MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE
ÚSTRAŠICE **státní podnik**

390 02 Tábor 2 **Česká republika**

BROILER FEEDING TEST No. 7/2022

XXXXX

XXXXX

18 May – 21 June 2022

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July 2022
Červenec 2022

Material and methods

Test term

Beginning of the test: 18 May 2022 (transfer to the chicken house)

End of the test: 21 June 2022

Birds

In total there were 3360 day old chicks (females) of xxxxx. Day-old chicks were randomly distributed into 2 dietary treatments with 12 replicates per treatment and 140 chicken per replicate.

Origin 1-day old chicks:

breeder company – xxxxx

parent flock – xxxxx

age of the breeding flock – 52 weeks

Experimental treatments:

Tr. No.	Tr.	Description
1	T1	xxxxx
2	T2	xxxxx

Housing system

Chickens were kept in the windowless chicken house with full climatic control, on deep litter. The heating program was conducted according to the Manual of xxxxx. Drinking water was supplied ad libitum by nipple drinkers. Each pen was equipped with manually filled tube feeders. Bedding material was wood shaving.

Light was provided as follows during the experimental period:

Lighting programme:	Day 1 - 7	23 hours of light + 1 hour of darkness
	Day 8 - 32	18 hours of light + 6 hours of darkness
	Day 33 - 35	23 hours of light + 1 hour of darkness
Stocking density:	16,2 broilers per square meter	

The conduct of the trial was conformed to the national welfare legislation.

Veterinary precautions

The chicken house was disinfected with xxxxx before the chick placement.

On the first days chickens was applied xxxxx.

Feed

Feed was produced by International Poultry Testing Station Ústrašice

Day 1 - 10 Starter (BR 1)

Day 11- 28 Grower (BR2)

Day 29 - 35 Finisher (BR 3)

Diet formulas:

Components (%)	**Starter BR1**	**Grower BR2**	**Finisher BR3**
Soybean extr. groats	36.99	32.71	26.64
Wheat	30.00	35.00	42.41
Maize	23.77	22.20	21.00
Soybean oil	5.00	6.00	6.00
Calcium carbonate	1.49	1.35	1.12
MCP - monocalciumphosphate	1.14	1.10	1.20
Salt	0.29	0.30	0.29
Sodium sulfate	0.12	0.15	0.15
L-lysine	0.40	0.39	0.39
L-threonin	0.20	0.20	0.20
DL-methionin	0.10	0.10	0.10
AMV BR1 Plus	0.50	-	-
AMV BR2 Plus	-	0.50	-
AMV BR3 Plus	-	-	0.50
Nutrient content			
Crude protein (g/kg)	210.39	196.09	177.03
Fat (g/kg)	67.28	76.71	76.29
Lysine (g/kg)	15.08	13.91	12.40
Methionine (g/kg)	6.45	5.84	5.26
Ca (g/kg)	9.61	8.82	7.83
P (g/kg)	6.49	6.25	6.29
Vitamin A (IU/kg)	13500	10000	10000
Vitamin D3 (IU/kg)	5000	5000	5000
ME (MJ/kg)	11.94	12.28	12.44

Parameters recorded and methods applied

Live weight

Live weight was measured on day 1 (all the birds in each pen were weighed altogether). On day 10 and 28 of age birds were weighed individually, without fasting. On day 35 birds were weighed individually, after 12 hours of fasting.

Feed consumption

Feed consumption was determined per pen for the feed – starter, grower and finisher.

Weight gain

Weight gain per phase and average daily weight gains were calculated for the periods 1 – 10 days, 11 – 28 days, 29 – 35 days and for the overall experiment (1 – 35 days).

Feed conversion ratio

Feed conversion ratio was calculated as feed consumption per 1 kg of live weight and per 1 kg of weight gain for the periods 1 – 10 days, 11 – 28 days, 29 – 35 days and for the overall experiment (1 – 35 days). The calculation was included weight of deaths.

Mortality

All pens were checked twice times a day to see if there were any dead or ill birds. Dead chickens were registered by date, weight and reason of mortality on the day of death. Mortality was recorded for the periods 1 – 10 days, 11 – 28 days, 29 – 35 days and 1 – 35 days.

