



**Hubbard**  
YOUR CHOICE, OUR COMMITMENT

JV

**GUIDE**

*Parent Stock*



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## 1. FEMALE REARING PERIOD (0-24 WEEKS)

### 1.1. CRITICAL POINTS IN REARING

- ✓ Optimum brooding conditions, with a quick step down light program.
- ✓ Early grading and sufficient equipment / space to promote good uniformity.
- ✓ 580 / 595 g at 5 weeks to promote skeleton development.
- ✓ 1 860 to 1 900 g at 20 weeks.
- ✓ Eating time: 45 to 60 minutes. Adjust feeding program accordingly (6/7, 5/7, etc.).

### 1.2. BODYWEIGHT TARGETS

Weigh chicks weekly from the first week. Take collective weights (5-10 birds) the first two weeks and individual weights thereafter. The sample size should be representative (2 - 3% from each pen and at least 100 birds.)

5 weeks (35 d)	10 weeks (70 d)	15 weeks (105 d)	20 weeks (140 d)	24 weeks (168 d)
580 /	1 055 /	1 460 /	1 860 /	2 205 /
595 g	1 080 g	1 500 g	1 900 g	2 260 g

Take samples from 3 separate places in each pen; weigh every bird in the catching pen to record data which reflects the flock's true bodyweight.

### 1.3. MAIN POINTS TO ACHIEVE PROPER BODYWEIGHT WITH GOOD UNIFORMITY

Optimum brooding conditions, with a quick step down light programme.

#### DARK REARING HOUSE AND DARK PRODUCTION HOUSE

Age (Days)	Day length*	Light intensity (lux)**	Feed / day ***	Temperature (°C) / (°F)			Humidity	
				Using brooders (1 / 500 chicks)				Whole house heating
				Under brooders	Living area	"Cold" area		
0	24 h	60	Ad libitum up to 30 g/bird  (6.6 lb/100 birds)	34-35/(93-95)	28/(83)	22-23/(72-73)	31-32/(88-90)	50-60%
1	22 h	60		34-35/(93-95)	28/(83)	22-23/(72-73)	30-31/(86-88)	50-60%
2	20 h	60		34-35/(93-95)	28/(83)	22-23/(72-73)	29-30/(84-86)	50-60%
3	18 h	40		34-35/(93-95)	27/(81)	22-23/(72-73)	28-29/(83-84)	50-60%
4	16 h	30		31-33/(88-91)	26/(79)	22-23/(72-73)	28-29/(83-84)	50-60%
5	14 h	20		31-33/(88-91)	25/(77)	22-23/(72-73)	26-27/(79-81)	50-60%
6	12 h	15		31-33/(88-91)	25/(77)	22-23/(72-73)	26-27/(79-81)	50-60%
7	10 h	10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
8	8 h	5 - 10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
9	8 h	5 - 10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
10	8 h	5 - 10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
11	8 h	5 - 10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
12	8 h	5 - 10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
13	8 h	5 - 10		27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%
14	8 h	5 - 10	27-28/(81-83)	22-23/(72-73)		24-25/(75-77)	50-60%	

\* In non-dark houses, refer to the Light Programme section in the general Management Guide for the minimum light to apply.

\*\* 10 lux = 1 ft. candle

\*\*\* Adjust the feed quantity so that at the end of the day the feeders are empty.

## DARK REARING HOUSE AND NON-DARK PRODUCTION HOUSE

Natural day length (h) at 154 days		< 11	12	13	14	15
Age (days)	Intensity (lux)	Length of artificial light (h)				
1	60	22	22	22	22	22
2	60	20	20	20	20	20
3	40	18	18	18	18	18
4	30	16	16	16	16	16
5	20	14	14	14	14	14
6	15	12	12	12	12	12
7	10	10	10	10	11	11
8 to 153	5 - 10	8	8	10	11	5 - 10

