58.2	62.3	64.7	67.7	69.6	71.0	72.0	73.2	73.5	66.3
██████████	7	53.5	58.2	61.4	63.0	65.1	65.9	67.7	69.7	70.0	70.4	64.1
██████████	8	52.9	57.5	61.8	64.3	67.0	68.3	70.3	71.1	72.1	72.3	65.6
██████████	9	51.0	56.4	61.1	63.1	66.0	67.7	68.8	70.4	70.6	71.5	64.3
██████████	10	53.8	58.5	62.0	63.8	65.9	67.5	69.0	71.4	71.2	72.1	65.1
██████████	11	52.9	58.1	62.2	65.0	67.7	69.5	71.6	72.5	73.3	73.1	66.1
██████████	12	53.6	58.5	62.0	64.0	66.3	68.0	69.3	70.7	70.8	72.0	65.1

1<sup>st</sup> period: 23<sup>th</sup> – 26<sup>th</sup> week of age

10<sup>th</sup> period: 59<sup>th</sup> – 62<sup>th</sup> week of age

**Mortality - hens in the laying period**

**Tab. No. 7**

Breed	Treat. No.	Initial flock	Final flock	Mortality in the laying period		Mortality according causes														
		birds	birds	birds	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
██████████	1	220	188	32	14.5										3	2	18			9
██████████	2	220	197	23	10.5											6	15			2
██████████	3	220	208	12	5.5											1	11			
██████████	4	220	206	14	6.4											5	7			2
██████████	5	220	211	9	4.1												8			1
██████████	6	220	214	6	2.7											1	4			1
██████████	7	220	208	12	5.5											2	4			6
██████████	8	220	213	7	3.2											1	6			
██████████	9	220	209	11	5.0											1	9			1
██████████	10	220	216	4	1.8												3			1
██████████	11	220	209	11	5.0											1	10			
██████████	12	220	211	9	4.1											3	5			1

**Diagnostic:** 1 - Viral diseases      4 - Parasitary diseases      7 - Digestive tract diseases      10 - Locomotion apparatus diseases      13 - Diverticulus inflammation  
 2 - Bacterial diseases      5 - Tumors      8 - Respiratory tract diseases      11 - Sudden death syndrome      14 - culling and other causes  
 3 - Fungal diseases      6 - Injuries      9 - Reproductory tract diseases      12 - Cannibalism

Breed	Treat. No.	Treatment size	Average live weight	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/ks	g/ks	%	g/ks	%	%
██████████	1	17	5198.24	510.64	9.82	123.85	2.38	1.75
██████████	2	20	5193.50	384.03	7.39	85.87	1.65	1.21
██████████	3	18	5226.11	546.39	10.46	128.79	2.46	1.81
██████████	4	16	5013.75	375.07	7.48	93.77	1.87	1.37
██████████	5	17	5081.18	503.13	9.90	122.03	2.40	1.77
██████████	6	16	5254.38	591.36	11.25	147.84	2.81	2.08
██████████	7	16	5149.38	314.89	6.12	78.72	1.53	1.12
██████████	8	17	5254.12	404.91	7.71	98.20	1.87	1.37
██████████	9	17	5227.65	432.93	8.28	105.00	2.01	1.47
██████████	10	18	5045.00	455.49	9.03	107.36	2.13	1.56
██████████	11	16	5179.38	619.71	11.97	154.93	2.99	2.22
██████████	12	16	4998.13	482.40	9.65	120.60	2.41	1.78

Breed	Treat. No.	Treatment size	Average live weight	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/ks	g/ks	%	g/ks	%	%
██████████	1	188	4298.19	552.30	12.85	40.28	0.94	0.68
██████████	2	197	4457.97	438.94	9.85	31.27	0.70	0.50
██████████	3	208	4424.57	473.78	10.71	32.85	0.74	0.53
██████████	4	206	4249.37	417.39	9.82	29.08	0.68	0.49
██████████	5	211	4450.00	500.43	11.25	34.45	0.77	0.56
██████████	6	214	4230.79	501.44	11.85	34.28	0.81	0.58
██████████	7	208	4321.49	457.03	10.58	31.69	0.73	0.53
██████████	8	213	4285.96	561.82	13.11	38.50	0.90	0.65
██████████	9	209	4162.20	613.74	14.75	42.45	1.02	0.74
██████████	10	216	4383.29	597.67	13.64	40.67	0.93	0.67
██████████	11	209	4291.39	464.94	10.83	32.16	0.75	0.54
██████████	12	211	4366.92	465.87	10.67	32.07	0.73	0.53

