



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE ÚSTRAŠICE

státní podnik

390 02 Tábor 2

Česká republika

XXXXX

Trial No. xxxxx (No. 1239)

XXXXX

Test č. xxxxx (VT č. 1239)

**International Poultry Testing Station Ústrašice
Mezinárodní testování drůbeže Ústrašice**

**Czech Republic
Česká republika**

Study Investigator:
Zpracovatel studie:

Ing. Jan Tyl

Associate Investigator:
Spoluzpracovatel studie:

**Ing. Hana Horná
Ing. Hana Koželuhová
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Study monitor:
Dohlížitel:

XXXXX

Study sponsor :
Dohlížitel:

XXXXX

**January 2024
Leden 2024**

Aim of the Project

Impact of xxxxx in different type of diets on broiler performances in standard or protein reduced diets.

Study location

The study was carried out on the test facility Mezinárodní testování drůbeže, s.p., (next MTD, s.p. only), Ústřašice, Czech Republic. Feed samples were sended for the contents of nutrients by xxxxx.

Trial period

Beginning of the trial:	24 October 2023
End of the trial:	28 November 2023

Study responsibility

Ing. Jan Tyl was the independent Study Director, responsible that the trial is conducted according to the protocol. Ing. Hana Horná was responsible for daily animal care at the test facility. Full details of study's responsibility are provided below.

Persons involved in the trial

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Material and methods

Birds

In total there were 7800 day old chicks (male) of xxxxx. Day-old chicks were randomly distributed into 8 dietary treatments with 7/8 replicates per treatment and 130 chicken per replicate.

Origin 1-day old chicks:

breeder company – xxxxx

parent flock – xxxxx age of the breeding flock – 49 weeks

Experimental treatments:

Tr. No.	Tr.	Description	xxxxx	xxxxx	Reps	Birds / Rep	Birds
1	T1	xxxxx	xxxxx	xxxxx	7	130	910
2	T2	xxxxx	xxxxx	xxxxx	8	130	1040
3	T3	xxxxx	xxxxx	xxxxx	7	130	910
4	T4	xxxxx	xxxxx	xxxxx	8	130	1040
5	T5	xxxxx	xxxxx	xxxxx	7	130	910
6	T6	xxxxx	xxxxx	xxxxx	8	130	1040
7	T7	xxxxx	xxxxx	xxxxx	7	130	910
8	T8	xxxxx	xxxxx	xxxxx	8	130	1040

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 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 days 1 and 12 the chicken were vaccinated with xxxxx. On the first days old chickens was applied the water solution of permanganate.

Feeds and Diets

Chickens were fed ad libitum according to three phase feeding programme. The test phases were 0-8 days of age for the starter BR1, 9-16 days of age for the grower BR2-1, 17-24 days of age for the grower BR2-2 and 25-35 days of age for the finisher BR3.

Feed was produced by International Poultry Testing Station Ústrašice. The composition of diets is shown in following tables.

Composition of the feed

Starter:

Ingredients (%)	T1	T2	T3	T4	T5	T6	T7	T8
	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Corn	55.97	55.97	55.97	55.97	32.14	32.14	32.14	32.14
Soyabean meal	35.10	35.10	35.10	35.10	31.13	31.13	31.13	31.13
Rice brand	-	-	-	-	20.00	20.00	20.00	20.00
Sugar beet pulp	-	-	-	-	2.50	2.50	2.50	2.50
Soyabean oil	3.24	3.24	3.24	3.24	8.56	8.56	8.56	8.56
Limestone	1.20	1.20	1.20	1.20	1.30	1.30	1.30	1.30
Salt	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
MCP	1.41	1.41	1.41	1.41	1.25	1.25	1.25	1.25
Neophos	0.55	0.55	0.55	0.55	0.42	0.42	0.42	0.42
xxxxxx	1.71	1.71	1.71	1.71	1.88	1.88	1.88	1.88
AMV BR1 plus	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
AMV BR2 plus	-	-	-	-	-	-	-	-
AMV BR3 plus	-	-	-	-	-	-	-	-
Nutritional composition (%)								
Crude protein	217.00	217.00	217.00	217.00	219.70	219.70	219.70	219.70
ME (MJ/kg)	12.55	12.55	12.55	12.55	12.55	12.55	12.55	12.55
Lysine	14.21	14.21	14.21	14.21	14.49	14.49	14.49	14.49
Methionine	6.97	6.97	6.97	6.97	7.29	7.29	7.29	7.29
Met.+Cys.	10.22	10.22	10.22	10.22	10.60	10.60	10.60	10.60
Ca	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50
P dig.	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Na	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60

Grower-A:

Ingredients (%)	T1	T2	T3	T4	T5	T6	T7	T8
	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Corn	60.32	60.32	63.74	63.74	35.84	35.84	41.02	41.02
Soyabean meal	31.79	31.79	28.31	28.31	28.47	28.47	23.34	23.34
Rice brand	-	-	-	-	20.00	20.00	20.00	20.00
Sugar beet pulp	-	-	-	-	2.50	2.50	2.50	2.50
Soyabean oil	2.72	2.72	2.15	2.15	8.15	8.15	7.27	7.27
Limestone	0.85	0.85	0.57	0.57	0.95	0.95	0.94	0.94
Salt	0.32	0.32	0.20	0.20	0.32	0.32	0.31	0.31
MCP	1.07	1.07	0.37	0.37	0.90	0.90	0.89	0.89
Neophos	0.56	0.56	1.74	1.74	0.44	0.44	0.54	0.54
xxxxx	1.87	1.87	2.42	2.42	1.93	1.93	2.69	2.69
AMV BR1 plus	-	-	-	-	-	-	-	-
AMV BR2 plus	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
AMV BR3 plus	-	-	-	-	-	-	-	-
Nutritional composition (%)								
Crude protein	206.30	206.30	197.00	197.00	210.70	210.70	197.00	197.00
ME (MJ/kg)	12.65	12.65	12.65	12.65	12.65	12.65	12.65	12.65
Lysine	13.62	13.62	13.52	13.52	13.91	13.91	13.76	13.76
Methionine	6.83	6.83	6.95	6.95	7.09	7.09	7.26	7.26
Met.+Cys.	9.93	9.93	9.86	9.86	10.29	10.29	10.19	10.19
Ca	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
P dig.	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30
Na	1.60	1.60	1.70	1.70	1.60	1.60	1.60	1.60

Grower-B:

