



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE
státní podnik. ÚSTRAŠICE

390 02 Tábor 2

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**XXIX. International performance test
of commercial layers
- cage system**

**The final report
2020 - 2021**

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1 The list of participants

Sam.	Cross	Hatchery flock	State	Breeding organization
1	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
2	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
3	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
4	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
5	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
6	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
7	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
8	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
9	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
10	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
11	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX
12	XXXXXXXXXXXXX	XXXXXXXXXXXXX	XXXXXXXXXXXXX XX	XXXXXXXXXXXXX

2 The basic data of performance test

2.1 Progeny testing

The progeny testing of commercial layers hybrids consists of:

- incubation and hatch of delivered hatching eggs from a regular PS flock
- pullets rearing: 18 weeks long rearing period (126 days)
- hen production: 56 weeks long laying period (127 – 518 days of age)

2.2 Location of the test

Mezinárodní testování drůbeže. s.p. Ústrašice – Testační stanice nosných slepic (Test Station of Layers)

2.3 Material

There were 12 genotypes compared in the test. Each sample consisted of 1080 hatching eggs delivered to the test station. The list of genotypes and their origin is shown in „The list of participants“.

2.4 Important dates

setting in the hatchery:	16 March 2020
beginning of rearing – day 1:	7 April 2020
end of rearing:	11 August 2020
beginning of laying. start of the period 1:	12 August 2020
end of laying. end of the period 14:	7 September 2021

3 Incubation and hatching

3.1 Sorting and weighing of hatching eggs

The hatching eggs were sorted immediately after delivery to the test station. The average egg weight of each sample was found.

3.2 Storage of hatching eggs

After sorting and weighing. the hatching eggs were disinfected and stored in temperature of 16 – 18 °C.

3.3 Setting in the hatchery

Hatching eggs of all samples were set for a single stage incubation at once. Correspondent data monitoring was made during incubation.

4 Rearing of pullets

4.1 Samples and their location

The rearing of pullets took 126 days. Day old chicks were sexed. The males were destroyed. After culling of non standard birds, 280 pullets of each sample were randomly chosen for the test. 90 pullets were placed in the house with deep litter system and 190 pullets in the cage system.

Pullets were marked (wing banded). Beak trimming was carried out by hot blade. This treatment was done on a half of pullets reared in the cage system and on all pullets reared in the deep litter system. A half of pullets reared in the cage system is not beak-trimmed.

4.2 Housing system

Pullets were kept in windowless house with full control of the environment. Pullets in cage system were kept in 3-tier cage batteries. Feed was manually filled in the feeders. Nipple automatic drinkers were used. Belt conveyer for clearance of excrements. Manually filled tube feeders and nipple automatic drinkers were used in deep litter system.

4.3 Conditions of the environment

Temperature

Age	Deep litter system		Cage system
	below the heater °C	in the house °C	in the house °C
Day 1 - 3	36	27	36
Day 4 - 7	33	27	33
Day 8 - 14	30	24	30
Day 15 - 21	27	24	27
Day 22 - 28	24	22	24
Day 29 - 35	-	20	20
From week 6	-	18-20	18 – 20

Stocking density

Age	Deep litter system	Cage system
Day 1 - 112	9 birds/m ²	350 cm ² /bird
From day 112	756 cm ² /ks	

Ventilation

Transversal automatically controlled ventilation (fans and air inlets on the opposite side of the house) was used. Ventilation provided minimum ventilation rate of 3 m³/hour/kg live weight in winter, with possible increase in summer, depending on temperature and air humidity. Relative humidity was kept between 50 – 70 %.

4.4 Lighting programme

Pullets were kept in windowless house. All the birds were submitted to the following lighting programme.

Lighting programme:

Age	Hours of light	From - to	Luminous intensity (lx)
Day 1 - 3	23	1 ⁰⁰ – 24 ⁰⁰	40
Day 4 - 7	20	2 ⁰⁰ – 22 ⁰⁰	30
Day 8 - 14	18	3 ⁰⁰ – 21 ⁰⁰	20
Day 15 - 21	16	4 ⁰⁰ – 20 ⁰⁰	10
Day 22 - 28	14	5 ⁰⁰ – 19 ⁰⁰	10
Day 29 - 35	12	6 ⁰⁰ – 18 ⁰⁰	5 - 10
Week 6 - 16	10	6 ⁰⁰ – 16 ⁰⁰	5 - 10
Week 17	12	6 ⁰⁰ – 18 ⁰⁰	10 - 15
Week 18	13	5 ⁰⁰ – 18 ⁰⁰	5 - 10

4.5 Feeding and watering

Pullets were fed to reach their BW standards during rearing. The complete feed mixture was filled daily in the tube feeders in deep litter system and in groove feeders in cage system. The feed K1 is distributed several times a day. The feeds K2, KZK and N0 are distributed twice a day – 50% in the morning and 50% in the afternoon. All the distributed feed should be daily eaten. Water was supplied by automatic nipple drinkers. Feed was supplied by ZS Dynín. a.s.

Diet formulas:

	K1 IT N	K2 IT N	KZK IT N	N0 IT N
Age	Week 1 - 4	Week 5 - 10	Week 11 - 16	Week 17 - 18
Feed form	crumbled	crushed	crushed	crushed
Components – content in %:				
Wheat	36.250	48.130	60.180	40.130
Maize	33.000	26.000	15.000	10.000
Extr. soybean groats	23.300	19.500	9.300	10.000
Barley	-	-	-	20.000
Wheat bran	-	-	6.000	-
Extr. sunflower groats	-	-	5.500	-
Extr. rapeseed groats	-	-	-	10.00
Fish meal	2.200	1.500	-	-
Soybean oil	1.100	-	-	2.000
Animal fat	-	0.700	-	-
Lysine-HCl	0.240	0.130	0.140	0.060
L-threonine	0.080	0.040	-	0.020
DL-methionine	0.220	0.160	0.080	0.180
Salt	0.360	0.350	0.360	0.300
Limestone	1.530	1.360	0.910	2.850
Limestone-roughly ground	-	-	0.910	3.000
MCP – monocalciumphosphate	1.530	1.920	1.400	1.240
Vitamin and mineral supplement	0.190	0.210	0.220	0.220
Nutrient content (calculated values):				
CP (g/kg)	203.57	185.47	156.58	161.32
Fat (g/kg)	36.88	30.76	21.41	39.32
Linoleic acid (g/kg)	17.64	13.21	11.30	19.80
Crude fiber (g/kg)	27.81	28.47	39.12	40.08
ME (MJ/kg)	12.18	12.05	11.39	11.23
Lysine (g/kg)	11.54	9.54	7.12	7.54
Methionine (g/kg)	5.19	4.39	3.29	4.37
Met. + Cys. (g/kg)	8.60	7.65	6.36	7.75
Threonine (g/kg)	7.75	6.61	5.12	5.86
Tryptophan (g/kg)	2.43	2.22	1.86	1.96
Ca (g/kg)	10.50	10.10	10.28	25.67
P (g/kg)	7.93	8.56	7.65	7.00
P digest. (g/kg)	5.48	6.52	5.41	3.72
Vitamin A (IU/kg)	10842.15	10857.29	10819.48	9468.49
Vitamin D3 (IU/kg)	2080.00	2080.00	2080.00	1820.00

4.6 Veterinary precautions

House was cleaned, washed and disinfected with Virkon before the pullets' placement. Disinfection of shoes with Chloramin solution at house entry was used. Rodent control was provided regularly.

Vaccination programme

Age	Disease
Day 1	Marek's disease + infectious bronchitis
Day 3	Salmonellosis
Day 7	Coccidiosis
Day 10	E.coli
Day 13	Infectious bronchitis
Day 17	Newcastle disease
	Gumboro disease
Week 3	Salmonellosis
Week 4	Gumboro disease
Week 6	Infectious bronchitis
	Newcastle disease
Week 9	Infectious bronchitis
Week 10	Avian pneumovirus
Week 11	Avian encephalomyelitis
Week 12	Infectious bronchitis
Week 13	Salmonellosis
Week 14	E.coli
Week 16	Infectious bronchitis
	Newcastle disease
	Egg-drop syndrome

4.7 Transfer to the laying house

Pullets were moved to the laying house at the age of 16 weeks (112 days). 180 birds per sample were selected according to their live weight.

Pullets were placed in cage batteries in 6 replications per sample. All samples were kept in coincident environment conditions.

5 Production period

5.1 Samples and their placement

Hens were placed in cage batteries in 6 replications per sample. All samples were kept in coincident environment conditions.

5.2 Housing system

Hens were kept in windowless house with full control of the environment. They were kept in 3-tier enriched cage batteries.

Enriched cages provided 756 cm² of floor space per hen. Enriched cages were equipped with a perch, a nest, a roosting ash place and claw shortening devices in addition to feeders and drinkers.

Feed was manually filled in the feeders, water was supplied by automatic nipple drinkers. Droppings were removed by the conveyor belt. Eggs were collected manually, each sample separately.

5.3 Conditions of the environment

Temperature was kept between 18 – 20°C. Relative humidity was 60 – 70 %. Temperature was regulated by transversal automatically controlled ventilation (fans and air inlets on the opposite side of the house), in cold weather a gas heater was used. Ventilation provided minimum ventilation rate of 3 m³/hour/kg live weight in winter and 5 m³/hour/kg live weight in summer.

5.4 Lighting programme

Hens were kept in windowless house. All the birds were submitted to the following lighting programme.

Age	Hours of light
Week 19	14
Week 20	15
Week 21	15.5
Week 22 – end of the test	16

Luminous intensity 15 – 20 lx.

5.5 Feeding

Hens were fed with three types of feed: from 19th week of age N1 start, from 23th week of age N1 and from 47th week of age N2. Complete feeds were in mash form and fed ad libitum.

