TETRA
SELECTED FOR QUALITY

TETRA H

DUAL-PURPOSE HYBRID
CHARTS AND GRAPHS

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CONTENTS

Performance Specifications of TETRA H Dual-Purpose Hybrid

Liveability	
0-10 weeks of age	95%
11-70 weeks of age	92%
Feed consumption	
Males 0-10 weeks of age (at fattening feeding)	5.7 kg
Females 0-10 weeks of age (at fattening feeding)	4.7 kg
As hatched 0-10 weeks of age (at fattening feeding)	5.2 kg
Females 0-70 weeks of age	55.4 kg
Body weight	
Males at 10 weeks of age (at fattening feeding)	2145 g
Females at 10 weeks of age (at fattening feeding)	1660 g
As hatched at 10 weeks of age (at fattening feeding)	1900 g
Females at 20 weeks of age (at controlled feeding from 8 weeks of age)	1895 g
Females at 24 weeks of age	2155 g
Females at 70 weeks of age	2505 g
Maturity	
Age at 50% production	21-22 weeks
Peak production	26-30 weeks
Egg production per hen housed	
Until 70 weeks of age	244 pcs
Average egg weight	
Until 70 weeks of age	60 g
Egg mass	
Until 70 weeks of age	14.7 kg

When used for egg production, females must be separated from males at 8 weeks of age and fed according to the relevant tables in the manual.

Weight Development for TETRA H Dual-Purpose Males

Weeks	Days	Body Weight (g)	Body Weight Gain (g)	Body Weight Gain Cumulative (g)	Feed/ week (g)	Feed Cumulative (g)	FCR Cumulative (kg/kg)
0	0	38	-	-	-	-	-
1	7	120	82	82	116	116	1.41
2	14	250	130	212	200	316	1.49
3	21	400	150	362	296	612	1.69
4	28	570	170	532	402	1014	1.91
5	35	760	190	722	503	1517	2.10
6	42	975	215	937	610	2127	2.27
7	49	1215	240	1177	720	2847	2.42
8	56	1490	275	1452	830	3677	2.53
9	63	1800	310	1762	942	4619	2.62
10	70	2145	345	2107	1051	5670	2.69

Weight Development for TETRA H Dual-Purpose Females

Weeks	Days	Body Weight (g)	Body Weight Gain (g)	Body Weight Gain Cumulative (g)	Feed/ week (g)	Feed Cumulative (g)	FCR Cumulative (kg/kg)
0	0	38	-	-	-	-	-
1	7	110	72	72	119	119	1.65
2	14	230	120	192	196	315	1.63
3	21	365	135	327	273	588	2.02
4	28	515	150	477	350	938	2.33
5	35	680	165	642	427	1365	2.59
6	42	855	175	817	504	1869	2.88
7	49	1040	185	1002	581	2450	3.14
8	56	1235	195	1197	658	3108	3.37
9	63	1440	205	1402	735	3843	2.74
10	70	1660	220	1622	812	4655	2.87

Weight Development for TETRA H Dual-Purpose Hybrid As-Hatched Performance

Weeks	Days	Body Weight (g)	Body Weight Gain (g)	Body Weight Gain Cumulative (g)	Feed/ week (g)	Feed Cumulative (g)	FCR Cumulative (kg/kg)
0	0	38	-	-	-	-	-
1	7	115	77	77	118	118	1.53
2	14	240	125	202	198	316	1.56
3	21	385	145	347	285	601	1.73
4	28	545	160	507	376	977	1.93
5	35	720	175	682	465	1442	2.11
6	42	915	195	877	557	1999	2.28
7	49	1130	215	1092	651	2649	2.43
8	56	1365	235	1327	744	3393	2.56
9	63	1620	255	1582	839	4232	2.67
10	70	1900	280	1862	932	5163	2.77

Ad libitum feeding. Weight gain is significantly dependent on the feeding program, the content of the feed and the feed structure. The recommended feed content values and feed structures are given in the relevant table. TETRA H Dual-Purpose Hybrid is a resistant breed that grows well in a backyard and produces well, and it produces these fattening data under industrial conditions.