Ingredients (%)	T1	T2	T3	T4	T5	T6	T7	T8
	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Corn	61.18	61.18	64.67	64.67	38.21	38.21	41.49	41.49
Soyabean meal	31.65	31.65	28.26	28.26	26.85	26.85	23.65	23.65
Rice brand	-	-	-	-	20.00	20.00	20.00	20.00
Sugar beet pulp	-	-	-	-	2.50	2.50	2.50	2.50
Soyabean oil	3.09	3.09	2.50	2.50	8.26	8.26	7.72	7.72
Limestone	0.70	0.70	0.82	0.82	0.92	0.92	0.92	0.92
Salt	0.26	0.26	0.31	0.31	0.32	0.32	0.32	0.32
MCP	0.57	0.57	0.89	0.89	0.71	0.71	0.73	0.73
Neophos	1.03	1.03	0.57	0.57	0.44	0.44	0.45	0.45
xxxxx	1.02	1.02	1.48	1.48	1.29	1.29	1.72	1.72
AMV BR1 plus	-	-	-	-	-	-	-	-
AMV BR2 plus	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
AMV BR3 plus	-	-	-	-	-	-	-	-
Nutritional composition (%)								
Crude protein	199.90	199.90	190.00	190.00	200.40	200.40	190.90	190.90
ME (MJ/kg)	12.75	12.75	12.75	12.75	12.75	12.75	12.75	12.75
Lysine	12.21	12.21	12.12	12.12	12.45	12.45	12.37	12.37
Methionine	5.92	5.92	6.03	6.03	6.23	6.23	6.33	6.33
Met.+Cys.	9.02	9.02	8.95	8.95	9.35	9.35	9.29	9.29
Ca	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
P dig.	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Na	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60

Finisher:

Ingredients (%)	T1	T2	T3	T4	T5	T6	T7	T8
	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Corn	64.11	64.11	67.38	67.38	41.14	41.14	44.55	44.55
Soyabean meal	29.56	29.56	26.43	26.43	24.76	24.76	21.48	21.48
Rice brand	-	-	-	-	20.00	20.00	20.00	20.00
Sugar beet pulp	-	-	-	-	2.50	2.50	2.50	2.50
Soyabean oil	2.83	2.83	2.28	2.28	8.00	8.00	7.44	7.44
Limestone	0.55	0.55	0.76	0.76	0.86	0.86	0.76	0.76
Salt	0.20	0.20	0.31	0.31	0.32	0.32	0.27	0.27
MCP	0.18	0.18	0.74	0.74	0.57	0.57	0.34	0.34
Neophos	1.44	1.44	0.58	0.58	0.45	0.45	0.88	0.88
xxxxx	0.63	0.63	1.02	1.02	0.90	0.90	1.28	1.28
AMV BR1 plus	-	-	-	-	-	-	-	-
AMV BR2 plus	-	-	-	-	-	-	-	-
AMV BR3 plus	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Nutritional composition (%)								
Crude protein	190.00	190.00	180.00	180.00	190.50	190.50	180.00	180.00
ME (MJ/kg)	12.78	12.78	12.78	12.78	12.78	12.78	12.78	12.78
Lysine	11.05	11.05	10.96	10.96	11.30	11.30	11.21	11.21
Methionine	5.37	5.37	5.47	5.47	5.68	5.68	5.78	5.78
Met.+Cys.	8.37	8.37	8.31	8.31	8.70	8.70	8.64	8.64
Ca	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
P dig.	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
Na	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60

Parameters recorded and methods applied

Live weight

Live weight was measured on day 1 and on day 8 (the birds in each pen were weighed altogether). On day 16 and 24 of age birds were weighed individually, without fasting. On day 35 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 – 8 days, 9 – 16 days, 17 – 24 days, 25 – 35 days and for the overall experiment (1 – 35 days).

Feed consumption

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

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 – 8 days, 9 – 16 days, 17 – 24 days, 25 – 35 days and for the overall experiment (1 – 35 days). The calculation was included weight of deaths.

Mortality

All pens were checked three 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 – 8 days, 9 – 16 days, 17 – 24 days, 25 – 35 days and 1 – 35 days.

Statistical analyses

Performance results of live weight (on days 1, 8, 16, 24 and 35) and feed conversion ratio were statistically evaluated using the ANOVA single-factor model (Duncan test, Scheffe 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 Carcass analysis
	5 Statistical analysis of body weight at the age of 35 days (average body weight, standard deviation, coefficient of variation)
	6 - 7 Statistical analyses of performance results
	8 Performance results per pen:
	8a Body weight
	8b Weight gain
	8c Feed conversion per 1 kg of live weight
	8d Feed conversion per 1 kg of weight gain
	8e 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	88.30	84.40	95.60	910	64.50	42.91
T2	2				1040		43.03
T3	3				910		42.91
T4	4				1040		42.93
T5	5				910		42.91
T6	6				1040		43.03
T7	7				910		42.80
T8	8				1040		42.93

Body weight per phases

Tab. No. 2a

Treatment	Tr. No.	Day 1		Day 8		Day 16		Day 24		Day 35	
		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	910	42.91	910	238.55	903	677.34	897	1310.16	881	2376.59
T2	2	1040	43.03	1040	245.53	1025	701.03	1018	1361.98	1005	2401.58
T3	3	910	42.91	910	243.35	902	697.54	899	1354.66	894	2348.12
T4	4	1040	42.93	1040	244.71	1026	706.45	1012	1355.42	995	2374.04
T5	5	910	42.91	910	215.71	904	649.16	895	1164.23	883	2086.26
T6	6	1040	43.03	1040	211.68	1026	630.37	1018	1176.46	1010	2116.98
T7	7	910	42.80	910	212.20	901	626.74	898	1126.50	887	2074.59
T8	8	1040	42.93	1040	209.81	1032	617.14	1026	1101.81	1011	2062.02

Weight gain per phases

Tab. No. 2b

Treatment	Tr. No.	Day 1 - 8		Day 9 - 16		Day 17 - 24		Day 25 - 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	Weight gain per phase	Daily weight gain
		g	g	g	g	g	g	g	g	g	g
T1	1	195.64	24.45	438.79	54.85	632.81	79.10	1066.44	88.87	2333.68	64.82
T2	2	202.50	25.31	455.51	56.94	660.95	82.62	1039.60	86.63	2358.55	65.52
T3	3	200.44	25.05	454.19	56.77	657.12	82.14	993.46	82.79	2305.21	64.03
T4	4	201.78	25.22	461.74	57.72	648.96	81.12	1018.63	84.89	2331.11	64.75
T5	5	172.80	21.60	433.45	54.18	515.08	64.38	922.03	76.84	2043.35	56.76
T6	6	168.65	21.08	418.69	52.34	546.09	68.26	940.52	78.38	2073.95	57.61
T7	7	169.39	21.17	414.54	51.82	499.77	62.47	948.09	79.01	2031.79	56.44
T8	8	166.88	20.86	407.33	50.92	484.67	60.58	960.20	80.02	2019.09	56.09

