Lohmann Brown

Management Guide

March 2005

Contents

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Introduction

To achieve optimal production results, it is essential to make full use of the **Lohmann Brown** layer's performance potential by providing good housing conditions and systematic management. The aim of this manual is to draw the attention of the practical stockman to the more important points which, if overlooked, may depress flock performance. This manual is not intended to provide definitive information on every aspect of stock management and cannot substitute the regular observation of the birds and assessment of the respective conditions. It does, however, offer a base for efficient management.

The data in this manual gives some indication of what can be achieved under good environmental and management conditions. The profile of performance can be altered, to meet market demands, by management techniques, and can be adversely affected by poor management, disease and many other factors. Figures should not be regarded as guarantees of production but as performance objectives

In recent decades, advanced methods have greatly improved breeding quality. Lohmann's use of electronic data processing systems has enabled them to put the theory of selection systematically into practice, thus turning modern quantitative genetics into reality. Lohmann's breeding aims continue to be based on the most efficient production of first quality eggs through good egg numbers, optimum egg weight, good shell strength and colour and excellent feed conversion. In addition, this work produces a bird with a good temperament, easily managed and adaptable to all types of production systems.

This careful genetic selection allied to high quality management makes the **Lohmann Brown - the most profitable hen in the house.**

The Specifications in this manual are for the United Kingdom and may differ from the version produced for English speaking countries worldwide.

Performance Objectives

Eggs per hen housed to 72 weeks		310.4
Average Egg Size to 72 weeks		63.3grams
Egg Mass to 72 weeks		19.65kg
Feed Consumption	Day Old to 16 Weeks	5.85kg
	Day Old to 18 Weeks	7.03kg
	19 to 72 Weeks	42.62kg
	21 to 72 Weeks	41.36kg
Average Feed Intake	19 to 72 Weeks	112.8 g/b/d
	21 to 72 Weeks	113.6 g/b/d
Feed Conversion	21 to 72 Weeks	2.1
Bodyweight at	16 Weeks	1410 grams
	18 Weeks	1530 grams
Liveability	Rearing	97 - 98%
	Laying Period	93 - 96%

Rearing Management

Rearing is an extremely important stage in the bird's life as its bodyweight development and disease status will strongly influence the laying performance of the flock. Rearing sites should be housed with birds of a single age and should operate on an all-in-all-out system. Sheds should be thoroughly washed and disinfected between flocks. They should be well maintained to ensure there is no light or water leakage into the shed and that wild birds and vermin are excluded.

Temperature within the shed must be accurately controlled, adequate feeding and drinking space must be provided, and birds should not be overstocked in the shed.

If these conditions are provided, along with good quality management, the opportunity for successful rearing and highly productive laying flocks is more easily achieved.

The following figures give rules-of-thumb for conditions required in the rearing shed, but these must be allied to careful observation of the birds and action to maintain an ideal environment.

Brooders	1 × 36,000 BTU brooder per 2500 chicks. Temperature at litter 35 °C. House temperature 24-27 °C at day 1, reducing gradually to 20-22 °C by day 28-35.		
Whole house heating	House temperature 28-30 °C at day 1, reducing gradually to 20-22 °C by day 28-35.		
Stocking density	Litter Cages	17kg/m^2 250cm^2/kg	In accordance with the code of recommendations for the welfare of livestock.
Feeding space	0 to 4 weeks 5 weeks to depletion	4.0 cm/pullet 8.0 cm/pullet	
Drinking space	Bell drinkers Nipple drinkers	1.25 cm/pullet 10-13 pullets/nipple	
Ventilation	Minimum Maximum	1.5 m^3/hr/kg bodyweight Note: Removing ammonia may be the first limiting factor before this minimum level of ventilation is reached. 6.0 m^3/hr/kg bodyweight	

Bodyweight Profile

The bodyweight profile on page 5 shows the expected growth curve for the Lohmann Brown. Where the two lines diverge the lower line shows the expected bodyweight for litter rearing, whilst the upper line shows the maximum recommended weight for rearing in cages. In litter rearing, it would be expected that the birds would be ad-lib fed throughout the rearing period. In cages, if bodyweights seem likely to exceed the maximum recommended weight, a degree of feed control may be required. On litter or in cages, feed control must not be practised before 8 weeks of age or after the first light increase, as the birds are being brought into lay.

In order to ensure that the birds are progressing satisfactorily, it is essential to monitor the birds' bodyweight throughout the rearing period. The first weights should be taken at 3 weeks of age and the birds weighed weekly thereafter. A representative sample should be weighed on each occasion i.e. a minimum of 40 per pen.