Temperature Requirements for TETRA H Dual-Purpose Hybrid

Age (days)	Temperature (°C) at Birds' Level
0-2	32-33
3-4	31-32
5-7	31
8-14	30
15-21	27
22-28	24
29-35	22
35-	20

Space and Equipment Requirements for TETRA H Dual-Purpose Hybrid

Age (weeks)		0-10	over 10
Density birds/m^2)	Floor system	10-12	6-7
Drinking space	Birds/nipples	8-10	4-6
	Birds/drinkers (ø 46 cm)	80-100	60-80
Feeding space	Through or circular feeders (space/birds)	10-15 cm plus extra feeding surface in the first 4 days	15-20 cm

For the first 4 days, place chick paper next to the drinker lines and sprinkle a thin layer of feed on it. Check the availability of feed and water.

Lighting Programme for TETRA H Dual-Purpose Hybrid optimized for Meat Production

Age	Hours of Light	Light intensity (lux)
Days 0-1	24	20-30
Days 2-7	23	20-30
Weeks 2-10	18	50

After the 7th day of rearing, 6 hours of darkness, of which 4 hours are continuous nighttime and 2 hours with a maximum light intensity of 1 lux. Under natural lighting conditions the lighting program may differ from this.

Lighting Programme for TETRA H Dual-Purpose Hybrid optimized for Females' Egg Production

Age	Hours of Light	Light intensity (lux)
Days 0-2	23	20-30
Days 3-7	22	20-30
Week 2	16	10 (-20)
Week 3	15	5 (-10)
Week 4	14	5 (-10)
Week 5	13	5 (-10)
Week 6	12	5 (-10)
Week 7	11	5 (-10)
Weeks 8-17	8	5 (-10)
Week 18	11	10 (-20)
Week 19	12	10 (-20)
Week 20	13	10 (-20)
Weeks 21-70	14	10 (-20)

Under natural lighting conditions the lighting program may differ from this.

Weight Development and Feed Consumption for TETRA H Dual-Purpose Females with Separated Keeping after 8 Weeks of Age

Weeks	Body Weight (g)	Feed/day (g)	Feed Cumulated (g)
0	38	-	-
1	110	17	119
2	230	28	315
3	365	39	588
4	515	50	938
5	680	61	1365
6	855	72	1869
7	1040	83	2450
8	1175	94	3108
9	1245	95	3773
10	1295	96	4445
11	1345	97	5124
12	1395	98	5810
13	1445	99	6503
14	1495	100	7203
15	1545	101	7910
16	1595	102	8624
17	1670	106	9366
18	1745	110	10136
19	1820	114	10934
20	1895	118	11760
21	1960	121	12607
22	2025	124	13475
23	2090	127	14364
24	2155	130	15271
25	2200	130	16178
26	2245	130	17085
27	2265	130	17992
28	2285	130	18899
29	2295	129	19799
30	2305	129	20699
31	2310	129	21599
32	2315	129	22499
33	2320	129	23399
34	2325	128	24292
35	2330	128	25185
36	2335	128	26078
37	2340	128	26971
38	2345	128	27864
39	2350	127	28750
40	2355	127	29636
41	2360	127	30522
42	2365	127	31408
43	2370	127	32294
44	2375	126	33173
45	2380	126	34052
46	2385	126	34931
47	2390	126	35810
48	2395	125	36682
49	2400	125	37554
50	2405	125	38426
51	2410	125	39298
52	2415	124	40163
53	2420	124	41028
54	2425	124	41893
55	2430	124	42758
56	2435	123	43616
57	2440	123	44474
58	2445	123	45332
59	2450	122	46183
60	2455	122	47034
61	2460	122	47885
62	2465	121	48729
63	2470	121	49573
64	2475	121	50417
65	2480	120	51254
66	2485	120	52091
67	2490	120	52928
68	2495	119	53758
69	2500	119	54588
70	2505	119	55418

With sepated keeping and contolled feeding from 8 weeks of age. Weight gain is significantly dependent on the feeding program, the content of the feed and the feed structure. The recommended feed content values are given in the relevant tables.