Feed was supplied by xxxxxxxxxxxxxx

Diet formulas

		N1 IT N start	N1 IT N	N2 IT N
Age		19 th -22 th week	23 th -46 th week	47 th -74 th week
Feed form		crushed	crushed	crushed
Components – content in %:				
Wheat		54.508	51.130	61.155
Extr. soybean groats		19.390	8.500	9.500
Maize		9.995	15.000	2.000
Sunflower meal		-	8.000	4.500
Oat		-	-	2.300
Wheat bran		2.799	-	5.000
Extr. rapeseed meal		1.999	3.500	3.000
Soybean oil		1.549	2.800	1.600
DL-methionine		0.150	0.130	0.140
Lysine-HCL		-	0.200	0.180
L-threonine		-	0.030	0.040
Salt		0.365	0.350	0.360
Limestone		2.949	3.000	3.000
Limestone-roughly ground		5.297	6.000	6.500
MCP - monocalciumphosphate		0.730	1.100	0.470
Premix of vitamins, enzymes		0.270	0.260	0.255
Nutrient content (calculated values):				
Crude protein	g/kg	172.64	161.35	158.82
Fat	g/kg	33.34	46.69	33.14
Linoleic acid	g/kg	17.06	23.81	16.80
Crude fiber	g/kg	31.80	39.46	39.92
ME	MJ/kg	11.61	11.25	11.18
Lysine	g/kg	8.11	7.80	7.81
Methionine	g/kg	4.06	3.91	3.89
Meth. +cysteine	g/kg	7.37	6.97	7.15
Threonine	g/kg	6.01	5.68	5.60
Tryptophan	g/kg	2.21	1.87	1.99
Ca	g/kg	35.10	37.31	39.50
P	g/kg	5.59	6.52	5.21
P (digestible)	g/kg	3.81	4.50	3.37
Vitamin A	U.I./kg	9470.98	9730.00	9131.19
Vitamin D3	U.I./kg	1819.09	4277.40	3920.95

6 Evaluated parameters

6.1 Incubation and hatching

- weight of hatching eggs
- fertility in %
- hatchability of set eggs in %
- hatchability of fertile eggs in %

6.2 Feed consumption

- per 1 reared pullet
- per 1 hen in production period
- per 1 egg
- per 1 kg of egg mass
- per 1 feeding day

6.3 Live body weight

- at the age of 1 day – group weighing
- at the age of 14 days (2 week), 28 days (4 week), 42 days (6 week), 56 days (8 week), 70 days (10 week), 84 days (12 week), 98 days (14 week) – individual weighing
- at the age of 112 days (16 weeks) – individual weighing all birds
- at the age of 126 days (18 weeks), 140 days (20 weeks), 154 days (22 weeks), 168 days (24 weeks), 182 days (26 weeks), 210 days (30 weeks) – individual weighing 30 birds per sample
- at the age of 518 days (74 weeks) – individual weighing all birds

6.4 Mortality

- mortality during rearing
- mortality of hens and it's causes

6.5 Egg production

Egg production was recorded daily. Eggs were collected manually at the same time every day. Eggs of different samples were collected separately. Production was evaluated in 14 four week periods, from 127 to 518 days of age.

Results of the egg production:

- per 1 hen housed
- per 1 hen present
- per 1 hen housed for each period

6.6 Sexual maturity

- age of the layers at 10 %. 30 %. 50 % and peak of lay

6.7 Egg weight

- average egg weight for each period
- average egg weight for the whole production
- classification of eggs

6.8 Production of egg mass

- per 1 hen housed
- per 1 hen present

6.9 Second quality eggs

Second quality eggs were sorted out as:

- cracked eggs
- broken eggs
- double-yolk eggs
- shell-less eggs

6.10 Egg quality

- egg weight
- yolk weight
- shell strength
- index of egg shape
- shell thickness
- Haugh's units
- yolk colour
- egg shell colour
- presence of blood spots on the yolk

7 Results

Tab. No. 1	Results of incubation and hatching
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Tab. No. 11	Intensity of lay
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Graph No. 1-4 Intensity of lay

Results of incubation and hatching

Tab. No. 1

Sample	Cross	Weight of hatching eggs	Fertility	Hatchability	
				Set eggs	Fertile eggs
		g	%	%	%
1	XXXXXXXXXXXXX	57.10	95.55	88.88	93.02
2	XXXXXXXXXXXXX	59.56	90.55	74.25	82.00
3	XXXXXXXXXXXXX	59.74	89.44	78.61	87.88
4	XXXXXXXXXXXXX	56.44	93.51	86.11	92.07
5	XXXXXXXXXXXXX	62.00	94.90	86.85	91.51
6	XXXXXXXXXXXXX	60.19	93.31	83.24	89.36
7	XXXXXXXXXXXXX	59.28	91.38	79.25	86.72
8	XXXXXXXXXXXXX	54.93	95.74	91.29	95.35
9	XXXXXXXXXXXXX	57.75	94.81	84.62	89.17
10	XXXXXXXXXXXXX	60.76	94.81	88.33	93.07
11	XXXXXXXXXXXXX	62.63	97.22	90.00	92.57
12	XXXXXXXXXXXXX	56.44	90.27	81.20	89.94

Results of rearing

Tab. No. 2

Page 1

Sample	Cross	Live weight										Feed consumption per 1 pullet at the age of 126 days kg/bird
		Day 1	Week 2	Week 4	Week 6	Week 8	Week 10	Week 12	Week 14	Week 16	Week 18	
		g	g	g	g	g	g	g	g	g	g	
1	xxxxxxxxxxxxx	33.7	125.9	283.1	528.5	710.5	969.8	1143.0	1339.8	1423.0	1580.3	7.3
	cage system	34.0	121.9	303.8	534.0	713.0	971.5	1148.0	1318.5	1415.0	1638.5	6.95
	deep litter system	33.5	130.0	262.5	523.0	708.0	968.0	1138.0	1361.0	1431.0	1522.0	7.62
2	xxxxxxxxxxxxx	35.8	130.8	280.5	539.8	717.3	973.5	1145.5	1329.0	1429.5	1571.3	7.2
	cage system	35.3	132.7	311.1	557.5	709.5	1001.0	1129.0	1312.0	1430.0	1618.5	6.94
	deep litter system	36.2	129.0	250.0	522.0	725.0	946.0	1162.0	1346.0	1429.0	1524.0	7.41
3	xxxxxxxxxxxxx	35.1	130.5	306.4	556.0	757.5	985.5	1167.8	1333.8	1434.0	1616.0	7.2
	cage system	35.0	123.9	310.0	572.0	757.0	1018.0	1161.5	1301.5	1413.0	1609.0	6.94
	deep litter system	35.2	137.0	302.8	540.0	758.0	953.0	1174.0	1366.0	1455.0	1623.0	7.48
4	xxxxxxxxxxxxx	34.0	129.4	297.5	536.8	765.0	977.8	1162.5	1324.0	1436.5	1640.8	7.2
	cage system	34.0	129.4	314.7	552.5	754.0	1032.5	1158.0	1270.0	1427.0	1625.5	6.92
	deep litter system	34.0	129.5	280.3	521.0	776.0	923.0	1167.0	1378.0	1446.0	1656.0	7.53
5	xxxxxxxxxxxxx	35.8	128.5	302.5	546.8	752.5	991.0	1179.3	1337.8	1420.3	1601.5	7.2
	cage system	35.5	127.0	315.0	552.5	743.0	1015.0	1174.5	1303.5	1425.5	1643.0	6.93
	deep litter system	36.0	130.0	290.0	541.0	762.0	967.0	1184.0	1372.0	1415.0	1560.0	7.39
6	xxxxxxxxxxxxx	35.6	133.6	298.0	544.0	730.3	963.3	1174.5	1308.8	1438.5	1614.0	7.2
	cage system	35.3	134.4	307.5	533.0	695.5	963.5	1153.0	1256.5	1410.0	1602.0	6.94
	deep litter system	35.9	132.8	288.5	555.0	765.0	963.0	1196.0	1361.0	1467.0	1626.0	7.48

Results of rearing

Tab. No. 2

Page 2

Sample	Cross	Live weight										Feed consumption per 1 pullet at the age of 126 days kg/bird
		Day 1	Week 2	Week 4	Week 6	Week 8	Week 10	Week 12	Week 14	Week 16	Week 18	
		g	g	g	g	g	g	g	g	g	g	
7	xxxxxxxxxxxxx	35.8	126.7	297.3	525.3	700.0	952.5	1160.8	1295.0	1420.3	1578.8	7.2
	cage system	35.6	130.9	322.7	542.5	691.0	975.0	1162.5	1244.0	1416.5	1581.5	6.93
	deep litter system	36.0	122.5	272.0	508.0	709.0	930.0	1159.0	1346.0	1424.0	1576.0	7.42
8	xxxxxxxxxxxxx	32.8	118.6	282.8	521.5	709.5	954.3	1155.3	1289.8	1452.0	1633.3	7.2
	cage system	32.7	121.9	300.8	534.0	694.0	982.5	1156.5	1227.5	1467.0	1646.5	6.96
	deep litter system	32.8	115.3	264.8	509.0	725.0	926.0	1154.0	1352.0	1437.0	1620.0	7.42
9	xxxxxxxxxxxxx	33.6	96.3	285.9	512.5	706.5	936.5	1130.8	1284.5	1408.3	1574.0	7.2
	cage system	33.5	104.9	288.8	520.0	703.0	954.0	1115.5	1252.0	1405.5	1588.0	6.92
	deep litter system	33.7	87.8	283.0	505.0	710.0	919.0	1146.0	1317.0	1411.0	1560.0	7.55
10	xxxxxxxxxxxxx	35.5	131.0	299.2	520.3	702.3	935.3	1124.8	1294.3	1407.8	1578.8	7.2
	cage system	35.4	131.4	314.2	528.5	689.5	956.5	1117.5	1261.5	1397.5	1576.5	6.95
	deep litter system	35.5	130.5	284.3	512.0	715.0	914.0	1132.0	1327.0	1418.0	1581.0	7.41
11	xxxxxxxxxxxxx	36.6	127.7	298.4	526.0	732.5	998.3	1192.0	1302.5	1446.8	1613.3	7.2
	cage system	36.8	133.0	319.2	527.0	738.0	1002.5	1174.0	1284.0	1435.5	1605.5	6.95
	deep litter system	36.4	122.5	277.5	525.0	727.0	994.0	1210.0	1321.0	1458.0	1621.0	7.44
12	xxxxxxxxxxxxx	34.0	126.5	284.9	476.3	645.5	843.3	984.3	1095.5	1188.3	1333.5	7.3
	cage system	34.0	125.2	295.3	470.5	621.0	831.5	980.5	1108.0	1181.5	1324.0	7.03
	deep litter system	34.1	127.8	274.5	482.0	670.0	855.0	988.0	1083.0	1195.0	1343.0	7.58

Mortality in rearing

Tab. No. 3

Page 1

Sample	Cross	Number of pullets			
		Initial flock	Final flock	Mortality	
		birds	birds	birds	%
1	xxxxxxxxxxxx	280	274	6	2.14
	cage system	190	188	2	1.05
	deep litter system	90	86	4	4.44
2	xxxxxxxxxxxx	280	278	2	0.71
	cage system	190	189	1	0.53
	deep litter system	90	89	1	1.11
3	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	189	1	0.53
	deep litter system	90	88	2	2.22
4	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	190	0	0.00
	deep litter system	90	87	3	3.33
5	xxxxxxxxxxxx	280	279	1	0.36
	cage system	190	190	0	0.00
	deep litter system	90	89	1	1.11
6	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	189	1	0.53
	deep litter system	90	88	2	2.22

