



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE ÚSTRAŠICE

státní podnik

390 02 Tábor 2

Česká republika

BROILER FEEDING TEST No. 13/2021

Effect of feed additives to performance of broilers

1 December 2021 – 13 January 2022

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Basic tests information

The basic dates

Beginning of the test: 9 November 2021 (setting in the incubator)
1 December 2021 (transfer to the chicken house)
End of the test: 13 January 2022

Material and methods

Material

In total there were 1800 day old chicks (males) of xxxxx. Day old chicks were randomly distributed into 4 dietary treatments.

Experimental treatments

Treat. No.	Treat.	Description	Amount of product (kg/ton)			No. of pen	Birds per pen	No. of chick
			BR1	BR2	BR3			
1	T1	xxxxx	-	-	-	6	75	450
2	T2	xxxxx	-	-	-	6	75	450
3	T3	xxxxx	1	0,5	0,5	6	75	450
4	T4	xxxxx	0,5	1	2	6	75	450

Origin of hatching eggs: Mezinárodní testování drůbeže s.p., Ústřice, age of the breeding flock was 33 weeks.

Housing system

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

Lighting programme

Day 1 – 7 23 hours of light + 1 hour of darkness
Day 8 – 38 18 hours of light + 6 hours of darkness
Day 39 – 42 23 hours of light + 1 hour of darkness

Stocking density

18,4 broilers per square meter.

Feed

Feed was produced in Mezinárodní testování drůbeže s.p., Ústrašice.

Day 1 – 14 Starter (BR1)

Day 15 – 28 Grower (BR2)

Day 29 – 42 Finisher (BR3)

Diet formulas

Components (%)	Starter BR1	Grower BR2	Finisher BR3
Soybean meal	38.36	34.55	28.90
Maize	27.71	36.00	37.21
Wheat	24.78	20.38	25.00
Soybean oil	4.50	4.80	5.00
MCP	1.75	1.56	1.10
Limestone	1.30	1.14	1.16
L-lysine HCl	0.40	0.36	0.39
Salt	0.30	0.30	0.30
L-threonine	0.20	0.20	0.20
Na ₂ CO ₃	0.10	0.11	0.14
DL-methionine	0.10	0.10	0.10
Premix AMVBR1 Plus	0.50	-	-
Premix AMVBR2 Plus	-	0.50	-
Premix AMVBR3 Plus	-	-	0.50
Nutrient content			
Crude protein (g/kg)	229.98	215.00	195.00
ME (MJ/kg)	12.26	12.48	12.70
Lysine (g/kg)	15.41	14.08	12.89
Methionine (g/kg)	6.51	5.93	5.38
Met.+Cys. (g/kg)	10.36	9.56	8.74
Ca (g/kg)	68.69	8.91	8.07
P (g/kg)	8.11	7.51	6.29
Na (g/kg)	1.51	1.53	1.61

Feed analyses for nutrient contents were performed at the laboratory of xxxxx

	Starter BR1	Grower BR2	Finisher BR3
Crude protein (g/kg)	217.00	223.00	189.00
Dry matter (%)	89.30	89.70	89.20
Fat (g/kg)	61.70	68.40	70.8
Crude fibre (g/kg)	38.50	21.60	22.50
Starch (g/kg)	416.00	370.00	408.00
P (g/kg)	7.29	7.53	6.36
Ca (g/kg)	8.25	8.42	8.79
ME (MJ/kg)	13.20	12.60	12.80

Veterinary precautions

The chicken house was disinfected by xxxxx before the chick placement. On days 1 and 13 chickens were vaccinated with xxxxx.

Parameters recorded

Live weight

Live weight was measured on days 1 (all the birds in each pen were weighed altogether), 14, 28 and 35 (all the birds were weighed individually, without fasting). On day 42 birds were weighed individually, after 12 hours of fasting.

Weight gain

Weight gain per phase and average daily weight gains were calculated for the periods 1 – 14 days, 15 – 28 days, 29 – 35 days, 36 – 42 days, 1 – 28 days, 1 – 35 days and for the overall experiment (1 – 42 days).

