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OPTIPOULTRY FM

Přírodní mikroživiny pro vyšší užitkovost nosnic

Výsledky testu na farmě v Miquel Avícola - Spain- (duben 2009 – září 2009) Salt Dalmau Farm (Granja Robert)

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Parametry testu:

- Farma: SALT – DALMAU (Granja Robert)
- Region: Banyoles, Catalonia (Spain).
- OPTIPOULTRY FM byl podáván od 3-tího týdne snášky
- Počet nosnic na začátku testu: 7.810 ks

PŘEDMĚT TESTU: byl sledován vliv mikrovýživy pro nosnice prostřednictvím OPTIPOULTRY FM od **H.U. HOFMANN AG (HOKOVIT)** na následující produkční parametry:

- Snáškovost
- Stabilita snášky.
- Velikost vajec a jejich klasifikace
- Ekonomika farmy

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Dosažené výsledky a zlepšení

skupina OPTIPOULTRY FM				KONTROLNÍ SKUPINA				ZLEPŠENÍ
Týden věku	Datum	Týden snášky	Snáškovost (%)	Týden věku	Datum	Týden snášky	Snáškovost (%)	
25	20/04 a 26/04	6	82,78	25	06/04 a 12/04	6	83,05	**-0,33%**
26	27/04 a 03/05	7	89,90	26	13/04 a 19/04	7	85,89	**4,67%**
27	04/05 a 10/05	8	96,24	27	20/04 a 26/04	8	87,41	**10,10%**
28	11/05 a 17/05	9	94,88	28	27/04 a 03/05	9	88,53	**7,17%**
29	18/05 a 24/05	10	97,00	29	04/05 a 10/05	10	87,63	**10,69%**
30	25/05 a 31/05	11	95,50	30	11/05 a 17/05	11	87,04	**9,72%**
31	01/06 a 07/06	12	92,30	31	18/05 a 24/05	12	87,50	**5,49%**
32	08/06 a 14/06	13	94,00	32	25/05 a 31/05	13	88,50	**6,21%**
33	15/06 a 21/06	14	95,50	33	01/06 a 07/06	14	87,70	**8,89%**
34	22/06 a 28/06	15	95,00	34	08/06 a 14/06	15	87,00	**9,20%**
35	29/06 a 05/07	16	96,00	35	15/06 a 21/06	16	84,50	**13,61%**
36	06/07 a 12/07	17	96,00	36	22/06 a 28/06	17	85,00	**12,94%**
37	13/07 a 19/07	18	95,60	37	29/06 a 05/07	18	86,00	**11,16%**
38	20/07 a 26/07	19	93,00	38	06/07 a 12/07	19	85,00	**9,41%**
39	27/07 a 02/08	20	93,00	39	13/07 a 19/07	20	86,00	**8,14%**
40	03/08 a 09/08	21	93,00	40	20/07 a 26/07	21	86,00	**8,14%**
41	10/08 a 16/08	22	93,00	41	27/07 a 02/08	22	85,00	**9,41%**
42	17/08 a 23/08	23	93,00	42	03/08 a 09/08	23	84,00	**10,71%**
43	24/08 a 30/08	24	90,00	43	10/08 a 16/08	24	84,00	**7,14%**