Nutritional Recommendation for Fattening Feeding of TETRA H Dual-Purpose Hybrid

Feed Type		Starter	Grower	Finisher
Nutrient		**0-21 days**	**22-49 days**	**50-70 days**
Crude protein	%	21.00	18.50	17.50
Met. energy	MJ/kg	12.20	12.50	11.70
Crude fat	%	3.55	4.47	4.86
Crude fiber	%	3.81	3.76	3.85
Lysine	%	1.19	1.01	0.96
Methionine	%	0.52	0.47	0.42
Calcium	%	1.04	0.91	0.99
Phosphorus	%	0.77	0.74	0.64
Phosphorus, av.	%	0.45	0.44	0.45
Sodium	%	0.17	0.15	0.18
Vitamin A	IU/kg	10000	9600	10000
Vitamin D_3	IU/kg	4000	3500	3000
Vitamin E	mg/kg	35.00	30.60	21.00

The recommended starter feed is finely crumbled until 7 days of age, coarsely crumbled until 14 days of age, and then 3 mm short granules. The growing and finishing phase consists of 3 mm granules.

Nutritional Recommendation for TETRA H Dual-Purpose Females after 8 Weeks of Age (Growing Period)

Feed Type		Developer	Pre-layer
Age (weeks)		**9-17**	**18-20**
ENERGY & NUTRIENT			
Met. energy	MJ/kg	11.50	11.70
Met. energy	kcal/kg	2750	2800
Crude protein	%	15.50	17.50
AMINO ACIDS, TOTAL			
Lysine	%	0.75	0.85
Methionine	%	0.35	0.40
Methionine + cysteine	%	0.61	0.70
Threonine	%	0.50	0.60
Valine	%	0.60	0.65
Arginine	%	0.77	0.82
Tryptophan	%	0.17	0.18
Isoleucine	%	0.58	0.66
AMINO ACIDS, DIGESTIBLE			
Lysine	%	0.60	0.70
Methionine	%	0.30	0.35
Methionine + cysteine	%	0.50	0.58
Threonine	%	0.42	0.50
Valine	%	0.50	0.54
Arginine	%	0.63	0.68
Tryptophan	%	0.14	0.15
Isoleucine	%	0.49	0.52
Linoleic acid	%	1.00	1.50
Calcium	%	1.00	2.50
Phosphorus, available	%	0.38	0.44
Sodium	%	0.16-0.17	0.16-0.17
Chloride	%	0.15-0.30	0.15-0.30

The structure of the feed is coarse in both phases.

Nutritional Recommendations for TETRA H Dual-Purpose Layers (Production Period)

Feed Type		Layer I from 5% Production			Layer II below 70% Production		
Daily feed consumption		**125 g**	**130 g**	**135 g**	**125 g**	**130 g**	**135 g**
ENERGY & NUTRIENT							
Met. energy	MJ/kg	11.70	11.50	11.25	11.60	11.40	11.20
Met. energy	kcal/kg	2800	2750	2700	2780	2720	2680
Crude protein	%	18.00	17.00	16.00	17.00	16.00	15.00
AMINO ACIDS, TOTAL							
Lysine	%	0.87	0.82	0.78	0.83	0.79	0.75
Methionine	%	0.43	0.41	0.39	0.42	0.39	0.37
Methionine + cysteine	%	0.75	0.71	0.68	0.74	0.70	0.66
Threonine	%	0.60	0.57	0.54	0.58	0.55	0.53
Valine	%	0.70	0.66	0.63	0.67	0.63	0.60
Arginine	%	0.88	0.83	0.79	0.84	0.79	0.75
Tryptophan	%	0.18	0.17	0.16	0.17	0.16	0.15
Isoleucine	%	0.65	0.62	0.60	0.62	0.59	0.57
AMINO ACIDS, DIGESTIBLE							
Lysine	%	0.71	0.67	0.64	0.69	0.65	0.62
Methionine	%	0.38	0.36	0.34	0.36	0.34	0.32
Methionine + cysteine	%	0.62	0.59	0.56	0.61	0.58	0.55
Threonine	%	0.49	0.46	0.44	0.48	0.46	0.43
Valine	%	0.57	0.54	0.51	0.55	0.52	0.50
Arginine	%	0.72	0.68	0.64	0.68	0.64	0.61
Tryptophan	%	0.15	0.14	0.13	0.14	0.13	0.12
Isoleucine	%	0.54	0.51	0.49	0.51	0.48	0.47
Linoleic acid	%	1.90	1.80	1.70	1.80	1.70	1.60
Calcium	%	3.90	3.75	3.60	4.10	3.85	3.70
Phosphorus, available	%	0.42	0.39	0.37	0.40	0.38	0.36
Sodium	%	0.16-0.18	0.15-0.17	0.14-0.16	0.16-0.18	0.15-0.17	0.14-0.16
Chloride	%	0.15-0.30	0.15-0.30	0.15-0.30	0.15-0.30	0.15-0.40	0.15-0.50

When changing rations production level is more important than the actual age of the flock. In the case of higher feed intake, a moderate-intensity diet is needed, while with lower feed consumption, the diet should be more concentrated. The structure of the feed is coarse in all phases.