Feed conversion ratio

Feed consumption and feed conversion ratio to gain ratio were calculated for the periods 1 – 14 days, 15 – 28 days, 29 – 35 days, 36 – 42 days, 1 – 28 days, 1 – 35 days and for the overall experiment (1 – 42 days). The calculation was included weight of deaths.

Feed consumption

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

Mortality

All pens were checked twice a day to see if there were any dead or ill birds. Dead chickens were registered by date and reason of mortality on the day of death. Mortality was recorded for the periods 1 – 14 days, 15 – 28 days, 29 – 35 days, 36 – 42 days and 1 – 42 days.

Carcass analysis

The carcass analysis was done in 6 birds per each pen on day 42. Breast muscles was weighed without skin and thigh muscles with skin.

Statistical analyses

Performance results of live weight (on days 1, 14, 28, 35, 42), daily weight gain and feed conversion ratio were statistically evaluated using the ANOVA single-factor model (Scheffe test, 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 ratio per 1 kg of live weight
	2d Feed consumption per 1 kg of weight gain
	2e Feed consumption
	3 Mortality
	4 Carcass analysis
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	(average body weight, standard deviation, coefficient of variation)
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	10 Performance results per pen:
	10a Body weight
	10b Weight gain
	10c Feed conversion ratio per 1 kg of live weight
	10d Feed consumption per 1 kg of weight gain
	10e 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	95.80	83.60	87.40	450	61.20	39.56
T2	2				450		39.73
T3	3				450		39.78
T4	4				450		39.47

Body weight per phases

Tab. No. 2a

Treatment	Tr. No.	Day 1		Day 14		Day 28		Day 35		Day 42	
		Birds	Average body weight	Birds	Average body weight	Birds	Average body weight	Birds	Average body weight	Birds	Average body weight
			g		g		g		g		
T1	1	450	39.56	441	490.20	435	1677.03	430	2501.40	399	3172.99
T2	2	450	39.73	442	494.69	440	1709.22	437	2517.89	406	3193.82
T3	3	450	39.78	444	496.69	440	1716.46	437	2535.40	408	3270.26
T4	4	450	39.47	445	491.90	442	1721.84	440	2522.16	410	3298.91

Weight gain per phases

Tab. No. 2b

Treatment	Tr. No.	Day 1 - 14		Day 15 - 28		Day 29 - 35		Day 36 - 42	
		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	450.64	32.19	1186.83	84.77	824.37	117.77	671.59	95.94
T2	2	454.95	32.50	1214.53	86.75	808.67	115.52	675.93	96.56
T3	3	456.91	32.64	1219.77	87.13	818.94	116.99	734.86	104.98
T4	4	452.43	32.32	1229.94	87.85	800.32	114.33	776.75	110.96

Treatment	Tr. No.	Day 1 - 28		Day 1 - 35		Day 1 - 42	
		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
T1	1	1637.48	58.48	2461.84	70.34	3133.43	74.61
T2	2	1669.48	59.62	2478.15	70.80	3154.08	75.10
T3	3	1676.69	59.88	2495.62	71.30	3230.49	76.92
T4	4	1682.37	60.08	2482.69	70.93	3259.44	77.61

Feed conversion ratio (Feed consumption per 1 kg of live weight)

Tab. No. 2c

Treatment	Tr. No.	Feed conversion ratio			
		Day 14	Day 28	Day 35	Day 42
		g/kg LW	g/kg LW	g/kg LW	g/kg LW
T1	1	1175.95	1356.76	1439.52	1639.01
T2	2	1181.58	1320.38	1428.45	1608.68
T3	3	1154.60	1325.71	1417.70	1569.08
T4	4	1152.45	1317.00	1418.65	1557.88

Feed consumption per 1 kg of weight gain (WG)

Tab. No. 2d

Treatment	Tr. No.	Feed consumption per 1 kg of weight gain			
		1-14 days	15-28 days	29-35 days	36-42 days
		g/kg WG	g/kg WG	g/kg WG	g/kg WG
T1	1	1280.81	1432.65	1610.73	2416.50
T2	2	1285.90	1377.67	1658.37	2308.38
T3	3	1256.07	1396.03	1612.67	2109.59
T4	4	1253.94	1383.32	1639.76	2025.93