Mortality in rearing

Tab. No. 3

Page 2

Sample	Cross	Number of pullets			
		Initial flock	Final flock	Mortality	
		birds	birds	birds	%
7	xxxxxxxxxxxx	280	279	1	0.36
	cage system	190	190	0	0.00
	deep litter system	90	89	1	1.11
8	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	188	2	1.05
	deep litter system	90	89	1	1.11
9	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	190	0	0.00
	deep litter system	90	87	3	3.33
10	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	188	2	1.05
	deep litter system	90	89	1	1.11
11	xxxxxxxxxxxx	280	277	3	1.07
	cage system	190	189	1	0.53
	deep litter system	90	88	2	2.22
12	xxxxxxxxxxxx	280	271	9	3.21
	cage system	190	185	5	2.63
	deep litter system	90	86	4	4.44

Results of the egg yield

Tab. No. 4 (page 1)

Treatment	Cross		Age at the yield					Egg production per				Egg weight	Egg mass per		
			10%	30%	50%	Max.		hen - housed		hen - day			hen - housed	hen - day	
	Way of rearing					day	%	number	%	number	%	g	kg	kg	
1	xxxxxxxxxxxx		ø	137	141	142	175	100.00	349.24	89.09	357.33	91.16	60.42	21.10	21.59
			a	138	139	142	157	100.00	353.83	90.26	357.02	91.08	61.21	21.66	21.85
			b	137	139	142	153	100.00	338.18	86.27	354.71	90.49	59.98	20.29	21.28
			c	135	139	139	151	100.00	355.72	90.74	360.17	91.88	60.05	21.36	21.63
2	xxxxxxxxxxxx		ø	135	140	142	215	100.00	344.16	87.80	347.36	88.61	61.16	21.05	21.24
			a	137	139	144	166	100.00	346.23	88.32	347.10	88.55	62.45	21.62	21.68
			b	133	139	139	160	100.00	338.72	86.41	344.23	87.81	59.93	20.30	20.63
			c	135	138	139	160	100.00	347.53	88.66	350.72	89.47	61.08	21.23	21.42
3	xxxxxxxxxxxx		ø	137	140	141	186	100.00	348.60	88.93	350.83	89.50	59.43	20.72	20.85
			a	137	139	141	166	100.00	345.02	88.01	349.87	89.25	61.00	21.04	21.34
			b	138	139	142	152	100.00	350.48	89.41	350.48	89.41	58.68	20.57	20.57
			c	135	138	139	151	100.00	350.30	89.36	352.14	89.83	58.60	20.53	20.64
4	xxxxxxxxxxxx		ø	136	140	143	160	99.44	345.34	88.10	348.90	89.01	60.93	21.04	21.26
			a	133	139	141	166	100.00	339.85	86.70	346.37	88.36	62.43	21.22	21.63
			b	137	139	143	160	100.00	341.07	87.01	343.99	87.75	60.11	20.50	20.68
			c	133	138	139	149	100.00	355.10	90.59	356.28	90.89	60.29	21.41	21.48

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Results of the egg yield

Tab. No. 4 (page 2)

Treatment	Cross		Age at the yield					Egg production per				Egg weight	Egg mass per	
			10%	30%	50%	Max.		hen - housed		hen - day			hen - housed	hen - day
	Way of rearing	day				%	number	%	number	%	g	kg	kg	
5	xxxxxxxxxxxx	ø	136	140	146	212	100.00	342.98	87.50	348.22	88.83	60.67	20.81	21.13
		a	137	139	143	165	100.00	339.18	86.53	343.82	87.71	60.98	20.68	20.97
		b	137	139	143	160	100.00	332.13	84.73	341.69	87.17	61.09	20.29	20.87
		c	133	138	139	151	100.00	357.63	91.23	358.95	91.57	59.99	21.46	21.53
6	xxxxxxxxxxxx	ø	137	141	143	177	100.00	346.25	88.33	348.48	88.90	61.40	21.26	21.40
		a	135	139	142	160	100.00	342.90	87.47	347.51	88.65	62.27	21.35	21.64
		b	139	142	145	165	100.00	347.53	88.66	349.61	89.19	61.46	21.36	21.49
		c	133	139	139	154	100.00	348.32	88.86	348.32	88.86	60.51	21.08	21.08
7	xxxxxxxxxxxx	ø	135	138	139	212	100.00	347.86	88.74	351.74	89.73	60.37	21.00	21.23
		a	135	139	141	166	100.00	355.45	90.68	355.63	90.72	61.18	21.75	21.76
		b	135	138	139	163	100.00	347.48	88.64	350.66	89.45	60.29	20.95	21.14
		c	133	136	139	155	100.00	340.65	86.90	348.85	88.99	59.58	20.30	20.78
8	xxxxxxxxxxxx	ø	135	140	139	195	99.44	349.04	89.04	355.81	90.77	60.36	21.07	21.48
		a	136	139	142	161	100.00	356.62	90.97	358.35	91.42	60.48	21.57	21.67
		b	136	139	142	166	100.00	336.15	85.75	352.31	89.88	60.87	20.46	21.44
		c	133	137	139	160	100.00	354.37	90.40	356.61	90.97	59.76	21.18	21.31

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Results of the egg yield

Tab. No. 4 (page 3)

Treatment	Cross		Age at the yield					Egg production per				Egg weight	Egg mass per	
			10%	30%	50%	Max.		hen - housed		hen - day			hen - housed	hen - day
	Way of rearing	day				%	number	%	number	%	g	kg	kg	
9	xxxxxxxxxxxx	ø	135	140	141	175	100.00	346.74	88.45	354.15	90.34	61.04	21.17	21.62
		a	136	139	139	154	100.00	340.82	86.94	359.83	91.79	61.80	21.06	22.24
		b	135	139	141	135	100.00	347.18	88.57	350.66	89.45	60.67	21.06	21.27
		c	133	138	139	152	100.00	352.22	89.85	352.22	89.85	60.67	21.37	21.37
10	xxxxxxxxxxxx	ø	138	139	145	177	99.44	325.16	82.95	339.50	86.61	63.94	20.79	21.71
		a	136	139	143	160	100.00	309.50	78.95	335.43	85.57	64.58	19.99	21.66
		b	139	141	143	177	100.00	329.93	84.17	341.12	87.02	63.93	21.09	21.81
		c	137	139	141	184	100.00	336.05	85.73	341.73	87.18	63.35	21.29	21.65
11	xxxxxxxxxxxx	ø	138	139	144	175	99.44	341.68	87.16	355.12	90.59	61.39	20.98	21.80
		a	136	139	144	187	100.00	345.18	88.06	350.59	89.44	62.30	21.50	21.84
		b	138	142	145	162	100.00	321.85	82.10	356.85	91.03	62.01	19.96	22.13
		c	135	139	142	155	100.00	358.00	91.33	358.00	91.33	59.94	21.46	21.46
12	xxxxxxxxxxxx	ø	136	138	143	188	99.44	353.22	90.11	362.15	92.38	59.49	21.01	21.54
		a	136	137	139	160	100.00	347.18	88.57	361.22	92.15	60.60	21.04	21.89
		b	137	138	139	170	100.00	350.72	89.47	361.14	92.13	59.36	20.82	21.44
		c	136	138	139	149	100.00	361.77	92.29	364.03	92.86	58.54	21.18	21.31

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Feed consumption

Tab. No. 5 (page 1)

Treatment	Cross		Feed consumption			
			per 1 hen	per 1 egg	per 1 kg of egg mass	per 1 feeding day
	Way of rearing		kg	g	kg	g
1	xxxxxxxxxxxx	ø	52.64	147.33	2.44	134.30
		a	51.64	144.63	2.36	131.73
		b	55.28	155.85	2.60	141.02
		c	51.11	141.90	2.36	130.38
2	xxxxxxxxxxxx	ø	52.21	150.30	2.46	133.18
		a	52.03	149.91	2.40	132.74
		b	53.27	154.74	2.58	135.88
		c	51.33	146.36	2.40	130.95
3	xxxxxxxxxxxx	ø	52.44	149.49	2.52	133.79
		a	52.59	150.30	2.46	134.15
		b	53.28	152.02	2.59	135.92
		c	51.47	146.15	2.49	131.29
4	xxxxxxxxxxxx	ø	52.65	150.89	2.48	134.31
		a	52.99	152.99	2.45	135.18
		b	54.39	158.10	2.63	138.74
		c	50.58	141.97	2.35	129.03

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Feed consumption

Tab. No. 5 (page 2)

Treatment	Cross		Feed consumption			
			per 1 hen	per 1 egg	per 1 kg of egg mass	per 1 feeding day
	Way of rearing		kg	g	kg	g
5	XXXXXXXXXXXX	ø	53.38	153.28	2.53	136.16
		a	53.25	154.87	2.54	135.83
		b	55.53	162.51	2.66	141.65
		c	51.40	143.21	2.39	131.13
6	XXXXXXXXXXXX	ø	51.80	148.65	2.42	132.15
		a	52.08	149.85	2.41	132.85
		b	52.68	150.68	2.45	134.39
		c	50.66	145.43	2.40	129.22
7	XXXXXXXXXXXX	ø	51.73	147.08	2.44	131.97
		a	50.80	142.83	2.33	129.58
		b	53.00	151.14	2.51	135.20
		c	51.41	147.36	2.47	131.14
8	XXXXXXXXXXXX	ø	52.10	146.43	2.43	132.91
		a	51.63	144.07	2.38	131.71
		b	54.06	153.43	2.52	137.90
		c	50.69	142.16	2.38	129.32

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Feed consumption

Tab. No. 5 (page 3)

Treatment	Cross		Feed consumption			
			per 1 hen	per 1 egg	per 1 kg of egg mass	per 1 feeding day
	Way of rearing		kg	g	kg	g
9	XXXXXXXXXXXX	ø	52.67	148.73	2.44	134.36
		a	54.23	150.72	2.44	138.35
		b	53.12	151.50	2.50	135.52
		c	50.74	144.06	2.37	129.44
10	XXXXXXXXXXXX	ø	53.53	157.67	2.47	136.56
		a	54.61	162.81	2.52	139.31
		b	53.88	157.96	2.47	137.46
		c	52.17	152.66	2.41	133.08
11	XXXXXXXXXXXX	ø	53.32	150.15	2.45	136.02
		a	52.44	149.56	2.40	133.77
		b	56.59	158.57	2.56	144.36
		c	51.24	143.13	2.39	130.72
12	XXXXXXXXXXXX	ø	52.52	145.03	2.44	133.99
		a	53.29	147.51	2.43	135.93
		b	53.53	148.22	2.50	136.56
		c	50.80	139.56	2.38	129.60