**Hatchability**

**Tab. No. 9**

Breed	Treat. No.	Fertility	Hatchability		Birds housed	Average weight		
			Set	Fert.		hatch. eggs	1-day	
		%	%	%		♂	♀	
			%	%		g	g	g
██████████	1	90.4	78.7	87.0	2200	65.4	43.4	43.5
██████████	2	94.6	84.9	89.8	2200	65.6	44.8	44.6
██████████	3	94.1	84.0	89.2	2200	67.4	44.1	44.2
██████████	4	94.0	85.3	90.7	2200	65.0	44.4	44.3
██████████	5	92.5	82.0	88.6	2200	67.4	44.5	44.5
██████████	6	93.9	83.4	88.8	2200	67.4	44.2	44.0
██████████	7	94.9	84.3	88.8	2200	65.2	44.0	43.7
██████████	8	94.1	82.6	87.8	2200	66.6	43.9	43.8
██████████	9	94.6	82.9	87.7	2200	66.1	43.2	43.4
██████████	10	92.2	79.4	86.1	2200	66.5	45.0	44.7
██████████	11	93.1	80.9	86.9	2200	67.3	44.5	44.3
██████████	12	91.9	79.9	87.0	2200	66.3	44.5	44.2



**Broiler results at the age of 14 days**

**Tab. No. 10a**

Breed	Treat. No.	Average live weight at 14 days								
		male			female			average		
		birds	live weight.	FCR	birds	live weight	FCR	birds	live weight	FCR
			g	g		g	g		g	
██████████	1	1092	539.2	1058.9	1081	509.4	1091.3	2173	524.4	1074.6
██████████	2	1087	546.0	1080.7	1083	512.6	1097.4	2170	529.3	1088.8
██████████	3	1082	528.5	1065.2	1078	507.0	1107.1	2160	517.8	1085.7
██████████	4	1089	546.7	1034.5	1086	517.7	1061.8	2175	532.2	1047.7
██████████	5	1089	551.0	1047.2	1077	520.2	1081.9	2166	535.7	1063.9
██████████	6	1090	545.4	1093.7	1083	510.4	1154.4	2173	528.0	1123.0
██████████	7	1090	541.3	1046.2	1079	517.4	1077.5	2169	529.4	1061.4
██████████	8	1089	548.8	1042.8	1086	522.0	1087.0	2175	535.4	1064.3
██████████	9	1070	545.2	1046.6	1079	510.4	1126.5	2149	527.7	1085.4
██████████	10	1084	544.0	1045.5	1066	526.0	1056.8	2150	535.1	1051.0
██████████	11	1083	542.5	1113.1	1079	518.1	1126.8	2162	530.3	1119.8
██████████	12	1092	537.6	1027.2	1087	511.7	1087.9	2179	524.7	1056.7

**Broiler results at the age of 32 days**

**Tab. No. 10b**

Breed	Treat. No.	Average live weight at 32 days								
		male			female			average		
		birds	live weight	FCR	birds	live weight	FCR	birds	live weight	FCR
			g	g		g	g		g	
██████████	1	1076	2206.0	1523.5	1074	1978.6	1533.5	2150	2092.4	1528.2
██████████	2	1066	2234.3	1499.7	1076	1980.3	1519.1	2142	2106.7	1508.8
██████████	3	1070	2239.0	1459.3	1071	1982.2	1516.5	2141	2110.5	1486.2
██████████	4	1078	2088.1	1544.5	1083	1878.1	1532.9	2161	1982.8	1539.0
██████████	5	1073	2215.1	1485.9	1073	1997.0	1510.9	2146	2106.0	1497.7
██████████	6	1067	2291.2	1500.3	1070	2063.7	1507.7	2137	2177.3	1503.8
██████████	7	1082	2202.3	1494.3	1071	1916.7	1553.5	2153	2060.3	1521.7
██████████	8	1068	2233.4	1506.9	1072	2026.2	1539.5	2140	2129.6	1522.4
██████████	9	1053	2226.7	1473.7	1073	2037.1	1503.8	2126	2131.0	1488.2
██████████	10	1064	2271.6	1506.4	1062	2025.8	1490.6	2126	2148.8	1498.9
██████████	11	1055	2255.1	1514.9	1066	2025.9	1531.3	2121	2139.9	1522.7
██████████	12	1073	2173.1	1516.6	1080	1970.2	1513.2	2153	2071.3	1515.0

**Broiler results at the age of 39 days**

**Tab. No. 10c**

Breed	Treat. No.	Average live weight at 39 days								
		male			female			average		
		birds	live weight	FCR	birds	live weight	FCR	birds	live weight	FCR
			g	g		g	g		g	
██████████	1	121	3218.8	1560.8	127	2611.5	1699.9	248	2907.8	1624.8
██████████	2	126	3144.0	1502.7	129	2694.8	1600.0	255	2916.8	1548.2
██████████	3	125	3045.6	1498.8	129	2680.5	1584.2	254	2860.2	1539.5
██████████	4	126	3068.5	1507.4	130	2618.8	1603.2	256	2840.2	1552.2
██████████	5	128	3002.5	1524.3	124	2699.0	1628.7	252	2853.2	1572.9
██████████	6	126	3249.2	1498.5	125	2836.8	1543.1	251	3043.8	1519.2
██████████	7	129	3069.2	1489.2	126	2645.2	1662.8	255	2859.7	1568.5
██████████	8	124	2924.3	1585.2	124	2870.2	1565.3	248	2897.2	1575.3
██████████	9	120	3204.3	1505.6	128	2759.1	1596.4	248	2974.5	1549.0
██████████	10	122	3108.7	1549.9	124	2740.3	1642.7	246	2923.0	1593.7
██████████	11	116	3196.2	1582.2	124	2803.7	1639.2	240	2993.4	1609.8
██████████	12	125	3098.6	1457.2	128	2714.5	1602.5	253	2904.3	1525.9