Treatment	Tr. No.	Feed consumption per 1 kg of weight gain		
		1-28 days	1-35 days	1-42 days
		g/kg WG	g/kg WG	g/kg WG
T1	1	1390.41	1463.40	1660.58
T2	2	1352.43	1451.86	1629.57
T3	3	1357.65	1440.73	1588.92
T4	4	1348.35	1441.61	1577.24

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

Treatment	Tr. No.	Feed consumption				
		Starter (1-14 days)	Grower (15-28 days)	Finisher (29-35 days)	Finisher (36-42 days)	Total
		kg	kg	kg	kg	kg
T1	1	255.66	742.10	572.60	676.40	2246.76
T2	2	260.41	735.65	588.06	659.36	2243.48
T3	3	255.85	752.70	578.83	661.55	2248.93
T4	4	252.90	753.16	575.88	672.01	2253.95

Mortality

Tab. No. 3

Treatment	Tr. No.	Mortality in the period											Mortality according causes														
		Day 1 - 14		Day 15 - 28		Day 29 - 35		Day 36 - 42		Day 1 - 42			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		birds	g	birds	g	birds	g	birds	g	birds	g	%															
T1	1	9	1230	6	4660	5	9400	7	14100	27	29390	6.00											27				24
T2	2	8	1740	2	580	3	6340	7	15710	20	24370	4.44											20				24
T3	3	6	1060	4	4460	3	6200	5	10440	18	22160	4.00											18				24
T4	4	5	550	3	2300	2	2500	6	14640	16	19990	3.56											16				24

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 – Other causes
- 15 – Culling (excluded of calculation)

Results of carcass analysis

Tab. No. 4

Treatment	Tr. No.	Weight				Ratio of abd. fat to live weight	Breast muscles without skin			Thigh muscles with skin			Total muscles			Carcass	
		Total	Body	Gibl.	Abd. fat		Weight	Percentage		Weight	Percentage		Weight	Percentage		Value	Yield
								Total weight	Body carcass		Total weight	Body carcass		Total weight	Body carcass		
		g	g	g	g	%	g	%	%	g	%	%	g	%	%	%	%
T1	1	3200	2354	172	26	0.80	844	26.36	35.83	688	21.50	29.22	1532	47.85	65.05	73.56	78.93
T2	2	3267	2407	174	25	0.77	854	26.12	35.46	712	21.78	29.57	1565	47.91	65.03	73.67	78.99
T3	3	3284	2404	180	27	0.81	839	25.56	34.91	716	21.80	29.78	1555	47.36	64.70	73.20	78.67
T4	4	3322	2432	178	26	0.79	869	26.17	35.75	714	21.51	29.38	1584	47.67	65.13	73.19	78.54

Statistical analysis - Body weight at 42 days of age

Tab. No. 5

Treatment	Tr. No.				
		Number of birds	Average body weight	Standard deviation	Coefficient of variation
			g/birds	g/birds	%
T1	1	399	3172.99	381.38	12.02
T2	2	406	3193.82	308.48	9.66
T3	3	408	3270.26	336.61	10.29
T4	4	410	3298.91	324.14	9.83

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. 6a

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	39.56	0.27		o	o	o
T2	2	6	39.73	0.48	0.485987		o	o
T3	3	6	39.78	0.57	0.410187	0.858406		o
T4	4	6	39.47	0.34	0.726397	0.326193	0.266994	

Body weight - day 14

Tab. No. 6b

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Kruskal-Wallis test			
					T1	T2	T3	T4
T1	1	441	490.20	54.89		o	o	o
T2	2	442	494.69	55.75	1.000000		o	o
T3	3	444	496.69	59.36	0.207124	1.000000		o
T4	4	445	491.90	63.50	0.997123	1.000000	1.000000	

Body weight - day 28**Tab. No. 6c**

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Scheffe test			
					T1	T2	T3	T4
T1	1	435	1677.03	208.32		o	*	**
T2	2	440	1709.22	184.16	0.107974		o	o
T3	3	440	1716.46	188.59	0.027826	0.958049		o
T4	4	442	1721.84	190.05	0.008162	0.814935	0.982122	

