MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE
státní podnik, ÚSTRAŠICE

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THE COMPLETE REPORT

The effect of xxxxx on performance parameters in parent flock

Vliv přípravku xxxxx na produkci v rodičovském hejně slepic

XXXXX

2021 – 2022

Ústrašice, June 2022

1 The basic tests information

1.1 The basic dates

Rearing 1 – 22 weeks (1 – 154 days):	25 March 2021 – 25 August 2021
Production 23 – 62 weeks (155 – 434 days):	26 August 2021 – 1 June 2022
End of the test:	10 July 2022

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 990 hens and 225 cocks in the treatment. Genotype of parent hens was xxxxx.

Treatment No.	Treatment	Description
1	xxxxx	**xxxxx**
2	xxxxx	**xxxxx**

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 880 birds, i.e. 80 birds per pen, males to 45 birds in one entry (box 13 and 14 – 60 birds) 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 36 birds. Only 2 boxes of males and ten boxes of females from the xxxxx sample were used in the laying.

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	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 (box 13, 14 – 7.1)
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	$7^{00} – 2^{00}$	19
Day 5	$7^{00} – 23^{00}$	16
Day 6 – 7	$7^{00} – 20^{00}$	13
Day 8 – 14	$7^{00} – 17^{00}$	10
Day 15 – 147	$7^{00} – 15^{00}$	8
Day 148 – 154	$7^{00} – 19^{00}$	12

Light intensity in first three days was 60 lux/sq. m. and than till the end of rearing 5 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 – 21: K1 – starter, pellets
Day 22 – 35: K2 – starter, pellets
Day 36 – 105: KZK – pellets
Day 106 – 154: NP-0 – pellets

Diet formulas

	K1	K2	KZK	NP-0
Components (%)				
Wheat	41.10	51.47	46.23	45.17
Maize	22.50	18.00	15.00	23.00
Oat	1.00	1.00	9.60	2.00
Sunflower meal	1.00	3.00	4.60	5.30
Wheat bran	-	2.70	14.00	10.90
Soybean meal	29.70	19.75	7.00	9.15
Soya fat	1.27	0.75	0.20	0.77
Salt	0.23	0.20	0.15	0.21
Calcium carbonate	1.78	1.80	2.00	2.18
Monocalcium phosphate	0.63	0.65	0.41	0.46
Sodium bicarbonate	0.17	0.22	0.21	0.23
Vitamin premix	0.62	0.46	0.60	0.63
Nutrient content (calculated values)				
Protein	20.80	18.00	14.55	15.00
Fat	3.38	2.80	2.50	3.01
Lysin	0.95	0.72	0.54	0.56
Methionin	0.44	0.34	0.30	0.33
Calcium	1.05	1.05	1.06	1.15
Phosphorus	0.42	0.42	0.42	0.38
Metabolizable energy MJ/kg	12.14	12.12	10.99	11.40

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 % diference 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.

Vaccination programme

Age	Vaccine
Day 1	Marek + IB
Days 6	LIVACOX Q
Days 11	Cevac I Bird
Days 15	Salmovac 440
Days 19	Cevac Gumboro L
Days 26	Cevac Gumboro L
Days 33	Avinew (ND)
Week 6	Poulvac E. coli
Week 7	Bioral H120 + Avinew (IB + ND)
Week 8	Salmovac 440
Week 9	REO
Week 10	Myelovax (AE)
Week 11	Poulvac IB QX
Week 12	Avipro Thymovac (CAV)
Week 13	Salmovac 440
Week 14	Avifa RTI
Week 15	Cevac I Bird
Week 16	Poulvac E - coli
Week 17	Gallimune Se + St
Week 19	Gallimune 201 + 407 (ART + ND + G + IB + EDS + REO)

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 6 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
Week 23 (Day 155 – 161)	$7^{00} – 20^{00}$	13
From week 24 (from day 162)	$7^{00} – 21^{00}$	14

3.5 Feeding and watering

Feed was produced in xxxxx.