Mortality during growing period at the age of 32 days

Tab. No. 11a

Breed	Treat. No.	Mortality in the period						Mortality according causes													
		1 - 14		15 - 32		1 - 32		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		birds	%	birds	g	birds	%														
█	1	27	1.2	23	1.0	50	2.3											33		7	10
█	2	30	1.4	28	1.3	58	2.6											35		15	8
█	3	40	1.8	19	0.9	59	2.7											31		8	20
█	4	25	1.1	14	0.6	39	1.8											26		4	9
█	5	34	1.5	20	0.9	54	2.5											32		9	13
█	6	27	1.2	36	1.6	63	2.9											36		7	20
█	7	31	1.4	16	0.7	47	2.1											26		9	12
█	8	25	1.1	35	1.6	60	2.7										2	39		3	16
█	9	51	2.3	23	1.0	74	3.4											47		16	11
█	10	50	2.3	24	1.1	74	3.4									1	38		16	19	
█	11	38	1.7	41	1.9	79	3.6											50		10	19
█	12	21	1.0	26	1.2	47	2.1											33		6	8

- Causes:**
- |                         |                                    |                               |
|-------------------------|------------------------------------|-------------------------------|
| 1 – Viral diseases      | 6 – Wounds                         | 11 – Sudden death syndrome    |
| 2 – Bacterial diseases  | 7 – Digestive track diseases       | 12 – Cannibalism              |
| 3 – Moulds diseases     | 8 – Respiratory tract diseases     | 13 – Yolk sac. infam.         |
| 4 – Parasitary diseases | 9 – Reproduction tract diseases    | 14 – Culling and other causes |
| 5 – Tumors              | 10 – Locomotion apparatus diseases |                               |

Mortality during growing period at the age of 39 days

Tab. No. 11b

Breed	Treat. No.	Mortality in the period						Mortality according causes													
		1 - 14		15 - 39		1 - 39		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		birds	%	birds	%	birds	%														
██████████	1	4	0.4	12	1.1	16	1.5											13			3
██████████	2	4	0.4	5	0.5	9	0.8											6			3
██████████	3	5	0.5	6	0.6	11	1.0											7			4
██████████	4	8	0.7	4	0.4	12	1.1											8			4
██████████	5	8	0.7	5	0.5	13	1.2											9			4
██████████	6	6	0.6	12	1.1	18	1.7											14			4
██████████	7	9	0.8	1	0.1	10	0.9											4	1		5
██████████	8	5	0.5	15	1.4	20	1.9											12	1		7
██████████	9	7	0.6	12	1.1	19	1.8											17	1		1
██████████	10	19	1.8	11	1.0	30	2.8											14	9		7
██████████	11	12	1.1	20	1.9	32	3.0											23	3		6
██████████	12	5	0.5	6	0.6	11	1.0											8	2		1

- Causes:**
- 1 – Viral diseases
  - 2 – Bacterial diseases
  - 3 – Moulds diseases
  - 4 – Parasitary diseases
  - 5 – Tumors
  - 6 – Wounds
  - 7 – Digestive track diseases
  - 8 – Respiratory tract diseases
  - 9 – Reproduction tract diseases
  - 10 – Locomotion apparatus diseases
  - 11 – Sudden death syndrome
  - 12 – Cannibalism
  - 13 – Yolk sac. infam.
  - 14 – Culling and other causes