Feed conversion per 1 kg of live weight

Tab. No. 2c

Treatment	Tr. No.	Feed conversion ratio			
		Day 8	Day 16	Day 24	Day 35
		g/kg live weight	g/kg live weight	g/kg live weight	g/kg live weight
T1	1	860.43	1128.05	1185.76	1478.37
T2	2	827.10	1087.69	1151.18	1474.52
T3	3	858.43	1092.81	1148.20	1474.60
T4	4	849.12	1079.68	1161.04	1473.56
T5	5	946.00	1083.81	1267.79	1617.30
T6	6	938.45	1066.95	1246.02	1574.33
T7	7	950.80	1084.15	1271.10	1563.06
T8	8	956.46	1076.48	1296.20	1572.39

Feed conversion per 1 kg of weight gain

Tab. No. 2d

Treatment	Tr. No.	Feed conversion ratio				
		Day 1-8	Day 9-16	Day 17-24	Day 25-35	Day 1-35
		g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain
T1	1	1049.14	1274.18	1248.24	1844.95	1506.03
T2	2	1002.85	1229.20	1219.55	1907.19	1502.00
T3	3	1042.22	1219.08	1207.49	1922.53	1502.34
T4	4	1029.78	1202.93	1251.48	1898.94	1501.40
T5	5	1180.93	1152.66	1502.35	2068.25	1651.86
T6	6	1177.88	1132.24	1456.46	1991.02	1607.60
T7	7	1191.05	1152.78	1507.73	1916.58	1596.54
T8	8	1202.52	1138.55	1578.53	1894.54	1606.31

Feed consumption per phases

Tab. No. 2e

Treatment	Tr. No.	Feed consumption				
		Starter (d 1-8)	Grower (d 9-16)	Grower (d 17-24)	Finisher (d 25-35)	Total (d 1-35)
		kg	kg	kg	kg	kg
T1	1	186.80	506.60	708.70	1741.40	3143.50
T2	2	211.20	578.00	821.80	1994.50	3605.50
T3	3	190.10	501.10	713.60	1714.00	3118.80
T4	4	216.10	572.70	822.50	1936.10	3547.40
T5	5	185.70	452.90	694.30	1685.30	3018.20
T6	6	206.60	490.60	809.80	1897.30	3404.30
T7	7	183.60	432.50	676.90	1610.10	2903.10
T8	8	208.70	480.40	786.40	1848.90	3324.40

Mortality

Tab. No. 3

Treatment	Tr. No.	Mortality in the period											Mortality according causes																	
		Day 1 - 8		Day 9 - 16		Day 17 - 24		Day 25 - 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	birds	g	%																		
T1	1	0	0	7	3049	6	4188	16	25306	29	32543	3.19														24			5	
T2	2	0	0	15	7015	7	5916	13	18688	35	31619	3.37														29			6	
T3	3	0	0	8	3319	3	2318	5	10155	16	15792	1.76														14			2	
T4	4	0	0	14	5767	14	10361	17	29077	45	45205	4.33													2	40			3	
T5	5	0	0	6	2376	9	6992	12	14664	27	24032	2.97														23			4	
T6	6	0	0	14	6690	8	5124	8	12417	30	24231	2.88													1	26			3	
T7	7	0	0	9	3591	3	2042	11	11531	23	17164	2.53													1	21			1	
T8	8	0	0	8	3250	6	4614	15	21669	29	29533	2.79													1	23			5	

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)

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	2429	1699	147	36	1.49	553	22.78	32.58	521	21.46	30.69	1075	44.25	63.26	69.94	75.98
T2	2	2468	1726	145	35	1.42	568	23.01	32.92	530	21.46	30.69	1098	44.47	63.61	69.91	75.80
T3	3	2369	1643	147	35	1.48	529	22.33	32.21	507	21.40	30.85	1036	43.73	63.06	69.35	75.57
T4	4	2453	1705	150	38	1.53	552	22.50	32.37	515	21.01	30.23	1067	43.51	62.60	69.50	75.62
T5	5	2148	1477	139	23	1.07	470	21.89	31.83	466	21.69	31.54	936	43.59	63.38	68.78	75.23
T6	6	2141	1471	140	22	1.01	468	21.87	31.82	468	21.85	31.79	936	43.71	63.61	68.72	75.26
T7	7	2117	1428	142	24	1.12	434	20.50	30.40	459	21.68	32.15	893	42.18	62.55	67.43	74.13
T8	8	2112	1425	140	22	1.02	450	21.32	31.59	455	21.52	31.88	905	42.84	63.47	67.50	74.15

Statistical analysis - Body weight at 35 days of age

Tab. No. 5

Treatment	Tr. No.	Cocks			
		Number of birds	Average body weight	Standard deviation	Coefficient of variation
			g/birds	g/birds	%
T1	1	881	2376.59	280.14	11.79
T2	2	1005	2401.58	286.59	11.93
T3	3	894	2348.12	279.26	11.89
T4	4	995	2374.04	293.59	12.37
T5	5	883	2086.26	297.39	14.25
T6	6	1010	2116.98	300.13	14.18
T7	7	887	2074.59	335.17	16.16
T8	8	1011	2062.02	317.95	15.42

Statistical analyses of performance results

Performance results were statistically evaluated using the ANOVA single-factor model (Duncan test, Scheffe 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	Scheffe test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	7	42.91	0.62		o	o	o	o	o	o	o
T2	2	8	43.03	0.78	0.999993		o	o	o	o	o	o
T3	3	7	42.91	0.66	1.000000	0.999993		o	o	o	o	o
T4	4	8	42.93	0.74	1.000000	0.999997	1.000000		o	o	o	o
T5	5	7	42.91	0.49	1.000000	0.999993	1.000000	1.000000		o	o	o
T6	6	8	43.03	0.52	0.999993	1.000000	0.999993	0.999997	0.999993		o	o
T7	7	7	42.80	0.53	0.999997	0.999404	0.999996	0.999987	0.999996	0.999404		o
T8	8	8	42.93	0.54	1.000000	0.999997	1.000000	1.000000	1.000000	0.999997	0.999987	