Body weight - day 35**Tab. No. 6d**

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Scheffe test			
					T1	T2	T3	T4
T1	1	430	2501.40	279.82		o	o	o
T2	2	437	2517.89	278.30	0.843895		o	o
T3	3	437	2535.40	255.62	0.320868	0.816537		o
T4	4	440	2522.16	255.47	0.726841	0.996536	0.910618	

Body weight - day 42**Tab. No. 6e**

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Kruskal-Wallis test			
					T1	T2	T3	T4
T1	1	399	3172.99	381.38		o	***	***
T2	2	406	3193.82	308.48	1.000000		***	***
T3	3	408	3270.26	336.61	0.000110	0.000502		o
T4	4	410	3298.91	324.14	0.000005	0.000027	1.000000	

Average weight gain (day 1-14)**Tab. No. 7a**

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	32.18	1.07		o	o	o
T2	2	6	32.49	1.25	0.668680		o	o
T3	3	6	32.63	0.68	0.549528	0.839454		o
T4	4	6	32.32	1.48	0.837030	0.803504	0.670802	

Average weight gain (day 15-28)**Tab. No. 7b**

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Kruskal-Wallis test			
					T1	T2	T3	T4
T1	1	6	84.76	7.74		o	o	o
T2	2	6	86.77	5.23	1.000000		o	o
T3	3	6	87.14	2.29	1.000000	1.000000		o
T4	4	6	87.86	2.62	1.000000	1.000000	1.000000	

Average weight gain (day 29-35)**Tab. No. 7c**

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	117.63	5.15		o	o	o
T2	2	6	115.57	10.83	0.763135		o	o
T3	3	6	116.95	11.04	0.916550	0.829640		o
T4	4	6	114.49	14.76	0.656277	0.866518	0.718129	

Average weight gain (day 36-42)

Tab. No. 7d

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	96.26	13.13		o	o	o
T2	2	6	96.48	10.14	0.975866		o	o
T3	3	6	105.00	15.05	0.269533	0.255822		o
T4	4	6	110.87	11.57	0.078794	0.074693	0.429040	

Average weight gain (day 1-28)

Tab. No. 7e

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Kruskal-Wallis test			
					T1	T2	T3	T4
T1	1	6	58.47	4.34		o	o	o
T2	2	6	59.63	3.09	1.000000		o	o
T3	3	6	59.88	1.11	1.000000	1.000000		o
T4	4	6	60.09	1.82	1.000000	1.000000	1.000000	

Average weight gain (day 1-35)

Tab. No. 7f

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	70.30	3.85		o	o	o
T2	2	6	70.82	4.31	0.799056		o	o
T3	3	6	71.30	2.41	0.653551	0.822957		o
T4	4	6	70.97	2.93	0.756344	0.940391	0.870677	

Average weight gain (day 1-42)

Tab. No. 7g

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	74.63	3.38		o	o	o
T2	2	6	75.10	2.54	0.764658		o	o
T3	3	6	76.92	1.76	0.174072	0.250405		o
T4	4	6	77.62	2.73	0.087962	0.134957	0.651628	

FCR 14**Tab. No. 8a**

Treatment	Treat. No.	No. of box	Average (g/kg live weight)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1177.07	64.30		o	o	o
T2	2	6	1188.25	56.14	0.755295		o	o
T3	3	6	1156.21	49.83	0.561765	0.402243		o
T4	4	6	1153.99	72.30	0.545015	0.385826	0.950762	

FCR 28**Tab. No. 8b**

Treatment	Treat. No.	No. of box	Average (g/kg live weight)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1361.73	79.89		o	o	o
T2	2	6	1322.41	47.40	0.257126		o	o
T3	3	6	1326.49	35.69	0.282250	0.899577		o
T4	4	6	1318.11	47.91	0.224067	0.894327	0.807235	

FCR 35**Tab. No. 8c**

Treatment	Treat. No.	No. of box	Average (g/kg live weight)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1444.14	86.55		o	o	o
T2	2	6	1431.92	70.32	0.751972		o	o
T3	3	6	1419.21	53.13	0.556845	0.756752		o
T4	4	6	1419.58	46.62	0.550174	0.749512	0.992596	