Breed	Treat. No.	Sex	Weight				Ratio of abd. fat to live weight	Breast meat without skin			Thigh meat with bone			Breast meat and thighs			Carcass	
			Total	Body	Gibl.	Abd. fat		weight	percentage		weight	percentage		weight	percentage		value	quality
									total weight	body carcass		total weight	body carcass		total weight	body carcass		
			g	g	g	g		%	g	%	%	g	%	%	g	%	%	%
■	1	♂	2195	1547	135	25	1.1	483	22.0	31.2	483	22.0	31.2	965	44.0	62.4	70.5	76.6
		♀	1974	1395	118	26	1.3	431	21.9	30.9	420	21.3	30.1	852	43.2	61.1	70.7	76.7
		♂	<b>2085</b>	<b>1471</b>	<b>127</b>	<b>26</b>	<b>1.2</b>	<b>457</b>	<b>21.9</b>	<b>31.1</b>	<b>452</b>	<b>21.7</b>	<b>30.7</b>	<b>909</b>	<b>43.6</b>	<b>61.8</b>	<b>70.6</b>	<b>76.7</b>
■	2	♂	2215	1570	130	26	1.2	495	22.3	31.5	495	22.3	31.5	989	44.7	63.0	70.9	76.7
		♀	1970	1390	117	27	1.4	445	22.6	32.0	427	21.7	30.8	873	44.3	62.8	70.5	76.5
		♂	<b>2093</b>	<b>1480</b>	<b>124</b>	<b>26</b>	<b>1.3</b>	<b>470</b>	<b>22.5</b>	<b>31.8</b>	<b>461</b>	<b>22.0</b>	<b>31.2</b>	<b>931</b>	<b>44.5</b>	<b>62.9</b>	<b>70.7</b>	<b>76.6</b>
■	3	♂	2233	1572	132	26	1.1	514	23.0	32.7	483	21.6	30.7	997	44.7	63.4	70.4	76.3
		♀	1991	1402	120	27	1.3	466	23.4	33.2	419	21.1	29.9	885	44.4	63.1	70.4	76.4
		♂	<b>2112</b>	<b>1487</b>	<b>126</b>	<b>26</b>	<b>1.2</b>	<b>490</b>	<b>23.2</b>	<b>33.0</b>	<b>451</b>	<b>21.4</b>	<b>30.3</b>	<b>941</b>	<b>44.6</b>	<b>63.3</b>	<b>70.4</b>	<b>76.4</b>
■	4	♂	2081	1446	127	20	1.0	465	22.4	32.2	445	21.4	30.8	911	43.8	63.0	69.5	75.6
		♀	1887	1316	116	22	1.2	434	23.0	33.0	394	20.9	29.9	827	43.8	62.9	69.7	75.9
		♂	<b>1984</b>	<b>1381</b>	<b>121</b>	<b>21</b>	<b>1.1</b>	<b>449</b>	<b>22.7</b>	<b>32.6</b>	<b>419</b>	<b>21.1</b>	<b>30.4</b>	<b>869</b>	<b>43.8</b>	<b>62.9</b>	<b>69.6</b>	<b>75.7</b>
■	5	♂	2220	1561	131	27	1.2	506	22.8	32.4	476	21.5	30.5	983	44.3	62.9	70.3	76.2
		♀	2006	1417	119	29	1.4	466	23.2	32.9	424	21.1	29.9	890	44.4	62.8	70.6	76.6
		♂	<b>2113</b>	<b>1489</b>	<b>125</b>	<b>28</b>	<b>1.3</b>	<b>486</b>	<b>23.0</b>	<b>32.6</b>	<b>450</b>	<b>21.3</b>	<b>30.2</b>	<b>936</b>	<b>44.3</b>	<b>62.9</b>	<b>70.5</b>	<b>76.4</b>
■	6	♂	2309	1614	137	31	1.4	519	22.5	32.1	492	21.3	30.5	1011	43.8	62.6	69.9	75.8
		♀	2082	1473	125	32	1.5	471	22.6	32.0	440	21.1	29.8	911	43.7	61.8	70.8	76.8
		♂	<b>2196</b>	<b>1544</b>	<b>131</b>	<b>32</b>	<b>1.4</b>	<b>495</b>	<b>22.5</b>	<b>32.0</b>	<b>466</b>	<b>21.2</b>	<b>30.2</b>	<b>961</b>	<b>43.8</b>	<b>62.2</b>	<b>70.3</b>	<b>76.3</b>