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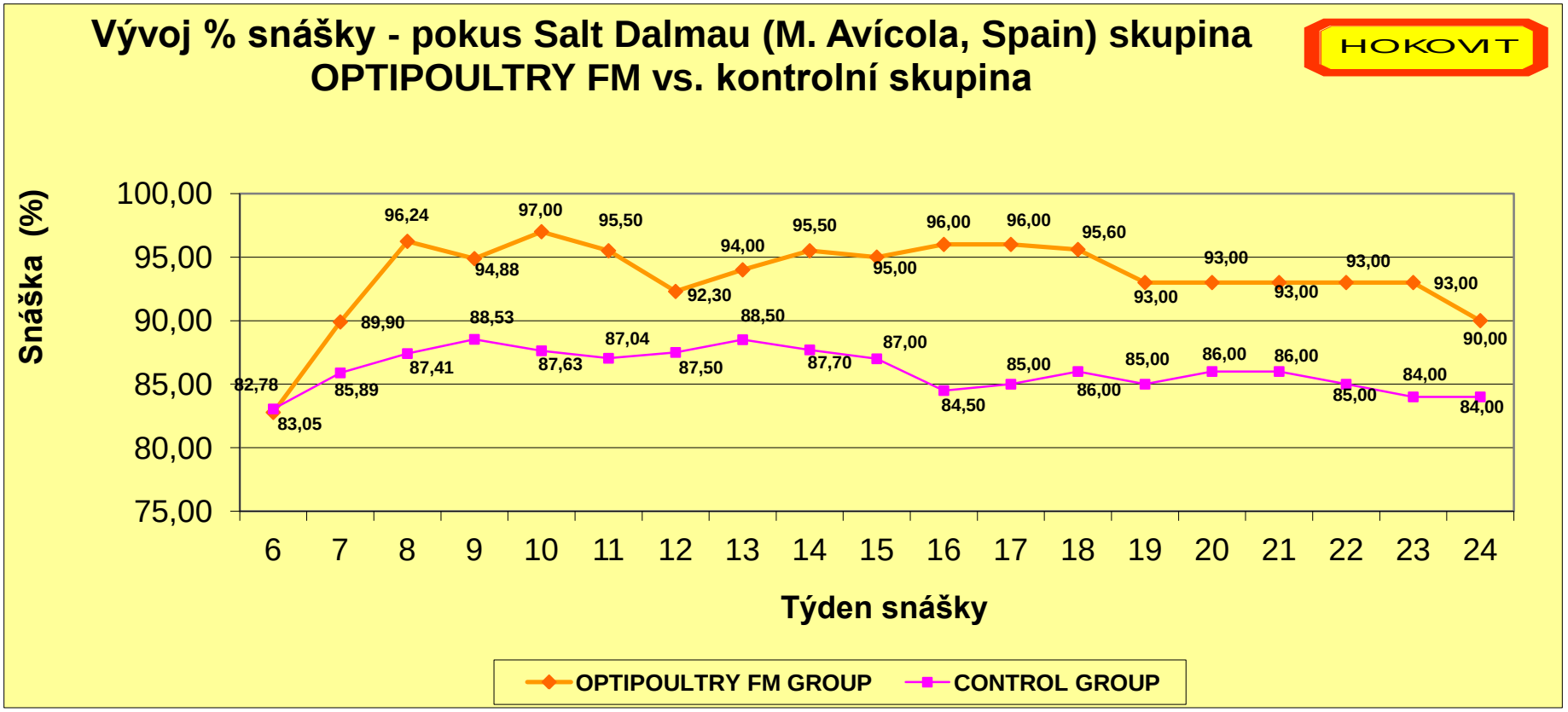
Křivka výkonnosti v obou skupinách:



✓ **Více snášejících nosnic ve skupině s** OPTIPOULTRY FM**.**

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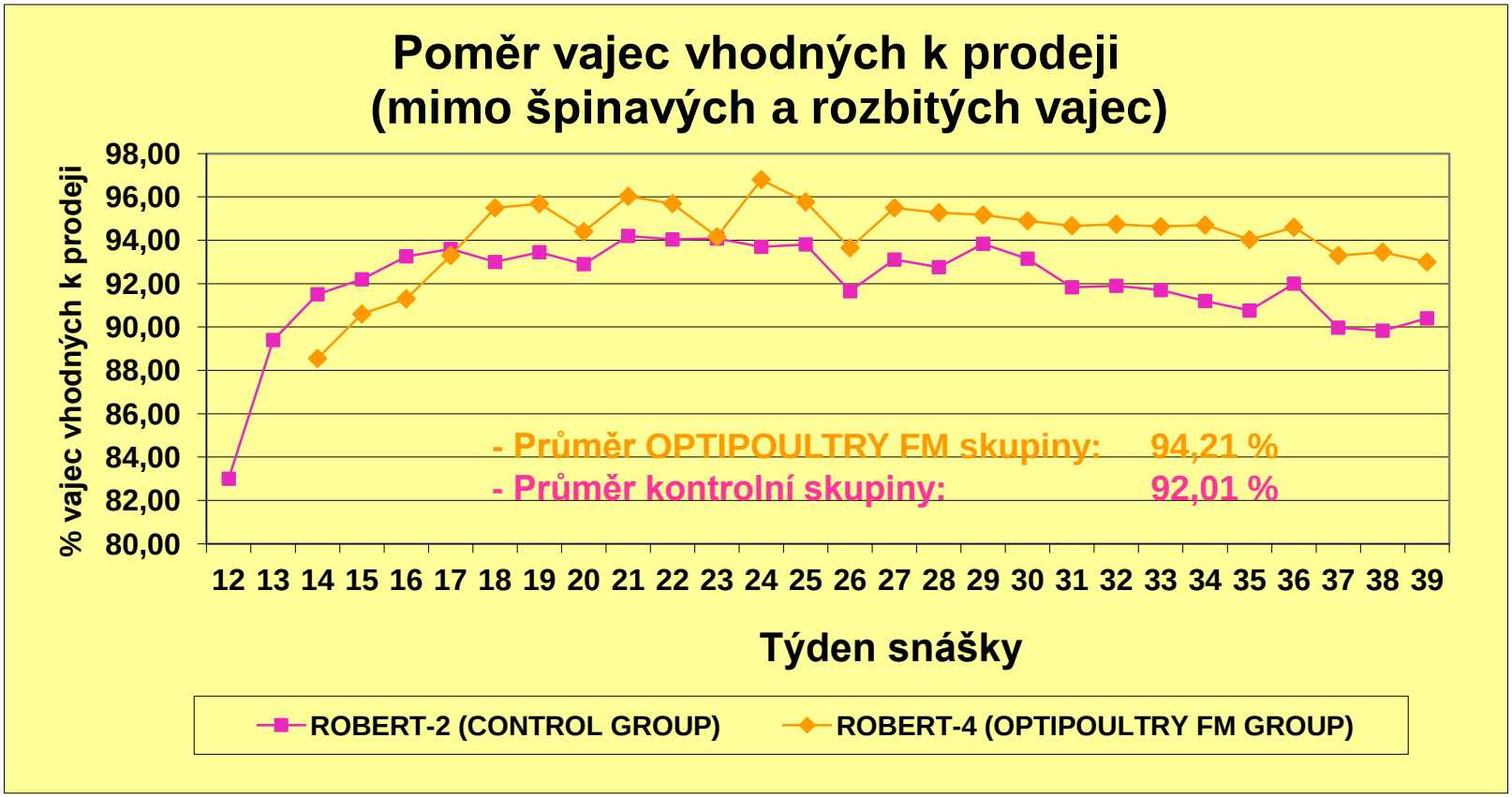
% vajec vhodných k prodeji:



✓ **Nosnice krmeny krmivem s přídavkem OPTIPOULTRY FM dosáhly nejen vyšší snášky, ale také vyššího % vajec vhodných k prodeji: méně špinavých vajec a křapek**