In addition to bodyweight, the degree of evenness within the flock (the variation in bodyweights around the average weight) is important. Birds in an uneven flock will mature at different times and the flock will show a low flat peak of production. Also birds which matured late will still have good egg laying potential at depletion. There is therefore a loss of eggs at both ends of the production cycle.

The calculation for evenness is shown below. The target for evenness at 16 weeks should be greater than 80%.

To achieve an evenness of 80% means that 80% of the birds weighed must be within + or - 10% of the average weight.

	Grams	X = One Bird Weight						
	1060							
	1080	X						
	1100							
	1120	X						
	1140	X	X					
▲	1160							
	1180	X						
	1200	X	X	X				
	1220	X	X	X				
	1240	X	X					
	1260	X	X	X	X			
●	1280	X	X	X	X	X	X	X
	1300	X	X	X	X	X	X	
	1320	X	X	X				
	1340	X	X					
	1360	X	X					
	1380	X						
▼	1400							
	1420	X						
	1440	X						
	1460							

<u>Example at 14 weeks of age</u>

In the example shown average weight = 1280grms
10% of average weight = 128grms

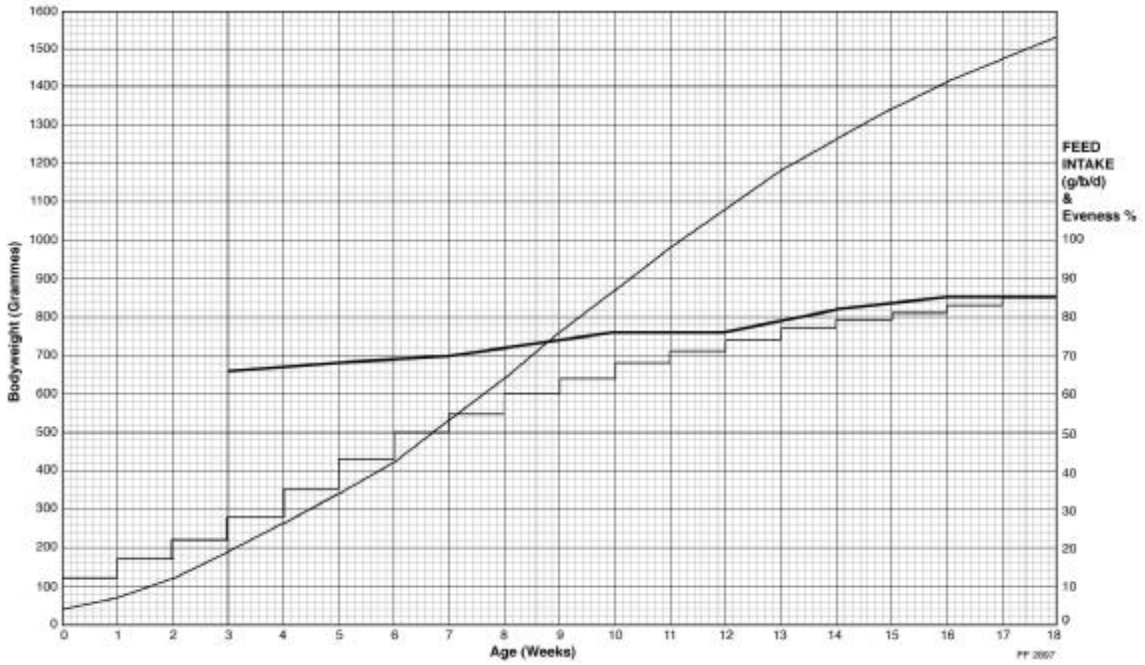
The range of weights used to calculate the evenness is:-
Lower weight = 1280 - 128 = 1152grms.

Upper weight = 1280 + 128 = 1408grms.

Number of birds weighed = 40
No of birds within + or - 10% of the average weight = 34

Evenness = 34÷40 = 85%

Lohmann Brown Bodyweight Targets



Age in Weeks	Bodyweight Range		Age in Weeks	Bodyweight Range	
	Target grms	Maximum grms		Target grms	Maximum grms
1	75	75	10	870	970
2	120	120	11	980	1070
3	190	190	12	1080	1150
4	260	260	13	1180	1220
5	340	340	14	1260	1290
6	420	440	15	1340	1350
7	530	570	16	1410	1410
8	640	710	17	1470	1470
9	760	850	18	1530	1530

Feed control must not be practised before 8 weeks of age or after the first light increase as the birds are being brought into lay.

Lighting

Lighting, in conjunction with bodyweight, is the main factor influencing the maturity of the bird.

Standard maturity (70% production at 22 weeks) can be achieved by following the light programme in column A of the table on page 7. This will give production and egg size as shown in the performance objectives.