FCR 42

Tab. No. 8d

Treatment	Treat. No.	No. of box	Average (g/kg live weight)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1641.40	59.38		o	*	*
T2	2	6	1610.51	58.43	0.318625		o	o
T3	3	6	1570.24	43.00	0.036048	0.197464		o
T4	4	6	1559.03	46.40	0.019671	0.121435	0.714548	

FCR per 1 kg of weight gain - 1-14 day

Tab. No. 9a

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1282.26	70.03		o	o	o
T2	2	6	1294.05	65.49	0.770184		o	o
T3	3	6	1258.09	57.44	0.550410	0.403511		o
T4	4	6	1255.91	80.66	0.539246	0.390865	0.957011	

FCR per 1 kg of weight gain - 15-28 day

Tab. No. 9b

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Kruskal-Wallis test			
					T1	T2	T3	T4
T1	1	6	1441.44	122.68		o	o	o
T2	2	6	1377.89	56.68	1.000000		o	o
T3	3	6	1396.48	34.04	1.000000	1.000000		o
T4	4	6	1384.32	60.83	1.000000	1.000000	1.000000	

FCR per 1 kg of weight gain - 29-35 day

Tab. No. 9c

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1619.42	144.55		o	o	o
T2	2	6	1669.19	142.43	0.641721		o	o
T3	3	6	1626.80	174.11	0.939687	0.682330		o
T4	4	6	1657.28	198.79	0.714629	0.902832	0.754752	

FCR per 1 kg of weight gain - 36-42 day

Tab. No. 9d

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	2450.35	315.51		o	o	*
T2	2	6	2325.92	196.59	0.396502		o	o
T3	3	6	2141.73	267.66	0.054011	0.214251		o
T4	4	6	2042.21	193.47	0.015486	0.074862	0.496251	

FCR per 1 kg of weight gain – 1-28 day

Tab. No. 9e

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1395.82	84.56		o	o	o
T2	2	6	1354.64	50.33	0.260564		o	o
T3	3	6	1358.50	37.62	0.280479	0.909971		o
T4	4	6	1349.53	49.78	0.221390	0.880866	0.804393	

FCR per 1 kg of weight gain - 1-35 day

Tab. No. 9f

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1468.26	89.57		o	o	o
T2	2	6	1455.52	72.96	0.750026		o	o
T3	3	6	1442.32	54.87	0.554508	0.755838		o
T4	4	6	1442.59	47.90	0.545997	0.746382	0.994896	

FCR per 1 kg of weight gain - 1-42 day

Tab. No. 9g

Treatment	Treat. No.	No. of box	Average (g/kg weight gain)	Standard deviation	Duncan test			
					T1	T2	T3	T4
T1	1	6	1663.07	61.14		o	*	*
T2	2	6	1631.48	60.11	0.321357		o	o
T3	3	6	1590.14	44.37	0.036649	0.198236		o
T4	4	6	1578.43	47.46	0.019770	0.120717	0.710261	