Breed	Treat. No.	Sex	Weight				Ratio of abd. fat to live weight	Breast meat without skin			Thigh meat with bone			Breast meat and thighs			Carcass	
			Total	Body	Gibl.	Abd. fat		weight	percentage		weight	percentage		weight	percentage		value	quality
									total weight	body carcass		total weight	body carcass		total weight	body carcass		
			g	g	g	g		%	g	%	%	g	%	%	g	%	%	%
████████	7	♂	2237	1558	132	25	1.1	508	22.7	32.6	478	21.4	30.7	985	44.1	63.2	69.7	75.6
		♀	1971	1404	118	27	1.4	460	23.4	32.8	421	21.3	30.0	881	44.7	62.8	71.2	77.2
		♂	<b>2104</b>	<b>1481</b>	<b>125</b>	<b>26</b>	<b>1.2</b>	<b>484</b>	<b>23.0</b>	<b>32.7</b>	<b>449</b>	<b>21.3</b>	<b>30.3</b>	<b>933</b>	<b>44.4</b>	<b>63.0</b>	<b>70.4</b>	<b>76.3</b>
██████	8	♂	2301	1597	134	28	1.2	513	22.3	32.1	483	21.0	30.2	996	43.3	62.3	69.4	75.2
		♀	2058	1451	120	31	1.5	483	23.5	33.3	427	20.8	29.5	911	44.3	62.8	70.5	76.4
		♂	<b>2179</b>	<b>1524</b>	<b>127</b>	<b>30</b>	<b>1.4</b>	<b>498</b>	<b>22.8</b>	<b>32.7</b>	<b>455</b>	<b>20.9</b>	<b>29.9</b>	<b>953</b>	<b>43.7</b>	<b>62.5</b>	<b>69.9</b>	<b>75.8</b>
██████	9	♂	2220	1558	136	28	1.3	492	22.2	31.6	475	21.4	30.5	967	43.6	62.1	70.2	76.3
		♀	2097	1485	125	29	1.4	474	22.6	31.9	444	21.2	29.9	918	43.8	61.8	70.8	76.8
		♂	<b>2158</b>	<b>1521</b>	<b>130</b>	<b>28</b>	<b>1.3</b>	<b>483</b>	<b>22.4</b>	<b>31.7</b>	<b>459</b>	<b>21.3</b>	<b>30.2</b>	<b>942</b>	<b>43.7</b>	<b>61.9</b>	<b>70.5</b>	<b>76.5</b>
████████	10	♂	2292	1625	134	25	1.1	531	23.2	32.7	505	22.0	31.1	1036	45.2	63.8	70.9	76.7
		♀	2081	1485	121	28	1.3	490	23.5	33.0	450	21.6	30.3	939	45.1	63.3	71.3	77.2
		♂	<b>2186</b>	<b>1555</b>	<b>128</b>	<b>26</b>	<b>1.2</b>	<b>511</b>	<b>23.4</b>	<b>32.8</b>	<b>477</b>	<b>21.8</b>	<b>30.7</b>	<b>988</b>	<b>45.2</b>	<b>63.5</b>	<b>71.1</b>	<b>76.9</b>
██████	11	♂	2276	1587	137	34	1.5	499	21.9	31.4	487	21.4	30.7	985	43.3	62.1	69.7	75.8
		♀	2037	1439	119	32	1.6	464	22.8	32.3	435	21.3	30.2	899	44.1	62.5	70.7	76.5
		♂	<b>2157</b>	<b>1513</b>	<b>128</b>	<b>33</b>	<b>1.5</b>	<b>482</b>	<b>22.3</b>	<b>31.8</b>	<b>461</b>	<b>21.4</b>	<b>30.4</b>	<b>942</b>	<b>43.7</b>	<b>62.3</b>	<b>70.2</b>	<b>76.1</b>
████████	12	♂	2212	1560	130	23	1.0	520	23.5	33.4	470	21.2	30.1	990	44.8	63.5	70.5	76.4
		♀	1960	1376	117	24	1.2	455	23.2	33.1	411	21.0	29.9	866	44.2	63.0	70.2	76.2
		♂	<b>2086</b>	<b>1468</b>	<b>124</b>	<b>23</b>	<b>1.1</b>	<b>488</b>	<b>23.4</b>	<b>33.2</b>	<b>441</b>	<b>21.1</b>	<b>30.0</b>	<b>928</b>	<b>44.5</b>	<b>63.2</b>	<b>70.4</b>	<b>76.3</b>