Lighting for earlier maturity, by following column B of the table on page 7 will give increased numbers and average egg size below standard. Early maturity should only be considered if the birds have followed the correct bodyweight profile throughout rearing, and have achieved an average bodyweight of 1260 grammes by 14 weeks of age with an evenness of not less than 80%. The importance of evenness is described in the section on bodyweight profile on page 4.

Late maturity to achieve average egg size greater than standard can be controlled by implementing a slow step-down lighting programme in the early stages of rearing. Light programmes which step-down to an 8 hour day length by between 4 weeks and 8 weeks of age will delay maturity by an increasing amount, approximately 1 day for each week that the step-down programme is extended. Flocks on a slow step-down programme should receive their first light increase at 16 weeks.

Whichever light programme is followed, the single rule which must always be observed is that no decrease in day length must occur after the onset of lay. Light intensity in the laying house must always be an increase over that in the rearing house and should be in the range of 20 - 30 lux.

Lighting

Age in Weeks	Light in hours			Light Intensity		
	A	B	C	A Lux	B Lux	C Lux
Day 1 - 2	23.0	23.0	23.0	20-40	20-40	20-40
Day 3 - 6 Reducing to:	16.0	16.0	16.0	20-30	20-30	20-30
Day 7 - 14 Reducing to:	14.0	14.0	14.0	10-20	10-20	10-20
2 - 3 wks Reducing to:	8.0	8.0	13.0	4-6	4-6	5-10
4	8.0	8.0	12.0	4-6	4-6	4-6
5	8.0	8.0	11.0	4-6	4-6	4-6
6	8.0	8.0	10.0	4-6	4-6	4-6
7	8.0	8.0	9.0	4-6	4-6	4-6
8	8.0	8.0	8.0	4-6	4-6	4-6
9	8.0	8.0	8.0	4-6	4-6	4-6
10	8.0	8.0	8.0	4-6	4-6	4-6
11	8.0	8.0	8.0	4-6	4-6	4-6
12	8.0	8.0	8.0	4-6	4-6	4-6
13	8.0	8.0	8.0	4-6	4-6	4-6
14	8.0	9.0	8.0	4-6	5-10	4-6
15	8.0	10.0	8.0	4-6	5-10	4-6
16	9.0	11.0	9.0	5-10	5-10	5-10
17	10.0	12.0	10.0	20-30	20-30	20-30
18	11.0	13.0	11.0	20-30	20-30	20-30
19	12.0	14.0	12.0	20-30	20-30	20-30
20	13.0	14.0	13.0	20-30	20-30	20-30
21	14.0	14.0	14.0	20-30	20-30	20-30

A = Standard Maturity B = Early Maturity C = Delayed Maturity

Use the above programmes in conjunction with page 6.

An 8 hour rearing day length is adequate for the Lohmann Brown. However, a 10 hour day length as is commonly practised currently will not be detrimental to the birds.

Nutrition

D/O to POL

A good plane of nutrition will be required to achieve the target bodyweights and the diets recommended are described in this section.

Feed particle size and gut development
Feed particle size directly influences the gizzard and gut development. Crude particles in the feed stimulate gizzard activity and its volume necessary for efficient digestion. A recommended structure profile which covers the requirements of the bird and allows optimal feed flow is given below.

For birds in rear a 3 stage feeding programme is adequate consisting of chick starter plus, chick starter and grower.

Chick starter plus is fed to approximately 3 weeks or when the birds have achieved a minimum bodyweight of 190 grammes. Starter is then fed until birds are 8 weeks or when a minimum body weight of 640 g is achieved. Grower is fed until transfer to the laying site, which should be at 16 weeks of age.

For birds following the Early Maturity programme, using early light stimulation, it is even more important that the target bodyweight at 8 weeks and 14 weeks are achieved. If necessary starter plus and starter diet may have to be used for longer periods.

Recommended Particle - Size Distribution for Chick Starter, Grower and Layer feed (Mash)

Sieve size (mm)	Passing Part %	Sieve size interval (mm)	Part of interval %
0.5 mm	19	0 - 0.5 mm	19
1.0 mm	40	0.51 - 1.0 mm	21
1.5 mm	75	1.01 - 1.5 mm	35
2.0mm	90	1.51 - 2.0 mm	15
2.5mm	100	> 2.0 mm	10*
			100

* Individual Particles Not Bigger Than

- 3 mm in chick superstarter/starter diets
- 5 mm in grower and layer diets.

Nutrient levels for these rations are shown in the table on page 10.

Birds on all systems must be fed ad-lib up to 8 weeks as this is a vital period of body frame and immune system development. It should be noted that the metabolism of the bird will change around 8 weeks and the bird's main requirement will then be for energy rather than protein.