Body weight - day 8

Tab. No. 6b

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Scheffe test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	7	238.55	3.59		***	*	***	***	***	***	***
T2	2	8	245.53	2.25	0.000032		o	o	***	***	***	***
T3	3	7	243.35	1.01	0.018072	0.758412		o	***	***	***	***
T4	4	8	244.71	1.04	0.000350	0.998673	0.975798		***	***	***	***
T5	5	7	215.71	1.97	0.000000	0.000000	0.000000	0.000000		o	o	***
T6	6	8	211.68	2.07	0.000000	0.000000	0.000000	0.000000	0.068063		o	o
T7	7	7	212.20	1.36	0.000000	0.000000	0.000000	0.000000	0.205582	0.999951		o
T8	8	8	209.81	2.10	0.000000	0.000000	0.000000	0.000000	0.000717	0.850805	0.659581	

Body weight - day 16

Tab. No. 6c

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Kruskal-Wallis test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	903	677.34	86.17		***	**	***	***	***	***	***
T2	2	1025	701.03	101.07	0.000000		***	o	***	***	***	***
T3	3	902	697.54	92.72	0.003782	0.000000		***	***	***	***	***
T4	4	1026	706.45	81.17	0.000000	0.538259	0.000000		***	***	***	***
T5	5	904	649.16	90.83	0.000000	0.000000	0.000000	0.000000		o	**	o
T6	6	1026	630.37	89.41	0.000000	0.000000	0.000000	0.000000	1.000000		***	o
T7	7	901	626.74	94.53	0.000000	0.000000	0.000000	0.000000	0.002433	0.000909		o
T8	8	1032	617.14	94.12	0.000000	0.000000	0.000000	0.000000	0.300475	0.158325	1.000000	

Body weight - day 24

Tab. No. 6d

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Kruskal-Wallis test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	897	1310.16	150.73		***	***	***	***	***	***	***
T2	2	1018	1361.98	167.71	0.000000		***	o	***	***	***	***
T3	3	899	1354.66	172.49	0.000340	0.000000		***	***	***	***	***
T4	4	1012	1355.42	161.17	0.000000	1.000000	0.000000		***	***	***	***
T5	5	895	1164.23	140.06	0.000000	0.000000	0.000000	0.000000		***	***	**
T6	6	1018	1176.46	153.29	0.000000	0.000000	0.000000	0.000000	0.000011		***	***
T7	7	898	1126.50	147.18	0.000000	0.000000	0.000000	0.000000	0.000938	0.000000		o
T8	8	1026	1101.81	150.22	0.000000	0.000000	0.000000	0.000000	0.004063	0.000000	1.000000	

Body weight - day 35

Tab. No. 6e

Treatment	Treat. No.	No. of birds	Average (g)	Standard deviation	Kruskal-Wallis test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	881	2376.59	280.14		***	o	***	***	***	***	***
T2	2	1005	2401.58	286.59	0.000000		***	o	***	***	***	***
T3	3	894	2348.12	279.26	1.000000	0.000000		***	***	***	***	***
T4	4	995	2374.04	293.59	0.000001	0.493206	0.000000		***	***	***	***
T5	5	883	2086.26	297.39	0.000000	0.000000	0.000000	0.000000		***	o	o
T6	6	1010	2116.98	300.13	0.000000	0.000000	0.000000	0.000000	0.000039		***	o
T7	7	887	2074.59	335.17	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000		o
T8	8	1011	2062.02	317.95	0.000000	0.000000	0.000000	0.000000	1.000000	0.071662	0.273918	

FCR - day 8

Tab. No. 7a

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Scheffe test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	7	860.30	40.88		o	o	o	**	**	***	***
T2	2	8	827.10	28.92	0.737724		o	o	***	***	***	***
T3	3	7	858.33	35.31	1.000000	0.794164		o	**	**	***	***
T4	4	8	849.09	22.15	0.999392	0.954494	0.999832		***	***	***	***
T5	5	7	946.06	35.46	0.001831	0.000002	0.001297	0.000133		o	o	o
T6	6	8	938.45	19.64	0.004324	0.000003	0.003074	0.000317	0.999954		o	o
T7	7	7	950.83	27.13	0.000789	0.000001	0.000552	0.000052	0.999999	0.998832		o
T8	8	8	956.54	33.64	0.000154	0.000000	0.000105	0.000008	0.999610	0.984780	0.999994	

FCR - day 16

Tab. No. 7b

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Scheffe test							
					T1	T2	T3	T4	T5	T6	T7	T8
T1	1	7	1129.03	39.33		o	o	o	o	o	o	o
T2	2	8	1090.65	67.87	0.934671		o	o	o	o	o	o
T3	3	7	1094.46	44.26	0.968516	1.000000		o	o	o	o	o
T4	4	8	1080.56	36.87	0.805399	0.999982	0.999875		o	o	o	o
T5	5	7	1084.96	53.02	0.889724	1.000000	0.999992	1.000000		o	o	o
T6	6	8	1067.73	31.15	0.549476	0.995895	0.991462	0.999908	0.999477		o	o
T7	7	7	1086.42	59.68	0.906228	1.000000	0.999998	1.000000	1.000000	0.999107		o
T8	8	8	1076.62	45.28	0.734114	0.999831	0.999340	1.000000	0.999996	0.999992	0.999988	

FCR - day 24

Tab. No. 7c

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Scheffe test								
					T1	T2	T3	T4	T5	T6	T7	T8	
T1	1	7	1186.91	40.19		o	o	o	o	o	o	o	*
T2	2	8	1153.06	44.67	0.960916		o	o	**	*	**	**	***
T3	3	7	1150.70	54.94	0.952732	1.000000		o	**	*	**	**	***
T4	4	8	1162.77	42.63	0.994554	0.999983	0.999942		*	o	*	*	***
T5	5	7	1268.89	41.76	0.183235	0.006498	0.007556	0.018074		o	o	o	o
T6	6	8	1248.52	54.75	0.504741	0.036932	0.040476	0.089587	0.998125		o	o	o
T7	7	7	1271.39	34.97	0.154123	0.004935	0.005804	0.014007	1.000000	0.996108		o	o
T8	8	8	1298.21	56.28	0.010573	0.000104	0.000147	0.000370	0.982541	0.724267	0.989654		o

FCR - day 35

Tab. No. 7d

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Kruskal-Wallis test								
					T1	T2	T3	T4	T5	T6	T7	T8	
T1	1	7	1478.93	22.20		o	o	o	*	*	o	o	o
T2	2	8	1474.81	31.98	1.000000		o	o	*	o	o	o	o
T3	3	7	1474.54	27.99	1.000000	1.000000		o	*	*	o	o	o
T4	4	8	1474.10	31.00	1.000000	1.000000	1.000000		*	o	o	o	o
T5	5	7	1618.33	41.07	0.019052	0.036690	0.017029	0.028031		o	o	o	o
T6	6	8	1575.65	58.66	0.035785	0.064271	0.032371	0.050525	1.000000		o	o	o
T7	7	7	1566.99	80.35	0.455782	0.741660	0.419014	0.607725	1.000000	1.000000		o	o
T8	8	8	1575.73	72.56	0.112304	0.190949	0.102524	0.153569	1.000000	1.000000	1.000000		o