Body weight (BW) per box
Tab. No. 10a

Treatment	Tr. No.	Box No.	Day 1		Day 14		Day 28		Day 35		Day 42	
			Birds	BW	Birds	BW	Birds	BW	Birds	BW	Birds	BW
				g		g		g		g		g
T1	1	1	75	40.00	75	483.72	75	1608.43	75	2464.04	68	3030.76
		5	75	39.47	72	469.54	72	1515.07	72	2306.11	68	3011.07
		9	75	39.20	73	480.85	70	1589.17	67	2388.09	63	3160.32
		13	75	39.73	74	511.35	73	1752.56	73	2619.63	68	3388.15
		17	75	39.47	73	500.82	71	1811.11	69	2595.65	62	3257.00
		21	75	39.47	74	494.46	74	1784.12	74	2627.35	70	3196.43
T2	2	2	75	40.27	74	471.43	74	1613.80	74	2312.72	67	3036.94
		6	75	39.47	74	478.93	73	1592.66	73	2386.25	69	3095.38
		10	75	38.93	75	509.79	75	1732.59	73	2502.82	68	3252.56
		14	75	39.73	73	509.12	73	1742.47	72	2608.17	66	3295.64
		18	75	40.00	71	488.76	71	1767.65	71	2576.21	66	3196.08
		22	75	40.00	75	509.64	74	1807.07	74	2723.97	70	3285.81
T3	3	3	75	40.00	72	485.97	71	1713.86	70	2492.30	64	3234.28
		7	75	39.20	75	503.12	74	1750.34	74	2469.09	70	3360.93
		11	75	40.27	75	495.33	74	1661.65	73	2439.73	69	3180.14
		15	75	39.20	74	493.38	74	1727.34	73	2546.95	68	3343.96
		19	75	40.53	75	512.44	75	1709.87	75	2603.43	71	3212.27
		23	75	39.47	73	489.23	72	1736.25	72	2659.89	66	3289.68
T4	4	4	75	39.47	75	455.21	75	1644.15	75	2383.31	69	3107.80
		8	75	39.47	75	501.72	74	1728.47	74	2437.41	70	3262.44
		12	75	40.00	74	507.24	74	1798.95	74	2488.70	68	3393.00
		16	75	39.47	74	504.54	72	1701.93	71	2619.82	67	3401.15
		20	75	38.93	73	504.15	73	1746.14	72	2579.47	67	3253.37
		24	75	39.47	74	479.05	74	1712.23	74	2631.64	69	3379.25

Weight gain (WG) and daily weight gain (DWG) per box

Tab. No. 10b (page 1)

Treatment	Tr. No.	Box No.	Day 1 - 14		Day 15 - 28		Day 29 - 35		Day 36 - 42	
			WG	DWG	WG	DWG	WG	DWG	WG	DWG
			g	g	g	g	g	g	g	g
T1	1	1	443.72	31.69	1124.71	80.34	855.61	122.23	566.72	80.96
		5	430.07	30.72	1045.53	74.68	791.04	113.01	704.96	100.71
		9	441.65	31.55	1108.32	79.17	798.92	114.13	772.23	110.32
		13	471.62	33.69	1241.21	88.66	867.07	123.87	768.52	109.79
		17	461.35	32.95	1310.29	93.59	784.54	112.08	661.35	94.48
		21	454.99	32.50	1289.66	92.12	843.23	120.46	569.08	81.30
T2	2	2	431.16	30.80	1142.36	81.60	698.92	99.85	724.22	103.46
		6	439.46	31.39	1113.73	79.55	793.59	113.37	709.13	101.30
		10	470.86	33.63	1222.80	87.34	770.24	110.03	749.74	107.11
		14	469.39	33.53	1233.34	88.10	865.70	123.67	687.47	98.21
		18	448.76	32.05	1278.89	91.35	808.56	115.51	619.86	88.55
		22	469.64	33.55	1297.43	92.67	916.91	130.99	561.84	80.26
T3	3	3	445.97	31.86	1227.89	87.71	778.44	111.21	741.98	106.00
		7	463.92	33.14	1247.22	89.09	718.76	102.68	891.83	127.40
		11	455.06	32.50	1166.32	83.31	778.08	111.15	740.42	105.77
		15	454.18	32.44	1233.96	88.14	819.61	117.09	797.01	113.86
		19	471.91	33.71	1197.43	85.53	893.56	127.65	608.84	86.98
		23	449.76	32.13	1247.02	89.07	923.64	131.95	629.79	89.97
T4	4	4	415.74	29.70	1188.93	84.92	739.16	105.59	724.49	103.50
		8	462.25	33.02	1226.75	87.63	708.93	101.28	825.04	117.86
		12	467.24	33.37	1291.70	92.26	689.76	98.54	904.30	129.19
		16	465.07	33.22	1197.39	85.53	917.89	131.13	781.33	111.62
		20	465.22	33.23	1241.99	88.71	833.34	119.05	673.90	96.27
		24	439.58	31.40	1233.18	88.08	919.41	131.34	747.61	106.80

Weight gain (WG) and daily weight gain (DWG) per box Tab. No. 10b (page 2)

