



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE
státní podnik. ÚSTRAŠICE

390 02 Tábor 2

Tel.: 381 200 320

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

**The final report
2024 - 2025**

Study Investigator: Ing. Fara Jiří
Ing. Krekulová Markéta

Ústrašice. September 2025

1 The list of participants

Sam.	Genotype	Hatchery flock	State	Breeding organization
1	xxxxxx	xxxxxx	xxxxxx	xxxxxx
2	xxxxxx	xxxxxx	xxxxxx	xxxxxx
3	xxxxxx	xxxxxx	xxxxxx	xxxxxx
4	xxxxxx	xxxxxx	xxxxxx	xxxxxx
5	xxxxxx	xxxxxx	xxxxxx	xxxxxx
6	xxxxxx	xxxxxx	xxxxxx	xxxxxx
7	xxxxxx	xxxxxx	xxxxxx	xxxxxx
8	xxxxxx	xxxxxx	xxxxxx	xxxxxx
9	xxxxxx	xxxxxx	xxxxxx	xxxxxx
10	xxxxxx	xxxxxx	xxxxxx	xxxxxx
11	xxxxxx	xxxxxx	xxxxxx	xxxxxx

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 11 genotypes compared in the test. Each sample consisted of 1080 hatching eggs delivered to the test station.

2.4 Important dates

setting in the hatchery:	26 February 2024
beginning of rearing – day 1:	19 March 2024
end of rearing:	23 July 2024
beginning of laying. start of the period 1:	24 July 2024
end of laying. end of the period 14:	19 August 2025

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 nonstandard birds, 270 pullets of each sample were randomly chosen for the test. 90 pullets were placed in the house with deep litter system and 180 pullets in the cage system.

Pullets were marked (wing banded). Beak trimming was carried out by hot blade on days 9 and 10. This treatment was done on half of the pullets reared in the cage system and on all pullets reared in the deep litter system. The other 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	Luminous intensity (lx)
Day 1 - 3	23	40
Day 4 - 7	20	30
Day 8 - 14	18	20
Day 15 - 21	16	10
Day 22 - 28	14	10
Day 29 - 35	12	5 – 10
Week 6 - 16	10	5 – 10
Week 17	12	10 – 15
Week 18	13	10 – 15

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 xxxxx

Diet formulas:

	K1 IT N	K2 IT N	KZK IT N	N0
Age	Week 1 - 4	Week 5 - 10	Week 11 - 16	Week 17 - 18
Feed form	crumbled	crushed	crushed	crushed
Components – content in %:				
Wheat	51.00	52.78	58.49	51.26
Maize	15.00	16.00	10.00	15.00
Extr. soybean groats	23.85	19.30	9.00	16.35
Extr. rapeseed groats	1.50	2.00	3.00	3.00
Extr. sunflower groats	1.50	2.00	2.90	2.50
Wheat bran	-	2.50	12.20	2.30
Fish meal	1.50	0.70	-	-
Soybean oil	1.56	0.92	0.88	0.30
Animal fat	-	-	-	1.82
Lysine-HCl	0.29	0.22	0.20	0.13
L-threonine	0.07	0.03	-	-
DL-methionine	0.23	0.17	0.08	0.15
Sodium sulfate	0.15	0.13	0.12	0.17
Salt	0.26	0.27	0.27	0.24
Limestone	1.97	1.95	2.15	3.53
Limestone-roughly ground	-	-	-	2.00
MCP – monocalciumphosphate	0.85	0.75	0.42	0.80
Vitamin and mineral supplement	0.27	0.28	0.29	0.45
Nutrient content (calculated values):				
CP (g/kg)	203.10	186.00	155.90	169.10
Fat (g/kg)	36.00	29.60	28.30	40.00
Linoleic acid (g/kg)	16.00	13.00	12.50	11.00
Crude fiber (g/kg)	29.80	32.80	42.00	33.10
ME enz. (MJ/kg)	12.30	12.10	11.80	11.50
Lysine (g/kg)	11.41	9.75	7.28	8.26
Methionine (g/kg)	5.15	4.39	3.21	3.96
Met. + Cys. (g/kg)	8.67	7.77	6.31	7.13
Threonine (g/kg)	7.90	6.82	5.23	5.91
Tryptophan (g/kg)	2.42	2.21	1.88	2.02
Ca phytase (g/kg)	12.00	11.50	11.50	24.50
P (g/kg)	6.20	6.00	5.90	5.90
P digest. (g/kg)	4.80	4.50	3.80	4.40
Vitamin A (IU/kg)	10000.00	10000.00	10000.00	10000.00
Vitamin D3 (IU/kg)	3000.00	3000.00	3000.00	3000.00

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 31th 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 xxxxx

Diet formulas

		N1 IT N start	N1 IT N	N2 IT N
Age		19 th -30 th week	31 th -46 th week	47 th -74 th week
Feed form		crushed	crushed	crushed
Components – content in %:				
Wheat		35.08	42.71	45.28
Extr. soybean groats		16.20	11.75	11.25
Maize		20.60	18.10	15.00
Rape extr. groat		5.00	5.00	5.00
Sunflower extr. groat		7.10	7.30	7.40
Animal fat		2.35	1.25	3.34
Soybean oil		2.50	2.72	1.10
Salt		0.28	0.28	0.28
Limestone		2.82	2.88	3.09
Limestone-roughly ground		6.60	6.60	7.00
MCP - monocalciumphosphate		0.55	0.47	0.33
Premix of vitamins, enzymes		0.45	0.45	0.45
Nutrient content (calculated values):				
Crude protein	g/kg	174.00	160.98	159.10
Fat	g/kg	67.14	58.03	61.86
Linoleic acid	g/kg	23.02	22.98	15.97
Crude fiber	g/kg	39.99	39.95	39.93
ME	MJ/kg	11.45	11.40	11.40
Lysine	g/kg	7.43	6.89	6.77
Methionine dig.	g/kg	4.08	3.68	3.56
Meth. +cysteine dig	g/kg	6.73	6.21	6.07
Threonine dig.	g/kg	5.27	4.76	4.68
Tryptophan dig.	g/kg	1.76	1.61	1.59
Ca	g/kg	37.00	37.00	38.99
P	g/kg	5.38	5.12	4.78
P (digestible)	g/kg	3.91	3.70	3.41
Vitamin A	U.I./kg	10 000.00	10 000.00	10 000.00
Vitamin D3	U.I./kg	3 000.00	3 000.00	3 000.00

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
Tab. No. 2	Results of rearing
Tab. No. 3	Mortality in rearing
Tab. No. 4	Results of the egg production
Tab. No. 5	Feed consumption
Tab. No. 6	Live weight of laying hens
Tab. No. 7	Mortality and it's causes
Tab. No. 8	Second quality eggs
Tab. No. 9	Weight classes of eggs
Tab. No. 10a	Egg quality – Period 6
Tab. No. 10b	Egg quality – Period 9
Tab. No. 10c	Egg quality – Period 12
Tab. No. 11	Intensity of lay
Tab. No. 12	Average egg weight

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	xxxxxx	58.62	94.40	89.60	95.00
2	xxxxxx	57.34	94.10	88.30	93.90
3	xxxxxx	61.09	88.30	78.10	88.50
4	xxxxxx	57.93	91.60	88.10	96.30
5	xxxxxx	60.05	88.90	83.10	93.50
6	xxxxxx	60.07	85.20	72.60	85.20
7	xxxxxx	57.55	81.60	76.20	93.40
8	xxxxxx	61.6	92.00	81.10	88.10
9	xxxxxx	60.63	90.90	80.60	88.60
10	xxxxxx	62.02	88.50	79.40	89.60
11	xxxxxx	59.87	91.00	84.90	93.30