Day 155 – 245: NP-1 – crusher
Day 246 – 434: NP-2 – crusher

xxxxx was mixed into xxxxx mixtures (in the ratio of 1 kg per ton). xxxxx in liquid form was administered into water according to the client's recommendation.

	NP-1	NP-2
Components (%)		
Wheat	43,86	44,70
Maize	25,00	25,00
Soybean meal	14,65	14,35
Limestone	4,39	4,95
Oat	3,60	2,00
Limestone–roughly ground	3,00	3,00
Sunflower meal	2,20	2,70
Soya fat	1,88	2,07
Monocalcium phosphate	0,37	0,27
Salt	0,26	0,27
Premix	0,79	0,69
Nutrient content (calculated values)		
Protein	151,10	150,20
Fat	40,02	41,41
Lysine	7,08	6,66
Methionine	3,77	3,53
Calcium	28,61	30,49
Phosphorus	4,28	4,07
Vitamin A (m.j./kg)	10000,00	10000,00
Vitamin D3 (m.j./kg)	3000,00	3000,00
Metabolizable energy MJ/kg	11,72	11,72

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 liquid, then treated against red mites and finally by Virkon aerosol on litter before the placement of the flock.

During the laying has been given the vaccine xxxxx (every 6 weeks), xxxxx (24^{th} and 42^{th} week), xxxxx (30^{th} and 48^{th} week), xxxxx (36^{th} and 54^{th} week), xxxxx (29^{th} week), xxxxx (from 37^{th} week) and xxxxx.

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	Dirty eggs, % of hatching eggs, in week
	8	Egg weight in period
	9	Mortality – hens in the laying period
	10a	Statistical analysis – cocks at 434 days of age
	10b	Statistical analysis – hens at 434 days of age

Rearing period **Tab. No. 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
xxxxx	1	♂	225	165	112	41.6	3341.3	41.1	71.0	62.4
		♀	990	880	733	42.7	2814.7	31.6	69.7	60.2
xxxxx	2	♂	225	135	84	41.6	3342.3	38.9	66.0	57.1
		♀	990	880	807	36.7	2815.1	32.7	70.4	61.0

Mortality during the rearing period **Tab. No. 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	%														
xxxxx	1	♂	1	1.1	0	0.0	6	3.6	7	7.8							2				5			106
		♀	0	0.0	0	0.0	6	0.7	6	0.6					1						5			251
xxxxx	2	♂	0	0.0	2	2.2	3	2.2	5	5.6											5			136
		♀	0	0.0	4	2.2	3	0.3	7	0.7											7			176

Diagnostic:

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

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	%	%
xxxxx	1	112	3341.34	276.67	8.28	26.14	0.78	0.56
xxxxx	2	84	3342.26	216.42	6.48	23.61	0.71	0.50

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	%	%
xxxxx	1	733	2814.73	224.91	7.99	8.31	0.30	0.21
xxxxx	2	807	2815.11	254.68	9.05	8.97	0.32	0.23

Body weight - rearing **Tab. No. 4**

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
xxxxx	1	♂	140	271	483	633	780	973	1213	1273	1360	1553	1687	1790	1847	1917	2137	2260	2497	2703	2833	2673	3007	3360
		♀	126	237	335	538	574	674	887	954	994	1072	1168	1274	1357	1403	1636	1783	1837	1928	2200	2325	2555	2819
xxxxx	2	♂	140	260	448	583	767	923	1140	1230	1330	1403	1563	1697	1807	1883	2043	2153	2377	2607	2690	2653	2980	3343
		♀	128	242	337	447	576	657	820	875	978	1070	1165	1254	1342	1435	1520	1726	1869	2059	2255	2436	2525	2809

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	%	%	%	numbe	number	%	g		days	days	g	g	g	g	g
xxxxx	1	330	90.0	77.0	85.4	149.5	136.7	91.5	65.2	105.3	176	177	5415.8	4635.6	166.8	293.7	417.2
xxxxx	2	330	87.9	73.9	82.6	156.1	142.2	91.1	65.3	105.1	175	177	5287.9	4758.0	168.5	286.6	425.6