A table of expected feed consumption and water intake is shown below.

Feed and Water Consumption

Age in Weeks	Feed Consumption		Water Consumption	Age in Weeks	Feed Consumption		Water Consumption
	g/day	Cum. Grms	litres/1000 birds		g/day	Cum. Grms	litres/1000 birds
1	12	84	10	10	65	2751	105
2	17	203	22	11	68	3227	114
3	22	357	33	12	70	3717	124
4	29	560	44	13	72	4221	132
5	36	812	55	14	75	4746	140
6	44	1120	65	15	77	5285	148
7	51	1477	75	16	79	5838	156
8	56	1869	85	17	81	6405	165
9	61	2296	95	18	84	6993	174

Recommendations for Nutrient Levels During Rear and Early Lay

		Starter Plus	Starter	Grower	Start-Lay
		1-3 Wks	4-8 Wks	9-15 Wks	16-28 Wks
Minimum	**MJ**	12.2	11.9	11.6	11.7
Crude Protein	**%**	20.2	18.6	14.5	18.0
Methionine	**%**	0.48	0.38	0.30	0.40
Meth/Cystine	**%**	0.84	0.73	0.60	0.73
Dig. M/C	**%**	0.78	0.66	0.53	0.60
Lysine	**%**	1.15	1.00	0.70	0.80
Dig. Lysine	**%**	1.05	0.90	0.62	0.66
Tryptophan	**%**	0.24	0.23	0.17	0.18
Threonine	**%**	0.72	0.63	0.45	0.59
Calcium	**%**	1.05	1.00	0.95	3.50
Phosphorous total	**%**	0.75	0.75	0.75	0.55
Phosphorous avail.	**%**	0.47	0.45	0.40	0.40
Sodium	**%**	0.16	0.16	0.16	0.15
Chlorine	**%**	0.23	0.23	0.23	0.20
Linoleic Acid	**%**	1.25	1.20	1.00	1.80

Notes:

- If birds have been beak trimmed Starter plus can be crumbs, but should have a layer of meal covering the crumbs to allow birds easy access to feed.
- ME figures above are corrected for Nitrogen
- Total Phosphorus can be reduced in presence of added phytase

Nutrition

POL to 28 Weeks

During the early period of lay, feed consumption is developing. During this period it is important that excess calcium and fibre is curtailed as these will inhibit appetite. Therefore a tailor made Start Lay diet is recommended with the nutrient profile in the table on page 10. The calcium level should be fixed to 3.5 %; the fibre level should not exceed 4 %. The Start-Lay ration should be fed until a daily egg mass of 57g is achieved (around 28 weeks of age) at which point the diet should be changed to Layer Phase 1.

Note: Daily egg mass is calculated by multiplying egg weight by the hen week % production divided by 100

e.g.
Egg Weight = 60.4g
% HW Production = 93.9%
Daily Egg Mass = 60.4 x 93.9/100 = 56.7g

Nutritional concepts after reaching 57g daily egg mass

From this stage on, a phase feeding system should be followed. The basis of feed formulation (% level of nutrients) is daily feed intake which can be influenced by energy level, house temperature, feather quality and feed structure.

By adjusting the feed levels, particularly crude protein, amino acids, calcium, phosphorous and linoleic acid to changing requirements, full use of nutrients can be achieved enabling high levels if production and persistent shell quality to be maintained.

The change to Layer Phase 1 is based on reaching 57g egg mass. Changing to Layer Phase 2 is recommended to be by 50 weeks, at the latest, in order to adjust calcium and phosphorous levels in the birds diet to support shell stability in the later stage of lay. Layer Phase 3 should be introduced by 60 weeks, at the latest, for the same reason.

In the event of daily egg mass output, significantly above standard at 50 weeks that would justify maintaining the birds on Layer Phase 1, calcium and phosphorous levels must be adjusted to give equivalent intakes as would be achieved on Layer Phase 2. This is important for achieving long term shell stability. Producers should consult their feed company representative to make this alteration to the Phase 1 diet.

The figures stated in the 3 following tables apply to feed containing an energy level of 11.6 MJ (2780 kcal) per kg of feed at a temperature of 21EC and good feather condition.

Metabolizable Energy (ME) figures given in this manual are corrected for nitrogen.