Results of rearing

Tab. No. 2

Page 1

Sample	Cross	Live weight										Feed consumption per 1 pullet at the age of 126 days
		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	kg/bird
1	xxxxxx	36.77	123.7	273.6	467.9	679.9	932.2	1114.0	1265.0	1376.5	1554.8	7.58
	cage system	37.13	123.3	268.7	445.7	675.7	913.3	1112.0	1261.0	1377.0	1580.5	7.67
	deep litter system	36.41	124.0	278.5	490.0	684.0	951.0	1116.0	1269.0	1376.0	1529.0	7.48
2	xxxxxx	35.63	121.7	276.8	468.5	677.0	900.9	1123.2	1241.5	1393.0	1560.5	7.56
	cage system	35.83	120.4	278.3	471.0	696.0	925.7	1137.3	1249.0	1409.0	1535.0	7.57
	deep litter system	35.43	123.0	275.3	466.0	658.0	876.0	1109.0	1234.0	1377.0	1586.0	7.55
3	xxxxxx	37.72	128.0	283.3	491.0	693.2	920.5	1133.4	1275.2	1394.0	1570.3	7.47
	cage system	38.38	126.9	275.0	486.0	690.3	932.0	1105.7	1264.3	1404.0	1657.5	7.58
	deep litter system	37.06	129.0	291.5	496.0	696.0	909.0	1161.0	1286.0	1384.0	1483.0	7.35
4	xxxxxx	37.34	122.4	274.4	478.9	688.5	914.2	1112.7	1235.2	1402.3	1490.0	7.58
	cage system	37.39	120.8	270.3	466.7	690.0	937.3	1096.3	1239.3	1412.5	1540.0	7.61
	deep litter system	37.28	124.0	278.5	491.0	687.0	891.0	1129.0	1231.0	1392.0	1440.0	7.55
5	xxxxxx	37.93	123.7	278.4	478.5	673.9	885.9	1103.9	1252.7	1373.0	1563.8	7.51
	cage system	37.50	123.8	273.3	459.0	658.7	900.7	1077.7	1232.3	1363.0	1535.5	7.58
	deep litter system	38.36	123.5	283.5	498.0	689.0	871.0	1130.0	1273.0	1383.0	1592.0	7.43
6	xxxxxx	38.20	128.6	279.9	478.4	693.4	921.9	1121.2	1256.9	1380.3	1531.8	7.64
	cage system	38.13	129.2	271.7	459.7	687.7	922.7	1094.3	1232.7	1369.5	1505.5	7.59
	deep litter system	38.26	128.0	288.0	497.0	699.0	921.0	1148.0	1281.0	1391.0	1558.0	7.68

Results of rearing

Tab. No. 2

Page 2

Sample	Cross	Live weight										Feed consumption per 1 pullet at the age of 126 days
		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	kg/bird
7	xxxxxx	36.94	125.6	271.4	467.0	668.4	842.9	1069.2	1174.3	1271.5	1388.5	7.47
	cage system	37.14	124.2	260.7	453.0	641.7	850.7	1024.3	1168.6	1271.0	1349.0	7.59
	deep litter system	36.74	127.0	282.0	481.0	695.0	835.0	1114.0	1180.0	1272.0	1428.0	7.35
8	xxxxxx	37.80	122.8	273.8	475.0	689.2	924.2	1137.0	1284.5	1393.0	1532.3	7.54
	cage system	37.76	120.6	262.0	449.0	677.3	904.3	1084.0	1263.0	1387.0	1549.5	7.60
	deep litter system	37.83	125.0	285.5	501.0	701.0	944.0	1190.0	1306.0	1399.0	1515.0	7.47
9	xxxxxx	37.10	123.5	269.8	465.4	671.0	892.9	1064.9	1238.0	1337.3	1464.0	7.63
	cage system	37.24	122.5	265.0	442.7	643.0	874.7	1055.7	1234.0	1313.5	1441.0	7.64
	deep litter system	36.96	124.5	274.5	488.0	699.0	911.0	1074.0	1242.0	1361.0	1487.0	7.62
10	xxxxxx	38.35	123.5	288.8	492.7	698.5	935.5	1125.7	1291.7	1393.3	1545.5	7.54
	cage system	38.23	121.5	284.0	473.3	704.0	930.0	1117.3	1262.3	1378.5	1577.0	7.66
	deep litter system	38.47	125.5	293.5	512.0	693.0	941.0	1134.0	1321.0	1408.0	1514.0	7.41
11	xxxxxx	37.42	121.7	274.5	469.9	674.0	896.9	1085.5	1253.4	1355.8	1586.5	7.55
	cage system	37.34	116.9	273.0	465.7	667.0	909.7	1101.0	1254.7	1348.5	1487.0	7.62
	deep litter system	37.50	126.5	276.0	474.0	681.0	884.0	1070.0	1252.0	1363.0	1686.0	7.47

Mortality in rearing

Tab. No. 3

Page 1

Sample	Cross	Number of pullets			
		Initial flock	Final flock	Mortality	
		birds	birds	birds	%
1	xxxxx	270	261	9	3.33
	cage system	180	173	7	3.89
	deep litter system	90	88	2	2.22
2	xxxxx	270	265	5	1.85
	cage system	180	178	2	1.11
	deep litter system	90	87	3	3.33
3	xxxxx	270	267	3	1.11
	cage system	180	177	3	1.67
	deep litter system	90	90	0	0.00
4	xxxxx	270	262	8	2.96
	cage system	180	175	5	2.78
	deep litter system	90	87	3	3.33
5	xxxxx	270	267	3	1.11
	cage system	180	179	1	0.56
	deep litter system	90	88	2	2.22
6	xxxxx	270	261	9	3.33
	cage system	180	178	2	1.11
	deep litter system	90	83	7	7.78

Mortality in rearing

Tab. No. 3

Page 2

Sample	Cross	Number of pullets			
		Initial flock	Final flock	Mortality	
		birds	birds	birds	%
7	xxxxxx	270	267	3	1.11
	cage system	180	177	3	1.67
	deep litter system	90	90	0	0.00
8	xxxxxx	270	264	6	2.22
	cage system	180	176	4	2.22
	deep litter system	90	88	2	2.22
9	xxxxxx	270	260	10	3.70
	cage system	180	174	6	3.33
	deep litter system	90	86	4	4.44
10	xxxxxx	270	259	11	4.07
	cage system	180	170	10	5.56
	deep litter system	90	89	1	1.11
11	xxxxxx	270	264	6	2.22
	cage system	180	176	4	2.22
	deep litter system	90	88	2	2.22

Results of the egg yield

Tab. No. 4 (page 1)

Sample	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	XXXXX	ø	142	145	150	181	100.00	341.27	87.06	344.24	87.82	64.14	21.89	22.08
		a	139	142	145	173	100.00	341.23	87.05	345.91	88.24	63.61	21.70	22.00
		b	140	143	145	181	100.00	333.65	85.11	337.71	86.15	64.47	21.51	21.77
		c	142	145	145	164	100.00	348.93	89.01	349.04	89.04	64.36	22.46	22.46
2	XXXXX	ø	141	145	149	181	100.00	338.52	86.36	342.01	87.25	63.64	21.54	21.76
		a	140	142	145	174	100.00	338.77	86.42	345.82	88.22	63.58	21.54	21.99
		b	140	144	145	173	100.00	341.72	87.17	342.49	87.37	63.62	21.74	21.79
		c	140	141	143	160	100.00	335.08	85.48	337.75	86.16	63.70	21.35	21.52
3	XXXXX	ø	140	145	150	181	100.00	338.17	86.27	342.46	87.36	63.18	21.37	21.64
		a	141	144	148	174	100.00	335.53	85.60	337.53	86.10	63.58	21.33	21.46
		b	140	141	145	158	100.00	343.38	87.60	344.97	88.00	63.80	21.91	22.01
		c	138	141	142	167	100.00	335.60	85.61	344.94	88.00	62.16	20.86	21.44
4	XXXXX	ø	140	145	149	181	100.00	341.27	87.06	346.93	88.50	61.30	20.92	21.27
		a	140	141	146	161	100.00	340.90	86.96	347.73	88.71	62.27	21.23	21.65
		b	139	142	145	164	100.00	347.05	88.53	347.05	88.53	61.19	21.24	21.24
		c	137	140	144	160	100.00	335.85	85.68	345.99	88.26	60.49	20.32	20.93
5	XXXXX	ø	140	145	149	180	100.00	331.31	84.52	340.15	86.77	61.96	20.53	21.07
		a	139	141	144	159	100.00	336.62	85.87	350.40	89.39	62.20	20.94	21.79
		b	141	143	146	158	100.00	323.55	82.54	328.58	83.82	62.95	20.37	20.68
		c	136	140	141	159	100.00	333.75	85.14	341.73	87.18	60.77	20.28	20.77
6	XXXXX	ø	143	148	156	181	100.00	336.02	85.72	339.84	86.69	64.44	21.65	21.90
		a	140	145	147	161	100.00	330.57	84.33	340.93	86.97	64.30	21.26	21.92
		b	143	145	148	177	100.00	334.63	85.37	335.72	85.64	65.93	22.06	22.13
		c	141	142	144	164	100.00	342.87	87.47	342.90	87.47	63.09	21.63	21.63