- Starter feed (crumbles) during the first 3-4 weeks and change to grower feed from the 5<sup>th</sup> week.
- Flock eating behaviour: Check the time birds take to eat. Eating time should be around 45-60 min. Change to the 6/7, 5/7 or 4/7 feeding program from the 4<sup>th</sup> week according to the eating time (to be considered according to the prevailing legislation in the country).
- Beak trimming (to be considered according to the prevailing legislation in the country) should be done at day old or at around 7 days in specific situations for females to be housed:
  - In open rearing and/or production farms with high light intensity.
  - In stressful environments, lack of equipment, high density...
- This operation has to be very carefully implemented. Do not beak trim the small chicks; separate them and treat those 4-5 days later.
- Then birds can be fed separately using the feed amount that best meets their needs.
- The small birds should develop their frame size before 10-12 weeks.
- Grading of birds by bodyweight is the best way to enhance flock uniformity. Grading is the best done as early in life as possible (at 4-5 weeks).
- And above all, it is crucial to observe the flock eating behaviour to be sure that the feed and the water distribution are correct.

### 1.4. EQUIPMENT AND STOCKING DENSITY

<b>Linear trough feeder:</b>	12-14 cm/bird
<b>Pan feeding system: Round:</b>	1/12-13 birds
<b>Oval:</b>	1/14-15 birds
<b>Spin feeding:</b>	1 spinner/1500- 1800 birds (density :10-12 birds/sqm)
<b>Bell drinkers:</b>	1/80 birds
<b>Nipple drinkers:</b>	1/10 birds
<b>Feed distribution time:</b>	4 min
<b>Stocking density</b>	9 - 10 females/sqm (moderate climate) 6 - 8 females/sqm (hot climate)

### 1.5. WATER RESTRICTION (IF REQUIRED)

On days with feed: stop water 2 hours after the end of the feed clean-up.

On days with no feed: a minimum of 2 hours and more if it is too hot.

Check the crop before stopping the water; it should be soft.

Regularly check the chemical and bacteriological quality of the drinking water

## 1.6. GRAIN AND GRIT

To induce scratching the litter, exercise and to help improve flock feeding behaviour, allocate:

- 3 g of grit/week/bird distributed on two days.
- 3 g of grain/bird twice a week.

This is also important to keep the birds busy on the non-feeding days.

## 1.7. PERCHES

Provide 3 cm of perch space/pullet from the 4<sup>th</sup> week to train the pullets to jump up to the nests and to help prevent floor eggs.

Perches are recommended, especially when the equipment does not allow any other way of perching; pan feeders, nipple drinkers, etc.

## 2. LIGHTING PROGRAMME

### OBJECTIVE: 10-15 % WEEKLY PRODUCTION AT 25 WEEKS

Numerous parameters affect the sexual maturity: the type of house, latitude, season, bodyweight and uniformity.

The acquired experience for a given farm is very useful. Adjustment of the program allows reaching the expected results according to the lighting program used on previous flocks.

- It is very difficult to manage the proper maturity with open rearing houses. It is thus recommended to have dark rearing farms. Otherwise it is advised to darken the houses at the latest towards 5 / 6 weeks of age (e.g.: black curtains, light traps on fans, air inlets).
- The birds' bodyweight is also essential to manage the sexual maturity; too heavy birds: earlier maturity / too light birds: late maturity.
- It is recommended to apply the 1st stimulation both in duration and in intensity of light between 147 days (21 weeks) and 161 days (23 weeks) according to the season and the type of house.
- Stimulation must be strong (at least +2 to +3 hours) with light intensity of between 60 and 80 lux according to the conditions. A lux-meter is useful to precisely estimate the intensity level. Then 7 to 14 days later give a 2<sup>nd</sup> stimulation of + 2 hours if possible. In this way every bird can react to the light stimulation. The maximum day length should be between 14 and 16 hours.
- It is advisable, from 16 weeks of age onwards, to check the progress of the pelvic bone aperture at each weighing time. This helps to show the overall trend of flock sexual maturity. The light program can be calculated to stimulate the birds at the correct time when they will be responsive.
- When a flock has low uniformity it is better to delay the stimulation by approximately one week (refer to the chart below).