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Live weight of laying hens

Tab. No. 6 (page 1)

Treatment	Cross		Live weight (g)					
	Way of rearing		week 20	week 22	week 24	week 26	week 30	final live weight
1	XXXXXXXXXXXX	ø	1783.7	1808.7	1832.3	1958.7	1935.3	2112.9
		a	1806	1786	1878	1920	1973	2139
		b	1775	1835	1788	1891	1859	2050
		c	1770	1805	1831	2065	1974	2135
2	XXXXXXXXXXXX	ø	1718.7	1696.3	1712.0	1818.0	1865.3	2028.5
		a	1718	1645	1706	1788	1818	2093
		b	1719	1715	1709	1863	1950	1993
		c	1719	1729	1721	1779	1828	1999
3	XXXXXXXXXXXX	ø	1761.0	1789.7	1862.0	1991.7	2006.3	2193.4
		a	1778	1810	1894	1963	2022	2346
		b	1777	1802	1870	1991	1999	2108
		c	1728	1757	1822	2021	1998	2123
4	XXXXXXXXXXXX	ø	1806.0	1797.7	1829.7	1825.3	1942.7	2133.0
		a	1825	1842	1901	1953	2037	2128
		b	1734	1763	1788	1965	1900	2121
		c	1859	1788	1800	1858	1891	2140

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Live weight of laying hens

Tab. No. 6 (page 2)

Treatment	Cross		Live weight (g)					
	Way of rearing		week 20	week 22	week 24	week 26	week 30	final live weight
5	XXXXXXXXXXXXX	ø	1734.0	1745.0	1782.0	1911.3	1939.7	2095.8
		a	1726	1756	1775	1829	1887	2119
		b	1747	1762	1827	1981	1988	2131
		c	1729	1717	1744	1924	1944	2071
6	XXXXXXXXXXXXX	ø	1776.3	1786.7	1869.0	1952.7	2023.7	2186.7
		a	1781	1797	1885	1952	2055	2265
		b	1825	1811	1897	1994	2001	2117
		c	1723	1752	1825	1912	2015	2157
7	XXXXXXXXXXXXX	ø	1720.3	1710.3	1755.3	1816.0	1854.0	2067.8
		a	1755	1732	1828	1860	1887	2205
		b	1657	1702	1756	1816	1803	2063
		c	1749	1697	1682	1772	1872	2002
8	XXXXXXXXXXXXX	ø	1767.3	1766.7	1838.3	1914.3	1966.0	2095.7
		a	1735	1727	1905	1930	1965	2099
		b	1868	1836	1883	1969	2022	2090
		c	1699	1737	1727	1844	1911	2103

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Live weight of laying hens

Tab. No. 6 (page 3)

Treatment	Cross		Live weight (g)					
	Way of rearing		week 20	week 22	week 24	week 26	week 30	final live weight
9	XXXXXXXXXXXXX	ø	1722.7	1752.3	1800.3	1882.3	1975.0	2085.0
		a	1695	1725	1817	1860	2009	2135
		b	1726	1795	1826	1923	1961	2079
		c	1747	1737	1758	1864	1955	2048
10	XXXXXXXXXXXXX	ø	1764.3	1776.3	1800.7	1935.7	1981.3	2095.4
		a	1753	1793	1848	1924	1998	2224
		b	1800	1781	1820	1981	2017	2008
		c	1740	1755	1734	1902	1929	2060
11	XXXXXXXXXXXXX	ø	1773.3	1772.3	1804.3	1906.7	1950.3	2104.1
		a	1787	1808	1861	1911	1988	2049
		b	1727	1723	1762	1878	1838	2228
		c	1806	1786	1790	1931	2025	2048
12	XXXXXXXXXXXXX	ø	1487.0	1509.7	1542.0	1603.7	1643.0	1829.5
		a	1494	1538	1594	1672	1666	1990
		b	1498	1496	1570	1620	1600	1785
		c	1469	1495	1462	1519	1663	1723

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Mortality and it's causes

Tab. No. 7 (page 1)

Treatment	Cross		Number of hens				Causes																
			Initial flock	Final flock	Mortality		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
	Birds	Birds	Birds	%																			
1	xxxxxxxxxxxx	ø	180	159	21	11.67										10		8	3				
		a	60	58	2	3.33										1		1					
		b	60	44	16	26.67										7		7	2				
		c	60	57	3	5.00										2			1				
2	xxxxxxxxxxxx	ø	180	175	5	2.78										1		4					
		a	60	59	1	1.67										1							
		b	60	59	1	1.67												1					
		c	60	57	3	5.00													3				
3	xxxxxxxxxxxx	ø	180	177	3	1.67										2		1					
		a	60	58	2	3.33										2							
		b	60	60	0	0.00																	
		c	60	59	1	1.67													1				
4	xxxxxxxxxxxx	ø	180	172	8	4.44										2	1	5					
		a	60	56	4	6.67										1	1	2					
		b	60	57	3	5.00										1		2					
		c	60	59	1	1.67													1				

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Diagnostic: 1 - Viral diseases 6 - Injuries 11 - Metabolic derangement
 2 - Bacterial diseases 7 - Digestive tract diseases 12 - Cannibalism
 3 - Fungal diseases 8 - Respiratory tract diseases 13 - Diverticulus inflammation
 4 - Parasitary diseases 9 - Reproduction tract diseases 14 - Culling and other causes
 5 - Tumors 10 - Locomotion apparatus diseases 15 - Sampling (excluded of calculation)

Mortality and it's causes

Tab. No. 7 (page 2)

Treatment	Cross		Number of hens				Causes															
			Initial flock	Final flock	Mortality		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	Way of rearing		Birds	Birds	Birds	%																
5	XXXXXXXXXXXX	ø	180	169	11	6.11										6		5				
		a	60	57	3	5.00										2		1				
		b	60	53	7	11.67										3		4				
		c	60	59	1	1.67										1						
6	XXXXXXXXXXXX	ø	180	176	4	2.22										2		2				
		a	60	59	1	1.67												1				
		b	60	57	3	5.00										2		1				
		c	60	60	0	0.00																
7	XXXXXXXXXXXX	ø	180	174	6	3.33										1		4		1		
		a	60	59	1	1.67												1				
		b	60	58	2	3.33												1		1		
		c	60	57	3	5.00										1		2				
8	XXXXXXXXXXXX	ø	180	168	12	6.67												2		9	1	
		a	60	58	2	3.33												1		1		
		b	60	52	8	13.33														7	1	
		c	60	58	2	3.33												1		1		

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Diagnostic: 1 - Viral diseases 6 - Injuries 11 - Metabolic derangement
 2 - Bacterial diseases 7 - Digestive tract diseases 12 - Cannibalism
 3 - Fungal diseases 8 - Respiratory tract diseases 13 - Diverticulus inflammation
 4 - Parasitary diseases 9 - Reproduction tract diseases 14 - Culling and other causes
 5 - Tumors 10 - Locomotion apparatus diseases 15 - Sampling (excluded of calculation)

Mortality and it's causes

Tab. No. 7 (page 3)

Treatment	Cross		Number of hens				Causes														
			Initial flock	Final flock	Mortality		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Way of rearing		Birds	Birds	Birds	%															
9	XXXXXXXXXXXX	ø	180	166	14	7.78									5		8	1			
		a	60	50	10	16.67									2		7	1			
		b	60	56	4	6.67									3		1				
		c	60	60	0	0.00															
10	XXXXXXXXXXXX	ø	180	165	15	8.33									3	1	7	4			
		a	60	53	7	11.67									2		3	2			
		b	60	54	6	10.00									1	1	2	2			
		c	60	58	2	3.33											2				
11	XXXXXXXXXXXX	ø	180	172	8	4.44								1		1		6			
		a	60	59	1	1.67								1				6			
		b	60	53	7	11.67									1						
		c	60	60	0	0.00															
12	XXXXXXXXXXXX	ø	180	172	8	4.44						1			4		3				
		a	60	55	5	8.33						1			3		1				
		b	60	58	2	3.33									1		1				
		c	60	59	1	1.67												1			

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Diagnostic: 1 - Viral diseases 6 - Injuries 11 - Metabolic derangement
 2 - Bacterial diseases 7 - Digestive tract diseases 12 - Cannibalism
 3 - Fungal diseases 8 - Respiratory tract diseases 13 - Diverticulus inflammation
 4 - Parasitary diseases 9 - Reproduction tract diseases 14 - Culling and other causes
 5 - Tumors 10 - Locomotion apparatus diseases 15 - Sampling (excluded of calculation)

Second quality eggs

Tab. No. 8 (page 1)

Treatment	Cross		Eggs laid	Cracked		Broken eggs		Double-yolked		Membranes		Nonstandard together		
	Way of rearing		number	number	%	number	%	number	%	number	%	number	%	
1	xxxxxxxxxxxx		ø	62864	2254	3.59	1361	2.16	0	0.00	420	0.67	4035	6.42
			a	21230	775	3.65	513	2.42	0	0.00	147	0.69	1435	6.76
			b	20291	669	3.30	395	1.95	0	0.00	141	0.69	1205	5.94
			c	21343	810	3.80	453	2.12	0	0.00	132	0.62	1395	6.54
2	xxxxxxxxxxxx		ø	61949	2637	4.26	1603	2.59	0	0.00	459	0.74	4699	7.59
			a	20774	1017	4.90	592	2.85	0	0.00	150	0.72	1759	8.47
			b	20323	779	3.83	485	2.39	0	0.00	167	0.82	1431	7.04
			c	20852	841	4.03	526	2.52	0	0.00	142	0.68	1509	7.24
3	xxxxxxxxxxxx		ø	62748	2703	4.31	1637	2.61	0	0.00	521	0.83	4861	7.75
			a	20701	877	4.24	550	2.66	0	0.00	152	0.73	1579	7.63
			b	21029	939	4.47	541	2.57	0	0.00	184	0.87	1664	7.91
			c	21018	887	4.22	546	2.60	0	0.00	185	0.88	1618	7.70
4	xxxxxxxxxxxx		ø	62161	2538	4.08	1643	2.64	0	0.00	480	0.77	4661	7.50
			a	20391	942	4.62	589	2.89	0	0.00	136	0.67	1667	8.18
			b	20464	825	4.03	547	2.67	0	0.00	228	1.11	1600	7.82
			c	21306	771	3.62	507	2.38	0	0.00	116	0.54	1394	6.54