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)

Sample	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
7	xxxxxx	ø	140	145	150	181	100.00	334.83	85.42	340.32	86.82	61.11	20.46	20.80
		a	139	144	144	161	100.00	333.30	85.03	340.82	86.94	61.69	20.56	21.02
		b	140	144	143	164	100.00	326.73	83.35	335.56	85.60	61.56	20.12	20.66
		c	136	140	142	159	100.00	344.45	87.87	344.45	87.87	60.09	20.70	20.70
8	xxxxxx	ø	141	145	150	164	100.00	335.13	85.49	346.48	88.39	63.87	21.41	22.13
		a	140	142	145	158	100.00	323.45	82.51	345.19	88.06	64.45	20.85	22.25
		b	144	143	145	164	100.00	335.12	85.49	344.76	87.95	64.61	21.65	22.27
		c	140	143	144	159	100.00	346.82	88.47	349.37	89.13	62.62	21.72	21.88
9	xxxxxx	ø	143	146	150	181	100.00	339.01	86.48	343.03	87.51	63.44	21.51	21.76
		a	139	143	145	159	100.00	337.23	86.03	343.44	87.61	64.09	21.61	22.01
		b	143	147	150	159	100.00	338.67	86.39	343.60	87.65	64.03	21.68	22.00
		c	140	143	146	173	100.00	341.12	87.02	342.05	87.26	62.22	21.22	21.28
10	xxxxxx	ø	141	145	146	174	100.00	343.11	87.53	343.29	87.57	64.56	22.15	22.16
		a	133	140	143	164	100.00	345.05	88.02	345.05	88.02	63.80	22.01	22.01
		b	141	144	145	167	100.00	338.62	86.38	339.14	86.51	65.83	22.29	22.33
		c	133	140	144	167	100.00	345.67	88.18	345.67	88.18	64.06	22.14	22.14
11	xxxxxx	ø	143	146	150	181	100.00	325.02	82.91	337.85	86.19	63.79	20.73	21.55
		a	142	144	145	161	100.00	310.53	79.22	331.37	84.53	63.65	19.76	21.09
		b	142	146	146	173	100.00	324.23	82.71	336.98	85.97	64.70	20.98	21.80
		c	141	143	146	160	100.00	340.30	86.81	344.85	87.97	63.09	21.47	21.76

way of rearing:

a - deep litter + beak trimming

b - cages + non beak trimming

c - cages + beak trimming

Feed consumption

Tab. No. 5 (page 1)

Sample	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	xxxxxx	Ø	51.38	149.26	2.33	131.07
		a	51.10	147.73	2.32	130.36
		b	51.80	153.38	2.38	132.14
		c	51.24	146.80	2.28	130.71
2	xxxxxx	Ø	51.34	150.11	2.36	130.97
		a	51.53	149.00	2.34	131.45
		b	51.29	149.75	2.35	130.83
		c	51.21	151.61	2.38	130.63
3	xxxxxx	Ø	51.52	150.45	2.38	131.43
		a	50.85	150.67	2.37	129.73
		b	51.34	148.83	2.33	130.97
		c	52.39	151.88	2.44	133.65
4	xxxxxx	Ø	51.76	149.18	2.43	132.03
		a	51.59	148.35	2.38	131.60
		b	51.24	147.66	2.41	130.72
		c	52.45	151.61	2.51	133.81
5	xxxxxx	Ø	52.13	153.26	2.47	132.99
		a	52.27	149.19	2.40	133.35
		b	52.00	158.24	2.51	132.64
		c	52.13	152.55	2.51	132.99
6	xxxxxx	Ø	51.71	152.16	2.36	131.92
		a	52.16	152.99	2.38	133.06
		b	51.79	154.27	2.34	132.12
		c	51.20	149.31	2.37	130.61

way of rearing:

a - deep litter + beak trimming

b - cages + non beak trimming

c - cages + beak trimming

Feed consumption
Tab. No. 5 (page 2)

Sample	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
7	xxxxxx	ø	51.99	152.77	2.50	132.63
		a	51.78	151.92	2.46	132.08
		b	52.93	157.72	2.56	135.02
		c	51.29	148.91	2.48	130.84
8	xxxxxx	ø	52.57	151.73	2.38	134.11
		a	53.28	154.34	2.39	135.91
		b	52.72	152.93	2.37	134.50
		c	51.76	148.14	2.37	132.03
9	xxxxxx	ø	51.57	150.33	2.37	131.55
		a	51.32	149.42	2.33	130.91
		b	52.19	151.90	2.37	133.15
		c	51.20	149.68	2.41	130.61
10	xxxxxx	ø	50.96	148.44	2.30	129.99
		a	50.47	146.27	2.29	128.75
		b	51.47	151.77	2.31	131.30
		c	50.93	147.33	2.30	129.92
11	xxxxxx	ø	52.74	156.11	2.45	134.55
		a	53.11	160.28	2.52	135.49
		b	53.11	157.62	2.44	135.49
		c	52.03	150.88	2.39	132.73

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)

Sample	Cross		Live weight (g)					
	Way of rearing		week 20	week 22	week 24	week 26	week 30	final live weight
1	xxxxxx	ø	1852.0	1870.3	1938.7	1913.0	1973.3	2197.4
		a	1825	1766	1929	1912	1917	2144.5
		b	1927	1937	2014	1901	2018	2142.1
		c	1804	1908	1873	1926	1985	2301.9
2	xxxxxx	ø	1846.7	1925.7	1877.3	1922.7	2014.0	2195.6
		a	1846	1872	1899	1940	2082	2164.3
		b	1852	1968	1861	1942	2019	2167.8
		c	1842	1937	1872	1886	1941	2254.7
3	xxxxxx	ø	1851.0	1901.0	1830.7	1966.3	1976.0	2295.0
		a	1857	1901	1802	2020	1960	2266.3
		b	1909	1952	1927	2031	2002	2348.1
		c	1787	1850	1763	1848	1966	2269.5
4	xxxxxx	ø	1827.3	1845.7	1866.3	1904.3	1964.0	2231.5
		a	1838	1823	1867	1980	2016	2267.5
		b	1852	1869	1920	1884	1945	2223.3
		c	1792	1845	1812	1849	1931	2204.1
5	xxxxxx	ø	1767.3	1825.0	1815.3	1871.7	1874.7	2133.7
		a	1744	1758	1708	1876	1823	2089.0
		b	1818	1861	1900	1918	1921	2174.1
		c	1740	1856	1838	1821	1880	2135.7
6	xxxxxx	ø	1820.3	1934.7	1884.3	1949.7	1976.7	2277.3
		a	1820	2061	1858	1914	1953	2211.8
		b	1861	1943	1944	2026	2012	2252.5
		c	1780	1800	1851	1909	1965	2362.4

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)

Sample	Cross		Live weight (g)					
	Way of rearing		week 20	week 22	week 24	week 26	week 30	final live weight
7	xxxxxx	ø	1702.3	1787.0	1756.3	1751.7	1780.3	2118.1
		a	1685	1802	1814	1700	1731	2131.2
		b	1696	1773	1737	1775	1790	2081.8
		c	1726	1786	1718	1780	1820	2141.3
8	xxxxxx	ø	1855.7	1929.7	1879.3	1938.3	2029.3	2254.3
		a	1818	1869	1839	1976	2015	2281.0
		b	1901	1926	1867	1892	1991	2186.0
		c	1848	1994	1932	1947	2082	2295.2
9	xxxxxx	ø	1779.0	1832.0	1850.3	1847.0	1934.7	2185.6
		a	1791	1847	1863	1882	2022	2234.1
		b	1787	1851	1918	1802	1838	2133.7
		c	1759	1798	1770	1857	1944	2190.6
10	xxxxxx	ø	1823.3	1885.7	1897.7	1938.0	2002.7	2203.3
		a	1811	1872	1909	1892	1996	2166.1
		b	1878	1939	1946	2017	2062	2201.2
		c	1781	1846	1838	1905	1950	2242.6
11	xxxxxx	ø	1787.3	1813.3	1807.7	1858.7	1901.3	2179.7
		a	1799	1826	1935	1875	1902	2164.1
		b	1841	1860	1733	1834	1939	2157.0
		c	1722	1754	1755	1867	1863	2215.7