Treatment	Tr. No.	Box No.	Day 1 - 28		Day 1 - 35		Day 1 - 42	
			WG	DWG	WG	DWG	WG	DWG
			g	g	g	g	g	g
T1	1	1	1568.43	56.02	2424.04	69.26	2990.76	71.21
		5	1475.60	52.70	2266.64	64.76	2971.60	70.75
		9	1549.97	55.36	2348.89	67.11	3121.12	74.31
		13	1712.83	61.17	2579.90	73.71	3348.42	79.72
		17	1771.64	63.27	2556.18	73.03	3217.53	76.61
		21	1744.65	62.31	2587.88	73.94	3156.96	75.17
T2	2	2	1573.53	56.20	2272.45	64.93	2996.67	71.35
		6	1553.19	55.47	2346.78	67.05	3055.91	72.76
		10	1693.66	60.49	2463.89	70.40	3213.63	76.51
		14	1702.74	60.81	2568.44	73.38	3255.91	77.52
		18	1727.65	61.70	2536.21	72.46	3156.08	75.14
		22	1767.07	63.11	2683.97	76.68	3245.81	77.28
T3	3	3	1673.86	59.78	2452.30	70.07	3194.28	76.05
		7	1711.14	61.11	2429.89	69.43	3321.73	79.09
		11	1621.38	57.91	2399.46	68.56	3139.87	74.76
		15	1688.14	60.29	2507.75	71.65	3304.76	78.68
		19	1669.34	59.62	2562.90	73.23	3171.74	75.52
		23	1696.78	60.60	2620.42	74.87	3250.21	77.39
T4	4	4	1604.68	57.31	2343.84	66.97	3068.33	73.06
		8	1689.00	60.32	2397.94	68.51	3222.97	76.74
		12	1758.95	62.82	2448.70	69.96	3353.00	79.83
		16	1662.46	59.37	2580.35	73.72	3361.68	80.04
		20	1707.21	60.97	2540.54	72.59	3214.44	76.53
		24	1672.76	59.74	2592.17	74.06	3339.78	79.52

Feed conversion ratio (Feed konsum. per 1 kg of live weight) per box

Tab. No. 10c

Treatment	Tr. No.	Box No.	Feed conversion ratio			
			Day 14	Day 28	Day 35	Day 42
			g/kg LW	g/kg LW	g/kg LW	g/kg LW
T1	1	1	1078.03	1372.44	1390.99	1658.85
		5	1160.35	1473.43	1573.68	1707.55
		9	1261.54	1425.04	1533.51	1698.95
		13	1157.15	1350.12	1399.40	1568.84
		17	1173.16	1271.68	1399.97	1638.88
		21	1232.22	1277.65	1367.29	1575.32
T2	2	2	1287.94	1368.46	1527.61	1685.77
		6	1180.61	1385.74	1490.75	1653.93
		10	1134.07	1292.17	1401.57	1552.92
		14	1207.80	1320.88	1411.84	1590.67
		18	1179.45	1307.81	1431.68	1639.68
		22	1139.63	1259.37	1328.07	1540.07
T3	3	3	1225.56	1350.51	1469.18	1636.60
		7	1081.25	1266.98	1423.70	1512.84
		11	1192.46	1366.23	1488.72	1600.63
		15	1136.92	1313.97	1410.86	1548.71
		19	1139.65	1315.11	1363.79	1561.82
		23	1161.40	1346.11	1359.03	1560.84
T4	4	4	1255.38	1345.05	1467.48	1618.70
		8	1086.93	1280.70	1420.91	1554.42
		12	1117.39	1242.27	1418.34	1509.60
		16	1202.32	1365.42	1457.88	1565.30
		20	1188.52	1320.30	1417.50	1601.18
		24	1073.42	1354.92	1335.35	1504.97