Performance results per replicate

Body weight per phases

Tab. No. 8a (page 1)

Treatment	Tr. No.	Pen	Day 1		Day 8		Day 16		Day 24		Day 35	
			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	1	130	42.69	130	239.23	130	656.23	130	1315.62	128	2417.58
		9	130	41.92	130	238.08	125	679.52	124	1438.31	122	2380.00
		17	130	43.46	130	240.00	130	703.69	129	1333.80	125	2398.96
		25	130	43.08	130	240.38	130	707.69	128	1282.58	127	2353.39
		42	130	43.46	130	238.85	130	672.85	130	1284.92	129	2442.87
		50	130	42.31	130	242.31	129	637.83	128	1272.42	127	2381.02
		58	130	43.46	130	231.00	129	683.41	128	1247.58	123	2257.72
T2	2	2	130	42.69	130	244.23	125	700.40	125	1419.36	125	2405.84
		10	130	41.92	130	243.08	130	712.92	127	1429.53	125	2408.08
		18	130	43.85	130	246.54	128	705.55	127	1389.92	125	2346.24
		26	130	43.08	130	245.00	128	701.80	128	1290.94	125	2391.44
		34	130	43.46	130	243.85	126	697.22	126	1379.92	123	2422.60
		41	130	41.92	130	245.38	130	663.77	129	1258.22	129	2464.81
		49	130	43.46	130	245.77	128	642.89	128	1272.58	125	2394.48
57	130	43.85	130	250.38	130	782.77	128	1458.59	128	2378.05		
T3	3	3	130	42.31	130	241.92	129	663.18	129	1311.32	129	2308.84
		11	130	41.92	130	242.69	130	676.38	129	1490.31	128	2344.84
		19	130	43.85	130	242.69	129	676.82	129	1404.65	128	2383.83
		27	130	43.08	130	243.46	130	707.38	130	1293.69	130	2391.85
		40	130	43.46	130	245.00	130	691.08	130	1319.54	129	2384.96
		48	130	42.69	130	243.85	128	703.20	127	1302.76	127	2294.65
		56	130	43.08	130	243.85	126	766.51	125	1360.48	123	2325.93
T4	4	4	130	42.69	130	243.08	128	686.33	128	1328.13	128	2294.92
		12	130	41.92	130	245.00	128	731.02	124	1474.27	119	2419.75
		20	130	43.46	130	243.85	128	717.58	127	1384.72	124	2363.47
		28	130	42.69	130	245.77	128	718.98	128	1304.92	124	2386.77
		33	130	43.46	130	245.00	126	672.70	124	1368.31	122	2544.02
		39	130	41.92	130	243.85	129	682.79	126	1250.56	126	2336.98
		47	130	43.46	130	245.00	129	707.98	127	1338.74	126	2270.24
55	130	43.85	130	246.15	130	733.46	128	1396.25	126	2385.40		

Body weight per phases

Tab. No. 8a (page 2)

Treatment	Tr. No.	Pen	Day 1		Day 8		Day 16		Day 24		Day 35	
			Birds	Average body weight	Birds	Average body weight	Birds	Average body weight	Birds	Average body weight	Birds	Average body weight
				g		g		g		g		
T5	5	5	130	42.69	130	214.62	129	629.38	127	1171.26	127	2140.08
		13	130	42.31	130	214.62	130	678.08	130	1167.38	126	2118.97
		21	130	43.46	130	214.62	130	686.00	129	1142.56	126	2116.27
		29	130	43.08	130	219.62	128	646.72	125	1152.00	123	1978.78
		38	130	43.46	130	213.85	127	624.96	126	1175.87	126	2115.32
		46	130	42.31	130	216.54	130	606.54	129	1106.12	126	1959.05
		54	130	43.08	130	216.15	130	671.69	129	1234.42	129	2170.39
T6	6	6	130	42.69	130	210.77	130	636.85	130	1183.38	130	2031.23
		14	130	42.31	130	212.69	128	633.05	127	1238.98	127	2133.15
		22	130	43.46	130	210.38	130	672.92	128	1187.42	128	2115.70
		30	130	42.69	130	207.69	127	643.70	127	1158.43	125	1976.72
		32	130	43.08	130	213.85	128	583.20	127	1118.43	126	2135.63
		37	130	42.69	130	213.85	128	604.69	127	1184.25	126	2196.51
		45	130	43.46	130	212.69	126	603.73	125	1075.60	122	2178.11
53	130	43.85	130	211.54	129	663.49	127	1263.39	126	2172.22		
T7	7	7	130	42.69	130	212.69	129	674.57	128	1173.83	126	2001.98
		15	130	41.92	130	213.85	129	620.08	129	1158.29	128	2215.39
		23	130	43.46	130	211.15	130	687.31	129	1083.49	126	1842.14
		36	130	43.08	130	212.69	128	570.00	127	1111.73	124	2100.32
		44	130	43.08	130	211.54	128	605.78	128	1104.84	128	2197.58
		52	130	42.31	130	213.46	128	588.44	128	1125.94	128	2153.67
		60	130	43.08	130	210.00	129	639.61	129	1127.36	127	2006.54
T8	8	8	130	42.69	130	214.23	130	635.00	128	1074.06	126	1982.14
		16	130	41.92	130	211.15	129	625.19	129	1144.50	127	1896.22
		24	130	43.46	130	208.46	129	622.71	128	1114.61	127	2003.78
		31	130	42.69	130	209.62	128	612.34	127	1041.34	125	2043.20
		35	130	43.08	130	208.85	130	597.23	130	1124.85	128	2155.47
		43	130	42.69	130	209.62	127	594.09	126	1033.49	126	2252.38
		51	130	43.46	130	209.23	129	621.63	128	1134.61	122	2181.39
59	130	43.46	130	207.31	130	628.46	130	1144.15	130	1987.85		

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

Tab. No. 8b (page 1)