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)

Sample	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	%															
1	xxxxx	ø	180	173	7	3.89									4		3				
		a	60	58	2	3.33									2						
		b	60	56	4	6.67									2		2				
		c	60	59	1	1.67											1				
2	xxxxx	ø	180	171	9	5.00									6	1	2				
		a	60	55	5	8.33									4	1					
		b	60	59	1	1.67									1						
		c	60	57	3	5.00									1		2				
3	xxxxx	ø	180	172	8	4.44									4		4				
		a	60	58	2	3.33									1		1				
		b	60	58	2	3.33									2						
		c	60	56	4	6.67									1		3				
4	xxxxx	ø	180	176	4	2.22									2		2				
		a	60	58	2	3.33									2						
		b	60	60	0	0.00															
		c	60	58	2	3.33											2				
5	xxxxx	ø	180	170	10	5.56									8		2				
		a	60	55	5	8.33									4		1				
		b	60	58	2	3.33									1		1				
		c	60	57	3	5.00									3						
6	xxxxx	ø	180	171	9	5.00	1								2	1	5				
		a	60	55	5	8.33	1								1		3				
		b	60	57	3	5.00									1	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

Mortality and it's causes
Tab. No. 7 (page 2)

Sample	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	%															
7	XXXXXX	ø	180	172	8	4.44									3		2	2		1	
		a	60	54	6	10.00									3		2			1	
		b	60	58	2	3.33												2			
		c	60	60	0	0.00															
8	XXXXXX	ø	180	168	12	6.67									8		4				
		a	60	53	7	11.67									5		2				
		b	60	56	4	6.67									3		1				
		c	60	59	1	1.67											1				
9	XXXXXX	ø	180	175	5	2.78									4					1	
		a	60	57	3	5.00									2					1	
		b	60	59	1	1.67									1						
		c	60	59	1	1.67									1						
10	XXXXXX	ø	180	178	2	1.11											2				
		a	60	60	0	0.00															
		b	60	58	2	3.33											2				
		c	60	60	0	0.00															
11	XXXXXX	ø	180	170	10	5.56									7		3				
		a	60	55	5	8.33									2		3				
		b	60	56	4	6.67									4						
		c	60	59	1	1.67									1						

way of rearing:

a - deep litter + beak trimming

b - cages + non beak trimming

c - cages + beak trimming

Second quality eggs

Tab. No. 8 (page 1)

Sample	Cross		Eggs laid	Cracked		Broken eggs		Double-yolked		Membranes		Nonstandard together	
	Way of rearing		number	number	%	number	%	number	%	number	%	number	%
1	XXXXX	ø	61429	2104	3.43	1209	1.97	0	0.00	165	0.27	3478	5.66
		a	20474	711	3.47	445	2.17	0	0.00	57	0.28	1213	5.92
		b	20019	688	3.44	399	1.99	0	0.00	50	0.25	1137	5.68
		c	20936	705	3.37	365	1.74	0	0.00	58	0.28	1128	5.39
2	XXXXX	ø	60934	2509	4.12	1297	2.13	8	0.01	238	0.39	4052	6.65
		a	20326	910	4.48	455	2.24	4	0.02	72	0.35	1441	7.09
		b	20503	795	3.88	423	2.06	1	0.00	71	0.35	1290	6.29
		c	20105	804	4.00	419	2.08	3	0.01	95	0.47	1321	6.57
3	XXXXX	ø	60871	2373	3.90	1362	2.24	10	0.02	258	0.42	4003	6.58
		a	20132	848	4.21	480	2.38	4	0.02	64	0.32	1396	6.93
		b	20603	758	3.68	409	1.99	0	0.00	81	0.39	1248	6.06
		c	20136	767	3.81	473	2.35	6	0.03	113	0.56	1359	6.75
4	XXXXX	ø	61428	2212	3.60	1241	2.02	0	0.00	288	0.47	3741	6.09
		a	20454	714	3.49	392	1.92	0	0.00	78	0.38	1184	5.79
		b	20823	764	3.67	432	2.07	0	0.00	89	0.43	1285	6.17
		c	20151	734	3.64	417	2.07	0	0.00	121	0.60	1272	6.31
5	XXXXX	ø	59635	2434	4.08	1269	2.13	11	0.02	259	0.43	3973	6.66
		a	20197	864	4.28	425	2.10	8	0.04	99	0.49	1396	6.91
		b	19413	794	4.09	423	2.18	2	0.01	91	0.47	1310	6.75
		c	20025	776	3.88	421	2.10	1	0.00	69	0.34	1267	6.33
6	XXXXX	ø	60484	2290	3.79	1165	1.93	6	0.01	263	0.43	3724	6.16
		a	19834	824	4.15	414	2.09	1	0.01	95	0.48	1334	6.73
		b	20078	769	3.83	417	2.08	4	0.02	91	0.45	1281	6.38
		c	20572	697	3.39	334	1.62	1	0.00	77	0.37	1109	5.39

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)

Sample	Cross		Eggs laid	Cracked		Broken eggs		Double-yolked		Membranes		Nonstandard together	
	Way of rearing		number	number	%	number	%	number	%	number	%	number	%
7	xxxxx	ø	60269	2482	4.12	1187	1.97	7	0.01	261	0.43	3937	6.53
		a	19998	885	4.43	380	1.90	7	0.04	86	0.43	1358	6.79
		b	19604	851	4.34	427	2.18	0	0.00	107	0.55	1385	7.06
		c	20667	746	3.61	380	1.84	0	0.00	68	0.33	1194	5.78
8	xxxxx	ø	60323	2173	3.60	1169	1.94	1	0.00	215	0.36	3558	5.90
		a	19407	732	3.77	362	1.87	0	0.00	62	0.32	1156	5.96
		b	20107	692	3.44	362	1.80	1	0.00	82	0.41	1137	5.65
		c	20809	749	3.60	445	2.14	0	0.00	71	0.34	1265	6.08
9	xxxxx	ø	61021	2118	3.47	1235	2.02	13	0.02	205	0.34	3571	5.85
		a	20234	739	3.65	444	2.19	10	0.05	80	0.40	1273	6.29
		b	20320	651	3.20	350	1.72	2	0.01	55	0.27	1058	5.21
		c	20467	728	3.56	441	2.15	1	0.00	70	0.34	1240	6.06
10	xxxxx	ø	61760	2412	3.91	1256	2.03	7	0.01	221	0.36	3896	6.31
		a	20703	817	3.95	415	2.00	2	0.01	103	0.50	1337	6.46
		b	20317	792	3.90	409	2.01	2	0.01	67	0.33	1270	6.25
		c	20740	803	3.87	432	2.08	3	0.01	51	0.25	1289	6.22
11	xxxxx	ø	58504	2191	3.75	1123	1.92	4	0.01	157	0.27	3475	5.94
		a	18632	753	4.04	378	2.03	1	0.01	57	0.31	1189	6.38
		b	19454	706	3.63	362	1.86	1	0.01	43	0.22	1112	5.72
		c	20418	732	3.59	383	1.88	2	0.01	57	0.28	1174	5.75

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)