Age		Pelvic bone opening - sexual maturity > 85% 3 cm		Bodyweight (fasted) at stimulation	Pelvic bone opening - sexual maturity < 85% 3 cm	
Week	Days	Hours	Lux		Hours	Lux
≤21	146	8	5 - 10		8	5 - 10
21	147	11	60 - 80	1940	8	5 - 10
22	154	13	60 - 80	2020	11	60 - 80
23	161	14	60 - 80		13	60 - 80
24	168	15	60 - 80		14	60 - 80
25	175	15	60 - 80		15	60 - 80

- The light programme for males is often the same as for F15 females. This program can however be adjusted according to the males' level of maturity at the end of the rearing period to help assure a good balance of the male and female sexual maturity.
- Depending on the target age to start production and the rearing conditions (climatic, region, house, etc.), the light programme can be adapted with the help of your local technician.

### 3. PRODUCTION PERIOD (25 - 65 WEEKS)

#### 3.1. CRITICAL POINTS IN PRODUCTION

- ✓ Light stimulation between 147 and 161 days to achieve 10 - 15% weekly production at 25 weeks.
- ✓ If slats are used, the height should not exceed 35 - 40 cm.
- ✓ The grill size to be used should be 43 mm wide and 55 mm high.
- ✓ No overfeeding before 10 % daily production. Reach peak feed at around 60% lay.
- ✓ To promote early egg size (hot season), use a specific onset of lay feed with more sulphur amino-acids and linoleic acid.

#### 3.2. PEAK OF PRODUCTION

To achieve a good peak of production it is recommended to:

- Apply an effective light programme.
- Maintain good uniformity. Assure that the feed distribution is well done using the relevant equipment:

	Temperate climate		Hot climate
	All litter	¾ litter + ¼ slats	
<b>Density</b>	6.5 hens/available m <sup>2</sup> - 1.65 ft <sup>2</sup> /bird	7.5 hens/available m <sup>2</sup> - 1.65 ft <sup>2</sup> /bird	5 hens/available m <sup>2</sup> - 1.65 ft <sup>2</sup> /bird
<b>Feeders :</b>			
- trough	14 cm (5.5 in) feeder space per bird / 7 m (23 ft.) length for 100 birds	14 cm (5.5 in) feeder space per bird / 7 m (23 ft.) length for 100 birds	14 cm (5.5 in) feeder space per bird / 7 m (23 ft.) length for 100 birds
- round pans (ø35 cm - 13.8in)	1 for 12 - 13 hens	1 for 12 - 13 hens	1 for 12 - 13 hens
- oval pans	1 for 14 - 15 hens	1 for 14 - 15 hens	1 for 14 - 15 hens
<b>Drinkers :</b>			
- round	1 for 80 hens	1 for 80 hens	1 for 80 hens
- nipples (flow 90 -120 ml/mn minimum)	1 for 6 to 8 hens	1 for 6 to 8 hens	1 for 6 to 8 hens
<b>Feed distribution time</b>	4 mn	4 mn	4 mn
<b>Nests</b>	1 manual nest /4 hens or 80-90 hens/linear meter (3.28ft.) of automatic nest	1 manual nest /4 hens or 80-90 hens/linear meter (3.28ft.) of automatic nest	1 manual nest /4 hens or 80-90 hens/linear meter (3.28ft.) of automatic nest
<b>Ventilation</b>	5 m <sup>3</sup> /Kg (80 ft <sup>2</sup> /lb) liveweight/hour or 3m/s air speed	5 m <sup>3</sup> /Kg (80 ft <sup>2</sup> /lb) liveweight/hour or 3m/s air speed	8 m <sup>3</sup> /Kg (80 ft <sup>2</sup> /lb) liveweight/hour or 3m/s air speed
<b>Maximum light intensity</b>	60-80 lux	60-80 lux	60-80 lux