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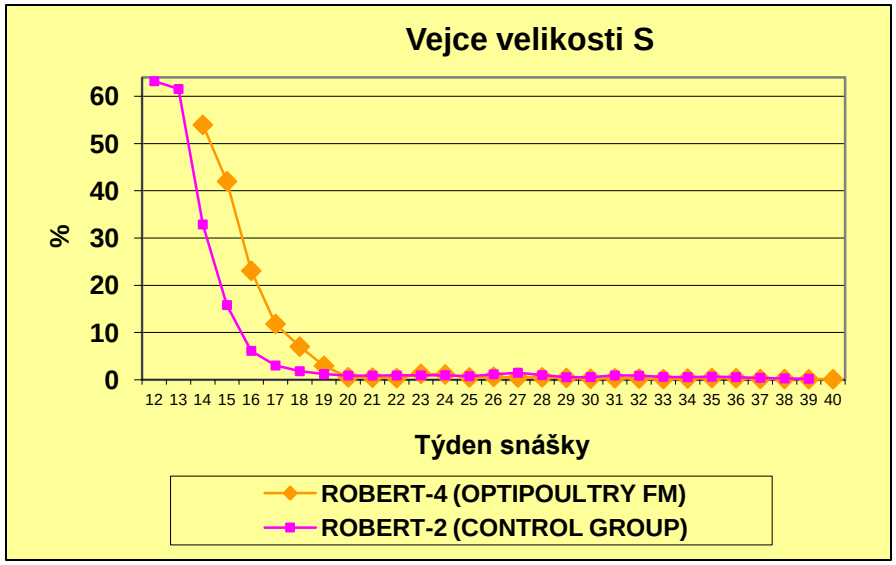
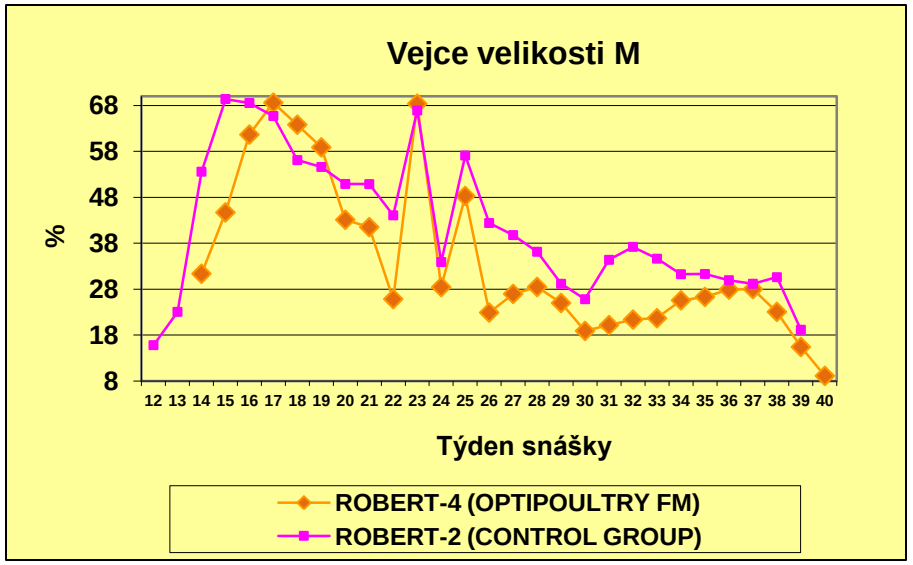
Klasifikace vajec dle velikosti (S a M):