Sample	Cross		Egg weight	XL	L	M	S
				(= > 73 g)	(63 - 73 g)	(53 - 63 g)	(= < 53 g)
	Way of rearing		g	%	%	%	%
1	xxxxxx	ø	64.14	8.55	50.96	39.11	1.39
		a	63.61	6.75	48.02	44.52	0.71
		b	64.47	7.64	56.22	34.72	1.42
		c	64.36	11.13	48.90	37.96	2.01
2	xxxxxx	ø	63.64	7.74	49.24	41.24	1.78
		a	63.58	7.48	47.41	43.65	1.46
		b	63.62	8.11	49.93	39.59	2.37
		c	63.70	7.62	50.34	40.57	1.46
3	xxxxxx	ø	63.18	7.02	43.92	47.67	1.38
		a	63.58	7.24	47.95	44.10	0.72
		b	63.80	8.53	46.83	43.20	1.44
		c	62.16	5.26	36.93	55.82	1.99
4	xxxxxx	ø	61.30	2.44	35.38	58.61	3.56
		a	62.27	2.54	42.25	53.11	2.09
		b	61.19	2.79	35.11	57.22	4.88
		c	60.49	2.00	28.76	65.53	3.70
5	xxxxxx	ø	61.96	3.97	39.83	53.38	2.82
		a	62.20	3.49	41.95	51.64	2.92
		b	62.95	5.34	47.49	44.93	2.24
		c	60.77	3.12	30.40	63.20	3.28
6	xxxxxx	ø	64.44	10.16	52.36	36.06	1.42
		a	64.30	8.41	53.06	37.95	0.59
		b	65.93	15.37	55.43	27.69	1.52
		c	63.09	6.62	48.63	42.62	2.12

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)

Sample	Cross		Egg weight	XL	L	M	S
				(= > 73 g)	(63 - 73 g)	(53 - 63 g)	(= < 53 g)
	Way of rearing		g	%	%	%	%
7	xxxxxx	ø	61.11	2.33	32.32	62.67	2.68
		a	61.69	1.97	34.99	61.89	1.14
		b	61.56	3.97	36.33	56.27	3.44
		c	60.09	1.12	25.86	69.57	3.45
8	xxxxxx	ø	63.87	6.42	54.27	38.18	1.13
		a	64.45	6.36	59.54	33.14	0.97
		b	64.61	9.88	56.25	32.81	1.05
		c	62.62	3.03	47.47	48.16	1.34
9	xxxxxx	ø	63.44	6.07	48.36	44.10	1.46
		a	64.09	7.46	52.72	38.58	1.24
		b	64.03	8.03	50.67	39.81	1.49
		c	62.22	2.78	41.88	53.70	1.64
10	xxxxxx	ø	64.56	10.70	53.24	35.11	0.95
		a	63.80	9.01	48.48	41.12	1.39
		b	65.83	15.40	56.30	27.79	0.51
		c	64.06	7.72	54.86	36.47	0.95
11	xxxxxx	ø	63.79	7.30	51.90	39.60	1.20
		a	63.65	5.92	54.43	38.80	0.85
		b	64.70	10.34	53.44	35.54	0.69
		c	63.09	5.67	48.23	44.11	1.99

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
								L	a	b	Roche	L	a	b	
		g	g	N		mm									
1	xxxxxx	66.62	17.93	51.14	1.29	0.37	93.23	-10.33	4.3	4.4	15.13	56.13	23.5	31.5	1
2	xxxxxx	66.12	18.19	50.34	1.28	0.37	94.33	-11.48	4.1	4.2	15.17	57.27	22.9	31.1	0
3	xxxxxx	64.20	17.53	45.85	1.26	0.37	99.18	-11.57	4.2	4.2	15.18	61.28	20.6	31.0	1
4	xxxxxx	63.31	18.17	50.57	1.28	0.37	94.97	-10.62	4.5	5.0	14.78	57.72	22.6	31.6	0
5	xxxxxx	63.32	17.24	47.45	1.28	0.37	94.28	-11.22	4.3	4.5	15.03	58.55	21.4	29.6	0
6	xxxxxx	66.38	17.24	45.96	1.27	0.38	99.58	-10.43	4.4	5.0	14.68	59.72	20.3	30.3	0
7	xxxxxx	63.42	18.19	43.26	1.30	0.35	99.90	-10.25	4.1	5.2	14.55	82.57	6.1	16.8	0
8	xxxxxx	65.82	17.61	45.40	1.26	0.37	97.13	-11.65	4.1	4.1	15.32	55.62	22.8	30.4	0
9	xxxxxx	65.83	17.28	46.66	1.26	0.37	94.40	-11.58	3.5	3.4	15.50	56.23	22.3	29.7	0
10	xxxxxx	67.18	17.48	49.61	1.27	0.38	95.77	-10.32	4.1	5.2	14.52	56.82	21.9	30.3	0
11	xxxxxx	64.94	17.18	45.24	1.27	0.37	98.33	-11.15	4.3	4.5	15.12	58.13	21.2	30.0	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

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
								L	a	b	Roche	L	a	b	
		g	g	N		mm									
1	xxxxxx	65.05	17.76	48.18	1.30	0.37	91.08	-10.40	4.2	5.1	14.57	57.48	22.4	31.0	0
2	xxxxxx	64.61	17.84	46.28	1.30	0.35	93.00	-10.63	4.1	5.0	14.52	58.90	21.6	30.6	1
3	xxxxxx	63.95	17.80	44.21	1.28	0.37	96.77	-10.42	4.0	5.0	14.42	61.62	19.9	30.3	0
4	xxxxxx	61.64	17.89	47.70	1.29	0.37	93.58	-10.30	4.2	5.1	14.52	59.07	21.7	31.3	0
5	xxxxxx	62.93	17.44	42.17	1.30	0.35	95.58	-10.87	4.0	4.7	14.73	59.93	20.0	29.5	0
6	xxxxxx	66.01	17.65	42.98	1.28	0.37	98.68	-10.40	4.2	4.7	14.87	60.80	19.5	30.2	0
7	xxxxxx	62.25	17.98	42.23	1.32	0.35	98.93	-10.05	3.9	5.3	14.10	83.85	5.7	16.6	0
8	xxxxxx	65.55	18.15	43.50	1.27	0.37	95.38	-11.75	4.0	3.9	15.27	56.27	22.5	31.0	0
9	xxxxxx	64.43	17.19	44.87	1.27	0.37	95.15	-11.67	3.8	4.0	15.10	57.15	22.0	30.6	0
10	xxxxxx	65.71	17.60	45.13	1.28	0.38	93.25	-10.37	4.3	5.2	14.52	58.80	20.9	30.6	0
11	xxxxxx	64.80	17.30	44.31	1.28	0.38	97.22	-11.05	3.9	4.5	14.90	59.22	20.7	30.0	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