LAYER PHASE 1 (Daily egg mass of 57g+)

Recommended Nutrient Levels per kg of Feed at different Feed Intake Levels

Nutrient	Requirement	Feed Intake		
	g/hen/Day	112 g	117 g	123 g
Crude Protein	19.60	17.50 %	16.80 %	15.90 %
Methionine	0.44	0.39 %	0.38 %	0.36 %
Meth./Cyst.	0.80	0.71 %	0.68 %	0.65 %
Dig. M/C	0.66	0.59 %	0.56 %	0.54 %
Lysine	0.87	0.78 %	0.74 %	0.71 %
Dig. Lysine	0.71	0.63 %	0.61 %	0.58 %
Tryptophan	0.21	0.19 %	0.18 %	0.17 %
Threonine	0.64	0.57 %	0.55 %	0.52 %
Calcium	4.10	3.66 %	3.50 %	3.33 %
Phosphor, tot.	0.60 *	0.54 %	0.51 %	0.49 %
Phosphor, av.	0.42	0.38 %	0.36 %	0.34 %
Sodium	0.17	0.15 %	0.15 %	0.14 %
Chlorine	0.17	0.15 %	0.15 %	0.14 %
Linoleic Acid	2.00	1.79 %	1.71 %	1.63 %

* lower levels acceptable in presence of added phytase

LAYER PHASE 2 (by 50 weeks latest)

Recommended Nutrient Levels per kg of Feed at different Feed Intake Levels

Nutrient	Requirement	Feed Intake		
	g/hen/Day	112 g	117 g	123 g
Crude Protein	18.40	16.40 %	15.70 %	15.00 %
Methionine	0.38	0.34 %	0.32 %	0.31 %
Meth./Cyst.	0.71	0.63 %	0.61 %	0.58 %
Dig. M/C	0.59	0.53 %	0.50 %	0.48 %
Lysine	0.83	0.74 %	0.71 %	0.67 %
Dig. Lysine	0.68	0.61 %	0.58 %	0.55 %
Tryptophan	0.20	0.18 %	0.17 %	0.16 %
Threonine	0.58	0.52 %	0.50 %	0.47 %
Calcium	4.50	4.02 %	3.85 %	3.65 %
Phosphor, tot.	0.54 *	0.48 %	0.46 %	0.44 %
Phosphor, av.	0.38	0.34 %	0.32 %	0.31 %
Sodium	0.17	0.15 %	0.15 %	0.14 %
Chlorine	0.17	0.15 %	0.15 %	0.14 %
Linoleic Acid	1.60	1.43 %	1.37 %	1.30 %

* lower levels acceptable in presence of added phytase

LAYER PHASE 3 (by 60 weeks latest)

Recommended Nutrient Levels per kg of Feed at different Feed Intake Levels

Nutrient	Requirement	Feed Intake		
	g/hen/Day	112 g	117 g	123 g
Crude Protein	17.80	15.90 %	15.20 %	14.50 %
Methionine	0.36	0.32 %	0.31 %	0.29 %
Meth./Cyst.	0.67	0.60 %	0.57 %	0.54 %
Dig. M/C	0.55	0.49 %	0.47 %	0.45 %
Lysine	0.78	0.70 %	0.67 %	0.63 %
Dig. Lysine	0.64	0.57 %	0.55 %	0.52 %
Tryptophan	0.19	0.17 %	0.16 %	0.15 %
Threonine	0.55	0.49 %	0.47 %	0.44 %
Calcium	4.70	4.20 %	4.00 %	3.82 %
Phosphor, tot.	0.47 *	0.42 %	0.40 %	0.38 %
Phosphor, av.	0.33	0.29 %	0.28 %	0.27 %
Sodium	0.17	0.15 %	0.15 %	0.14 %
Chlorine	0.17	0.15 %	0.15 %	0.14 %
Linoleic Acid	1.20	1.07 %	1.03 %	0.98 %

* lower levels acceptable in presence of added phytase

Free Range Diets

Free Range diets should have a ME level of 11.8 MJ/kg and be formulated on feed intake based on the same requirements of other nutrients as for intensive flocks.

Once the birds have passed the Startlay phase, they are able to compensate their higher energy demands by increased feed consumption. Management systems, feather quality and diseases will affect energy demand.

Fine and coarse Limestone in Layer Diets

Up to about 30 weeks of age a bone growth continues. Therefore young hens require calcium both for bone growth and shell formation. Crude limestone (2-5 mm) has the advantage that it remains in the gizzard and is released over night, where the highest Ca-demand of a laying hen occurs. Due to these circumstances both sources of limestone should be incorporated in layer diets. The relation between fine and coarse limestone should be as shown in the following table.

Continuous Supply of Fine and Coarse Limestone Recommended Relation in Feed

Feed Type	Fine Limestone	Coarse Limestone (can be partly replaced by oyster shells)
Start-Lay	35%	65%
Layer Phase 1	30%	70%
Layer Phase 2	25%	75%
Layer Phase 3	15%	85%

Supplements

Supplements ensure the necessary supply of essential vitamins, trace elements and substances such as anti-oxidants or carotenoids for yolk pigmentation.

