



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE
státní podnik, ÚSTRAŠICE

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THE COMPLETE REPORT

XXXXX

JA 35/2023

2022-2024

Ústrašice, February 2024

1. The basic characteristics of the test

DOC placement: 21. 9.2022
Rearing 154 days: 21. 2. 2023
Production 155 – 490 days: 22. 2. 2023 – 23. 1. 2024
End of the test: 30. 1. 2024

Experimental treatments:

Tr. No.	Treatment	Description	No. of pen	Birds per pen	No. of chick
1	T1	xxxxxx	6	102♀ + 11♂	612♀ + 66♂
2	T2	xxxxxx	6	102♀ + 11♂	612♀ + 66♂
3	T3	xxxxxx	7	82♀ + 9♂	574♀ + 63♂
4	T4	xxxxxx	7	82♀ + 9♂	574♀ + 63♂

xxxxxx was administered throughout the study in the laying phase, via feed.

xxxxxx was administered 4 days per week from 21.2.2023 to 31.3.2023 (week 23-28), via drinking water.

2. Production period (155 – 490 days)

Females were moved to production houses at 21 weeks of age. Males were moved at 20 week of age. 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 six boxes in one hall (treatment 1 and 2) and into seven boxes in other one hall, according to the test station. To lay control was included in each sample 612 (574) females and 66 (63) males, therefore in each box were 102 (82) females and 11 (9) males. Selections are carried out primarily by negative selection by health and exterior, as well as by live weight of each bird.

Housing in laying halls: deep litter houses, automated heating and ventilation.

Stocking density (155 – 490 days):

House 15: 12 pens 113 birds/pen (102 females + 11 males) Pen size: 18,4 m²
House 16: 14 pens 91 birds/pen (82 females + 9 males) Pen size: 13,6 m²

Light programme:

Age (days)	Light hours	Light intensity (lux)
148 – 154 days (week 22)	12	60
155 – 161 days (week 23)	13	
162 – 168 days (week 24)	14	
from 169 day (week 25)	15	

Complete feed formulation:

Feed for females was produced by the feed mill xxxxx

Feed for males was produced by the feed mill xxxxx

Diet formulas:

Ingredient (%)	Females: NP-1	Males: NR
Wheat	52.14	61.49
Soybean ext. meal	16.65	10.00
Maize	13.00	20.00
Calcium carbonate	4.78	-
Sunflower ext. meal	4.20	-
Wheat bran	3.00	4.00
Limestone	3.00	2.10
Soyabean oil	1.22	-
Fish meal	0.60	-
Monocalcium phosphate	0.44	1.40
Salt	0.26	0.34
DL-Methionin	0.15	0.21
Lysin-HCL	0.03	0.22
Sodium sulfate	0.12	-
Premix (vitam., enz.,....)	0.41	0.25
Nutrient level (g)		
Protein	170.02	144.23
Fat	30.77	22.29
Lysine	7.82	7.39
Methionine	4.01	4.29
Calcium	30.49	12.57
Phosphorus	5.13	6.94
Vitamin A (m.j./kg)	10000.00	-
Vitamin D3 (m.j./kg)	3000.00	-
Metabolizable energy MJ/kg	11.07	12.17

Feeding management:

The flock was fed daily at 7⁰⁰ am separately males and females. Females were using troughs with grids, males tube pan feeders hanging higher. Oats (3g/birds) was fed daily at 12⁰⁰ on the litter. In the afternoon he was flung out into the litter grit.

System of drinking:

Nipple cup drinkem in production houses. Water was available the whole day.

Veterinary precautions:

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

During the laying has been given the vaccine xxxxx (every 6 weeks), xxxxx (36th and 54th week), xxxxx (30th and 48th week), xxxxx (24th, 42nd and 60th week).

4. Method of results presentation

The final results of testing are in the following tables:

Tab. No.	1:	Laying control
	2:	Feed consumption
	3:	Egg weight in period
	4:	Laying intensity in periods
	5:	Distribution of eggs in periods
	6:	Mortality – hens in the laying period
	7a:	Statistical analysis – cocks at 490 days of age
	7b:	Statistical analysis – hens at 490 days of age
	8:	Hatchability of chicks in period
Graph No.:	1:	Laying intensity