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	xxxxxx	66.24	17.80	42.40	1.31	0.37	92.12	-10.97	4.2	4.6	14.77	58.03	20.8	30.2	0
2	xxxxxx	65.67	18.07	41.59	1.31	0.36	92.30	-11.57	3.8	4.1	15.02	59.08	20.0	29.7	0
3	xxxxxx	66.11	18.19	37.97	1.29	0.36	96.28	-12.10	3.5	3.6	15.35	60.97	19.1	29.5	1
4	xxxxxx	62.67	17.79	42.98	1.30	0.37	94.00	-11.12	3.9	4.5	14.73	59.38	20.1	29.9	0
5	xxxxxx	63.97	18.02	38.79	1.30	0.35	93.93	-12.20	3.5	3.5	15.42	60.53	19.6	29.8	0
6	xxxxxx	65.58	18.00	37.05	1.30	0.36	97.12	-11.08	3.7	4.2	15.02	61.93	18.7	29.8	0
7	xxxxxx	63.00	18.62	34.60	1.32	0.34	97.53	-10.83	3.3	4.1	14.85	83.77	5.5	15.3	0
8	xxxxxx	66.20	18.85	36.54	1.28	0.35	95.03	-12.23	3.5	3.4	15.35	56.68	21.8	30.3	0
9	xxxxxx	65.99	18.95	37.00	1.29	0.35	91.53	-12.00	3.1	3.5	15.18	58.23	21.8	31.0	0
10	xxxxxx	66.76	18.56	40.01	1.30	0.37	89.50	-10.33	4.0	5.1	14.42	59.30	21.0	30.7	1
11	xxxxxx	66.07	18.49	41.46	1.30	0.38	92.52	-11.40	3.8	4.0	15.03	60.35	20.6	30.4	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	xxxxx	ø	39.38	92.02	93.39	93.12	93.00	93.08	92.44	93.17	91.63	88.25	90.91	88.87	86.61	82.96
		a	42.98	91.01	93.69	91.31	92.98	92.56	92.20	93.33	90.89	87.08	90.18	87.80	86.25	86.43
		b	39.76	90.71	91.55	93.15	92.02	91.37	91.13	90.83	90.06	87.56	89.94	87.20	81.43	74.88
		c	35.42	94.35	94.94	94.88	93.99	95.30	93.99	95.36	93.93	90.12	92.62	91.61	92.14	87.56
2	xxxxx	ø	41.57	93.19	91.43	92.14	91.25	92.90	91.27	91.61	90.60	87.74	89.94	87.22	85.44	82.72
		a	42.44	92.56	91.73	92.08	92.38	93.99	91.25	92.50	91.31	87.50	90.18	86.73	84.29	80.95
		b	38.75	92.62	90.89	92.50	91.79	92.86	92.56	93.81	92.80	88.87	91.31	89.17	87.02	85.48
		c	43.51	94.40	91.67	91.85	89.58	91.85	90.00	88.51	87.68	86.85	88.33	85.77	85.00	81.73
3	xxxxx	ø	41.94	91.69	92.82	92.42	92.08	92.20	91.33	91.25	90.00	87.54	90.34	87.54	84.31	82.30
		a	37.44	91.67	93.27	93.27	92.56	92.86	91.61	91.96	89.58	86.43	87.98	85.06	83.10	81.55
		b	42.74	91.90	92.80	91.73	92.74	92.56	92.02	92.62	92.20	89.46	92.92	91.79	87.80	83.10
		c	45.65	91.49	92.38	92.26	90.95	91.19	90.36	89.17	88.21	86.73	90.12	85.77	82.02	82.26
4	xxxxx	ø	42.54	93.15	92.32	91.65	91.63	92.10	91.29	91.23	90.89	89.19	91.96	88.95	87.40	84.50
		a	39.76	94.46	92.98	92.74	92.62	92.02	91.01	91.31	89.88	88.93	91.37	88.63	87.14	84.64
		b	43.39	92.98	92.98	92.26	93.81	94.17	93.33	93.45	93.45	91.37	93.27	90.48	88.10	86.43
		c	44.46	92.02	91.01	89.94	88.45	90.12	89.52	88.93	89.35	87.26	91.25	87.74	86.96	82.44
5	xxxxx	ø	42.66	93.06	90.95	90.79	89.56	89.46	89.72	89.05	86.25	85.83	87.88	83.99	83.43	80.60
		a	45.24	94.40	93.45	92.14	89.88	91.79	90.77	90.60	86.85	88.45	88.75	85.65	83.81	80.42
		b	35.83	91.43	88.39	88.10	88.10	86.01	87.02	87.26	85.30	85.42	87.26	83.10	81.90	80.42
		c	46.90	93.33	91.01	92.14	90.71	90.60	91.37	89.29	86.61	83.63	87.62	83.21	84.58	80.95
6	xxxxx	ø	35.73	91.94	92.26	93.06	92.06	91.33	91.94	90.56	89.40	87.06	90.44	87.98	86.29	80.02
		a	37.02	92.86	93.21	93.87	92.26	90.42	89.58	89.11	86.01	84.23	86.85	84.82	82.38	77.98
		b	31.19	90.18	91.01	91.43	91.31	91.19	93.57	89.94	90.48	88.33	92.14	89.94	86.79	77.62
		c	38.99	92.80	92.56	93.87	92.62	92.38	92.68	92.62	91.73	88.63	92.32	89.17	89.70	84.46

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
7	xxxxxx	ø	40.58	93.33	92.92	91.51	91.03	89.90	89.86	89.88	87.72	85.85	91.29	84.37	84.76	82.82
		a	42.50	92.14	92.44	92.44	90.83	91.73	90.18	90.54	88.10	85.48	88.21	82.38	81.79	81.61
		b	35.48	92.08	92.26	88.21	88.69	85.65	87.74	87.38	84.88	84.29	91.01	84.05	84.11	81.07
		c	43.75	95.77	94.05	93.87	93.57	92.32	91.67	91.73	90.18	87.80	94.64	86.67	88.39	85.77
8	xxxxxx	ø	41.15	93.81	91.96	91.92	91.57	91.03	90.16	89.78	87.84	86.21	88.39	85.52	85.24	82.30
		a	43.45	92.50	91.79	89.88	89.94	89.40	87.44	85.95	83.39	81.67	83.27	79.11	79.23	78.15
		b	37.62	95.24	91.37	91.79	90.89	90.48	89.29	89.52	88.51	88.04	89.64	86.55	86.61	81.31
		c	42.38	93.69	92.74	94.11	93.87	93.21	93.75	93.87	91.61	88.93	92.26	90.89	89.88	87.44
9	xxxxxx	ø	35.87	91.49	92.14	91.92	90.89	92.88	91.88	92.68	92.12	89.54	91.92	88.17	86.31	82.90
		a	42.38	91.73	92.92	92.50	89.70	91.90	90.06	92.02	90.54	87.62	91.25	86.73	83.99	81.07
		b	29.40	92.08	90.77	91.01	90.83	92.86	92.62	93.21	93.81	89.76	92.02	88.93	88.75	83.45
		c	35.83	90.65	92.74	92.26	92.14	93.87	92.98	92.80	92.02	91.25	92.50	88.87	86.19	84.17
10	xxxxxx	ø	45.08	93.35	93.00	92.76	92.06	92.66	92.34	92.34	91.45	89.23	91.87	89.17	87.60	82.50
		a	51.13	92.68	92.62	92.50	91.31	91.55	91.19	92.20	90.24	88.10	93.15	90.12	90.60	84.94
		b	37.32	93.21	94.64	93.63	92.56	93.57	92.50	91.67	91.85	88.27	89.88	87.32	83.93	78.99
		c	46.79	94.17	91.73	92.14	92.32	92.86	93.33	93.15	92.26	91.31	92.56	90.06	88.27	83.57
11	xxxxxx	ø	38.02	93.12	90.54	89.11	88.25	88.10	88.08	87.28	85.83	83.81	85.97	82.64	81.29	78.77
		a	40.83	93.33	87.68	85.89	81.43	83.57	83.81	81.67	79.94	78.21	82.56	76.73	77.68	75.71
		b	32.68	92.20	92.50	90.42	91.19	88.04	88.21	88.75	87.14	83.27	84.82	82.08	79.52	77.14
		c	40.54	93.81	91.43	91.01	92.14	92.68	92.20	91.43	90.42	89.94	90.54	89.11	86.67	83.45

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)

Sample	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	xxxxx	ø	51.80	57.95	62.47	63.46	64.95	65.49	66.41	65.42	65.75	64.66	65.39	65.67	66.02	65.88
		a	51.63	58.63	61.55	62.81	64.20	64.94	65.72	64.38	64.97	64.06	65.00	65.33	65.75	65.47
		b	51.92	57.53	62.52	63.55	65.23	65.50	66.42	65.90	66.35	65.24	66.24	66.43	66.36	67.10
		c	51.88	57.67	63.33	63.96	65.40	65.99	67.07	66.02	65.90	64.64	64.97	65.38	65.99	65.19
2	xxxxx	ø	51.44	57.86	61.56	63.28	64.32	65.42	66.01	65.02	65.05	63.93	64.91	65.31	65.44	65.21
		a	51.71	59.09	62.05	63.16	64.32	65.35	65.97	64.44	64.77	63.45	64.40	65.17	65.45	64.80
		b	51.48	56.92	61.39	63.69	64.52	65.39	65.62	64.91	65.37	63.24	65.10	65.54	65.42	65.36
		c	51.14	57.58	61.25	62.96	64.10	65.50	66.47	65.73	65.00	65.10	65.21	65.21	65.45	65.45
3	xxxxx	ø	53.26	57.73	61.33	62.65	64.22	64.31	65.08	64.17	64.82	63.53	64.27	64.45	64.92	64.91
		a	53.14	59.02	61.87	63.40	64.84	64.66	65.40	64.44	65.10	63.15	64.49	64.86	64.97	65.04
		b	54.18	57.80	61.90	62.97	65.09	64.72	65.16	64.94	65.85	64.06	64.81	65.17	66.34	65.36
		c	52.46	56.39	60.20	61.52	62.75	63.57	64.70	63.17	63.36	63.36	63.49	63.29	63.41	64.32
4	xxxxx	ø	50.58	55.64	59.59	60.85	62.05	62.74	63.34	62.94	62.37	61.74	62.57	62.73	62.94	62.69
		a	50.33	56.73	60.57	62.41	63.10	63.91	64.47	64.62	62.82	62.88	62.89	63.49	63.93	63.31
		b	50.68	54.88	59.74	60.06	62.17	62.38	62.74	63.05	62.55	61.22	62.55	63.31	63.16	62.86
		c	50.71	55.25	58.45	60.06	60.86	61.94	62.88	62.00	61.75	61.13	62.26	61.36	61.70	61.90
5	xxxxx	ø	50.44	55.96	59.87	61.26	61.90	63.14	63.53	63.28	63.51	63.10	63.75	63.98	64.22	64.36
		a	50.77	57.28	60.33	61.87	62.82	63.24	63.38	63.33	63.38	63.97	63.33	63.86	64.15	64.13
		b	50.89	56.77	60.41	62.28	63.27	63.73	64.43	64.03	64.37	63.56	65.37	65.31	65.37	65.25
		c	49.77	53.87	58.92	59.75	59.60	62.45	62.83	62.56	62.82	61.65	62.62	62.86	63.17	63.74
6	xxxxx	ø	53.43	59.28	62.71	63.79	64.49	65.56	66.82	65.38	65.86	64.84	65.70	65.94	66.11	65.98
		a	53.50	60.18	62.91	64.04	65.79	65.07	66.28	65.40	65.32	64.63	65.19	65.04	65.12	65.98
		b	52.89	59.88	63.57	64.78	65.94	66.82	68.24	66.60	67.91	66.94	67.46	67.93	68.14	67.63
		c	53.80	57.65	61.65	62.52	61.75	64.78	65.99	64.22	64.23	62.77	64.52	64.76	65.00	64.50