Hatching eggs in week (%) **Tab. No. 6**

Breed	Treat. No.	Period																			
		2				3				4				5				6			
		Week																			
		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
xxxxx	1	71.7	87.9	91.5	93.0	94.7	92.7	95.5	95.3	93.4	94.7	92.9	92.0	91.8	94.2	93.0	93.9	93.0	93.4	94.0	95.1
xxxxx	2	73.5	87.5	91.6	91.9	93.5	94.2	93.4	94.6	92.9	93.1	93.0	92.7	93.6	93.4	94.1	93.5	91.4	93.6	94.0	95.0

Breed	Treat. No.	Period																Cumulate
		7				8				9				10				
		Week																
		47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	
xxxxx	1	94.2	94.7	95.1	93.4	94.5	94.8	92.2	92.3	91.8	91.8	92.9	87.9	93.4	93.6	92.9	90.5	91.46
xxxxx	2	94.7	94.4	94.1	94.2	95.1	95.6	92.5	92.3	90.3	90.9	90.9	91.2	91.3	92.1	92.1	90.6	91.10

Dirty eggs, % of hatching eggs, in week **Tab. No. 7**

Breed	Treat. No.	Period																			
		2				3				4				5				6			
		Week																			
		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
xxxxx	1	4.6	3.4	3.1	2.3	2.9	0.7	0.6	1.6	1.6	0.8	2.9	2.1	2.0	2.0	1.2	1.8	2.2	1.9	1.4	2.5
xxxxx	2	4.3	3.2	3.9	2.1	4.5	1.4	0.5	1.8	2.0	1.9	2.5	1.6	1.6	1.8	1.8	2.5	2.3	2.0	1.5	3.0

Breed	Treat. No.	Period																Cumulate
		7				8				9				10				
		Week																
		47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	
xxxxx	1	1.5	1.4	2.1	1.2	0.1	0.8	0.9	1.0	1.1	1.3	1.2	0.8	0.1	1.1	0.3	0.2	1.77
xxxxx	2	1.7	0.8	2.8	1.5	0.1	0.6	1.0	0.4	0.7	1.4	0.9	0.6	0.9	0.7	0.3	0.1	1.93

Egg weight in period (period = 28 days) **Tab. No. 8**

Breed	Treat. No.	Period										Cumulate
		1	2	3	4	5	6	7	8	9	10	
xxxxx	1	54.6	58.2	62.6	65.5	67.5	68.4	69.9	70.2	71.1	71.7	65.2
xxxxx	2	53.9	58.0	62.7	65.3	67.1	68.9	70.1	71.1	71.3	71.7	65.3

1st period: 23th – 26th week of age
10th period: 59th – 62th week of age

Mortality - hens in the laying period **Tab. No. 9**

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	15
xxxxx	1	330	307	23	7.0										10	13				18
xxxxx	2	330	311	19	5.8										7	12				18

Diagnostic:

1 - Viral diseases
2 - Bacterial diseases
3 - Fungal diseases
4 - Parasitary diseases
5 - Tumors
6 - Injuries
7 - Digestive tract diseases
8 - Respiratory tract diseases
9 - Reproductory tract diseases
10 - Locomotion apparatus diseases
11 - Sudden death
12 - Cannibalism
13 - Diverticulus inflammation
14 - Other causes
15 - Culling (excluded of calculation)

Statistical analysis - Cocks at 434 days of age **Tab. No. 10a**

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	%	%
xxxxx	1	24	5415.83	783.46	14.47	159.92	2.95	2.18
xxxxx	2	28	5287.86	663.15	12.54	125.32	2.37	1.73

Statistical analysis - Hens at 434 days of age **Tab. No. 10b**

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	%	%
xxxxx	1	289	4635.61	533.58	11.51	31.39	0.68	0.49
xxxxx	2	293	4757.99	517.28	10.87	30.22	0.64	0.46