- Průměr skupiny s OPTIPOULTRY FM: 5.73 %
- Průměr kontrolní skupiny: 7.16 %

- Průměr skupiny s OPTIPOULTRY FM: 35.24 %
- Průměr kontrolní skupiny : 41.48 %

✓ **Nižší podíl malých vajec ve skupině s** OPTIPOULTRY FM**.**

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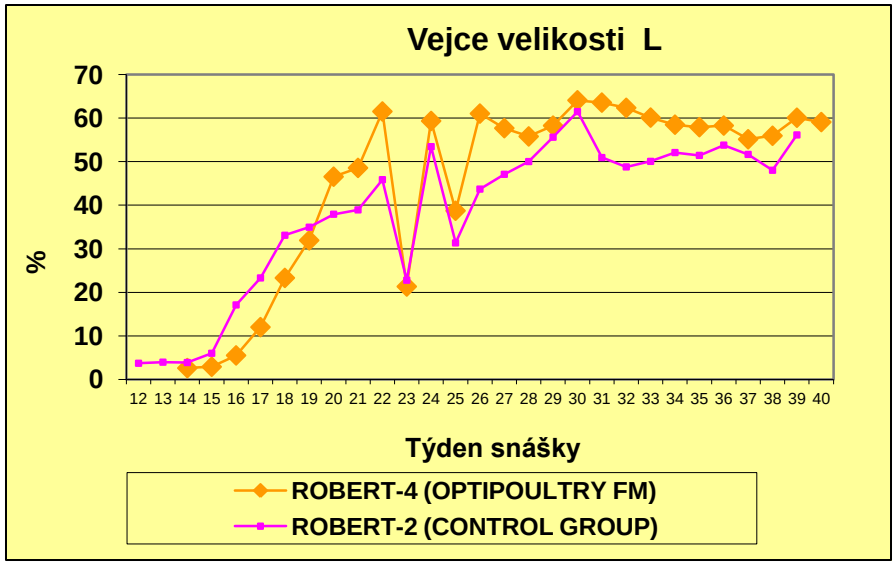
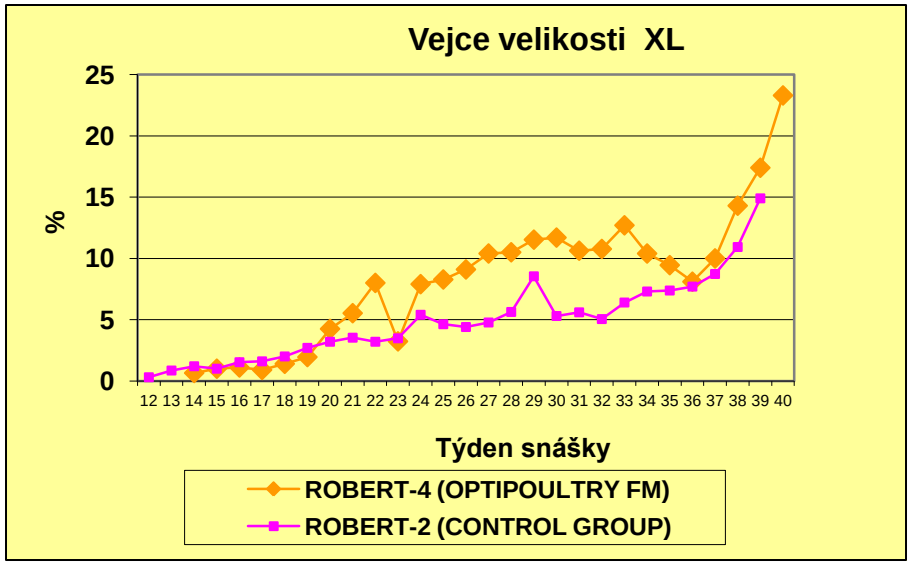
OPTIPOULTRY FM

Klasifikace vajec dle velikosti (L a XL):





- Průměr skupiny s OPTIPOULTRY FM: 45.51 %
- Průměr kontrolní skupiny : 38.47 %

- Průměr skupiny s OPTIPOULTRY FM : 7.74 %
- Průměr kontrolní skupiny : 4.9 %

✓ **Vyšší podíl velkých vajec ve skupině s OPTIPOULTRY FM. To je naprostou "nutností" pro ziskovost farmy na španělském trhu, neboť se jedná o vejce požadované spotřebiteli.**

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OPTIPOULTRY FM - ekonomika

PARAMETER	OPTIPOULTRY FM skupina	Kontrolní skupina	ROZDÍL
Průměrné % snášky:	93,46 %	86,09 %	+ 7.37
Dny sledování :	182		
Počet vajec na nosnici:	170	157	13
Prům. % vajec vhodných k prodeji:	94,21%	92,01%	+ 2,2
Prodaných vajec:	160.16 (13.3 balení)	144.45 (12.03 balení)	+ 15.71 (+1.27 balení)
Prům. cena získaná podle velikosti vajec:	0.83 € /balení (vypočítáno podle španělských cen vajec v Bellpuig v průběhu pokusu)	0.81 € / balení (vypočítáno podle španělských cen vajec v Bellpuig v průběhu pokusu)	+ 0.02 € více za balení
Příjmy:	11.04 €/nosnice za 6 měsíců	9.74 €/nosnice za 6 měsíců	+1,3 € více na nosnici
Spotřeba krmiva:	22 kg/nosnice za 6 měsíců	22 kg/nosnice za 6 měsíců	
Cena krmiva:	0.192 €/kg (OPTIPOULTRY FM včetně. 8 €/kg)	0.180 €/kg	+ 1,2 € centů
Náklad na krmivo:	4.22 €/nosnice za 6 měsíců	3.96 €/nosnice za 6 měsíců	+ 0.26 €
Hrubý zisk:	6.82 € / nosnice	5.78 € /nosnice	+ 1.04 €/nosnice / 6 měsíců
+1.04 € / nosnici x 500.000 nosnic = +520.000 € pro producenta za 6 měsíců.			

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Závěr:

- **Vyšší % snášky ve skupině s** OPTIPOULTRY FM **(+7.37%).**

- **Stabilní snášková křivka.**

- **Vyšší podíl vajec vhodných k prodeji (+2.2 %).**

- Lepší **konzistence výkalů** a z tohoto důvodu i **čistější vejce.**

- **Nižší podíl malých vajec klasifikovaných S a M**.