Vitamins and Micronutrient Recommendations for TETRA H Dual-Purpose Females (Growing and Production Period)

Feed Type		Developer	Pre-layer/ Layer I-II
ADDED VITAMINS			
Vitamin A	UI/kg	10000	10000
Vitamin D_3	UI/kg	3200	3200
Vitamin E	mg/kg	30	60
Vitamin K_3	mg/kg	2	5
Vitamin B_1	mg/kg	2	4
Vitamin B_2	mg/kg	6	10
Vitamin B_6	mg/kg	4	5
Vitamin B_{12}	mcg/kg	15	30
Pantothenic acid	mg/kg	8	15
Niacin	mg/kg	30	50
Biotin	mcg/kg	150	200
Folic acid	mg/kg	1	2
Choline	mg/kg	300	300
Vitamin C*	mg/kg	-	50-200
ADDED TRACE ELEMENTS			
Iron	mg/kg	50	
Manganese	mg/kg	100	
Copper	mg/kg	8	
Zinc	mg/kg	80	
Iodine	mg/kg	1	
Selenium	mg/kg	0.3	

** Vitamin C is recommended to prevent stress.*

Production Targets for TETRA H Dual-Purpose Layers

Age (weeks)	Egg Production (%)		Egg Number (HH)		Egg Weight (g)		Egg Mass (HH)	
	Hen Housed	Hen Day	Weekly	Cumulative	Weekly	Cumulative	Weekly (g)	Cumulative (kg)
	Range	Range	Range	Range	Range	Range	Range	Range
19	8.0 – 10.0	8.0 – 10.0	0.6 – 0.7	0.6 – 0.7	40.6 – 42.6	36.9 – 46.2	23.3 – 29.1	0.0 – 0.0
20	24.0 – 26.0	24.0 – 26.0	1.7 – 1.8	2.2 – 2.5	43.2 – 45.2	40.9 – 46.0	74.2 – 80.4	0.1 – 0.1
21	45.6 – 47.6	45.7 – 47.7	3.2 – 3.3	5.4 – 5.9	46.2 – 48.2	44.0 – 47.3	150.8 – 157.4	0.2 – 0.3
22	63.3 – 65.3	63.5 – 65.5	4.4 – 4.6	9.9 – 10.4	48.6 – 50.6	46.2 – 48.7	219.9 – 226.9	0.5 – 0.5
23	76.1 – 78.1	76.3 – 78.3	5.3 – 5.5	15.2 – 15.9	50.5 – 52.5	47.8 – 49.9	274.1 – 281.3	0.7 – 0.8
24	83.5 – 85.5	83.8 – 85.8	5.8 – 6.0	21.0 – 21.9	52.7 – 54.7	49.2 – 51.1	313.7 – 321.2	1.1 – 1.1
25	87.2 – 89.2	87.6 – 89.6	6.1 – 6.2	27.1 – 28.1	53.9 – 55.9	50.4 – 52.1	335.3 – 343.0	1.4 – 1.4
26	88.5 – 90.5	89.0 – 91.0	6.2 – 6.3	33.3 – 34.5	55.4 – 57.4	51.4 – 53.0	349.2 – 357.1	1.7 – 1.8
27	89.1 – 91.1	89.7 – 91.7	6.2 – 6.4	39.6 – 40.8	56.1 – 58.1	52.2 – 53.7	356.4 – 364.4	2.1 – 2.2
28	89.1 – 91.1	89.8 – 91.8	6.2 – 6.4	45.8 – 47.2	56.7 – 58.7	52.8 – 54.4	360.0 – 368.0	2.5 – 2.5
29	88.9 – 90.9	89.6 – 91.6	6.2 – 6.4	52.0 – 53.6	57.1 – 59.1	53.4 – 54.9	361.6 – 369.7	2.8 – 2.9
30	88.4 – 90.4	89.2 – 91.2	6.2 – 6.3	58.2 – 59.9	57.5 – 59.5	53.8 – 55.3	361.9 – 370.1	3.2 – 3.3