Breed	Treat. No.	Sex	Weight				Ratio of abd. fat to live weight	Breast meat without skin			Thigh meat with bone			Breast meat and thighs			Carcass	
			Total	Body	Gibl.	Abd. fat		weight	percentage		weight	percentage		weight	percentage		value	quality
									total weight	body carcass		total weight	body carcass		total weight	body carcass		
			g	g	g	g		g	%	%	%	g	%	%	g	%	%	%
■	1	♂	3339	2390	194	49	1.5	775	23.2	32.4	748	22.4	31.3	1523	45.6	63.7	71.6	77.4
		♀	2654	1896	154	48	1.8	616	23.2	32.5	588	22.1	31.0	1203	45.3	63.4	71.5	77.3
		♂	<b>2996</b>	<b>2143</b>	<b>174</b>	<b>48</b>	<b>1.6</b>	<b>695</b>	<b>23.2</b>	<b>32.4</b>	<b>668</b>	<b>22.3</b>	<b>31.2</b>	<b>1363</b>	<b>45.5</b>	<b>63.6</b>	<b>71.5</b>	<b>77.3</b>
■	2	♂	3176	2276	180	43	1.4	748	23.5	32.8	716	22.6	31.5	1464	46.1	64.3	71.7	77.3
		♀	2748	1982	152	46	1.7	673	24.5	34.0	593	21.6	29.9	1266	46.1	63.9	72.1	77.7
		♂	<b>2962</b>	<b>2129</b>	<b>166</b>	<b>44</b>	<b>1.5</b>	<b>711</b>	<b>24.0</b>	<b>33.4</b>	<b>655</b>	<b>22.1</b>	<b>30.7</b>	<b>1365</b>	<b>46.1</b>	<b>64.1</b>	<b>71.9</b>	<b>77.5</b>
■	3	♂	3064	2244	169	44	1.4	772	25.2	34.4	676	22.0	30.1	1447	47.2	64.5	73.2	78.8
		♀	2780	2001	162	47	1.7	682	24.5	34.1	597	21.5	29.8	1279	46.0	63.9	72.0	77.8
		♂	<b>2922</b>	<b>2123</b>	<b>166</b>	<b>45</b>	<b>1.6</b>	<b>727</b>	<b>24.9</b>	<b>34.2</b>	<b>636</b>	<b>21.8</b>	<b>30.0</b>	<b>1363</b>	<b>46.7</b>	<b>64.2</b>	<b>72.6</b>	<b>78.3</b>
■	4	♂	3098	2207	175	35	1.1	774	25.0	35.1	672	21.7	30.4	1446	46.7	65.5	71.2	76.9
		♀	2629	1885	149	40	1.5	644	24.5	34.2	579	22.0	30.7	1223	46.5	64.9	71.7	77.4
		♂	<b>2863</b>	<b>2046</b>	<b>162</b>	<b>37</b>	<b>1.3</b>	<b>709</b>	<b>24.8</b>	<b>34.7</b>	<b>625</b>	<b>21.8</b>	<b>30.6</b>	<b>1334</b>	<b>46.6</b>	<b>65.2</b>	<b>71.5</b>	<b>77.1</b>
■	5	♂	3170	2307	178	46	1.5	793	25.0	34.4	710	22.4	30.8	1503	47.4	65.1	72.8	78.4
		♀	2831	2071	159	51	1.8	719	25.4	34.7	615	21.7	29.7	1334	47.1	64.4	73.2	78.8
		♂	<b>3000</b>	<b>2189</b>	<b>168</b>	<b>49</b>	<b>1.6</b>	<b>756</b>	<b>25.2</b>	<b>34.5</b>	<b>662</b>	<b>22.1</b>	<b>30.2</b>	<b>1418</b>	<b>47.3</b>	<b>64.8</b>	<b>73.0</b>	<b>78.6</b>
■	6	♂	3285	2325	184	49	1.5	786	23.9	33.8	712	21.7	30.6	1499	45.6	64.5	70.8	76.4
		♀	2987	2164	162	61	2.0	738	24.7	34.1	647	21.7	29.9	1384	46.3	64.0	72.4	77.9
		♂	<b>3136</b>	<b>2244</b>	<b>173</b>	<b>55</b>	<b>1.7</b>	<b>762</b>	<b>24.3</b>	<b>34.0</b>	<b>680</b>	<b>21.7</b>	<b>30.3</b>	<b>1441</b>	<b>46.0</b>	<b>64.2</b>	<b>71.6</b>	<b>77.1</b>