Suitable supplementation can compensate for varying contents of raw materials and safeguard the supply of all necessary micronutrients.

Recommended Supplements

Supplements per kg		Starter Feed	Grower Feed	Pre-/Start Layer Feed	Layer Feed
Vitamin A	**I.U.**	12000	8000	10000	10000
Vitamin D_3	**I.U.**	3000	2000	3000	3000
Vitamin E	**mg**	10 - 30*	10 - 30*	20 - 60*	10 - 30*
Vitamin K_3	**mg**	3**	3**	3**	3**
Vitamin B_1	**mg**	1	1	1	1
Vitamin B_2	**mg**	6	6	6	4
Vitamin B_6	**mg**	3	2	3	3
Vitamin B_{12}	**mcg**	15	10	15	15
Pantothenic Acid	**mg**	8	7	8	8
Nicotinic Acid	**mg**	30	30	30	30
Folic Acid	**mg**	1.0	0.5	1.0	0.5
Biotin	**mcg**	50	25	50	-
Choline Chloride	**mg**	100	100	100	50
Anti-oxidants	**mg**	100 - 150*	100 - 150*	100 - 150*	100 - 150*
Coccidiostat		as required	as required	-	-
Manganese	**mg**	100	100	100	100
Zinc	**mg**	60	60	60	80
Iron	**mg**	25	25	25	25
Copper	**mg**	5	5	5	5
Cobalt	**mg**	0.1	0.1	0.1	0.1
Iodine	**mg**	0.5	0.5	0.5	0.5
Selenium	**mg**	0.2	0.2	0.2	0.2

* According to fat content
** Doubling with heat treated feed

Levels are based on UK (wheat/soya) diets.

Housing - Laying Period

The Lohmann Brown is an early maturing hybrid and should be transferred to the laying house early enough to avoid stressing the birds as they come into lay. The timing of this will depend on the light stimulation programme used. For birds on the standard maturity light programme, housing should be at 16 weeks. On an earlier maturity programme transfer to the laying house should coincide with the first light increase.

Pullets can lose approximately 10% of their bodyweight at the time of transfer, principally through dehydration. It is essential to ensure that birds start drinking soon after being housed. Cages should be checked to ensure that at least one bird in the cage is drinking. The others will follow. On litter based systems, the stockman should be aware of any birds starting to develop pale combs and losing weight and ensure they have access to water.

Good quality feed should be available ad-lib until beyond peak egg mass (approx 38 weeks) at least. In the period between housing and peak production, it is important to match the increasing feed intake of the bird and ensure feed is freely available to avoid birds being faced with an empty trough.

Such a shortage of feed could lead to nutritional deficiency and result in stress on the bird at a critical period in the production cycle.
Nutritional requirements for the Lohmann Brown are shown in the table on pages10,12, and 13.

A shed temperature of 21°C is recommended. Temperatures below this will result in increased feed consumption at a rate of 1.5% increase in consumption per 1°C drop in temperature below 21°C. Temperatures above 25°C will have an increasingly adverse effect on egg weight.

Regular inspection of the stock is always essential and particularly in the period after housing to ensure that all birds make the transition from rearing farm to laying farm successfully without any undue stress that will affect their production potential.

Water consumption for adult hens at 21◦C should be 210 litres per 1000 birds. It is important that this level is achieved by first eggs.

Bodyweight

Bodyweights should be monitored weekly after housing on the laying site to ensure that the flock is progressing towards production satisfactorily. Failure to achieve target bodyweights should be addressed promptly by altering management.

A table of the bodyweights for Lohmann Brown from point of lay to end of lay is shown below.

Laying Period

Age In Weeks	Target Weight (grms)	Age In Weeks	Target Weight (grms)
16	1410	40	1950
17	1470	42	1950
18	1530	44	1950
19	1630	46	1950
20	1710	48	1950
21	1770	50	1950
22	1820	52	1950
23	1850	54	1950
24	1870	56	1940
25	1890	58	1940
26	1910	60	1930
27	1920	62	1920
28	1930	64	1920
29	1940	66	1910
30	1950	68	1910
32	1950	70	1900
34	1950	72	1900
36	1950	74	1890
38	1950	76	1890

Lighting

In a controlled light environment, the light should be increased by 1 hour per week from the time of the first light increase to a maximum of 14 hours, and maintained at this level. Day length must never be allowed to decrease during the laying period. In free range systems, account must be taken of the natural day length at the time of housing.

A bird of correct bodyweight will start to become sexually mature from approximately 16 weeks, regardless of whether any light increase is given or not. However, in this event, failure to increase day length will restrict the bird's ability to consume adequate nutrition during a period of rapid development. This will result in poor development and possible long term damage to the bird's productive potential as she will use her body resources to substitute the lack of nutrition.