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Second quality eggs

Tab. No. 8 (page 2)

Treatment	Cross		Eggs laid	Cracked		Broken eggs		Double-yolked		Membranes		Nonstandard together	
	Way of rearing		number	number	%	number	%	number	%	number	%	number	%
5	xxxxxxxxxxxx	ø	61737	2521	4.08	1535	2.49	0	0.00	502	0.81	4558	7.38
		a	20351	865	4.25	596	2.93	0	0.00	187	0.92	1648	8.10
		b	19928	814	4.08	546	2.74	0	0.00	186	0.93	1546	7.76
		c	21458	842	3.92	393	1.83	0	0.00	129	0.60	1364	6.36
6	xxxxxxxxxxxx	ø	62325	2515	4.04	1672	2.68	0	0.00	513	0.82	4700	7.54
		a	20574	985	4.79	654	3.18	0	0.00	151	0.73	1790	8.70
		b	20852	792	3.80	513	2.46	0	0.00	179	0.86	1484	7.12
		c	20899	738	3.53	505	2.42	0	0.00	183	0.88	1426	6.82
7	xxxxxxxxxxxx	ø	62615	2193	3.50	1272	2.03	0	0.00	441	0.70	3906	6.24
		a	21327	700	3.28	426	2.00	0	0.00	151	0.71	1277	5.99
		b	20849	756	3.63	407	1.95	0	0.00	125	0.60	1288	6.18
		c	20439	737	3.61	439	2.15	0	0.00	165	0.81	1341	6.56
8	xxxxxxxxxxxx	ø	62828	2452	3.90	1487	2.37	0	0.00	522	0.83	4461	7.10
		a	21397	777	3.63	497	2.32	0	0.00	160	0.75	1434	6.70
		b	20169	817	4.05	488	2.42	0	0.00	172	0.85	1477	7.32
		c	21262	858	4.04	502	2.36	0	0.00	190	0.89	1550	7.29

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Second quality eggs

Tab. No. 8 (page 3)

Treatment	Cross		Eggs laid	Cracked		Broken eggs		Double-yolked		Membranes		Nonstandard together	
	Way of rearing		number	number	%	number	%	number	%	number	%	number	%
9	xxxxxxxxxxxx	ø	62413	2413	3.87	1560	2.50	0	0.00	554	0.89	4527	7.25
		a	20449	805	3.94	513	2.51	0	0.00	218	1.07	1536	7.51
		b	20831	754	3.62	507	2.43	0	0.00	166	0.80	1427	6.85
		c	21133	854	4.04	540	2.56	0	0.00	170	0.80	1564	7.40
10	xxxxxxxxxxxx	ø	58529	2457	4.20	1626	2.78	1	0.00	505	0.86	4589	7.84
		a	18570	784	4.22	497	2.68	1	0.01	160	0.86	1442	7.77
		b	19796	835	4.22	621	3.14	0	0.00	180	0.91	1636	8.26
		c	20163	838	4.16	508	2.52	0	0.00	165	0.82	1511	7.49
11	xxxxxxxxxxxx	ø	61502	2535	4.12	1553	2.53	0	0.00	525	0.85	4613	7.50
		a	20711	911	4.40	557	2.69	0	0.00	212	1.02	1680	8.11
		b	19311	804	4.16	516	2.67	0	0.00	155	0.80	1475	7.64
		c	21480	820	3.82	480	2.23	0	0.00	158	0.74	1458	6.79
12	xxxxxxxxxxxx	ø	63580	2609	4.10	1939	3.05	0	0.00	510	0.80	5058	7.96
		a	20831	854	4.10	747	3.59	0	0.00	155	0.74	1756	8.43
		b	21043	742	3.53	454	2.16	0	0.00	136	0.65	1332	6.33
		c	21706	1013	4.67	738	3.40	0	0.00	219	1.01	1970	9.08

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Weight classes of eggs

Tab. No. 9 (page 1)

Treatment	Cross		Egg weight	XL	L	M	S
				(= > 73 g)	(63 - 73 g)	(53 - 63 g)	(= < 53 g)
	Way of rearing		g	%	%	%	%
1	XXXXXXXXXXXXX	ø	60.42	1.58	27.60	66.60	4.22
		a	61.21	1.74	34.28	59.85	4.13
		b	59.98	0.84	25.08	70.66	3.42
		c	60.05	2.11	23.27	69.55	5.08
2	XXXXXXXXXXXXX	ø	61.16	2.22	31.37	63.13	3.28
		a	62.45	3.79	37.00	56.68	2.53
		b	59.93	0.91	24.09	71.88	3.12
		c	61.08	1.92	32.89	60.98	4.21
3	XXXXXXXXXXXXX	ø	59.43	0.52	21.94	71.14	6.40
		a	61.00	0.78	31.36	65.55	2.30
		b	58.68	0.37	17.59	73.43	8.61
		c	58.60	0.41	16.87	74.43	8.28
4	XXXXXXXXXXXXX	ø	60.93	2.23	29.56	65.30	2.91
		a	62.43	4.06	37.79	56.76	1.39
		b	60.11	1.71	24.77	69.46	4.06
		c	60.29	0.97	26.28	69.48	3.27

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Weight classes of eggs

Tab. No. 9 (page 2)

Treatment	Cross		Egg weight	XL	L	M	S
				(= > 73 g)	(63 - 73 g)	(53 - 63 g)	(= < 53 g)
	Way of rearing		g	%	%	%	%
5	XXXXXXXXXXXXX	ø	60.67	2.10	28.02	66.07	3.81
		a	60.98	2.22	32.43	61.45	3.90
		b	61.09	2.73	29.33	64.45	3.49
		c	59.99	1.41	22.71	71.85	4.03
6	XXXXXXXXXXXXX	ø	61.40	2.19	34.29	60.60	2.92
		a	62.27	1.65	40.36	56.07	1.92
		b	61.46	3.37	33.58	59.42	3.63
		c	60.51	1.52	29.21	66.13	3.14
7	XXXXXXXXXXXXX	ø	60.37	0.92	27.79	67.36	3.94
		a	61.18	1.17	32.13	62.95	3.75
		b	60.29	0.97	27.58	68.17	3.28
		c	59.58	0.58	23.28	71.31	4.83
8	XXXXXXXXXXXXX	ø	60.36	1.59	26.71	68.41	3.29
		a	60.48	1.19	28.44	67.75	2.62
		b	60.87	1.91	28.37	66.84	2.87
		c	59.76	1.69	23.32	70.59	4.40

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Weight classes of eggs

Tab. No. 9 (page 3)

Treatment	Cross		Egg weight	XL	L	M	S
				(= > 73 g)	(63 - 73 g)	(53 - 63 g)	(= < 53 g)
	Way of rearing		g	%	%	%	%
9	XXXXXXXXXXXXX	ø	61.04	2.24	31.74	62.87	3.15
		a	61.80	2.97	36.98	57.35	2.71
		b	60.67	1.28	28.28	68.19	2.25
		c	60.67	2.51	30.11	62.89	4.50
10	XXXXXXXXXXXXX	ø	63.94	6.21	48.23	44.12	1.44
		a	64.58	7.47	53.70	37.58	1.24
		b	63.93	5.98	47.20	45.39	1.43
		c	63.35	5.30	44.24	48.84	1.62
11	XXXXXXXXXXXXX	ø	61.39	1.69	34.89	60.28	3.14
		a	62.30	1.93	41.24	55.42	1.41
		b	62.01	1.91	38.58	57.31	2.19
		c	59.94	1.27	25.36	67.68	5.69
12	XXXXXXXXXXXXX	ø	59.49	0.97	21.05	72.44	5.54
		a	60.60	1.33	27.80	67.16	3.71
		b	59.36	0.51	19.77	75.08	4.63
		c	58.54	1.07	15.84	74.90	8.20

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Egg quality - Period 6

Tab. No. 10a

Sample	Cross	Egg weight	Yolk weight	Shell strength	Index of egg shape	Shell thickness	Haugh's units	Yolk colour				Egg shell colour			Blood spot
		g	g	N		mm		L	a	b	Roche	L	a	b	
1	XXXXXXXXXXXX	60.22	16.47	45.73	1.27	0.40	81.50	-4.23	4.9	10.1	12.67	56.57	20.9	30.6	0
2	XXXXXXXXXXXX	63.67	17.04	44.34	1.28	0.40	83.67	-4.23	4.9	10.5	12.70	58.43	19.0	29.4	0
3	XXXXXXXXXXXX	59.56	16.40	39.81	1.28	0.39	88.63	-3.93	4.6	10.6	12.40	56.73	18.3	28.8	1
4	XXXXXXXXXXXX	62.35	17.62	44.49	1.29	0.40	83.47	-3.87	4.8	10.7	12.43	55.10	19.8	30.0	0
5	XXXXXXXXXXXX	60.96	17.30	44.74	1.27	0.40	80.27	-6.33	5.2	8.6	13.47	55.53	19.5	28.7	1
6	XXXXXXXXXXXX	62.46	16.85	43.13	1.28	0.39	86.70	-4.07	4.6	10.6	12.43	58.67	18.4	29.8	0
7	XXXXXXXXXXXX	60.39	17.33	42.86	1.29	0.37	79.07	-3.27	4.3	11.2	12.07	58.80	18.8	30.5	0
8	XXXXXXXXXXXX	60.99	17.19	44.12	1.28	0.38	83.83	-4.17	4.9	10.5	12.63	58.57	19.9	31.1	1
9	XXXXXXXXXXXX	61.00	17.09	43.99	1.29	0.37	82.83	-3.37	4.6	11.0	12.37	55.93	20.8	30.6	0
10	XXXXXXXXXXXX	64.30	17.54	43.82	1.31	0.37	79.80	-3.83	4.8	10.7	12.63	56.83	19.9	29.4	0
11	XXXXXXXXXXXX	62.34	17.46	40.10	1.28	0.36	87.17	-4.83	4.8	9.9	12.87	57.50	20.3	29.7	0
12	XXXXXXXXXXXX	58.43	17.10	43.60	1.29	0.36	92.63	-0.60	3.6	13.4	10.97	90.67	0.9	2.1	0

Interpretative notes:

L - colour of egg (0=black. 100=white)

a - red colouring and it's fullness

b - yellow colouring and it's fullness

Egg quality - Period 9

Tab. No. 10b

Sample	Cross	Egg weight	Yolk weight	Shell strength	Index of egg shape	Shell thickness	Haugh's units	Yolk colour				Egg shell colour			Blood spot
		g	g	N		mm		L	a	b	Roche	L	a	b	
1	XXXXXXXXXXXX	60.36	17.15	41.45	1.31	0.38	80.37	-1.23	1.9	12.6	9.23	56.63	20.5	30.5	1
2	XXXXXXXXXXXX	63.54	17.38	38.52	1.29	0.36	82.13	-1.40	1.9	12.4	9.50	59.50	18.1	29.1	0
3	XXXXXXXXXXXX	60.33	17.28	37.67	1.31	0.36	85.57	-1.53	1.8	12.4	9.27	59.37	18.5	29.5	1
4	XXXXXXXXXXXX	61.49	18.83	37.55	1.31	0.37	79.40	-0.80	1.6	13.0	8.83	58.63	18.6	29.9	0
5	XXXXXXXXXXXX	61.90	18.24	38.37	1.31	0.36	78.23	-2.73	2.1	11.4	9.73	56.83	18.7	28.4	0
6	XXXXXXXXXXXX	62.57	17.90	36.72	1.31	0.36	82.83	-2.50	2.2	11.6	9.77	60.37	18.0	30.1	0
7	XXXXXXXXXXXX	61.52	18.47	40.06	1.31	0.37	72.67	0.47	1.3	14.0	8.27	61.80	18.1	30.0	0
8	XXXXXXXXXXXX	60.65	18.05	39.99	1.30	0.36	75.80	0.73	1.3	14.2	8.20	58.00	19.6	30.9	0
9	XXXXXXXXXXXX	62.46	18.76	41.00	1.31	0.37	76.17	0.80	1.2	14.3	8.10	57.57	19.5	29.6	0
10	XXXXXXXXXXXX	64.71	18.16	42.90	1.33	0.37	76.07	0.13	1.2	13.9	8.13	57.33	19.5	29.4	0
11	XXXXXXXXXXXX	64.54	18.94	39.29	1.29	0.35	79.97	-2.17	2.2	11.9	9.77	60.83	18.8	29.4	0
12	XXXXXXXXXXXX	60.89	18.49	41.23	1.30	0.34	85.40	1.57	0.9	14.8	7.43	92.40	0.9	1.6	0

Interpretative notes:

L - colour of egg (0=black. 100=white)

a - red colouring and it's fullness

b - yellow colouring and it's fullness

Egg quality - Period 12

Tab. No. 10c

Sample	Cross	Egg weight	Yolk weight	Shell strength	Index of egg shape	Shell thickness	Haugh's units	Yolk colour				Egg shell colour			Blood spot
		g	g	N		mm		L	a	b	Roche	L	a	b	
1	XXXXXXXXXXXX	59.77	17.14	38.94	1.32	0.34	76.13	-1.93	2.1	12.0	9.53	55.27	19.7	28.2	0
2	XXXXXXXXXXXX	61.76	17.03	36.71	1.31	0.33	82.17	-2.57	2.7	11.5	10.47	56.40	18.4	28.1	1
3	XXXXXXXXXXXX	58.81	16.95	35.29	1.31	0.32	80.43	-2.67	2.4	11.5	10.20	55.63	17.9	28.2	0
4	XXXXXXXXXXXX	60.42	17.36	37.33	1.32	0.32	76.63	-2.50	2.3	11.5	10.10	55.80	18.7	27.4	0
5	XXXXXXXXXXXX	59.52	17.03	34.71	1.31	0.32	79.00	-3.27	2.4	10.9	10.60	55.20	18.8	26.7	0
6	XXXXXXXXXXXX	61.09	16.56	36.47	1.29	0.32	81.23	-1.40	2.0	12.6	9.47	57.60	17.8	28.4	0
7	XXXXXXXXXXXX	60.62	17.72	38.04	1.31	0.34	71.40	-1.87	2.2	12.1	9.73	54.27	18.1	27.7	0
8	XXXXXXXXXXXX	59.68	17.39	35.04	1.30	0.32	76.27	-1.13	1.8	12.6	9.27	56.33	18.6	28.8	0
9	XXXXXXXXXXXX	60.84	17.91	39.01	1.32	0.33	71.37	-1.60	2.0	12.2	9.60	56.63	19.2	28.6	2
10	XXXXXXXXXXXX	62.97	18.45	40.19	1.30	0.33	73.77	-3.30	2.8	10.9	10.63	57.77	18.8	28.7	0
11	XXXXXXXXXXXX	61.09	17.91	38.00	1.29	0.33	81.60	-2.67	2.5	11.2	10.23	57.77	19.1	29.0	0
12	XXXXXXXXXXXX	58.92	18.01	32.03	1.32	0.31	84.17	0.60	1.8	14.0	8.70	89.47	1.5	1.0	0

Interpretative notes:

L - colour of egg (0=black. 100=white)

a - red colouring and it's fullness

b - yellow colouring and it's fullness

Laying intensity

Tab. No. 11 (page 1)

in four weeks long periods (%)

Sample	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	XXXXXXXXXXXX	ø	62.16	96.03	95.38	97.26	96.77	95.38	94.35	93.63	91.17	89.70	88.43	85.28	82.18	79.58
		a	59.76	95.95	94.58	97.62	96.73	96.25	93.75	92.74	91.31	91.49	90.12	88.27	87.92	87.20
		b	63.33	96.07	95.30	96.49	96.55	94.82	93.87	92.74	90.30	86.96	85.77	79.70	70.42	65.48
		c	63.39	96.07	96.25	97.68	97.02	95.06	95.42	95.42	91.90	90.65	89.40	87.86	88.21	86.07
2	XXXXXXXXXXXX	ø	61.77	93.97	93.08	95.16	93.15	92.42	92.90	91.43	90.20	88.59	88.00	86.33	82.26	79.90
		a	57.32	95.30	92.86	96.55	94.17	93.57	92.92	93.63	91.61	90.89	91.01	88.27	79.82	78.63
		b	60.77	92.14	91.19	93.75	91.96	90.06	91.61	88.99	89.23	86.13	84.88	85.71	83.04	80.24
		c	67.20	94.46	95.18	95.18	93.33	93.63	94.17	91.67	89.76	88.75	88.10	85.00	83.93	80.83
3	XXXXXXXXXXXX	ø	62.64	94.80	93.00	96.09	94.29	94.13	93.00	91.71	90.28	88.79	89.29	86.67	85.71	84.62
		a	59.17	94.94	89.29	95.65	94.35	94.88	93.75	91.90	88.69	87.80	87.74	85.54	84.94	83.57
		b	61.13	95.83	95.06	96.19	94.46	94.29	92.44	91.37	90.60	90.54	90.36	87.50	86.19	85.77
		c	67.62	93.63	94.64	96.43	94.05	93.21	92.80	91.85	91.55	88.04	89.76	86.96	86.01	84.52
4	XXXXXXXXXXXX	ø	63.19	94.29	94.46	96.11	93.59	93.23	92.74	91.35	88.59	87.86	88.13	84.88	83.75	81.17
		a	62.80	93.81	92.62	94.94	92.86	91.19	93.21	88.75	85.48	86.85	87.08	82.74	81.90	79.52
		b	57.98	94.29	93.63	96.67	92.98	93.33	92.02	90.48	88.75	86.49	86.31	83.81	81.96	79.40
		c	68.81	94.76	97.14	96.73	94.94	95.18	92.98	94.82	91.55	90.24	91.01	88.10	87.38	84.58

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Laying intensity

Tab. No. 11 (page 2)

in four weeks long periods (%)

Sample	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	XXXXXXXXXXXX	ø	61.13	93.51	93.77	94.17	93.33	92.70	92.18	90.97	89.23	87.64	88.65	83.33	83.04	81.29
		a	58.75	93.57	94.40	96.55	94.70	92.80	90.65	88.63	85.24	84.70	87.02	81.73	83.45	79.17
		b	55.89	92.08	91.31	90.60	89.82	90.65	89.82	90.30	89.70	85.95	86.73	79.76	76.67	76.90
		c	68.75	94.88	95.60	95.36	95.48	94.64	96.07	93.99	92.74	92.26	92.20	88.51	88.99	87.80
6	XXXXXXXXXXXX	ø	60.12	94.44	92.40	95.38	92.84	92.92	91.59	91.73	90.12	89.23	88.49	86.83	85.16	85.38
		a	61.67	94.05	88.57	94.05	92.20	91.73	90.65	90.06	88.87	87.86	88.87	86.37	84.17	85.54
		b	53.87	95.24	92.62	96.01	93.27	94.88	93.51	93.15	91.31	89.70	88.21	87.32	86.07	86.01
		c	64.82	94.05	96.01	96.07	93.04	92.14	90.60	91.96	90.18	90.12	88.39	86.79	85.24	84.58
7	XXXXXXXXXXXX	ø	65.10	93.59	94.23	94.98	94.25	92.94	92.34	91.29	88.77	88.67	88.71	87.00	86.31	84.19
		a	62.26	91.49	93.57	95.89	95.42	94.76	94.35	94.52	91.67	92.86	92.26	91.37	91.01	88.04
		b	61.61	95.54	95.65	95.30	94.40	92.98	93.27	91.25	90.77	88.33	88.69	87.02	83.75	82.44
		c	71.43	93.75	93.45	93.75	92.92	91.07	89.40	88.10	83.87	84.82	85.18	82.62	84.17	82.08
8	XXXXXXXXXXXX	ø	65.28	94.21	94.48	95.79	95.44	93.85	93.91	92.50	91.39	89.46	88.12	84.80	84.46	82.90
		a	60.77	94.52	93.63	97.20	96.49	95.89	96.01	94.58	93.63	92.44	91.19	89.46	89.94	87.86
		b	61.79	94.58	93.87	95.06	94.23	93.04	92.02	91.25	88.45	85.95	81.85	76.19	76.37	75.89
		c	73.27	93.51	95.95	95.12	95.60	92.62	93.69	91.67	92.08	90.00	91.31	88.75	87.08	84.94

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Laying intensity

in four weeks long periods (%)