- **Vyšší podíl velkých velkých vajec** klasifikovaných L a XL. To umožňuje vyšší cenové ohodnocení vajec na španělském trhu, a z toho plynoucí další příjem**.**

- **+0.02 € za balení vajec v průměru** v porovnání s kontrolní skupinou

- **Další hrubý zisk 1.04 € na nosnici za 6 měsíců.**

- **Další hrubý zisk 520.000 € pro producenta vejac za 6 měsíců.**

Test report **Bestensee, 26.02.10**
(Draft)

"Use of OPTIPOULTRY FM in broiler diet"

Client:
HOKOVIT
H.U. HOFMANN AG
Mr. Hofmann
CH-4922 Bützberg, Switzerland

Responsible for the planning, monitoring and evaluation of the test:
agroproduct Qualitätssicherungs GmbH
Bestensee
Dr. J. Hoffmann, Dr. B. Hoffmann,

Responsible for compliance with legal requirements (including liability):
H.U. HOFMANN AG
Mr. Hofmann
CH-4922 Bützberg, Switzerland

Trial site:
Farm Westerkamp
Tramm

Stabling:
Jan. 23, 2010

Trial period:
30 or 31 fattening days

Trial setup:
2 halls with comparable technical equipment
- Hall 14 Experimental hall
- Hall 12 Control hall

- same housing conditions, single feed from the same silo, feed quantity measurement by means of feed scale for each pen
- Experimental hall: Addition of **OPTIPOULTRY FM** to the diet in the appropriate dosage for the farm using a MediPut dispenser with special blends for the different feeding phases
- Investigations and data collection were done according to the test plan

Trial product:
OPTIPOULTRY FM

Results

General information

The animals of the two halls shared the same genetic origin. As a result of a decision of the slaughterhouse, animals in the experimental hall were removed for slaughter a day earlier than those in the control group. Animals in each hall were slaughtered separately to facilitate the comparison and evaluation of the two groups.

Tests on the feed used

The mixed feed for the control and experimental groups was mixed on the same day, according to a uniform standard recipe. Since the dosage of **OPTIPOULTRY FM** was delivered directly over the feed supply for the experimental hall 14, and all pens were given feed from the same silo, uniform feeds were used.
According to the test plan, feed samples of all types of feed were chemically analyzed.
The following Table 1 shows the summarized results of the feed tests with regard to relevant parameters.

Table 1: Results of the chemical feed analysis (in g/kg)

Feed type	Crude protein	Crude fat	MJ/kg	Ca	P	Na
Broiler starter feed	215	74	12.83	11.6	7.1	1.5
Middle fattening feed MF I	195	91	13.2	10.3	6.8	1.4
Middle fattening feed MF II	187	89	13.1	8.5	7.3	1.3
Final fattening feed	195	91	13.2	9.8	6.5	1.5

Since for the two pens (experimental and control groups) single mixed feed was used, both groups were given identical feed. The high energy content within the first weeks of fattening is above normal values.

Penning data, removal-for-slaughter data

Table 2: Penning and removal-for-slaughter data

	Experimental hall (H 14)	Control hall (H 12)
No. of animals	40,600	40,600
Fattening period in days	30	31
Origin of parents	809108 Ross 308	809108 Ross 308

The uniform origin of the animals and the same penning date allowed for a meaningful comparison between the experimental and the control groups.

Cleaning and disinfection

Prior to penning, the effectiveness of cleaning and disinfection was tested by means of swabs and contact samples. The findings have been summarized in Table 3.

