



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE
státní podnik, ÚSTRAŠICE

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THE COMPLETE REPORT

**The effect of xxxxx
on performance parameters in parent flock**

**4. RKT - 2023
Krmivářský test rodičovských forem kura domácího
– masného typu**

XXXXXX

2023 – 2024

Ústrašice, July 2024

1 The basic tests information

1.1 The basic dates

Rearing 1 – 22 weeks (1 – 154 days): 16 March 2023 – 16 August 2023
Production 23 – 62 weeks (155 – 434 days): 17 August 2023 – 22 May 2024
End of the test: 10 July 2024

1.2 Location of the test

Mezinárodní testování drůbeže, s.p. Ústrašice, Czech Republic

1.3 Material

There were 2 different breeds in the test. There were kept 330 hens and 42 cocks in the treatment. Genotype of parent hens was xxxxx.

Treatment No.	Treatment	Description
1	xxxxx	control diets + 1 kg xxxxx per 1 tonne of feed
2	xxxxx	control diets

xxxxx was added to both treatments (1 kg per 1 tonne of feed).

2 The rearing of pullets

2.1 Samples and their location

Females were reared in five pens by 90 chicks, males in separate pens by 75 chicks. Numbers of birds were reduced in 5th week of age to specified numbers. Females were reduced to 400 birds, i.e. 80 birds per pen, males to 65 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 six 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 330 females and 42 males per entry. Males were reduced later to 30 birds.

2.2 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.

2.3 Conditions of the environment

Temperature

Age	Bird level (°C)	House (°C)
Week 1	38	30
Week 2	32	28
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	7.7
127 – 154 days	4.8	4.8

2.4 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 ⁰⁰ – 6 ⁰⁰	23
Day 4	7 ⁰⁰ – 4 ⁰⁰	21
Day 5	7 ⁰⁰ – 2 ⁰⁰	19
Day 6	7 ⁰⁰ – 24 ⁰⁰	17
Day 7	7 ⁰⁰ – 22 ⁰⁰	15
Day 8 – 14	7 ⁰⁰ – 19 ⁰⁰	12
Day 15 – 147	7 ⁰⁰ – 15 ⁰⁰	8
Day 148 – 154	7 ⁰⁰ – 18 ⁰⁰	11

Light intensity in first three days was 60 lux/sq. m. and then till the end of rearing 8 lux/sq. m.

2.5 Feeding and watering

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

Day 1 – 14:	K1 – starter, pellets
Day 15 – 42:	K2 – starter, pellets
Day 43 – 105:	KZK – pellets
Day 106 – 154:	NP-0 – pellets

Diet formulas

	K1	K2	KZK	NP-0
Components (%)				
Wheat	41.14	51.52	46.28	42.97
Maize	22.50	18.00	15.00	23.00
Oat	1.00	1.00	9.60	5.00
Sunflower meal	1.00	3.00	4.60	4.20
Wheat bran	-	2.70	14.00	10.20
Soybean meal	29.70	19.75	7.00	10.50
Soya fat	1.27	0.75	0.20	0.69
Salt	0.23	0.20	0.15	0.21
Calcium carbonate	1.78	1.80	2.00	2.14
Monocalcium phosphate	0.63	0.65	0.41	0.38
Sodium bicarbonate	0.17	0.22	0.21	0.20
Vitamin premix	0.58	0.41	0.55	0.51
Nutrient content (calculated values)				
Protein	20.48	17.74	14.40	15.1
Fat	3.38	2.80	2.50	3.00
Lysin	0.95	0.71	0.54	0.56
Methionin	0.44	0.34	0.30	0.33
Calcium	1.07	1.07	1.09	1.14
Phosphorus	0.43	0.43	0.42	0.38
Metabolizable energy MJ/kg	12.16	12.14	11.26	11.41

Feeding management

First week ad libitum. From 2nd 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 4th 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.

2.6 Veterinary precautions

The house was disinfected by 1% xxxxx. As a prevention permanganate was given to the birds as well as vitamin – xxxxx (Vit. C).