*\* Slat height above the floor should not exceed 35-40 cm /14- 16 inches, and not exceed 25-30% of the total available area.*

- Keep the non-feed day feeding system (5/7) up to 3-5% daily production (change to daily feeding on the day with no feed).
- Do not overfeed birds before 10% daily production.
- From 10% daily production: fast and regular increase of feed amount +4 or +5 g/day/bird, the objective is to reach the maximum feed intake by 50 - 60% daily production.
- Remark: the adjustment of the feed allocation at the peak of production should be done according to the evolution of egg weight from 10% daily production.

#### 3.3. PERSISTENCY

##### AT THE PEAK OF PRODUCTION

- Check for broody hens at the end of each day. Place broody hens in a separate area with feed and water for a week or in cages without feed and water for 48 hours (see also the technical leaflet on this matter).

- The feed intake should be reduced starting the week following peak of lay to prevent overweight birds. Reduce by around 1gr/week up to 40 weeks. Then, when the bodyweight is under control, reduce by only 1gr every two weeks.
- The choice of feed allocation is made according to the following factors :
  - Female bodyweight.
  - Egg weight.
  - % daily production.
  - Eating time.
  - House temperature.
- Check as often as possible the quality of feed distribution: as long as the eating time is not more than 4 hours, keep 100% of the feed distribution in the morning. Otherwise, split the feed intake 50% in the morning and 50% in the afternoon. If the eating time becomes less than 4 hours, return to 100 % of the feed distribution in the morning.

## FLOOR EGGS: (PLEASE READ THE TECHNICAL BULLETIN FOR MORE SPECIFIC DETAILS)

Some factors that can influence floor eggs:

- Correct number and design of the nests
- Encourage hen's access to the nests
- Ensure good distribution of equipment
- Control water and feed to the flocks (avoid a too long eating time; check the quality of feed distribution and maintain the correct water level in the drinkers)
- Monitor male aggressiveness
- Monitor laying on the floor from the start of production and collect eggs frequently
- Slat height: 35 - 40 cm. Max area: 25 - 30% of total the floor space.

## 4. MALE MANAGEMENT

Please read the male management for more specific details.

### 4.1. REARING PERIOD: 3 STEPS

#### STEP 1: 1 DAY TO 10 WEEKS – GROWTH AND UNIFORMITY

- Good starting conditions.
- Crumble feed the first 3 weeks.
- Good frame development.
- Grading at 4 - 5weeks.
- No feed days start from 4 weeks (5/7).
- Careful beak trimming at 7 days (possible at day old). Also according the prevailing legislation in the country.

#### STEP 2: 10 TO 15 WEEKS - CONSISTENT GROWTH

#### STEP 3: 15 TO 21 – 23 WEEKS – TESTICLE DEVELOPMENT

- Bodyweight must not stall in this period to prevent future fertility issues.
- A minimum weekly growth of 140 to 160 grs is required.

### 4.2. EQUIPMENT

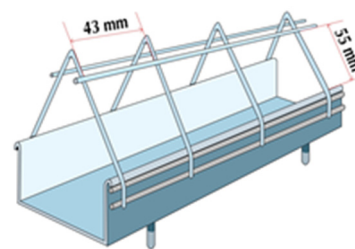
	REARING	PRODUCTION
Density	4 males/m <sup>2</sup>	
Linear troughs	1/8-10 males	1/8-10 males
Pan feeders	15-20 cm/male	20 cm/male
Bell drinkers	1/80 males	1/70 males
Nipple drinkers (90 - 120 ml/min)	1/10 males	1/8 males
Distribution time	4 min	4 min

### 4.3. PRODUCTION PERIOD

#### 21 TO 25 - 26 WEEKS

This period is crucial to establish a good relationship between the males and females.