Laying control

Tab. No. 1

Treatment	Tr. no.	Init. flock	Fertility	Hatchability		Average number of eggs per bird-housed			Aver. egg weight	Nr. of chicks hatched per 1 hen	Days at percent. of laying		Average live weight at the end of laying	
				set	fert.	total	hatch. eggs				30%	50%	cocks	hens
				birds	%	%	%	num.			num.	%	g	days
T1	1	612	88.94	82.22	92.44	261.98	228.47	87.21	60.56	187.83	154	154	5888.11	2266.68
T2	2	612	90.35	82.43	91.23	262.51	233.13	88.81	60.85	192.17	155	155	5937.75	2225.84
T3	3	574	88.73	82.39	92.86	261.12	234.89	89.95	60.65	193.53	155	155	5329.43	2269.80
T4	4	574	90.14	83.41	92.54	256.70	226.44	88.21	60.59	188.87	155	155	5619.54	2260.01

Feed consumption**Tab. No. 2**

Treatment	Tr. No.	Hens housed	Feed consumption per			
			1 feeding day	1 egg	1 hatch. egg	1 chick
			g	g	g	g
T1	1	612	139.55	170.80	195.86	238.23
T2	2	612	139.53	170.28	191.74	232.61
T3	3	574	139.74	169.92	188.89	229.26
T4	4	574	140.01	171.35	194.26	232.89

Egg weight in period (period = 28 days)

Tab. No. 3

Treatment	Tr. No.	Period												Average
		1	2	3	4	5	6	7	8	9	10	11	12	
T1	1	53.19	55.79	57.80	58.85	59.14	59.97	61.26	62.57	64.46	65.30	65.62	66.26	60.56
T2	2	53.20	55.76	57.84	58.72	59.60	60.31	61.56	63.27	64.75	65.84	66.06	66.27	60.85
T3	3	53.13	55.66	57.66	58.59	59.03	60.24	61.68	63.03	64.29	65.39	65.55	65.99	60.65
T4	4	53.21	55.49	57.26	58.69	59.59	60.32	61.67	62.59	64.49	65.30	66.02	66.33	60.59

1st period: 23th – 26th week of age

12th period: 67th – 70th week of age

Laying intensity

in four weeks long periods (%)

Tab. No. 4

Treatment	Tr. No.	Period											
		1	2	3	4	5	6	7	8	9	10	11	12
T1	1	91.16	95.27	92.65	90.54	85.51	80.20	77.15	74.19	70.87	64.85	60.31	52.94
T2	2	91.01	95.15	93.29	90.24	83.46	79.89	76.73	73.87	71.63	66.48	61.40	54.38
T3	3	91.76	95.53	92.05	89.42	85.02	80.97	77.40	74.43	70.36	64.98	58.75	51.92
T4	4	92.15	94.83	92.12	89.09	83.79	78.76	75.23	72.24	69.66	63.05	56.72	49.17

Distribution of eggs in period (%)

Tab. No. 5

Hatching eggs

Treatment	Tr. No.	Period												Average
		1	2	3	4	5	6	7	8	9	10	11	12	
T1	1	84.85	89.70	90.77	90.70	89.46	89.22	88.27	87.49	85.70	85.27	80.92	77.48	87.21
T2	2	85.48	90.05	91.54	91.19	91.48	91.31	90.19	89.89	88.40	87.21	84.32	79.91	88.81
T3	3	84.51	89.75	91.34	92.20	92.21	91.82	91.25	90.59	89.27	89.90	89.00	86.29	89.95
T4	4	84.44	89.56	89.88	91.10	91.16	90.30	89.07	88.60	87.29	86.53	85.10	81.07	88.21

Double-yolk eggs

Treatment	Tr. No.	Period												Average
		1	2	3	4	5	6	7	8	9	10	11	12	
T1	1	2.67	0.97	0.16	0.09	0.06	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.39
T2	2	2.77	0.94	0.16	0.05	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.39
T3	3	2.81	1.24	0.17	0.09	0.05	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.44
T4	4	3.11	0.98	0.16	0.11	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.45

Cracked eggs

Treatment	Tr. No.	Period												Average
		1	2	3	4	5	6	7	8	9	10	11	12	
T1	1	3.05	2.17	2.17	3.05	4.11	4.56	5.12	6.13	7.25	9.24	13.45	15.47	5.64
T2	2	2.98	2.20	2.01	3.10	2.89	3.01	3.50	4.12	5.43	7.55	10.64	13.68	4.58
T3	3	3.01	1.82	1.73	1.85	2.23	2.67	2.73	3.11	3.94	4.59	5.58	7.12	3.11
T4	4	3.10	2.18	2.48	2.84	2.96	4.14	4.52	5.30	5.82	7.35	9.08	12.15	4.64