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

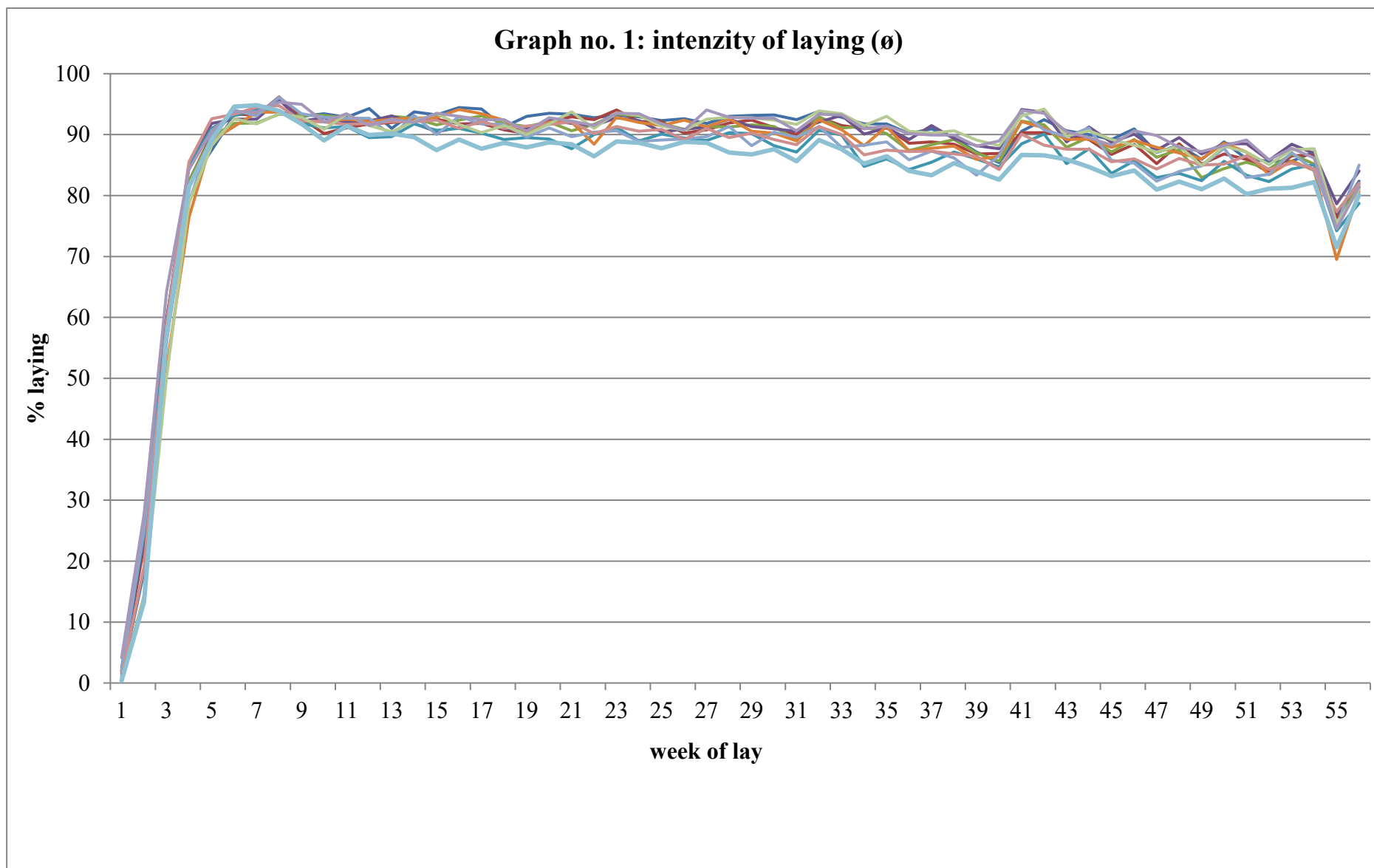
Average weight of eggs

Tab. No. 12 (page 2)

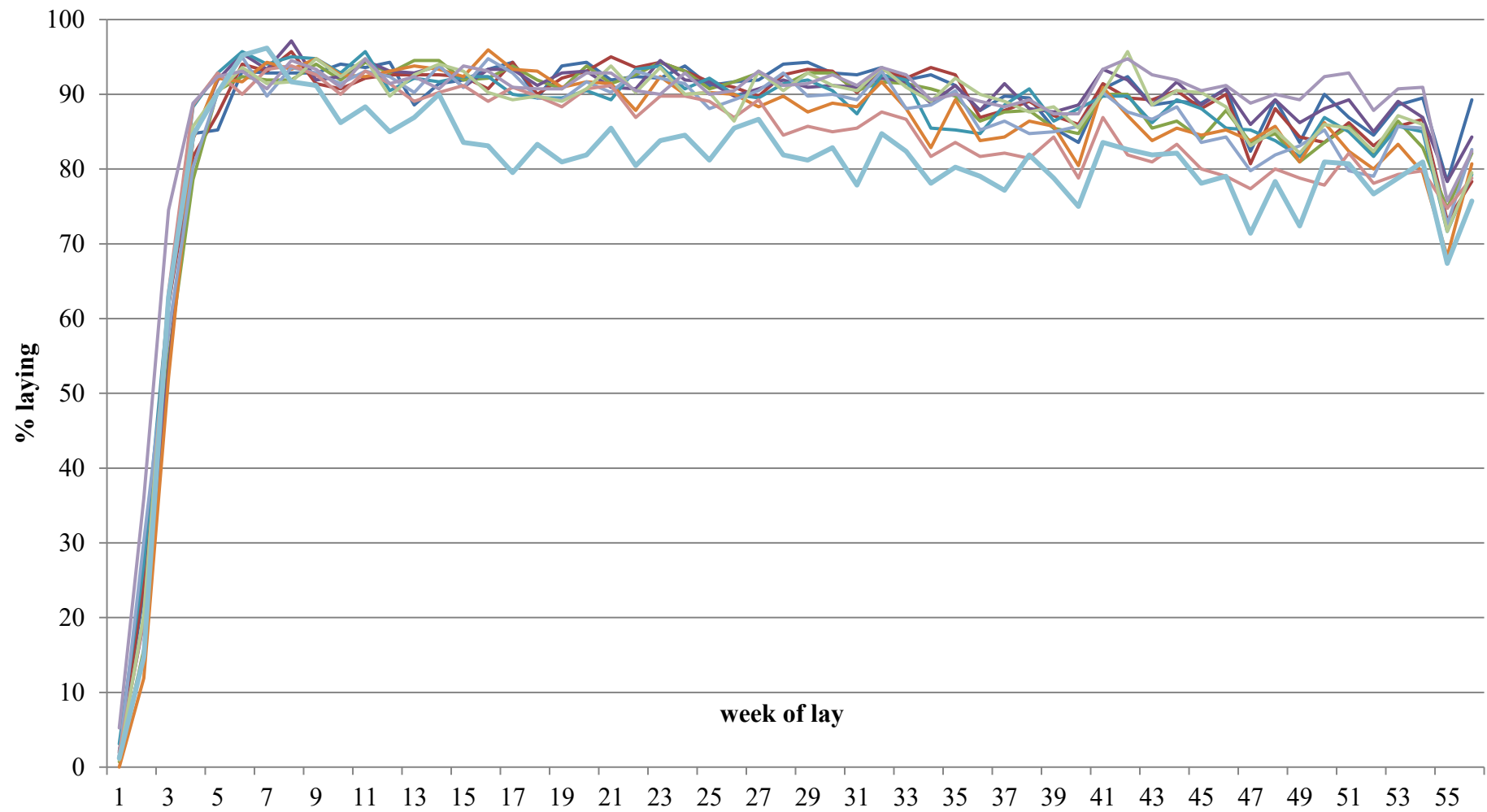
in four weeks long periods (g)