Statistical analyses

Performance results of live weight (on days 1, 10, 28 and 35) were statistically evaluated using the ANOVA single-factor model (Scheffe and Duncan test) or nonparametric method (Kruskal-Wallis test).

Results

Tab. No. **1 Hatchability**

2 Performance results:

- **2a Body weight**
- **2b Weight gain**
- **2c Feed conversion per 1 kg of live weight**
- **2d Feed conversion per 1 kg of weight gain**
- **2e Feed consumption**

3 Mortality

4 Statistical analysis of body weight at the age of 35 days
(average body weight, standard deviation, coefficient of variation)

5 - 10 Statistical analyses of performance results

11 Performance results per pen:

- **11a Body weight**
- **11b Weight gain**
- **11c Feed conversion per 1 kg of live weight**
- **11d Feed conversion per 1 kg of weight gain**
- **11e Feed consumption**

Results of incubation and hatching **Tab. No. 1**

Treatment	Tr. No.	Fertility	Hatchability		Birds housed	Average weight	
			Set eggs	Fertile eggs		Hatching eggs	Day old chicks
		%	%	%		g	g
T1	1	88.00	84.63	96.16	1680	66.80	45.54
T2	2				1680		45.60

Body weight per phases **Tab. No. 2a**

Treatment	Tr. No.	Day 1		Day 10		Day 28		Day 35	
		Birds	Average body weight	Birds	Average body weight	Birds	Average body weight	Birds	Average body weight
			g		g		g		g
T1	1	1680	45.54	1680	311.65	1663	1552.65	1659	2095.56
T2	2	1680	45.60	1680	311.33	1664	1539.04	1656	2083.95

Weight gain per phases **Tab. No. 2b**

Treatment	Tr. No.	Day 1 - 10		Day 11 - 28		Day 29 - 35		Day 1 - 35	
		Weight gain per phase	Daily weight gain	Weight gain per phase	Daily weight gain	Weight gain per phase	Daily weight gain	Weight gain per phase	Daily weight gain
		g	g	g	g	g	g	g	g
T1	1	266.11	26.61	1241.00	68.94	542.91	67.86	2050.02	58.57
T2	2	265.73	26.57	1227.72	68.21	544.90	68.11	2038.35	58.24

Feed conversion per 1 kg of live weight **Tab. No. 2c**

Treatment	Tr. No.	Feed conversion ratio		
		Day 10	Day 28	Day 35
		g/kg live weight	g/kg live weight	g/kg live weight
T1	1	996.81	1452.23	1628.59
T2	2	988.67	1432.74	1601.88

Feed conversion per 1 kg of weight gain **Tab. No. 2d**

Treatment	Tr. No.	Feed conversion ratio			
		Day 1-10	Day 11-28	Day 29-35	Day 1-35
		g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain
T1	1	996.95	1567.44	2136.44	1665.05
T2	2	988.81	1546.16	2084.99	1638.03

Feed consumption per phases **Tab. No. 2e**

Treatment	Tr. No.	Feed consumption			
		Starter (day 1-10)	Grower (day 11-28)	Finisher (day 29-35)	Total (day 1-35)
		kg	kg	kg	kg
T1	1	521.90	3244.00	1923.90	5689.80
T2	2	517.10	3166.20	1876.60	5559.90

Mortality **Tab. No. 3**

Treat.	Tr. No.	Mortality in the period									Mortality according causes														
		Day 1 - 10		Day 11 - 28		Day 29 - 35		Day 1 - 35			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		birds	g	birds	g	birds	g	birds	g	%															
T1	1	0	0	17	11135	4	6038	21	17173	1.25										16	5				
T2	2	0	0	16	9839	8	10005	24	19844	1.43										15	9				

Causes:

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 - Reproduction 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 - Body weight at 35 days of age **Tab. No. 4**

Treatment	Tr. No.	Hens			
		No. of birds	Average body weight	Standard deviation	Coefficient of variation
			g/birds	g/birds	%
T1	1	1659	2095.56	203.35	9.70
T2	2	1656	2083.95	214.55	10.30

Statistical analyses of performance results

Performance results were statistically evaluated using the ANOVA single-factor model (Scheffe test, Duncan test) or nonparametric method (Kruskal-Wallis test).
The following symbols are used for levels of significance:

$p \leq 0{,}001$	* * *	- differences are very high significant
$p \leq 0{,}01$	* *	- differences are high significant
$p \leq 0{,}05$	*	- differences are significant
$p > 0{,}05$	o	- differences are not significant

Body weight – day 1 **Tab. No. 5a**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	45.54	0.20		o
T2	2	12	45.60	0.22	0.535871	

Body weight – day 10 **Tab. No. 5b**

Treat.	Tr. No.	No. of birds	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	1680	311.65	29.20		o
T2	2	1680	311.33	29.45	0.748059	

Body weight – day 28 **Tab. No. 5c**

Treat.	Tr. No.	No. of birds	Average (g)	Standard deviation	Kruskal-Wallis test	
					T1	T2
T1	1	1663	1552.65	161.73		o
T2	2	1664	1539.04	174.57	0.052886	

Body weight – day 35 **Tab. No. 5d**

Treat.	Tr. No.	No. of birds	Average (g)	Standard deviation	Scheffe test	
					T1	T2
T1	1	1659	2095.56	203.35		o
T2	2	1656	2083.95	214.55	0.109946	

Average weight gain (day 1 – 10) **Tab. No. 6a**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	26.61	0.58		o
T2	2	12	26.57	0.69	0.885768	

Average weight gain (day 11 – 24) **Tab. No. 6b**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	68.94	1.65		o
T2	2	12	68.21	2.64	0.423890	

Average weight gain (day 25 – 35) **Tab. No. 6c**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	67.86	3.98		o
T2	2	12	68.11	3.74	0.879561	

Average weight gain (day 1 – 35) **Tab. No. 6d**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	58.57	1.15		o
T2	2	12	58.24	1.75	0.589202	

FCR 10 **Tab. No. 7a**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	997.08	27.10		o
T2	2	12	988.79	22.20	0.421313	

FCR 24 **Tab. No. 7b**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	1452.41	41.97		o
T2	2	12	1433.15	45.80	0.294629	

FCR 35 **Tab. No. 7c**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	1628.69	44.10		o
T2	2	12	1601.85	43.41	0.147242	

FCR per 1 kg of weight gain 1 – 10 day **Tab. No. 8a**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	997.22	27.10		o
T2	2	12	988.93	22.20	0.421353	

FCR per 1 kg of weight gain 11 – 24 day **Tab. No. 8b**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	1567.73	51.29		o
T2	2	12	1546.93	57.04	0.357923	

FCR per 1 kg of weight gain 25 – 35 day **Tab. No. 8c**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	2142.16	129.35		o
T2	2	12	2090.08	133.29	0.342076	

FCR per 1 kg of weight gain 1 – 35 day **Tab. No. 8d**

Treat.	Tr. No.	No. of box	Average (g)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	1665.18	45.22		o
T2	2	12	1638.03	44.26	0.151544	

Feed intake (starter) **Tab. No. 9a**

Treat.	Tr. No.	No. of box	Average (kg)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	43.49	0.96		o
T2	2	12	43.09	1.16	0.367192	

Feed intake (grower) **Tab. No. 9b**

Treat.	Tr. No.	No. of box	Average (kg)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	270.33	9.87		o
T2	2	12	263.85	11.20	0.146811	

Feed intake (finisher) **Tab. No. 9c**

Treat.	Tr. No.	No. of box	Average (kg)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	160.33	6.53		o
T2	2	12	156.38	7.59	0.186821	

Feed intake (total) **Tab. No. 9d**

Treat.	Tr. No.	No. of box	Average (kg)	Standard deviation	Duncan test	
					T1	T2
T1	1	12	474.15	15.28		o
T2	2	12	463.33	19.03	0.138818	

Mortality – % (day 1-35) **Tab. No. 10**

Treat.	Tr. No.	No. of box	Average (%)	Standard deviation	Kruskal-Wallis test	
					T1	T2
T1	1	12	1.25	0.75		o
T2	2	12	1.43	1.26	0.908073	