Vaccination programme

Age	Vaccine
Day 1	Marek`s disease + infectious bronchitis (IB)
Days 5	Coccidiosis
Days 11	Salmonellosis
Days 15	Infectious bronchitis (IB)
Days 19	Infectious bursal disease (Gumboro)
Days 26	Infectious bursal disease (Gumboro)
Days 33	Newcastle disease (ND)
Week 6	Escherichia coli infections (E. coli)
Week 7	Infectious bronchitis (IB) + newcastle disease (ND)
Week 8	Salmonellosis
Week 9	Reovirus infections
Week 10	Avian encephalomyelitis (AE)
Week 11	Infectious bronchitis (IB)
Week 12	Chicken anaemia virus (CAV)
Week 13	Salmonellosis
Week 14	Swollen head syndrome
Week 15	Infectious bronchitis (IB)
Week 16	Escherichia coli infections (E. coli)
Week 19	Salmonellosis + (Swollen head syndrome + newcastle disease (ND) + Infectious bursal disease (Gumboro) + infectious bronchitis (IB) + Egg-drop syndrome (EDS'76) + Reovirus infections)

3 The production period

3.1 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 10 boxes in the hall according to the test station. To lay control was included in each sample 330 females and 42 males, therefore in each box were 55 females and 7 males (who were later reduced to 30 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.

3.2 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.

3.3 Conditions of the environment

Temperature

Age	House (°C)
155 – 434 days	18

Stocking density

Age	♀ and ♂
155 – 434 days	4.2

3.4 Lighting programme

Age	Light from - to	Hours of light
Week 22 (day 148 – 154)	7 ⁰⁰ – 19 ⁰⁰	12
From week 23 (from day 155)	7 ⁰⁰ – 20 ⁰⁰	13

3.5 Feeding and watering

Feed was produced in xxxxx

Day 155 – 294: NP-1 – crusher

Day 295 – 434: NP-2 – crusher

Diet formulas

	NP-1	NP-2
Components (%)		
Wheat	41.87	40.68
Maize	24.00	24.00
Soybean meal	13.60	14.00
Oat	5.00	5.00
Soya oil	2.45	2.78
Monocalcium phosphate	0.40	0.30
Limestone	2.16	2.35
Limestone–roughly ground	5.10	5.50
Sunflower meal	4.40	4.50
Salt	0.26	0.26
Sodium bicarbonate	0.13	0.13
Premix	0.63	0.50
Nutrient content (calculated values)		
Protein	15.01	15.00
Fat	4.57	4.89
Lysine	0.62	0.59
Methionine	0.35	0.33
Calcium	2.99	3.19
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	11.72	11.71

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.

3.6 Veterinary precautions

The house was disinfected by 1% xxxxx, then treated against red mites and finally by xxxxx aerosol on litter before the placement of the flock.

During the laying has been given the vaccine IB (every 6 weeks), IB 88 (24th and 42th week), IB QX (30th and 48th week), IB Primer (36th and 54th week), from the 32nd week has been given Kombisol D3 (every 2 weeks), AQUAVIT E+Se (every 6 weeks) and Kombisol A.

4 The growing test of progeny

Four progeny fattening tests were performed on each sample and processed in separate reports.

5 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	Hatching eggs in week (%)
	7	Egg weight in period
	8	Mortality – hens in the laying period
	9a	Statistical analysis – cocks at 434 days of age
	9b	Statistical analysis – hens at 434 days of age

Rearing period

Tab. No. 1

Treatment	Treat. No.	Sex	Number of birds at			Average live weight at		Feed consumption per 1 bird and day		
			1 day	35 days	154 days	1 day	154 days	1-35 days	36-154 days	1-154 days
			birds	birds	birds	g	g	g	g	g
T1	1	♂	75	65	42	45.00	3717.86	46.02	80.93	72.08
		♀	450	400	330	40.80	2919.18	32.13	72.30	62.31
T2	2	♂	75	65	42	45.00	3835.48	45.52	81.98	72.74
		♀	450	400	330	40.80	2922.06	32.46	72.12	62.26

Mortality during the rearing period

Tab. No. 2

Treatment	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	%														
T1	1	♂	0	0.00	1	1.11	1	1.54	2	2.22					1						1			31
		♀	0	0.00	2	1.11	1	0.25	3	0.67					1					1	1			117
T2	2	♂	0	0.00	0	0.00	3	4.62	3	3.33					3									30
		♀	1	0.56	1	0.56	0	0.00	2	0.44					1		1							118

Diagnostic:

- | | | | | |
|------------------------|-------------------------|---------------------------------|------------------------------------|---------------------------------|
| 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 | |