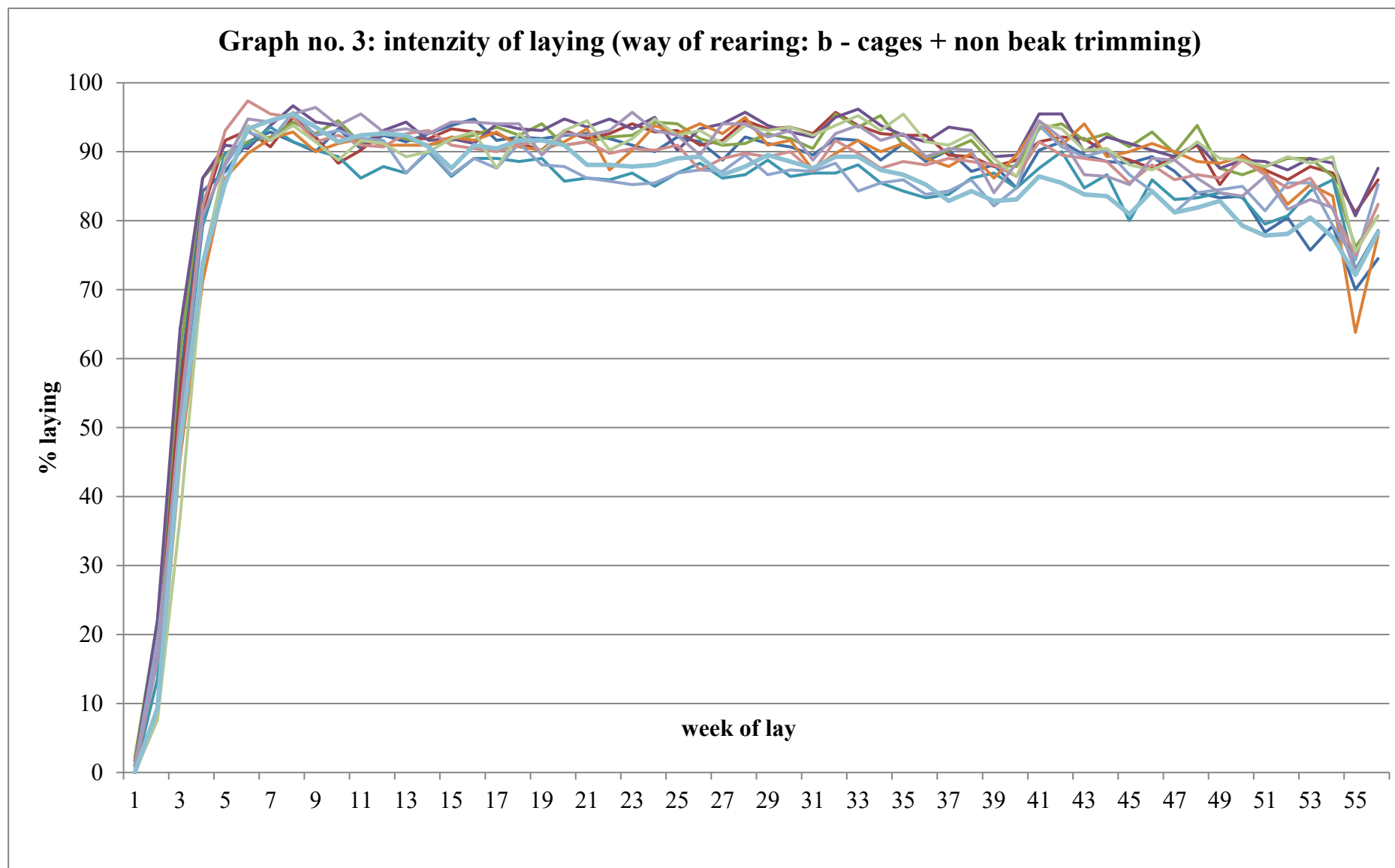
Sample	Cross		Period													
	Way of rearing		1	2	3	4	5	6	7	8	9	10	11	12	13	14
7	xxxxxx	ø	51.08	55.35	59.52	60.67	62.05	62.08	63.50	62.09	62.46	60.80	62.08	62.88	63.04	63.11
		a	51.54	56.90	60.13	61.63	63.24	63.22	63.40	61.96	62.69	61.55	62.55	63.04	63.41	63.60
		b	50.94	55.21	59.68	60.90	62.03	62.37	64.18	62.51	63.24	60.88	63.20	64.18	63.59	63.41
		c	50.75	54.04	58.79	59.49	60.88	60.51	63.01	61.60	61.40	60.00	60.48	61.46	62.19	62.38
8	xxxxxx	ø	52.28	57.91	61.50	63.35	64.21	65.18	66.30	65.74	65.72	64.66	65.00	65.66	65.68	65.43
		a	52.46	58.51	61.79	64.40	65.69	66.55	66.97	66.71	66.17	65.78	65.15	65.41	65.39	66.23
		b	52.14	58.39	62.21	63.76	63.90	65.58	66.88	66.35	66.64	65.20	66.30	67.22	67.14	66.40
		c	52.23	56.77	60.51	62.05	63.08	63.44	65.13	64.25	64.41	63.16	63.53	64.42	64.56	63.66
9	xxxxxx	ø	52.52	57.61	61.45	62.74	63.80	64.82	65.92	64.09	64.84	63.36	64.68	65.17	65.83	64.94
		a	53.20	58.08	62.53	63.70	64.87	65.83	66.86	64.94	66.04	63.29	65.13	66.07	66.24	65.16
		b	52.18	58.11	61.30	62.65	64.20	65.64	66.20	64.51	65.42	64.01	65.20	66.16	66.60	66.45
		c	52.08	56.60	60.52	61.95	62.32	63.02	64.76	62.87	63.03	62.84	63.74	63.33	64.65	63.29
10	xxxxxx	ø	52.55	58.68	63.00	63.70	65.08	66.05	66.40	65.79	66.26	65.57	66.37	66.32	66.47	65.93
		a	52.59	58.65	62.94	63.01	64.51	65.60	65.86	64.97	65.95	63.99	65.24	65.28	65.88	63.97
		b	53.48	59.52	64.14	64.76	66.04	66.69	67.11	67.20	67.67	66.88	67.74	68.16	67.79	67.89
		c	51.68	57.84	61.90	63.31	64.68	65.90	66.20	65.19	65.14	65.76	66.12	65.63	65.78	65.92
11	xxxxxx	ø	52.28	57.50	61.85	63.39	64.43	65.48	66.25	64.92	65.44	64.01	65.36	65.64	65.27	65.68
		a	52.42	57.19	61.21	63.80	64.58	65.40	66.40	64.87	65.88	63.15	65.08	65.32	65.47	66.05
		b	53.00	58.37	62.80	63.54	65.16	66.36	66.69	66.33	66.03	65.15	66.22	67.08	66.18	66.50
		c	51.56	56.91	61.50	62.90	63.53	64.79	65.71	63.65	64.49	63.71	64.87	64.67	64.27	64.69

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



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





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