31	87.7 – 89.7	88.6 – 90.6	6.1 – 6.3	64.4 – 66.2	57.9 – 59.9	54.3 – 55.7	361.4 – 369.6	3.5 – 3.6
32	86.9 – 88.9	87.8 – 89.8	6.1 – 6.2	70.4 – 72.4	58.1 – 60.1	54.6 – 56.1	359.3 – 367.5	3.9 – 4.0
33	86.2 – 88.2	87.2 – 89.2	6.0 – 6.2	76.5 – 78.6	58.3 – 60.3	54.9 – 56.4	357.5 – 365.8	4.3 – 4.4
34	85.0 – 87.0	86.0 – 88.0	6.0 – 6.1	82.4 – 84.7	58.4 – 60.4	55.2 – 56.7	353.7 – 362.0	4.6 – 4.7
35	83.9 – 85.9	85.0 – 87.0	5.9 – 6.0	88.3 – 90.7	58.6 – 60.6	55.5 – 56.9	350.3 – 358.6	5.0 – 5.1
36	82.7 – 84.7	83.9 – 85.9	5.8 – 5.9	94.1 – 96.6	58.8 – 60.8	55.7 – 57.1	346.4 – 354.7	5.3 – 5.4
37	81.5 – 83.5	82.7 – 84.7	5.7 – 5.8	99.8 – 102.5	59.0 – 61.0	55.9 – 57.3	342.4 – 350.8	5.7 – 5.8
38	80.4 – 82.4	81.7 – 83.7	5.6 – 5.8	105.4 – 108.2	59.2 – 61.2	56.1 – 57.5	338.9 – 347.3	6.0 – 6.1
39	79.2 – 81.2	80.5 – 82.5	5.5 – 5.7	111.0 – 113.9	59.4 – 61.4	56.3 – 57.7	334.9 – 343.4	6.3 – 6.5
40	78.0 – 80.0	79.3 – 81.3	5.5 – 5.6	116.4 – 119.5	59.6 – 61.6	56.4 – 57.9	330.9 – 339.4	6.7 – 6.8
41	76.8 – 78.8	78.2 – 80.2	5.4 – 5.5	121.8 – 125.0	59.8 – 61.8	56.6 – 58.0	326.8 – 335.3	7.0 – 7.2
42	75.6 – 77.6	77.0 – 79.0	5.3 – 5.4	127.1 – 130.5	60.0 – 62.0	56.7 – 58.2	322.7 – 331.3	7.3 – 7.5
43	74.4 – 76.4	75.9 – 77.9	5.2 – 5.3	132.3 – 135.8	60.2 – 62.2	56.9 – 58.3	318.6 – 327.2	7.6 – 7.8
44	73.2 – 75.2	74.7 – 76.7	5.1 – 5.3	137.4 – 141.1	60.4 – 62.4	57.0 – 58.5	314.5 – 323.1	7.9 – 8.1
45	72.0 – 74.0	73.6 – 75.6	5.0 – 5.2	142.5 – 146.2	60.6 – 62.6	57.1 – 58.6	310.3 – 318.9	8.2 – 8.5
46	70.8 – 72.8	72.4 – 74.4	5.0 – 5.1	147.4 – 151.3	60.8 – 62.8	57.3 – 58.8	306.1 – 314.7	8.6 – 8.8
47	69.6 – 71.6	71.2 – 73.2	4.9 – 5.0	152.3 – 156.4	60.9 – 62.9	57.4 – 58.9	301.8 – 310.5	8.9 – 9.1
48	68.4 – 70.4	70.0 – 72.0	4.8 – 4.9	157.1 – 161.3	61.1 – 63.1	57.5 – 59.0	297.5 – 306.2	9.2 – 9.4
49	67.2 – 69.2	68.9 – 70.9	4.7 – 4.8	161.8 – 166.1	61.3 – 63.3	57.6 – 59.1	293.2 – 301.9	9.4 – 9.7
50	66.0 – 68.0	67.7 – 69.7	4.6 – 4.8	166.4 – 170.9	61.5 – 63.5	57.7 – 59.3	288.9 – 297.6	9.7 – 10.0
51	64.8 – 66.8	66.5 – 68.5	4.5 – 4.7	170.9 – 175.6	61.7 – 63.7	57.8 – 59.4	284.5 – 293.3	10.0 – 10.3