No attempt should be made to delay maturity by delaying light increases after 16 weeks. Delayed maturity should be achieved by the use of a slow step down light programme in rearing as described previously in this manual.

Lighting in lay can also be a useful tool for altering egg weight by using intermittent lighting. Used appropriately, this can give increased egg weight and lower feed consumption. The effect is also easily reversible by returning to a normal lighting programme. Consult your Lohmann GB representative for further information on this.

Performance Monitoring

Records

Good records constitute an essential aid to management. They are important to:-

1. Show if the flock is performing to expectation.
2. Indicate changes in bird behaviour, e.g. a drop in feed or water consumption, that may give early warning of a problem.
3. Give essential background information in the analysis of problems.
4. Give historical information to allow comparison of one flock with another.

Records needed in rearing are:-
Date housed.
Number housed.
Mortality by day.
Temperature - daily max. and min.
Water consumption - daily.
Feed consumption - daily.
Lighting programme.
Vaccination programme - including
Date of administration.
Batch numbers/expiry date.
Bodyweights - weekly from 2 weeks.
Details of all feed and materials deliveries .
Record of all visitors to the farm.

Records needed in production are those shown above (bodyweights taken every 5 weeks after 30 weeks) plus the following:-
Production % - daily.
Seconds % - daily.
Egg weight - weekly.
Egg room temperature - daily.
Details of all egg collections from the farm.

Feed Sampling

In case of poor performance, it is often impossible to make reference to the particular feed being used because no sample is available, thus feed is commonly implicated by default. It is, therefore, good practice, in agreement with the feed supplier to establish a feed sampling procedure so that each delivery may be sampled and stored for a relevant period. A procedure involving taking a daily, dated feed sample from each feed bin is a practical way of monitoring feed deliveries.

Flock Health

Blood monitoring is extremely useful in giving a historical picture of flock health in the event of a production problem. Blood samples taken at 20, 25, 30, 40 and 50 weeks can be stored by your vet at minimal cost. If an investigation becomes necessary, these can be analysed as a batch to give a series of blood titre results through the life of the flock. The results can help to show whether the problem is due to development of disease or not.

Records of all blood sample results, post mortems, etc. for a flock should be carefully stored together. These can be used as an aid to develop the flock management and vaccination programme for subsequent flocks.

Performance Objectives
20 - 48 Weeks

Age Wks	Cum. Mort. %	Hen Wk Prod.%	Eggs/H.H Wk.	Eggs /H.H Cum.	Av. Egg Wt. grm. Wk	Av. Egg Wt. grm. Cum.	Egg Mass Cum. kg.	Feed Intake g/b/d	Feed/H.H Cum. kg.	FCR
20	0.0	20.0	1.4	1.8	48.85	48.40	0.08	100.0	0.00	0.00
21	0.0	40.0	2.8	4.6	51.76	50.50	0.23	106.0	0.74	3.23
22	0.0	71.8	5.023	9.6	54.25	52.50	0.50	109.0	1.51	3.00
23	0.1	87.1	6.093	15.7	56.26	53.90	0.84	112.0	2.29	2.71
24	0.2	92.2	6.445	22.1	57.58	55.00	1.22	115.0	3.09	2.54
25	0.3	94.3	6.581	28.7	58.67	55.80	1.60	117.0	3.91	2.44
26	0.4	94.5	6.589	35.3	59.43	56.50	1.99	117.0	4.72	2.37
27	0.5	94.5	6.582	41.9	60.22	57.10	2.39	117.0	5.54	2.32
28	0.6	94.5	6.575	48.4	60.55	57.60	2.79	117.0	6.35	2.28
29	0.7	94.3	6.569	55.0	61.03	58.00	3.19	117.0	7.17	2.25
30	0.8	94.3	6.548	61.6	61.53	58.40	3.59	117.0	7.98	2.22
31	0.9	94.2	6.535	68.1	61.93	58.70	4.00	117.0	8.79	2.20
32	1.0	94.1	6.521	74.6	62.25	59.00	4.40	117.0	9.60	2.18
33	1.1	94.0	6.508	81.1	62.50	59.30	4.81	117.0	10.41	2.16
34	1.2	93.8	6.486	87.6	62.77	59.50	5.22	117.0	11.22	2.15
35	1.3	93.5	6.459	94.1	62.89	59.80	5.62	117.0	12.03	2.14
36	1.4	93.2	6.431	100.5	62.94	60.00	6.03	117.0	12.84	2.13
37	1.5	92.9	6.403	106.9	63.05	60.20	6.43	117.0	13.64	2.12
38	1.6	92.6	6.375	113.3	63.16	60.30	6.83	117.0	14.45	2.11
39	1.7	92.2	6.348	119.6	63.27	60.50	7.24	117.0	15.25	2.11
40	1.8	91.9	6.320	125.9	63.38	60.60	7.64	117.0	16.06	2.10
41	1.9	91.6	6.293	132.2	63.49	60.80	8.04	117.0	16.86	2.10
42	2.0	91.3	6.265	138.5	63.60	60.90	8.43	117.0	17.66	2.09
43	2.1	91.0	6.238	144.7	63.71	61.00	8.83	117.0	18.47	2.09
44	2.2	90.7	6.210	150.9	63.82	61.10	9.23	117.0	19.27	2.09
45	2.3	90.4	6.183	157.1	63.93	61.20	9.62	117.0	20.07	2.09
46	2.4	90.1	6.155	163.3	64.04	61.30	10.02	117.0	20.87	2.08
47	2.5	89.8	6.128	169.4	64.15	61.50	10.41	117.0	21.66	2.08
48	2.6	89.5	6.101	175.5	64.26	61.50	10.80	117.0	22.46	2.08