Sample	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
9	XXXXXXXXXXXX	ø	65.12	95.32	94.40	95.93	94.96	93.91	93.06	92.54	90.30	89.58	88.85	84.68	80.02	79.68
		a	65.48	94.70	91.43	95.06	93.81	93.04	90.54	91.19	89.29	89.11	88.10	82.98	76.25	76.25
		b	61.37	96.61	95.18	95.89	94.94	94.40	93.21	92.98	90.00	89.70	89.88	84.64	81.79	79.35
		c	68.51	94.64	96.61	96.85	96.13	94.29	95.42	93.45	91.61	89.94	88.57	86.43	82.02	83.45
10	XXXXXXXXXXXX	ø	56.11	93.33	90.16	91.03	90.60	87.52	88.59	86.49	83.53	81.73	81.13	77.88	77.44	75.75
		a	56.73	93.04	84.76	85.00	87.14	81.55	84.11	82.62	77.80	77.38	76.61	73.57	72.86	72.20
		b	52.44	93.93	90.71	94.23	92.62	91.79	92.08	88.81	84.76	82.62	81.67	79.29	78.81	74.58
		c	59.17	93.04	95.00	93.87	92.02	89.23	89.58	88.04	88.04	85.18	85.12	80.77	80.65	80.48
11	XXXXXXXXXXXX	ø	57.34	93.57	91.01	92.80	92.06	90.85	91.45	90.67	89.31	89.50	87.96	85.46	83.67	84.62
		a	57.38	93.10	91.61	95.36	95.00	92.86	92.56	92.74	89.70	91.67	88.21	86.90	82.44	83.27
		b	52.74	92.62	85.24	85.18	85.06	84.88	86.13	85.12	84.58	84.23	82.14	79.88	79.94	81.73
		c	61.90	95.00	96.19	97.86	96.13	94.82	95.65	94.17	93.63	92.62	93.51	89.58	88.63	88.87
12	XXXXXXXXXXXX	ø	64.94	92.40	93.43	94.64	95.18	94.11	94.68	92.70	92.04	91.85	90.87	89.86	88.29	86.51
		a	62.50	91.90	89.17	93.93	94.82	93.27	92.80	89.35	91.19	91.01	89.35	87.32	89.05	84.29
		b	65.06	91.96	93.75	94.35	93.27	93.04	93.51	92.92	90.95	90.36	90.48	90.36	87.74	84.82
		c	67.26	93.33	97.38	95.65	97.44	96.01	97.74	95.83	93.99	94.17	92.80	91.90	88.10	90.42

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Average weight of eggs

Tab. No. 12 (page 1)

in four weeks long periods (g)

Treatment	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	XXXXXXXXXXXXX	ø	50.13	56.55	59.22	59.88	60.80	61.50	61.66	61.36	61.33	61.66	62.19	61.40	62.37	63.43
		a	50.65	56.49	59.70	61.04	61.48	62.11	62.20	62.42	62.20	63.02	62.43	62.06	63.48	64.50
		b	49.81	56.73	59.30	59.25	60.36	61.24	61.99	60.71	60.91	60.47	61.96	60.85	61.58	63.12
		c	49.94	56.44	58.67	59.33	60.56	61.15	60.81	60.96	60.88	61.35	62.19	61.19	61.91	62.66
2	XXXXXXXXXXXXX	ø	51.34	57.70	60.15	60.30	61.27	62.05	62.97	62.43	62.27	62.81	62.65	62.29	62.55	62.90
		a	51.71	58.39	60.32	61.44	62.20	63.15	64.69	63.82	63.77	64.25	63.58	64.15	64.44	65.29
		b	50.89	57.63	59.58	59.29	60.38	60.07	61.85	61.52	60.41	60.76	61.44	60.74	60.77	61.13
		c	51.43	57.05	60.50	60.13	61.26	62.95	62.47	61.81	62.48	63.22	62.93	61.90	62.64	62.32
3	XXXXXXXXXXXXX	ø	51.41	56.38	58.45	58.81	59.56	61.31	61.28	60.74	60.28	60.24	60.54	60.35	59.69	60.73
		a	52.04	57.06	59.21	60.43	61.27	62.33	62.76	62.48	61.49	62.38	62.20	62.70	61.93	63.00
		b	51.03	55.95	57.95	57.69	58.78	60.90	60.83	59.93	59.73	59.18	60.28	59.41	57.66	59.92
		c	51.19	56.14	58.25	58.28	58.80	60.65	60.07	59.86	59.62	59.10	59.17	59.15	59.11	59.23
4	XXXXXXXXXXXXX	ø	50.62	57.53	59.72	59.85	60.98	62.29	62.12	62.09	62.49	62.44	62.16	62.25	62.95	63.13
		a	51.58	57.74	60.78	61.73	62.63	63.74	63.81	64.00	63.66	64.20	63.70	63.75	65.53	65.04
		b	50.13	57.02	58.73	58.88	60.06	61.84	61.39	61.42	62.10	60.91	60.92	61.61	60.97	62.72
		c	50.12	57.81	59.51	59.02	60.31	61.33	61.27	61.06	61.82	62.21	61.82	61.47	62.47	61.67

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Average weight of eggs

Tab. No. 12 (page 2)

in four weeks long periods (g)

Treatment	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	XXXXXXXXXXXX	ø	51.32	57.51	59.37	59.87	60.77	61.96	62.42	61.86	61.55	61.41	62.51	61.36	61.45	63.52
		a	51.09	56.77	59.68	60.90	60.58	61.49	62.67	62.54	61.93	61.97	63.12	61.84	62.11	64.62
		b	51.54	58.87	59.79	59.05	61.29	62.88	61.88	61.67	61.87	62.06	63.07	62.24	62.15	64.18
		c	51.34	56.95	58.69	59.56	60.45	61.51	62.68	61.47	60.89	60.33	61.47	60.14	60.22	62.04
6	XXXXXXXXXXXX	ø	52.46	58.53	60.20	60.84	61.41	63.26	63.30	62.77	62.50	62.09	62.90	61.87	62.21	62.52
		a	52.86	59.38	60.35	61.76	62.03	64.38	64.21	63.45	63.24	63.01	64.18	63.49	62.82	63.98
		b	52.63	59.31	60.76	61.05	61.94	63.75	63.40	62.76	62.37	60.84	62.28	61.63	62.03	62.09
		c	51.94	56.84	59.58	59.75	60.31	61.60	62.32	62.12	61.94	62.50	62.21	60.54	61.80	61.68
7	XXXXXXXXXXXX	ø	50.24	56.48	58.98	59.24	60.18	61.88	62.13	61.71	61.78	62.04	61.88	62.19	61.52	62.57
		a	51.18	57.52	59.76	59.82	60.82	62.82	62.56	62.38	62.09	62.68	62.67	63.17	62.11	63.75
		b	49.55	56.05	58.62	59.16	60.48	61.96	62.45	61.50	61.90	61.24	61.87	62.55	61.62	62.37
		c	50.00	55.85	58.51	58.73	59.21	60.84	61.35	61.19	61.31	62.16	60.99	60.71	60.76	61.48
8	XXXXXXXXXXXX	ø	49.85	56.52	59.40	59.41	61.19	61.98	62.09	61.20	61.46	62.04	61.72	61.52	61.75	62.49
		a	49.48	56.04	58.69	59.59	60.63	62.17	62.45	61.32	61.42	62.34	62.09	61.56	62.43	63.02
		b	49.87	57.50	60.25	59.44	63.27	62.58	62.79	61.62	61.92	61.80	61.67	62.48	62.02	62.33
		c	50.19	56.06	59.25	59.17	59.69	61.16	60.93	60.70	61.06	61.95	61.39	60.65	60.77	62.09

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

Average weight of eggs

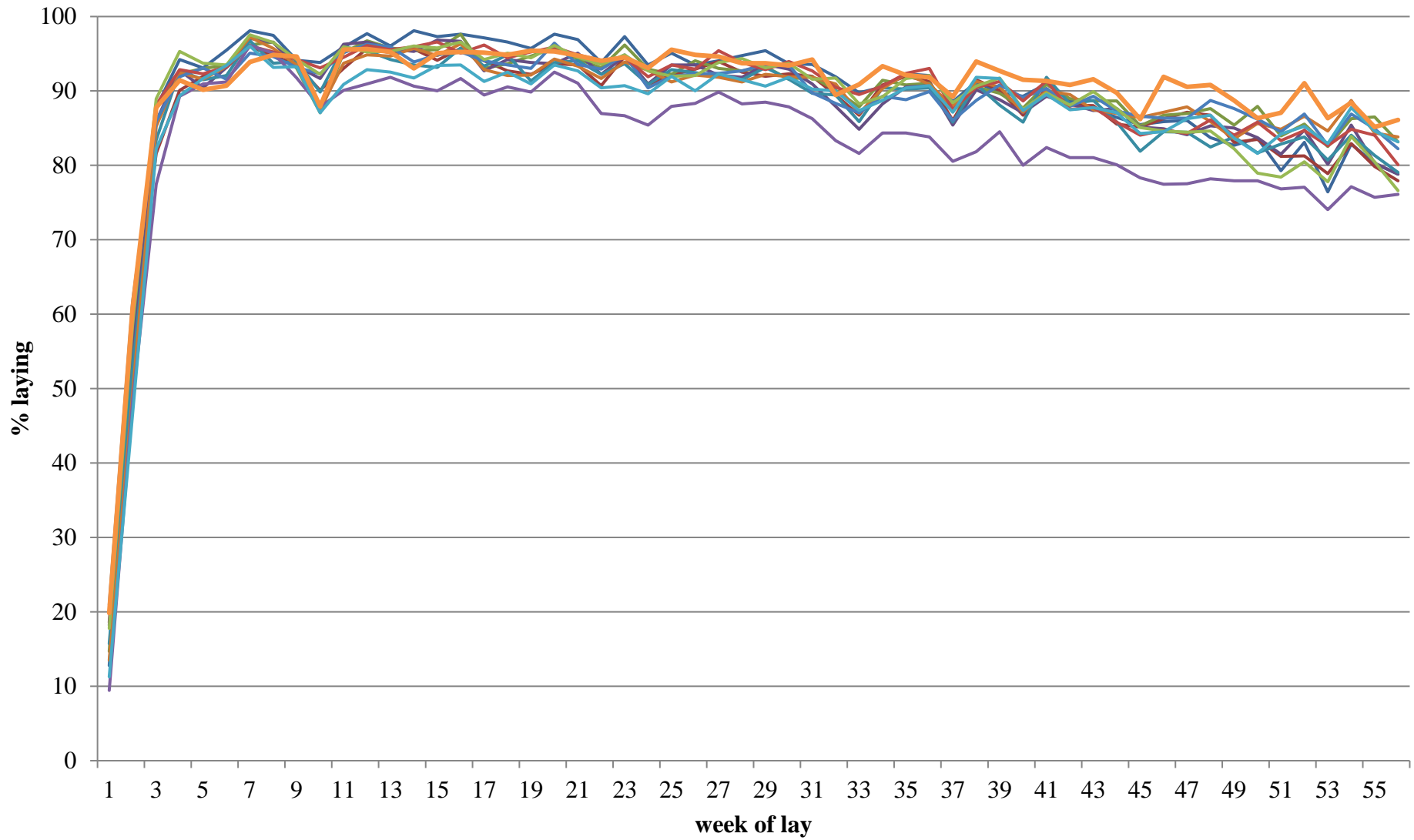
Tab. No. 12 (page 3)

in four weeks long periods (g)