Breed	Treat. No.	Sex	Weight				Ratio of abd. fat to live weight	Breast meat without skin			Thigh meat with bone			Breast meat and thighs			Carcass	
			Total	Body	Gibl.	Abd. fat		weight	percentage		weight	percentage		weight	percentage		value	quality
									total weight	body carcass		total weight	body carcass		total weight	body carcass		
g	g	g	g	%	g	%	%	g	%	%	g	%	%	%	%			
■	7	♂	3083	2214	177	42	1.4	744	24.1	33.6	670	21.7	30.2	1413	45.8	63.8	71.8	77.6
		♀	2635	1964	148	45	1.7	661	25.1	33.7	585	22.2	29.8	1246	47.3	63.4	74.5	80.1
		♂	<b>2859</b>	<b>2089</b>	<b>163</b>	<b>44</b>	<b>1.5</b>	<b>702</b>	<b>24.6</b>	<b>33.6</b>	<b>627</b>	<b>21.9</b>	<b>30.0</b>	<b>1329</b>	<b>46.5</b>	<b>63.6</b>	<b>73.1</b>	<b>78.8</b>
■	8	♂	3243	2318	176	48	1.5	793	24.5	34.2	693	21.4	29.9	1486	45.8	64.1	71.5	76.9
		♀	2790	2035	158	53	1.9	720	25.8	35.4	599	21.5	29.4	1319	47.3	64.8	72.9	78.6
		♂	<b>3016</b>	<b>2177</b>	<b>167</b>	<b>51</b>	<b>1.7</b>	<b>756</b>	<b>25.1</b>	<b>34.8</b>	<b>646</b>	<b>21.4</b>	<b>29.7</b>	<b>1402</b>	<b>46.5</b>	<b>64.4</b>	<b>72.2</b>	<b>77.7</b>
■	9	♂	3336	2377	189	45	1.3	805	24.1	33.8	709	21.3	29.8	1514	45.4	63.7	71.3	76.9
		♀	2853	2079	159	51	1.8	720	25.2	34.6	621	21.8	29.9	1341	47.0	64.5	72.9	78.5
		♂	<b>3094</b>	<b>2228</b>	<b>174</b>	<b>48</b>	<b>1.5</b>	<b>762</b>	<b>24.6</b>	<b>34.2</b>	<b>665</b>	<b>21.5</b>	<b>29.9</b>	<b>1427</b>	<b>46.1</b>	<b>64.1</b>	<b>72.0</b>	<b>77.7</b>
■	10	♂	3243	2325	181	39	1.2	796	24.5	34.2	720	22.2	31.0	1515	46.7	65.2	71.7	77.2
		♀	2938	2119	155	48	1.6	723	24.6	34.1	641	21.8	30.3	1365	46.5	64.4	72.1	77.4
		♂	<b>3090</b>	<b>2222</b>	<b>168</b>	<b>43</b>	<b>1.4</b>	<b>759</b>	<b>24.6</b>	<b>34.2</b>	<b>680</b>	<b>22.0</b>	<b>30.6</b>	<b>1440</b>	<b>46.6</b>	<b>64.8</b>	<b>71.9</b>	<b>77.3</b>
■	11	♂	3195	2336	179	48	1.5	771	24.1	33.0	709	22.2	30.4	1480	46.3	63.4	73.1	78.7
		♀	2701	1932	157	50	1.9	635	23.5	32.8	573	21.2	29.7	1208	44.7	62.5	71.5	77.3
		♂	<b>2948</b>	<b>2134</b>	<b>168</b>	<b>49</b>	<b>1.7</b>	<b>703</b>	<b>23.8</b>	<b>32.9</b>	<b>641</b>	<b>21.8</b>	<b>30.0</b>	<b>1344</b>	<b>45.6</b>	<b>63.0</b>	<b>72.4</b>	<b>78.1</b>
■	12	♂	3154	2272	174	41	1.3	794	25.2	35.0	682	21.6	30.0	1477	46.8	65.0	72.0	77.6
		♀	2763	2004	149	44	1.6	705	25.5	35.2	598	21.6	29.8	1303	47.2	65.0	72.5	77.9
		♂	<b>2958</b>	<b>2138</b>	<b>161</b>	<b>42</b>	<b>1.4</b>	<b>750</b>	<b>25.3</b>	<b>35.1</b>	<b>640</b>	<b>21.6</b>	<b>29.9</b>	<b>1390</b>	<b>47.0</b>	<b>65.0</b>	<b>72.3</b>	<b>77.7</b>

Statistical analysis - Cocks on the age of 32 days

Tab. No. 13a

Breed	Treat. No.	Sample size	Average	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/birds	g/birds	%	g/birds	%	%
██████████	1	1076	2205.99	285.23	12.93	8.70	0.39	0.28
██████████	2	1066	2234.32	259.75	11.63	7.96	0.36	0.26
██████████	3	1070	2238.99	271.47	12.12	8.30	0.37	0.27
██████████	4	1078	2088.05	261.64	12.53	7.97	0.38	0.27
██████████	5	1073	2215.07	245.33	11.08	7.49	0.34	0.24
██████████	6	1067	2291.24	266.54	11.63	8.16	0.36	0.26
██████████	7	1082	2202.30	246.67	11.20	7.50	0.34	0.24
██████████	8	1068	2233.36	258.63	11.58	7.91	0.35	0.25
██████████	9	1053	2226.72	303.41	13.63	9.35	0.42	0.30
██████████	10	1064	2271.58	281.06	12.37	8.62	0.38	0.27
██████████	11	1055	2255.10	291.02	12.91	8.96	0.40	0.29
██████████	12	1073	2173.14	241.48	11.11	7.37	0.34	0.24

Statistical analysis - Hens on the age of 32 days

Tab. No. 13b

Breed	Treat. No.	Sample size	Average	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/birds	g/birds	%	g/birds	%	%
██████████	1	1074	1978.59	239.51	12.11	7.31	0.37	0.27
██████████	2	1076	1980.33	243.74	12.31	7.43	0.38	0.27
██████████	3	1071	1982.22	259.86	13.11	7.94	0.40	0.29
██████████	4	1083	1878.07	250.28	13.33	7.61	0.40	0.29
██████████	5	1073	1996.96	253.42	12.69	7.74	0.39	0.28
██████████	6	1070	2063.70	254.39	12.33	7.78	0.38	0.27
██████████	7	1071	1916.74	238.93	12.47	7.30	0.38	0.27
██████████	8	1072	2026.20	252.65	12.47	7.72	0.38	0.27
██████████	9	1073	2037.12	250.87	12.31	7.66	0.38	0.27
██████████	10	1062	2025.78	252.46	12.46	7.75	0.38	0.27
██████████	11	1066	2025.85	238.93	11.79	7.32	0.36	0.26
██████████	12	1080	1970.20	253.86	12.89	7.72	0.39	0.28