Table 3: Findings from swabs/contact samples

Method used - BU	Sampling point	Experimental hall (H 14)	Control hall (H 12)
Swabs 1. Direct plating on nutrient and Gassner-Agar culture medium	Wall	+ Micrococci	+ Micrococci, yeasts
	Floor, back	+ aerobic spore formers	+ Micrococci, aerobic spore formers
	Floor, front	+ yeasts	++ Micrococci, aerobic spore formers
	Trough	+ aerobic spore formers	+ Micrococci
	Drinking trough	negative	++ Micrococci
Swabs 2. Smear after enrichment on Gassner and Endo-Agar culture medium	Wall	negative	negative
	Floor, back	+ Coliforms	negative
	Floor, front	negative	negative
	Trough	negative	negative
	Drinking trough	negative	+ Coliforms

Swabs taken from pen equipment and the wall were examined.
In direct plating, exclusively micrococci and aerobic spore formers were found in both halls. These bacteria are ubiquitous, contained in dust, which are without relevance to any disease. As well, after enrichment, only a very low-grade or no discernible contamination with coliform bacteria was detected.
Thus, an adequate cleaning and disinfection effect is evident in both pens, and there were no directed differences between the pens.

Penning test

The animals of the experimental and control groups were bred in the same hatchery. Thus, on the date of penning, a total of 10 chicks were removed and bacteriologically examined (heart, liver, yolk sac, blind intestine).

Table 4: Bacteriological examination of day-old chicks

Flock	Chick weight	Bacteriological findings
809108 Ross 308	38.6 g (36 -41 g)	2 x + coliforms 8 x negative

The animals examined showed a slight degree of bacteriological contamination. Comparability was established with respect to this parameter between the two pens.

Lesion index

On the 20th day, the lesion index and the OpG* value were determined in 5 animals each in the intestinal homogenate of the blind and small intestines as well as the rectum. The findings have been summarized in Table 5.

Table 5: Determination of lesion index, oocysts in intestinal homogenate (in million/animal)

	Intestinal segment	Experimental group (H 14)	Control group (H 12)
Lesion index	Blind intestine	0	0
	Small intestine	0	0
	Rectum	0	0
Oocysts in the Intestinal homog. (OpG)	Blind intestine	-	-
	Small intestine	0.0067	-
	Rectum	0.0027	-

* OpG value = oocysts per 1 kg feces

On examination of the intestines, no lesions were found in the three segments. The OpG values were negative (control hall) or were in a noncritical area (experiment hall). Based on these values, a clinical contamination of animal material with oocysts can be ruled out.

Determination of OpG values in feces

According to the experimental design, fecal samples were taken from both halls and the OpG values determined.

Table 6: OpG values in feces (million/g feces)

Age of animals	Experimental group (H 14)	Control group (H 12)
13th day after birth	-	0.00004
20th day after birth	0.00004	0.00004
28th day after birth	-	-

The parasitological tests on the feces produced both in the experimental and the control groups negative results (H 14 - experimental) and otherwise low OpG values, which are irrelevant to any coccidiosis event. The oocysts identified were Eimeria tenella and/or Eimeria acervulina.

Chemical analysis of feces

For 3 days, fecal samples from the two pens were analyzed for dry matter and raw protein (RP) contained in dry matter (DM); the findings have been summarized in a table (see Table 7).

Table 7: Dry matter, raw protein and raw fat content in fecal samples
(in g/kgDM)

Day of sample	Experimental group (H 14)			Control group (H 12)		
	DM	RP	R fat	DM	RP	R fat
13th day after birth	264	281	78	256	243	80
20th day after birth	218	260	103	221	271	67
28th day after birth	248	283	70	249	267	58

The dry matter in feces was relatively balanced at an average level between the trial groups throughout the fatting process. There were no directed differences observed between the experimental groups.
The content of raw protein and raw fat in the feces was also at an average level in both experimental groups.
Based on the present results, there was no evidence of a significant absorption impairment.

Condition of the litter

The condition of the litter was assessed on the 14th, 21st and 30th day of fattening (on a scoring scale of 1 to 6; 1 = very good: dry, scratchable; 6 = bad: wet and sticky) (see Table 8).

Table 8: Evaluation of the condition of the litter

Day of sample	Experimental group (H 14)	Control group (H 12)
13th day after birth	2	2
20th day after birth	3	3
28th day after birth	2	2-3

The condition of the litter was assessed as relatively uniform in both halls for the entire duration of the trial. In both halls, on fattening day 13, areas below the drinking-trough lines were moist; in the course of the fattening process and by fattening day 20, the litter in both halls had become moist. In the further course of the trial, an improvement of the litter quality was observed. Especially in the experimental hall, there were large areas of scratchable litter by fattening day 28.