Treatment	Tr. No.	Box No.	Feed consumption per 1 kg of weight gain			
			1-14 days	15-28 days	29-35 days	36-42 days
			g/kg WG	g/kg WG	g/kg WG	g/kg WG
T1	1	1	1175.22	1499.06	1425.88	2908.35
		5	1270.99	1614.57	1766.31	2149.45
		9	1376.07	1499.17	1759.86	2234.18
		13	1255.63	1430.02	1500.41	2165.94
		17	1275.30	1310.72	1707.01	2695.59
		21	1340.36	1295.12	1557.08	2548.58
T2	2	2	1409.63	1401.79	1895.40	2221.32
		6	1287.88	1475.65	1702.17	2210.29
		10	1227.83	1358.09	1653.77	2071.12
		14	1312.77	1367.50	1595.19	2348.41
		18	1289.50	1357.16	1704.81	2528.63
		22	1236.69	1307.14	1463.80	2575.74
T3	3	3	1339.42	1400.60	1740.82	2240.08
		7	1172.62	1341.23	1813.00	1769.45
		11	1297.99	1441.04	1751.98	1969.90
		15	1235.61	1385.34	1614.67	2014.85
		19	1237.52	1390.20	1456.94	2414.74
		23	1265.35	1420.49	1383.42	2441.37
T4	4	4	1374.57	1379.39	1739.81	2143.20
		8	1179.74	1360.06	1767.03	1957.02
		12	1214.03	1291.51	1878.06	1771.50
		16	1305.56	1436.50	1634.76	1936.80
		20	1290.64	1373.88	1625.16	2323.33
		24	1170.92	1464.58	1298.87	2121.42

Feed consumption per 1 kg of weight gain (WG) per box

Tab. No. 10d (page 2)

Treatment	Tr. No.	Box No.	Feed consumption per 1 kg of weight gain		
			1-28 days	1-35 days	1-42 days
			g/kg WG	g/kg WG	g/kg WG
T1	1	1	1407.44	1413.95	1681.33
		5	1514.40	1602.18	1731.19
		9	1463.03	1560.90	1722.04
		13	1381.85	1421.34	1587.94
		17	1301.26	1422.78	1660.60
		21	1306.94	1388.42	1595.32
T2	2	2	1403.94	1555.04	1709.04
		6	1421.83	1516.47	1675.91
		10	1321.87	1423.88	1571.99
		14	1352.45	1434.22	1611.01
		18	1339.56	1455.41	1661.64
		22	1288.20	1348.11	1559.31
T3	3	3	1384.18	1494.48	1658.58
		7	1295.82	1446.65	1530.87
		11	1400.49	1514.00	1621.40
		15	1344.83	1433.15	1567.52
		19	1347.04	1385.36	1581.81
		23	1378.62	1380.31	1580.67
T4	4	4	1378.14	1492.20	1639.78
		8	1310.66	1444.41	1573.65
		12	1270.88	1441.81	1528.05
		16	1399.00	1481.23	1584.68
		20	1351.20	1439.93	1621.32
		24	1387.30	1355.95	1523.12

Feed consumption per box

Tab. No. 10e

Treatment	Tr. No.	Box No.	Feed consumption				
			Starter (1-14 days)	Grower (15-28 days)	Finisher (29-35 days)	Finisher (36-42 days)	Total
			kg	kg	kg	kg	kg
T1	1	1	39.11	126.45	91.50	115.22	372.28
		5	39.46	121.80	100.60	108.36	370.22
		9	44.56	116.80	95.49	115.67	372.52
		13	43.96	131.20	94.97	118.65	388.78
		17	43.36	122.25	92.88	112.53	371.02
		21	45.21	123.60	97.16	105.97	371.94
T2	2	2	45.06	118.50	98.03	112.33	373.92
		6	41.96	119.65	98.61	113.16	373.38
		10	43.36	124.55	93.21	112.70	373.82
		14	45.01	123.60	101.02	105.85	375.48
		18	41.46	124.10	97.87	108.87	372.30
		22	43.56	125.25	99.32	106.45	374.58
T3	3	3	43.25	123.30	93.79	110.12	370.46
		7	40.80	126.60	96.43	113.91	377.74
		11	44.30	124.35	100.63	107.98	377.26
		15	41.85	126.50	98.34	112.63	379.32
		19	43.80	124.85	97.64	109.47	375.76
		23	41.85	127.10	92.00	107.44	368.39
T4	4	4	42.86	123.00	96.45	110.45	372.76
		8	40.90	124.96	92.70	118.10	376.66
		12	42.11	123.45	95.86	113.78	375.20
		16	45.01	123.40	105.39	105.18	378.98
		20	43.86	124.70	97.11	110.76	376.43
		24	38.16	133.65	88.37	113.74	373.92