Performance Objectives
49 - 76 Weeks

Age Wks	Cum. Mort. %	Hen Wk Prod. %	Eggs/ H.H Wk.	Eggs/ H.H Cum.	Av. Egg Wt. grm. Wk	Av. Egg Wt. grm. Cum.	Egg Mass Cum. kg.	Feed Intake g/b/d	Feed/H.H Cum. kg.	FCR
49	2.7	89.2	6.074	181.6	64.37	61.60	11.19	117.0	23.26	2.08
50	2.8	88.8	6.042	187.6	64.48	61.70	11.58	117.0	24.06	2.08
51	2.9	88.4	6.005	193.6	64.59	61.80	11.97	117.0	24.85	2.08
52	3.0	87.8	5.965	199.6	64.70	61.90	12.36	117.0	25.65	2.08
53	3.1	87.3	5.924	205.5	64.81	62.00	12.74	117.0	26.44	2.08
54	3.2	86.8	5.883	211.4	64.92	62.10	13.12	117.0	27.23	2.08
55	3.3	86.3	5.842	217.2	65.03	62.20	13.50	117.0	28.02	2.08
56	3.4	85.8	5.801	223.0	65.14	62.20	13.88	117.0	28.81	2.08
57	3.5	85.3	5.761	228.8	65.25	62.30	14.26	117.0	29.61	2.08
58	3.6	84.8	5.720	234.5	65.36	62.40	14.63	117.0	30.39	2.08
59	3.7	84.3	5.680	240.2	65.47	62.50	15.00	117.0	31.18	2.08
60	3.8	83.7	5.639	245.8	65.58	62.50	15.37	117.0	31.97	2.08
61	3.9	83.2	5.599	251.4	65.69	62.60	15.74	117.0	32.76	2.08
62	4.0	82.7	5.559	257.0	65.80	62.70	16.11	117.0	33.54	2.08
63	4.1	82.2	5.518	262.5	65.91	62.70	16.47	117.0	34.33	2.08
64	4.2	81.7	5.478	268.0	66.02	62.80	16.83	117.0	35.11	2.09
65	4.3	81.2	5.438	273.4	66.13	62.90	17.19	117.0	35.90	2.09
66	4.4	80.7	5.398	278.8	66.24	62.90	17.55	117.0	36.68	2.09
67	4.5	80.2	5.358	284.2	66.35	63.00	17.90	117.0	37.46	2.09
68	4.6	79.6	5.319	289.5	66.46	63.10	18.26	117.0	38.24	2.09
69	4.7	79.1	5.279	294.8	66.57	63.10	18.61	117.0	39.03	2.10
70	4.8	78.6	5.239	300.0	66.68	63.20	18.96	117.0	39.80	2.10
71	4.9	78.1	5.199	305.2	66.79	63.20	19.31	117.0	40.58	2.10
72	5.0	77.6	5.160	310.4	66.90	63.30	19.65	117.0	41.36	2.10
73	5.1	77.1	5.120	315.5	67.01	63.40	19.99	117.0	42.14	2.11
74	5.2	76.6	5.081	320.6	67.12	63.40	20.34	117.0	42.92	2.11
75	5.3	76.1	5.042	325.6	67.23	63.50	20.67	117.0	43.69	2.11
76	5.4	75.5	5.002	330.6	67.34	63.50	21.01	117.0	44.47	2.12

Appendices

Rearing Record Card

Body Weight Graph

Body Weight Chart

Egg Recording Card

Production Graph