Performance results per replicate

Body weight per phases **Tab. No. 11a**

Treatment	Tr. No.	Pen	Day 1		Day 10		Day 28		Day 35	
			Birds	Average body weight	Birds	Average body weight	Birds	Average body weight	Birds	Average body weight
				g		g		g		g
T1	1	1	140	45.71	140	311.37	139	1529.40	139	2095.60
		3	140	45.86	140	319.87	140	1605.57	139	2171.20
		5	140	45.43	140	315.52	138	1570.78	137	2098.34
		7	140	45.36	140	322.72	138	1578.17	138	2164.17
		9	140	45.64	140	312.56	138	1583.76	138	2133.61
		11	140	45.57	140	313.11	138	1488.96	138	2082.98
		13	140	45.71	140	307.10	140	1553.29	140	2087.27
		15	140	45.57	140	304.51	139	1572.92	138	2059.41
		17	140	45.29	140	311.56	139	1551.04	139	2057.78
		19	140	45.21	140	304.01	136	1534.53	136	2050.01
		21	140	45.43	140	306.16	139	1523.84	139	2069.12
		23	140	45.71	140	311.28	139	1538.80	138	2076.57
T2	2	2	140	45.50	140	310.80	136	1595.35	136	2135.40
		4	140	45.71	140	316.84	140	1567.25	139	2093.62
		6	140	45.50	140	312.84	136	1524.98	135	2035.49
		8	140	45.57	140	317.95	140	1527.09	138	2070.04
		10	140	45.64	140	320.31	140	1569.64	140	2138.02
		12	140	45.43	140	318.37	139	1612.34	139	2210.39
		14	140	45.43	140	305.64	137	1492.69	136	2087.95
		16	140	45.71	140	311.17	138	1562.63	136	2074.32
		18	140	45.14	140	310.22	140	1576.01	139	2089.88
		20	140	45.71	140	307.08	139	1535.12	139	2087.46
		22	140	46.00	140	295.41	139	1451.97	139	2001.58
		24	140	45.79	140	309.26	140	1453.90	140	1983.06

Weight gain per phases (WG) and daily weight gain **Tab. No. 11b**

Treatment	Tr. No.	Box	Day 1 - 10		Day 11 - 28		Day 29 - 35		Day 1 - 35	
			WG	DWG	WG	DWG	WG	DWG	WG	DWG
			g	g	g	g	g	g	g	g
T1	1	1	265.66	26.57	1218.03	67.67	566.20	70.78	2049.89	58.57
		3	274.01	27.40	1285.70	71.43	565.63	70.70	2125.34	60.72
		5	270.09	27.01	1255.26	69.74	527.56	65.95	2052.91	58.65
		7	277.36	27.74	1255.45	69.75	586.01	73.25	2118.82	60.54
		9	266.92	26.69	1271.20	70.62	549.85	68.73	2087.97	59.66
		11	267.54	26.75	1175.84	65.32	594.02	74.25	2037.41	58.21
		13	261.39	26.14	1246.19	69.23	533.98	66.75	2041.56	58.33
		15	258.94	25.89	1268.41	70.47	486.49	60.81	2013.84	57.54
		17	266.28	26.63	1239.48	68.86	506.73	63.34	2012.49	57.50
		19	258.80	25.88	1230.52	68.36	515.49	64.44	2004.80	57.28
		21	260.74	26.07	1217.68	67.65	545.28	68.16	2023.69	57.82
		23	265.56	26.56	1227.52	68.20	537.77	67.22	2030.86	58.02
T2	2	2	265.30	26.53	1284.55	71.36	540.06	67.51	2089.90	59.71
		4	271.13	27.11	1250.41	69.47	526.37	65.80	2047.90	58.51
		6	267.34	26.73	1212.14	67.34	510.51	63.81	1989.99	56.86
		8	272.38	27.24	1209.14	67.17	542.95	67.87	2024.47	57.84
		10	274.67	27.47	1249.32	69.41	568.39	71.05	2092.38	59.78
		12	272.94	27.29	1293.97	71.89	598.05	74.76	2164.96	61.86
		14	260.21	26.02	1187.05	65.95	595.26	74.41	2042.52	58.36
		16	265.46	26.55	1251.46	69.53	511.69	63.96	2028.61	57.96
		18	265.08	26.51	1265.79	70.32	513.87	64.23	2044.73	58.42
		20	261.36	26.14	1228.04	68.22	552.34	69.04	2041.75	58.34
		22	249.41	24.94	1156.56	64.25	549.60	68.70	1955.58	55.87
		24	263.47	26.35	1144.64	63.59	529.16	66.14	1937.27	55.35