52	63.6 – 65.6	65.4 – 67.4	4.5 – 4.6	175.4 – 180.2	61.9 – 63.9	57.9 – 59.5	280.1 – 288.9	10.3 – 10.6
53	62.4 – 64.4	64.2 – 66.2	4.4 – 4.5	179.8 – 184.7	62.1 – 64.1	58.0 – 59.6	275.6 – 284.5	10.6 – 10.9
54	61.2 – 63.2	63.0 – 65.0	4.3 – 4.4	184.0 – 189.1	62.3 – 64.3	58.1 – 59.7	271.2 – 280.0	10.8 – 11.1
55	60.0 – 62.0	61.8 – 63.8	4.2 – 4.3	188.2 – 193.4	62.5 – 64.5	58.2 – 59.8	266.6 – 275.5	11.1 – 11.4
56	58.8 – 60.8	60.6 – 62.6	4.1 – 4.3	192.4 – 197.7	62.7 – 64.7	58.3 – 59.9	262.1 – 271.0	11.4 – 11.7
57	57.6 – 59.6	59.4 – 61.4	4.0 – 4.2	196.4 – 201.9	62.9 – 64.9	58.4 – 60.0	257.5 – 266.5	11.6 – 12.0
58	56.4 – 58.4	58.2 – 60.2	3.9 – 4.1	200.3 – 205.9	63.1 – 65.1	58.5 – 60.1	252.9 – 261.9	11.9 – 12.2
59	55.2 – 57.2	57.1 – 59.1	3.9 – 4.0	204.2 – 209.9	63.3 – 65.3	58.6 – 60.2	248.3 – 257.3	12.1 – 12.5
60	54.0 – 56.0	55.9 – 57.9	3.8 – 3.9	208.0 – 213.9	63.4 – 65.4	58.7 – 60.3	243.3 – 252.3	12.4 – 12.7
61	52.8 – 54.8	54.7 – 56.7	3.7 – 3.8	211.7 – 217.7	63.4 – 65.4	58.8 – 60.4	237.8 – 246.9	12.6 – 13.0
62	51.6 – 53.6	53.5 – 55.5	3.6 – 3.8	215.3 – 221.5	63.4 – 65.4	58.8 – 60.5	232.4 – 241.5	12.8 – 13.2
63	50.4 – 52.4	52.3 – 54.3	3.5 – 3.7	218.8 – 225.1	63.4 – 65.4	58.9 – 60.6	227.4 – 236.4	13.1 – 13.5
64	49.2 – 51.2	51.1 – 53.1	3.4 – 3.6	222.3 – 228.7	63.4 – 65.4	59.0 – 60.7	222.0 – 231.0	13.3 – 13.7
65	48.0 – 50.0	49.9 – 51.9	3.4 – 3.5	225.6 – 232.2	63.4 – 65.4	59.0 – 60.8	216.5 – 225.6	13.5 – 13.9
66	46.8 – 48.8	48.7 – 50.7	3.3 – 3.4	228.9 – 235.6	63.4 – 65.4	59.1 – 60.8	211.1 – 220.2	13.7 – 14.1
66	45.6 – 47.6	47.5 – 49.5	3.2 – 3.3	232.1 – 239.0	63.5 – 65.5	59.2 – 60.9	206.0 – 215.1	13.9 – 14.3
66	44.4 – 46.4	46.3 – 48.3	3.1 – 3.2	235.2 – 242.2	63.5 – 65.5	59.2 – 61.0	200.6 – 209.6	14.1 – 14.6
66	43.2 – 45.2	45.0 – 47.0	3.0 – 3.2	238.2 – 245.4	63.5 – 65.5	59.3 – 61.0	195.2 – 204.2	14.3 – 14.8
70	42.0 – 44.0	43.8 – 45.8	2.9 – 3.1	241.2 – 248.4	63.5 – 65.5	59.3 – 61.1	189.8 – 198.8	14.5 – 15.0

The level of egg production and the development of egg weights depend significantly on the housing conditions, the lighting program, the nutritional value, the structure of the feed and the feeding practices.