Statistical analysis - Cocks at 154 days of age

Tab. No. 3a

Treatment	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	%	%
T1	1	42	3717.86	263.71	7.09	40.69	1.09	0.79
T2	2	42	3835.48	282.96	7.38	43.66	1.14	0.82

Statistical analysis - Hens at 154 days of age

Tab. No. 3b

Treatment	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	%	%
T1	1	330	2919.18	253.95	8.70	13.98	0.48	0.34
T2	2	330	2922.06	288.90	9.89	15.90	0.54	0.39

Body weight - rearing

Tab. No. 4

Treatment	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
T1	1	♂	150	359	532	689	905	1160	1310	1380	1570	1770	1800	1940	2080	2210	2420	2570	2650	2760	2970	2950	3230	3720
		♀	142	289	413	487	582	783	880	955	1130	1256	1296	1402	1518	1758	1854	1998	2064	2138	2340	2392	2578	2932
T2	2	♂	149	345	527	683	924	1139	1340	1410	1580	1750	1810	1890	2100	2290	2390	2610	2730	2790	2940	2930	3350	3840
		♀	137	294	418	493	589	809	869	982	1138	1314	1368	1462	1578	1760	1862	2000	2062	2140	2328	2420	2514	2922

Treatment	Tr. no.	Initial flock birds	Fertility %	Hatchability		Average number of eggs per bird-housed			Average egg weight g	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
				%	%	number	number	%			days	days	g	g	g	g	g
T1	1	330	97.17	87.32	89.57	203.75	182.10	89.37	62.96	159.01	162	163	5120.67	4222.21	179.31	230.55	295.43
T2	2	330	96.54	86.79	89.42	201.40	177.92	88.34	62.81	154.41	161	163	5286.54	4232.80	176.05	234.58	305.96

Hatching eggs in week (%)

Tab. No. 6

Treatment	Treat. No.	Period																			
		1				2				3				4				5			
		Week																			
		23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
T1	1	0.0	28.2	50.9	75.5	83.2	87.5	87.1	90.3	88.9	93.8	94.1	95.8	95.2	94.8	93.8	94.3	94.0	94.4	94.1	93.8
T2	2	0.0	28.8	49.4	71.8	80.6	88.6	85.9	90.7	90.3	94.7	93.7	95.1	94.8	93.8	92.5	92.3	94.0	90.8	92.6	93.3

Treatment	Treat. No.	Period																				Cumulate
		6				7				8				9				10				
		Week																				
		43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	
T1	1	93.0	91.6	94.0	93.0	93.0	93.3	91.4	92.3	91.0	93.3	92.5	90.8	90.7	93.3	90.1	89.4	89.7	92.6	89.0	89.2	89.37
T2	2	91.5	91.9	92.7	91.7	92.6	91.3	91.2	93.4	90.2	90.9	91.7	90.7	90.9	92.0	90.6	88.8	88.8	90.1	90.0	91.0	88.34

Egg weight in period (period = 28 days)

Tab. No. 7

Treatment	Treat. No.	Period										Cumulate
		1	2	3	4	5	6	7	8	9	10	
T1	1	53.5	56.8	59.9	61.7	63.5	66.4	67.0	68.0	68.9	69.7	63.0
T2	2	53.1	56.4	59.3	61.7	63.9	66.6	67.4	68.6	69.0	69.6	62.8

1st period: 23th – 26th week of age

10th period: 59th – 62th week of age

Mortality - hens in the laying period

Tab. No. 8

Treatment	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	15	
T1	1	220	294	36	16.36							1		1	8	8				18	
T2	2	220	304	26	11.82							1		1	1	4				19	

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	14 - Other causes
3 - Fungal diseases	6 - Injuries	9 - Reproductory tract diseases	12 - Cannibalism	15 - Culling (excluded of calculation)

Statistical analysis - Cocks at 434 days of age

Tab. No. 9a

Treatment	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	%	%
T1	1	30	5120.67	574.62	11.22	104.91	2.05	1.49
T2	2	26	5286.54	660.81	12.50	129.60	2.45	1.80

Statistical analysis - Hens at 434 days of age

Tab. No. 9b

Treatment	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	%	%
T1	1	294	4222.21	553.18	13.10	32.26	0.76	0.55
T2	2	304	4232.80	391.14	9.24	22.43	0.53	0.38