Statistical analysis - Cocks on the age of 39 days

Tab. No. 13c

Breed	Treat. No.	Sample size	Average	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/birds	g/birds	%	g/birds	%	%
██████████	1	121	3218.84	226.00	7.02	20.55	0.64	0.46
██████████	2	126	3144.05	257.05	8.18	22.90	0.73	0.52
██████████	3	125	3045.60	327.02	10.74	29.25	0.96	0.69
██████████	4	126	3068.49	261.82	8.53	23.32	0.76	0.54
██████████	5	128	3002.50	327.97	10.92	28.99	0.97	0.69
██████████	6	126	3249.21	266.01	8.19	23.70	0.73	0.52
██████████	7	129	3069.22	267.75	8.72	23.57	0.77	0.55
██████████	8	124	2924.27	336.16	11.50	30.19	1.03	0.74
██████████	9	120	3204.25	400.78	12.51	36.59	1.14	0.82
██████████	10	122	3108.69	362.06	11.65	32.78	1.05	0.76
██████████	11	116	3196.21	327.89	10.26	30.44	0.95	0.68
██████████	12	125	3098.56	290.85	9.39	26.01	0.84	0.60

Statistical analysis - Hens on the age of 39 days

Tab. No. 13d

Breed	Treat. No.	Sample size	Average	Standard deviation	Coefficient of variation	Standard error of mean	Precision select. average	Standard error of coeff. of variation
			g/birds	g/birds	%	g/birds	%	%
██████████	1	127	2611.50	275.42	10.55	24.44	0.94	0.67
██████████	2	129	2694.81	234.67	8.71	20.66	0.77	0.55
██████████	3	129	2680.47	282.17	10.53	24.84	0.93	0.67
██████████	4	130	2618.85	198.94	7.60	17.45	0.67	0.48
██████████	5	124	2699.03	328.67	12.18	29.52	1.09	0.79
██████████	6	125	2836.80	280.33	9.88	25.07	0.88	0.63
██████████	7	126	2645.24	287.32	10.86	25.60	0.97	0.70
██████████	8	124	2870.16	328.33	11.44	29.48	1.03	0.74
██████████	9	128	2759.14	263.11	9.54	23.26	0.84	0.60
██████████	10	124	2740.32	254.45	9.29	22.85	0.83	0.60
██████████	11	124	2803.71	318.32	11.35	28.59	1.02	0.73
██████████	12	128	2714.53	323.86	11.93	28.63	1.05	0.76

Real and alive fertility – 1<sup>st</sup> part fattening test

Tab. No. 14a

Breed	Tret. No.	Part of fattening test	Fertility	
			real	alive
			%	%
██████████	1	1st	97.65	89.88
██████████	2		98.52	95.06
██████████	3		97.53	93.58
██████████	4		98.02	92.96
██████████	5		96.91	91.36
██████████	6		97.41	92.59
██████████	7		97.53	92.84
██████████	8		97.65	93.09
██████████	9		98.27	93.33
██████████	10		98.64	93.33
██████████	11		96.79	91.85
██████████	12		97.41	94.07

Real and alive fertility – 2<sup>nd</sup> part fattening test

Tab. No. 14b

Breed	Tret. No.	Part of fattening test	Fertility	
			real	alive
			%	%
██████████	1	2nd	98.44	90.44
██████████	2		98.22	94.22
██████████	3		98.00	92.67
██████████	4		98.56	93.67
██████████	5		97.00	92.44
██████████	6		97.33	92.89
██████████	7		98.33	93.44
██████████	8		97.78	92.89
██████████	9		98.11	94.33
██████████	10		97.67	91.67
██████████	11		97.44	93.44
██████████	12		98.00	92.44

Real and alive fertility – 3<sup>rd</sup> part fattening test

Tab. No. 14c

Breed	Tret. No.	Part of fattening test	Fertility	
			real	alive
			%	%
██████████	1	3rd	95.78	86.67
██████████	2		97.33	91.22
██████████	3		98.00	92.00
██████████	4		97.44	91.11
██████████	5		95.89	91.44
██████████	6		96.11	89.67
██████████	7		96.89	91.44
██████████	8		96.33	90.11
██████████	9		95.78	88.44
██████████	10		96.78	88.56
██████████	11		97.11	90.22
██████████	12		96.11	88.00



Real and alive fertility – 4<sup>th</sup> part fattening test

Tab. No. 14d

Breed	Tret. No.	Part of fattening test	Fertility	
			real	alive
			%	%
██████████	1	4th	93.78	78.67
██████████	2		95.33	87.11
██████████	3		96.89	88.33
██████████	4		94.33	85.89
██████████	5		94.33	83.56
██████████	6		95.44	86.00
██████████	7		97.78	90.00
██████████	8		97.56	88.22
██████████	9		96.44	87.44
██████████	10		91.78	81.11
██████████	11		96.33	86.00
██████████	12		92.11	81.56