Feed conversion ratio (Feed consum. per 1 kg of live weight) **Tab. No. 11c**

Treatment	Tr. No.	Box	Feed conversion ratio		
			Day 10	**Day 28**	**Day 35**
			g/kg live weight	g/kg live weight	g/kg live weight
T1	1	1	1013.95	1470.99	1653.99
		3	989.24	1450.75	1625.27
		5	948.54	1378.97	1565.72
		7	965.01	1423.46	1579.53
		9	1019.22	1452.31	1615.93
		11	996.90	1439.92	1565.74
		13	1028.05	1518.89	1689.15
		15	1043.82	1399.25	1627.99
		17	1001.86	1443.63	1658.92
		19	998.54	1448.46	1608.74
		21	986.87	1517.77	1694.84
		23	972.95	1484.51	1658.48
T2	2	2	1013.51	1396.31	1602.48
		4	989.67	1350.41	1552.97
		6	963.51	1439.05	1626.97
		8	966.01	1424.27	1598.11
		10	965.57	1428.45	1594.93
		12	1002.87	1454.88	1600.35
		14	1023.63	1547.23	1683.84
		16	1007.71	1454.42	1652.88
		18	994.68	1442.16	1640.27
		20	997.88	1412.96	1556.84
		22	986.51	1415.54	1538.10
		24	953.90	1432.11	1574.41

Feed conversion per 1 kg of weight gain **Tab. No. 11d**

Treatment	Tr. No.	Box	Feed conversion ratio			
			Day 1-10	Day 11-28	Day 29-35	Day 1-35
			g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain
T1	1	1	1014.10	1588.41	2149.88	1691.06
		3	989.38	1565.57	2121.52	1660.35
		5	948.68	1488.45	2132.85	1600.88
		7	965.14	1542.69	2002.00	1613.72
		9	1019.37	1559.89	2090.17	1651.61
		11	997.04	1558.93	1883.50	1601.09
		13	1028.20	1639.85	2184.41	1726.97
		15	1043.97	1484.93	2378.50	1665.08
		17	1002.00	1555.57	2318.42	1696.50
		19	998.69	1562.16	2091.12	1645.81
		21	987.01	1651.41	2192.79	1732.99
		23	973.09	1614.86	2160.81	1696.04
T2	2	2	1013.66	1490.83	2219.26	1638.08
		4	989.82	1441.82	2164.58	1587.76
		6	963.65	1564.84	2197.75	1665.09
		8	966.15	1544.78	2097.47	1634.28
		10	965.71	1547.13	2054.69	1629.72
		12	1003.01	1566.82	1993.29	1634.13
		14	1023.78	1684.41	2032.35	1722.02
		16	1007.86	1566.63	2280.38	1690.76
		18	994.83	1551.83	2254.18	1676.58
		20	998.03	1516.95	1958.97	1591.80
		22	986.66	1525.77	1862.69	1574.48
		24	954.04	1561.31	1965.39	1611.62

Feed consumption per phases **Tab. No. 11e**

Treatment	Tr. No.	Box	Feed consumption			
			Starter (D 1-10)	Grower (D 11-28)	Finisher (D 29-35)	Total (D 1-35)
			kg	kg	kg	kg
T1	1	1	44.20	269.50	169.20	482.90
		3	44.30	281.80	167.70	493.80
		5	41.90	258.50	153.00	453.40
		7	43.60	268.00	161.90	473.50
		9	44.60	274.80	158.60	478.00
		11	43.70	254.40	154.40	452.50
		13	44.20	286.10	163.30	493.60
		15	44.50	262.60	159.10	466.20
		17	43.70	267.80	163.30	474.80
		19	42.50	263.10	146.60	452.20
		21	42.30	281.20	166.20	489.70
		23	42.40	276.20	160.60	479.20
T2	2	2	44.10	262.70	163.00	469.80
		4	43.90	252.40	157.30	453.60
		6	42.20	259.10	151.50	452.80
		8	43.00	261.50	156.10	460.60
		10	43.30	270.60	163.50	477.40
		12	44.70	282.00	165.70	492.40
		14	43.80	275.10	164.20	483.10
		16	43.90	271.70	156.50	472.10
		18	43.20	275.00	160.50	478.70
		20	42.90	260.30	150.40	453.60
		22	40.80	245.60	142.30	428.70
		24	41.30	250.20	145.60	437.10