Treatment	Tr. No.	Box	Day 1 - 8		Day 9 - 16		Day 17 - 24		Day 25 - 35		Day 1 - 35	
			WG	DWG	WG	DWG	WG	DWG	WG	DWG	WG	DWG
			g	g	g	g	g	g	g	g	g	g
T1	1	1	196.54	24.57	417.00	52.13	659.38	82.42	1101.96	91.83	2374.89	65.97
		9	196.16	24.52	441.44	55.18	758.79	94.85	941.69	78.47	2338.08	64.95
		17	196.54	24.57	463.69	57.96	630.11	78.76	1065.16	88.76	2355.50	65.43
		25	197.30	24.66	467.31	58.41	574.89	71.86	1070.81	89.23	2310.31	64.18
		42	195.39	24.42	434.00	54.25	612.08	76.51	1157.95	96.50	2399.41	66.65
		50	200.00	25.00	395.52	49.44	634.59	79.32	1108.60	92.38	2338.71	64.96
		58	187.54	23.44	452.41	56.55	564.17	70.52	1010.15	84.18	2214.26	61.51
T2	2	2	201.54	25.19	456.17	57.02	718.96	89.87	986.48	82.21	2363.15	65.64
		10	201.16	25.14	469.85	58.73	716.60	89.58	978.55	81.55	2366.16	65.73
		18	202.69	25.34	459.01	57.38	684.37	85.55	956.32	79.69	2302.39	63.96
		26	201.92	25.24	456.80	57.10	589.14	73.64	1100.50	91.71	2348.36	65.23
		34	200.39	25.05	453.38	56.67	682.70	85.34	1042.68	86.89	2379.14	66.09
		41	203.46	25.43	418.38	52.30	594.45	74.31	1206.59	100.55	2422.89	67.30
		49	202.31	25.29	397.12	49.64	629.69	78.71	1121.90	93.49	2351.02	65.31
T3	3	3	199.61	24.95	421.26	52.66	648.14	81.02	997.52	83.13	2266.53	62.96
		11	200.77	25.10	433.69	54.21	813.93	101.74	854.53	71.21	2302.92	63.97
		19	198.84	24.86	434.13	54.27	727.83	90.98	979.18	81.60	2339.98	65.00
		27	200.38	25.05	463.92	57.99	586.31	73.29	1098.15	91.51	2348.77	65.24
		40	201.54	25.19	446.08	55.76	628.46	78.56	1065.42	88.79	2341.50	65.04
		48	201.16	25.14	459.36	57.42	599.55	74.94	991.89	82.66	2251.96	62.55
		56	200.77	25.10	522.66	65.33	593.97	74.25	965.45	80.45	2282.85	63.41
T4	4	4	200.39	25.05	443.25	55.41	641.80	80.22	966.80	80.57	2252.23	62.56
		12	203.08	25.39	486.02	60.75	743.26	92.91	945.47	78.79	2377.83	66.05
		20	200.39	25.05	473.73	59.22	667.15	83.39	978.74	81.56	2320.01	64.44
		28	203.08	25.38	473.22	59.15	585.94	73.24	1081.85	90.15	2344.08	65.11
		33	201.54	25.19	427.70	53.46	695.61	86.95	1175.71	97.98	2500.56	69.46
		39	201.93	25.24	438.94	54.87	567.76	70.97	1086.43	90.54	2295.06	63.75
		47	201.54	25.19	462.98	57.87	630.76	78.84	931.50	77.62	2226.78	61.85
		55	202.30	25.29	487.31	60.91	662.79	82.85	989.15	82.43	2341.55	65.04

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

Tab. No. 8b (page 2)

Treatment	Tr. No.	Box	Day 1 - 8		Day 9 - 16		Day 17 - 24		Day 25 - 35		Day 1 - 35	
			WG	DWG	WG	DWG	WG	DWG	WG	DWG	WG	DWG
			g	g	g	g	g	g	g	g	g	g
T5	5	5	171.93	21.49	414.76	51.85	541.88	67.73	968.82	80.73	2097.39	58.26
		13	172.31	21.54	463.46	57.93	489.31	61.16	951.58	79.30	2076.66	57.68
		21	171.16	21.39	471.38	58.92	456.56	57.07	973.71	81.14	2072.81	57.58
		29	176.54	22.07	427.10	53.39	505.28	63.16	826.78	68.90	1935.70	53.77
		38	170.39	21.30	411.11	51.39	550.91	68.86	939.44	78.29	2071.86	57.55
		46	174.23	21.78	390.00	48.75	499.59	62.45	852.92	71.08	1916.74	53.24
		54	173.07	21.63	455.54	56.94	562.73	70.34	935.97	78.00	2127.31	59.09
T6	6	6	168.08	21.01	426.08	53.26	546.54	68.32	847.85	70.65	1988.54	55.24
		14	170.38	21.30	420.35	52.54	605.93	75.74	894.17	74.51	2090.84	58.08
		22	166.92	20.87	462.54	57.82	514.50	64.31	928.28	77.36	2072.24	57.56
		30	165.00	20.63	436.01	54.50	514.72	64.34	818.29	68.19	1934.03	53.72
		32	170.77	21.35	369.36	46.17	535.22	66.90	1017.21	84.77	2092.55	58.13
		37	171.16	21.39	390.84	48.86	579.56	72.45	1012.26	84.35	2153.82	59.83
		45	169.23	21.15	391.04	48.88	471.87	58.98	1102.51	91.88	2134.65	59.30
T7	7	53	167.69	20.96	451.95	56.49	599.90	74.99	908.84	75.74	2128.37	59.12
		7	170.00	21.25	461.88	57.74	499.25	62.41	828.16	69.01	1959.29	54.42
		15	171.93	21.49	406.23	50.78	538.22	67.28	1057.10	88.09	2173.47	60.37
		23	167.69	20.96	476.15	59.52	396.18	49.52	758.65	63.22	1798.68	49.96
		36	169.61	21.20	357.31	44.66	541.73	67.72	988.59	82.38	2057.24	57.15
		44	168.46	21.06	394.24	49.28	499.06	62.38	1092.73	91.06	2154.50	59.85
		52	171.15	21.39	374.98	46.87	537.50	67.19	1027.73	85.64	2111.36	58.65
T8	8	60	166.92	20.87	429.61	53.70	487.75	60.97	879.17	73.26	1963.46	54.54
		8	171.54	21.44	420.77	52.60	439.06	54.88	908.08	75.67	1939.45	53.87
		16	169.23	21.15	414.04	51.75	519.30	64.91	751.72	62.64	1854.30	51.51
		24	165.00	20.63	414.25	51.78	491.90	61.49	889.17	74.10	1960.32	54.45
		31	166.93	20.87	402.73	50.34	428.99	53.62	1001.86	83.49	2000.51	55.57
		35	165.77	20.72	388.38	48.55	527.62	65.95	1030.62	85.89	2112.39	58.68
		43	166.93	20.87	384.48	48.06	439.40	54.92	1218.89	101.57	2209.69	61.38
		51	165.77	20.72	412.40	51.55	512.98	64.12	1046.78	87.23	2137.93	59.39
59	163.85	20.48	421.15	52.64	515.69	64.46	843.69	70.31	1944.39	54.01		