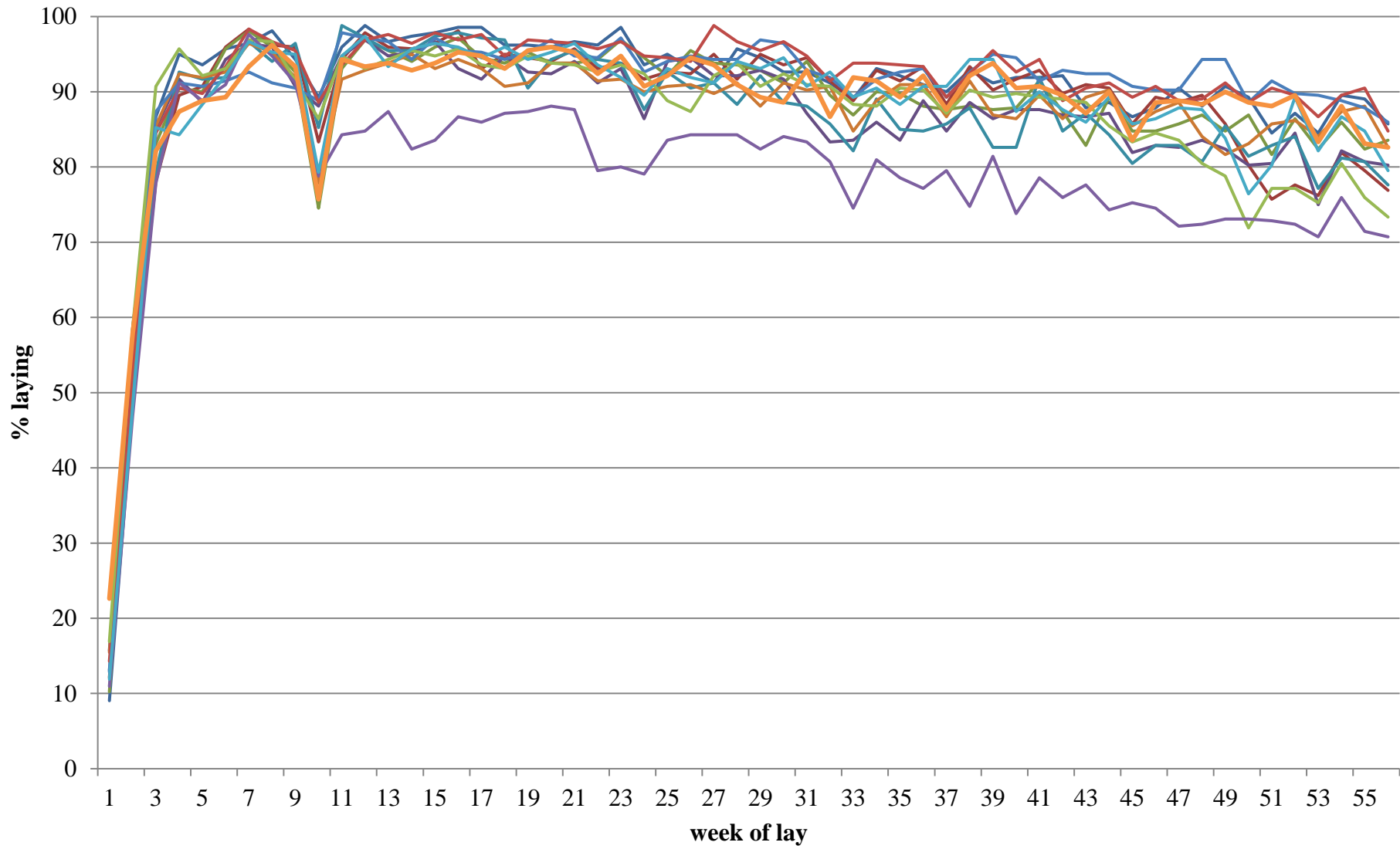
Treatment	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
9	XXXXXXXXXXXX	ø	50.87	57.16	60.10	60.29	61.46	62.42	62.92	62.02	62.76	62.57	62.71	62.44	62.14	62.47
		a	50.84	57.61	60.00	61.15	62.17	63.19	63.31	62.47	63.12	64.36	63.73	63.97	63.24	64.13
		b	50.06	57.20	59.93	59.63	61.04	61.69	63.20	61.74	62.48	60.75	62.12	62.23	61.94	62.56
		c	51.64	56.64	60.36	60.12	61.19	62.31	62.24	61.85	62.69	62.55	62.41	61.31	61.18	60.73
10	XXXXXXXXXXXX	ø	52.06	60.09	63.03	63.33	64.02	65.15	65.35	64.90	65.23	65.58	65.51	65.44	65.44	67.09
		a	52.94	60.87	62.77	63.94	65.37	66.21	66.15	65.94	66.08	65.76	66.11	66.23	65.74	67.90
		b	51.67	59.48	63.29	62.73	63.38	65.37	65.26	65.10	65.20	65.93	65.84	65.95	65.88	66.39
		c	51.61	59.87	63.01	63.38	63.40	63.97	64.69	63.65	64.53	65.04	64.66	64.32	64.70	67.05
11	XXXXXXXXXXXX	ø	51.63	57.35	60.60	61.00	61.75	63.62	62.94	63.18	62.60	62.83	62.54	61.87	61.46	62.85
		a	51.88	57.86	61.55	62.42	62.84	64.45	63.80	64.44	63.38	64.41	62.81	62.95	62.09	63.60
		b	51.48	57.67	61.16	61.17	62.54	63.53	63.86	63.47	63.21	63.50	63.77	62.88	62.20	64.36
		c	51.56	56.49	59.17	59.43	60.00	62.90	61.27	61.70	61.32	60.51	61.14	60.00	60.21	60.70
12	XXXXXXXXXXXX	ø	49.83	55.66	58.23	58.73	59.51	60.79	60.98	60.28	60.51	60.88	61.39	61.09	60.71	61.64
		a	49.33	56.04	59.35	59.73	59.62	61.76	62.52	61.97	61.65	62.71	62.93	62.27	61.97	63.44
		b	49.48	56.28	57.60	58.74	60.31	61.04	61.28	59.93	60.13	60.34	61.18	60.33	60.53	61.24
		c	50.62	54.56	57.89	57.70	58.61	59.54	59.25	59.01	59.69	59.66	60.07	60.74	59.73	60.37

way of rearing: a - deep litter + beak trimming b - cages + non beak trimming c - cages + beak trimming

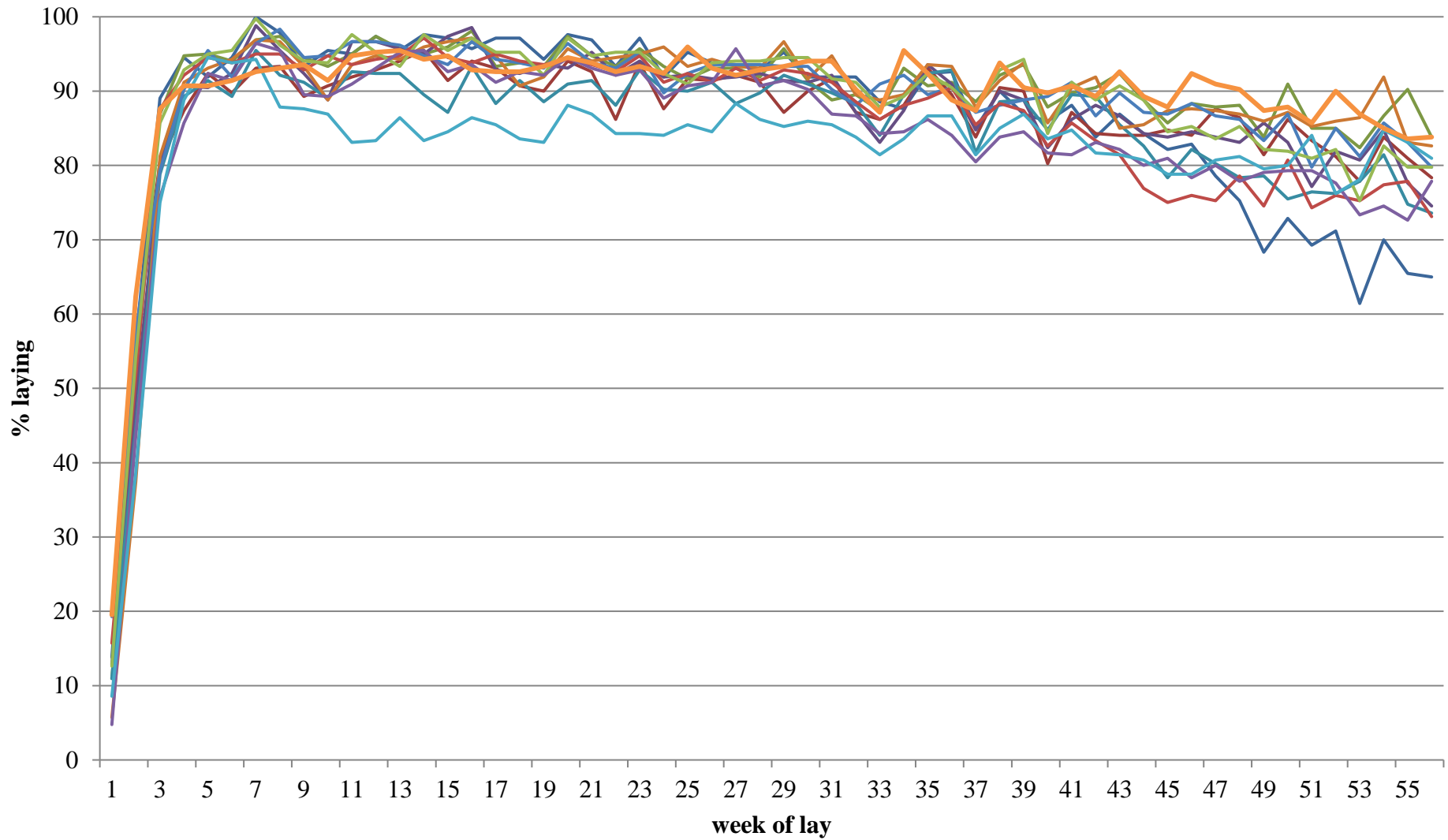
Graph no. 1: intenzity of laying (θ)



Graph no. 2: intenzity of laying (way of rearing: a-deep litter +beak trimming)



Graph no. 3: intenzity of laying (way of rearing: b- cages+non beak trimming)



Graph no. 4: intenzity of laying (way of rearing: c-cages+beak trimming)