The other non-standard eggs

Treatment	Tr. No.	Period												Average
		1	2	3	4	5	6	7	8	9	10	11	12	
T1	1	9.43	7.15	6.89	6.16	6.37	6.20	6.60	6.37	7.05	5.49	5.63	7.05	6.77
T2	2	8.77	6.81	6.30	5.66	5.57	5.66	6.31	5.99	6.17	5.24	5.04	6.41	6.23
T3	3	9.67	7.20	6.76	5.87	5.51	5.49	6.01	6.29	6.78	5.54	5.42	6.58	6.50
T4	4	9.36	7.28	7.48	5.95	5.84	5.53	6.40	6.11	6.90	6.12	5.81	6.78	6.71

Mortality - hens in the laying period

Tab. No. 6

Treatment	Tr. No.	Initial flock	Final flock	Mortality and sampling total		Mortality		Mortality according causes															
		birds	birds	birds	%	birds	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
T1	1	612	460	59	9.64	23	3.76										22	1					36
T2	2	612	549	63	10.29	27	4.41										26	1					36
T3	3	574	593	74	12.89	32	5.57										32						42
T4	4	574	484	90	15.68	48	8.36										48						42

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 syndrome
 12 - Cannibalism
 13 - Diverticulus inflammation
 14 - culling and other causes
 15 - Sampling (excluded of calculation)

Statistical analysis - Cocks at 490 days of age

Tab. No. 7a

Treatment	Tr. No.	Tr. 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	47	5888.11	605.00	10.27	88.25	1.50	1.08
T2	2	55	5937.75	866.33	14.59	116.82	1.97	1.43
T3	3	68	5329.43	774.69	14.54	93.95	1.76	1.28
T4	4	57	5619.54	648.40	11.54	85.88	1.53	1.10

Statistical analysis - Hens at 490 days of age

Tab. No. 7b

Treatment	Tr. No.	Tr. 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	460	2266.68	234.89	10.36	10.95	0.48	0.35
T2	2	549	2225.84	185.02	8.31	7.90	0.35	0.25
T3	3	593	2269.80	197.63	8.71	8.12	0.36	0.25
T4	4	484	2260.01	197.16	8.72	8.96	0.40	0.28

Hatchability of chicks in period

Tab. No. 8

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	3	57.83	36.96	97.33	93.33	95.89
T2	2		57.67	37.19	96.67	95.00	98.28
T3	3		57.50	37.54	95.67	93.67	97.91
T4	4		57.67	37.85	96.33	93.00	96.54

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	4	58.17	39.88	96.67	85.67	88.62
T2	2		58.50	37.06	96.67	94.00	97.24
T3	3		58.33	38.04	97.33	92.00	94.52
T4	4		58.17	37.32	96.00	94.67	98.61

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	6	59.58	39.51	95.67	89.50	93.54
T2	2		59.83	40.08	96.50	87.83	91.02
T3	3		59.50	39.50	97.67	86.50	88.57
T4	4		59.58	40.00	97.33	85.50	87.85

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	7	60.33	42.29	94.00	88.67	94.33
T2	2		60.83	39.81	95.00	86.67	91.23
T3	3		61.17	40.37	94.67	90.00	95.07
T4	4		61.00	40.64	95.00	89.00	93.68

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	8	61.78	40.54	94.67	88.11	93.06
T2	2		61.98	40.59	95.11	87.44	91.94
T3	3		61.56	40.75	95.44	88.33	92.47
T4	4		61.50	41.24	94.89	86.33	90.99

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	9	62.94	41.04	94.00	87.33	92.83
T2	2		63.28	41.96	94.11	86.89	92.34
T3	3		62.89	40.99	93.00	89.56	96.31
T4	4		62.89	40.18	94.11	91.67	97.40

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	10	64.33	42.46	86.33	79.67	92.29
T2	2		64.67	42.90	87.00	81.50	93.66
T3	3		64.00	43.04	85.33	76.00	89.09
T4	4		65.17	44.02	84.67	79.67	94.11

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	11	65.83	42.39	75.00	65.67	87.56
T2	2		65.17	42.64	81.67	65.67	80.41
T3	3		65.50	43.15	78.67	73.00	92.80
T4	4		65.33	42.79	82.67	76.33	92.34

Treatment	Tr. No.	Period	Average weight		Fertility	Hatchability	
			hatching eggs	day old chicks		Set eggs	Fertilized eggs
			g	g		%	%
T1	1	12	65.56	43.60	73.00	66.56	91.15
T2	2		65.61	42.61	77.11	66.11	85.79
T3	3		65.44	43.04	70.22	64.44	91.65
T4	4		65.50	43.48	77.11	66.89	86.65

Graph no. 1: Intenzity of lay