Feed conversion per 1 kg of live weight

Tab. No. 8c (page 1)

Treatment	Tr. No.	Box	Feed conversion ratio			
			Day 8	Day 16	Day 24	Day 35
			g/kg live weight	g/kg live weight	g/kg live weight	g/kg live weight
T1	1	1	819.94	1148.75	1191.60	1469.57
		9	894.99	1124.15	1099.26	1478.49
		17	826.92	1143.42	1206.20	1471.17
		25	851.20	1064.13	1201.01	1493.82
		42	927.54	1130.67	1187.14	1441.30
		50	876.19	1190.02	1221.61	1485.68
		58	825.29	1102.05	1201.50	1512.49
T2	2	2	844.09	1115.29	1139.60	1513.09
		10	841.77	1087.61	1100.23	1458.51
		18	783.15	1073.05	1113.21	1477.52
		26	797.49	1043.00	1166.02	1453.61
		34	835.96	1046.23	1140.79	1465.28
		41	862.07	1135.71	1219.74	1420.38
		49	801.25	1221.99	1216.54	1498.42
57	851.00	1002.36	1128.38	1511.69		
T3	3	3	823.53	1142.94	1193.93	1475.58
		11	805.07	1089.50	1040.83	1414.06
		19	862.12	1139.88	1117.19	1482.68
		27	875.20	1083.08	1185.04	1485.82
		40	913.66	1107.52	1162.99	1499.97
		48	864.35	1087.28	1189.42	1474.94
		56	864.35	1011.01	1165.47	1488.71
T4	4	4	816.46	1091.39	1173.81	1495.23
		12	825.75	1060.85	1091.58	1452.30
		20	873.82	1078.09	1144.42	1506.44
		28	873.24	1063.60	1205.54	1485.32
		33	869.70	1155.17	1163.75	1422.75
		39	842.27	1068.13	1219.92	1465.34
		47	854.00	1098.42	1181.93	1512.48
		55	837.50	1028.84	1121.18	1452.90

Feed conversion per 1 kg of live weight

Tab. No. 8c (page 2)

Treatment	Tr. No.	Box	Feed conversion ratio			
			Day 8	Day 16	Day 24	Day 35
			g/kg live weight	g/kg live weight	g/kg live weight	g/kg live weight
T5	5	5	989.25	1100.53	1250.40	1605.13
		13	892.47	1015.31	1234.84	1560.83
		21	924.73	1086.57	1313.34	1613.20
		29	935.20	1171.01	1297.49	1693.21
		38	992.81	1105.38	1276.88	1639.41
		46	948.49	1093.21	1308.04	1621.70
		54	939.50	1022.68	1201.29	1594.86
T6	6	6	970.80	1075.01	1233.75	1659.85
		14	911.39	1054.56	1184.51	1561.67
		22	936.01	1075.67	1244.62	1619.65
		30	937.04	1081.29	1281.33	1639.64
		32	956.83	1090.40	1285.83	1569.26
		37	946.04	1096.54	1255.02	1495.96
		45	933.09	1071.10	1335.58	1521.43
53	916.36	997.28	1167.51	1537.74		
T7	7	7	990.96	1028.27	1244.91	1636.50
		15	924.46	1180.37	1256.14	1454.68
		23	921.68	1005.04	1265.41	1653.11
		36	972.88	1129.84	1238.76	1518.20
		44	960.00	1077.78	1340.83	1516.41
		52	926.13	1075.67	1262.27	1534.34
		60	959.71	1107.98	1291.39	1655.70
T8	8	8	912.03	1029.68	1349.42	1609.26
		16	965.39	1156.59	1269.97	1686.87
		24	915.13	1030.17	1244.45	1591.67
		31	968.81	1069.36	1354.06	1594.52
		35	950.28	1130.86	1291.12	1520.86
		43	1016.51	1053.15	1375.03	1451.12
		51	974.26	1070.91	1284.79	1529.77
59	949.91	1072.22	1216.89	1621.78		

Feed conversion per 1 kg of weight gain

Tab. No. 8d (page 1)

Treatment	Tr. No.	Box	Feed conversion ratio				
			Day 1-8	Day 9-16	Day 17-24	Day 25-35	Day 1-35
			g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain
T1	1	1	998.03	1337.39	1234.25	1804.71	1496.11
		9	1086.26	1249.69	1076.10	2081.33	1506.27
		17	1009.78	1307.23	1276.64	1811.70	1498.69
		25	1037.05	1173.66	1372.08	1849.08	1522.04
		42	1133.85	1242.47	1249.21	1725.45	1467.50
		50	1061.55	1383.45	1253.79	1791.14	1512.94
		58	1016.39	1244.62	1323.17	1909.42	1542.91
T2	2	2	1022.89	1263.51	1163.90	2057.42	1541.32
		10	1017.19	1214.80	1113.03	1997.71	1484.94
		18	952.58	1229.54	1155.50	2024.25	1506.44
		26	967.63	1175.65	1314.15	1803.45	1481.00
		34	1017.27	1161.42	1239.25	1906.70	1492.97
		41	1039.68	1296.19	1314.20	1630.58	1445.09
		49	973.38	1484.15	1210.92	1822.65	1526.59
57	1031.68	1073.54	1275.62	2126.77	1540.33		
T3	3	3	998.08	1327.67	1246.26	1846.44	1503.31
		11	973.17	1248.67	1000.03	2067.54	1439.96
		19	1052.24	1295.63	1095.96	2008.17	1510.63
		27	1063.36	1192.17	1308.06	1840.15	1513.07
		40	1110.68	1214.00	1223.99	1920.06	1527.89
		48	1047.79	1207.65	1310.43	1852.82	1503.45
		56	1049.82	1080.39	1370.54	1954.84	1517.71
T4	4	4	990.39	1244.79	1262.33	1937.78	1523.98
		12	996.20	1180.82	1122.86	2050.78	1479.21
		20	1063.33	1183.83	1217.43	2026.57	1535.27
		28	1056.81	1163.40	1381.33	1829.31	1512.90
		33	1057.24	1321.59	1172.35	1735.90	1448.68
		39	1017.13	1194.25	1408.27	1751.77	1492.76
		47	1038.16	1227.95	1277.55	1994.25	1542.48
		55	1019.03	1125.49	1224.66	1931.13	1480.52