Development of live weight/fattening result

Table 9: Fattening period and live-weight development in experimental and control hall (in g /animal)

	Experimental group (H 14)	Control group (H 12)
Fattening period in days	30	31
Penning weight (in g)	39	39
Weight on 7th day (in g)	142	140
14th day (in g)	343	349
21th day (in g)	765	753
28th day (in g)	1316	1290
Live weight at slaughter in g	**1549**	**1561**
Daily live-weight gain -incl. chick weight	**51.6**	**50.4**
-excl. chick weight	**50.3**	**49.1**
Average carcass weight in g	**1078**	**1080**
Carcass yield in %	**69.6**	**69.2**

In both groups within the first 14 fattening days, an insufficient gain per fattening day was observed. In the further course of the trial, the experimental group exhibited better gains per fattening day and a greater balance of the flock than in the control group. Given the requirements of the slaughterhouse, the flock in pen 12 (control) was slaughtered a day later than the flock in pen 14.
After the slaughter, the experimental group showed a higher average gain per fattening day of approx. 1 g than was the case for the control group.
Regarding the carcass yield, no differences were observed between the groups.

Animal losses
The trends in animal loss in both trial groups has been summarized in Table 10.

Table 10: Animal losses

	Experimental group (H 14)	Control group (H 12)
No. of animals upon penning, in heads	**40,600**	**40,600**
Total losses in fattening period		
- in heads	1340	1260
- in % of initial stock (IS)	**3.3**	**3.1**
of which in first 7 fattening days		
- in heads	917	829
- in % of initial stock	**2.3**	**2.0**
of which from 8th fattening day to end of fattening		
- in heads	423	431
- in % of initial stock	**1.0**	**1.1**
Slaughterhouse discards		
- in heads	396	458
- in % of initial stock	**1.0**	**1.1**
Total losses (fattening+discards)		
- in heads	1736	1718
- in % of initial stock	**4.3**	**4.2**

Regarding the loss events, both groups showed significantly higher initial losses within the first week of fattening. These initial losses were more than one percent higher than the average values from the previous fattening cycles. In the further course of the fattening process, both groups exhibited significantly fewer daily losses.
Regarding the slaughterhouse discards, there were no directed differences between the groups.

Feed consumption

Table 11: Feed consumption/Feed conversion

	Experimental group (H14)	Control group (H12)
Feed quantity - starter feed in kg	12233	12578
- Middle fattening feed I in kg	10329	10361
- Middle fattening feed II in kg	43370	42956
- Final fattening feed in kg	26322	29921
- Wheat in kg	-	-
Total feed quantity in kg	92254	95816
Total slaughter weight in kg (net)	59979	60426
Total slaughter weight in kg (gross)	60612	61067
Feed conversion in kg feed per kg LW (net)	**1.54**	**1.59**
Feed conversion in kg feed per kg LW (gross)	**1.52**	**1.57**
Water consumption in l	161729	168033
Feed/water ratio	**1:1.75**	**1:1.75**

The use of feed in the different phases of feeding and the use of wheat were carried out uniformly, so that the situation allows for a comparison between the groups.
Overall, the feed conversion rate in both trial groups was at an average level.
There were, however, significant differences in the feed conversion in favor of the experimental group.
No differences were observed with respect to the food-water ratio.

Evaluation of results

1. The requirements with regard to experimental procedures, investigations and data acquisition have been met. Regarding the experimental procedure, no deviations from the test plan occurred, so that a comparison of the two groups is possible. The fattening period for the control group was longer by one fattening day.
2. The overall performance of the entire cycle can be assessed as good.
3. Overall, the daily gains can also be considered as meeting the norm. In the course of the fattening process, the average live weights in the experimental group were slightly higher than those in the control group, so that the animals in the experimental group ended up being slaughtered one day earlier.
4. Losses generally remained within average levels. Both groups experienced a higher mortality rate in the initial fattening days. In the further course of the fattening process, no differences were observed between the two groups with respect to losses.
5. Slaughterhouse discards did not show any directed differences.
6. As for feed conversion, both trial groups performed well. There was a significantly positive trend in favor of the experimental group. This result should be interpreted in the context of comparative experiments.

Dr. J. Hoffmann