Feed conversion per 1 kg of weight gain

Tab. No. 8d (page 2)

Treatment	Tr. No.	Box	Feed conversion ratio				
			Day 1-8	Day 9-16	Day 17-24	Day 25-35	Day 1-35
			g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain	g/kg weight gain
T5	5	5	1234.88	1158.25	1427.46	2039.99	1638.33
		13	1111.62	1072.20	1539.07	1975.46	1593.15
		21	1159.54	1160.25	1657.04	1979.06	1647.77
		29	1163.42	1293.30	1462.93	2261.84	1731.98
		38	1246.04	1164.85	1475.41	2098.50	1674.68
		46	1178.82	1173.57	1570.36	2032.91	1657.77
		54	1173.35	1062.14	1416.13	2116.12	1627.33
T6	6	6	1217.37	1126.56	1418.72	2254.58	1695.48
		14	1137.71	1127.36	1323.04	2089.64	1593.84
		22	1179.71	1139.20	1468.60	2104.02	1653.97
		30	1179.47	1151.24	1534.34	2152.62	1676.64
		32	1198.22	1168.28	1502.72	1885.30	1602.23
		37	1182.01	1179.02	1424.30	1782.17	1526.21
		45	1172.72	1146.67	1684.42	1709.86	1553.59
53	1155.99	1035.10	1361.18	2061.18	1570.05		
T7	7	7	1239.80	1045.58	1540.10	2197.55	1672.65
		15	1149.87	1315.84	1343.80	1674.68	1483.05
		23	1160.54	1042.00	1721.57	2228.69	1693.86
		36	1219.98	1223.68	1355.59	1844.82	1550.98
		44	1205.50	1141.29	1664.06	1695.15	1547.11
		52	1155.07	1161.92	1468.02	1833.52	1565.51
		60	1207.40	1180.50	1533.69	2133.95	1692.54
T8	8	8	1139.00	1089.58	1816.19	1923.23	1645.18
		16	1204.52	1253.94	1407.67	2332.26	1725.38
		24	1156.17	1088.59	1516.56	2034.39	1627.50
		31	1216.57	1122.00	1767.59	1850.32	1629.33
		35	1197.24	1227.97	1472.52	1773.42	1551.98
		43	1276.48	1073.41	1819.76	1516.47	1479.88
		51	1229.69	1120.14	1547.27	1805.38	1561.71
59	1201.87	1132.42	1393.20	2170.86	1658.03		

Feed consumption per phases

Tab. No. 8e (page 1)

Treatment	Tr. No.	Box	Feed consumption				
			Starter (D 1-8)	Grower (D 9-16)	Grower (D 17-24)	Finisher (D 24-35)	Total (D 1-35)
			kg	kg	kg	kg	kg
T1	1	1	25.50	72.50	105.80	256.00	459.80
		9	27.70	70.60	101.10	237.50	436.90
		17	25.80	78.80	104.10	243.90	452.60
		25	26.60	71.30	101.00	252.40	451.30
		42	28.80	70.10	99.40	257.80	456.10
		50	27.60	70.70	101.70	253.50	453.50
		58	24.80	72.60	95.60	240.30	433.30
T2	2	2	26.80	73.40	104.60	253.70	458.50
		10	26.60	74.20	101.60	244.20	446.60
		18	25.10	73.00	100.30	240.40	438.80
		26	25.40	69.30	99.10	246.40	440.20
		34	26.50	67.20	106.60	246.10	446.40
		41	27.50	70.50	100.90	253.80	452.70
		49	25.60	76.10	97.60	259.60	458.90
57	27.70	74.30	111.10	250.30	463.40		
T3	3	3	25.90	72.20	104.20	237.60	439.90
		11	25.40	70.40	104.90	227.70	428.40
		19	27.20	72.90	102.90	253.80	456.80
		27	27.70	71.90	99.70	262.70	462.00
		40	29.10	70.40	100.00	264.20	463.70
		48	27.40	70.90	100.00	233.40	431.70
		56	27.40	72.40	101.90	234.60	436.30
T4	4	4	25.80	70.50	103.70	239.80	439.80
		12	26.30	73.70	104.00	231.00	435.00
		20	27.70	72.50	102.80	250.20	453.20
		28	27.90	70.90	103.60	249.80	452.20
		33	27.70	72.20	101.20	248.10	449.20
		39	26.70	67.80	100.40	239.80	434.70
		47	27.20	73.80	102.60	235.70	439.30
		55	26.80	71.30	104.20	241.70	444.00

Feed consumption per phases

Tab. No. 8e (page 2)

Treatment	Tr. No.	Box	Feed consumption				
			Starter (D 1-8)	Grower (D 9-16)	Grower (D 17-24)	Finisher (D 24-35)	Total (D 1-35)
			kg	kg	kg	kg	kg
T5	5	5	27.60	62.30	98.70	251.00	439.60
		13	24.90	64.60	97.90	235.70	423.10
		21	25.80	71.10	97.50	240.10	434.50
		29	26.70	71.20	93.50	232.20	423.60
		38	27.60	61.30	102.50	248.40	439.80
		46	26.70	59.50	101.40	222.40	410.00
		54	26.40	62.90	102.80	255.50	447.60
T6	6	6	26.60	62.40	100.80	248.50	438.30
		14	25.20	61.30	101.80	237.30	425.60
		22	25.60	68.50	96.90	250.00	441.00
		30	25.30	64.10	100.30	222.60	412.30
		32	26.60	55.70	102.20	242.60	427.10
		37	26.30	59.80	104.70	228.10	418.90
		45	25.80	57.90	99.80	231.70	415.20
53	25.20	60.90	103.30	236.50	425.90		
T7	7	7	27.40	62.30	98.60	232.00	420.30
		15	25.70	69.10	93.30	226.30	414.40
		23	25.30	64.50	87.80	210.70	388.30
		36	26.90	56.60	93.40	225.40	402.30
		44	26.40	58.20	106.30	237.10	428.00
		52	25.70	55.90	101.00	241.20	423.80
		60	26.20	65.90	96.50	237.40	426.00
T8	8	8	25.40	59.60	102.70	221.40	409.10
		16	26.50	67.60	94.30	223.50	411.90
		24	24.80	58.10	96.10	229.50	408.50
		31	26.40	58.40	96.50	232.90	414.20
		35	25.80	62.00	101.00	235.90	424.70
		43	27.70	52.90	100.80	232.90	414.30
		51	26.50	59.80	101.60	234.70	422.60
		59	25.60	62.00	93.40	238.10	419.10