- Never transfer shy, poorly mature males.
- Transfer males a few days before the females if possible, between 21 and 23 weeks of age.
- Progressive mixing is ideal.
- Up to 26/27 weeks a culling should be done to keep 8 - 10% mature males beyond 27 weeks of age.
- The risk of excessive weight gain during this period is high, so:
  - Grill size is important to reduce male access to the female feeder. To stop the males from having access to the female feed, the female feeding system must be fitted with grills adapted to the female body characteristics.
  - The few points on the circuit without grills (corners for instance) should be sealed with covers.
  - Adjust male feed amounts to comply with the bodyweight objectives.
  - Feed males and females at the same time.
  - Weigh males weekly.



#### AFTER 26 WEEKS

- Male bodyweight gain should be regular. If the bodyweight is with feed add 6% to the standard bodyweight recommendations.
- Observing the males is important to assess their condition and adjust the feed amount accordingly.
- Special male mash feed is recommended (fibre 6-8%).

### 4.4. SPIKING

To obtain the best persistency of fertility at the end of production it may be useful to replace 10 - 30 % of the males by younger ones between 38 and 45 weeks weighing at least 3 500 g.

## 5. MALE / FEMALE BEHAVIOR MANAGEMENT

In specific cases (high light intensity, high density, bad equipment, too heavy males or too many males, fatty females, etc.), males can get aggressive with the females. They scratch the females during mating and then pecking issues arise between birds. We advise to prevent this kind of behaviour by:

- Checking the male beaks before the mixing time and re-trim the sharp beaks if needed (to be considered according to the prevailing legislation in the country).
- Controlling the male bodyweight both in the rearing and production period and maintain good uniformity.
- Preventing excess males.
- Using a high fibre diet in order to calm the males.
- Remark: de-toeing the day-old chicks on toes 3,4,5,6 can also be a good way to prevent these issues. In case of too much mortality due to injured females, we recommend to quickly implement both a new beak trimming and to cut the nails of toes 3 and 6 of the males.

In some cases, pecking issues occur between females and this is often due to shortage of feed space and / or poor feed distribution, poor equipment, high density, etc. Also high light intensity can cause this behaviour.

Once again, in some specific cases, it is recommended to beak trim females at 7 days or at day old.



# ➔ HUBBARD BREEDERS

## Female parent stock target daily allocation at peak production

### Amino-acids (mg/bird/day)

	Tot.	Dig.
Lysine (2)	1 100	980
Methionine	545	490
Meth. & Cystine	960	855
Valine	900	790
Isoleucine	855	745
Arginine (2)	1 200	1 020
Tryptophan	275	230
Threonine	800	690

### Ideal Protein

100
50
87
81
76
104
24
70

### Metabolisable energy intake (Kcal or MJ /bird/day)

Temperature	°C	15.0	17.5	20.0	22.5	> 25,0 (1)
	°F	59.0	63.5	68.0	72.5	> 77,0 (1)
Floor	Kcal	425	412	400	390	380 to 400
	MJ	1.78	1.72	1.67	1.63	1.59 to 1.67
Cage	Kcal	405	392	380	370	360 to 380
	MJ	1.69	1.64	1.59	1.55	1.50 to 1.60

### Feed intake (g/bird/day)

Temperature	°C	15.0	17.5	20.0	22.5	> 25,0	
	°F	59.0	63.5	68.0	72.5	> 77,0	
ME level in feed	2700 Kcal/kg	Floor	157	153	148	144	141 to 148
		Cage	150	145	141	137	133 to 141
ME level in feed	2800 Kcal/kg	Floor	152	147	143	139	136 to 143
		Cage	145	140	136	132	129 to 136

### Minerals (mg/bird/day)

	Min.	Max.
Calcium	4 700	5 000
Av. phosphorus	560	580

(1) The additional energy demands to dissipate heat will vary with bodyweight, feed intake, feed composition (Oil content), feathering, activity and environmental management.

(2) The arginine / lysine ratio can be increased to 110 % in hot conditions.

## 6. NUTRITION

### 6.1. F15 NUTRIENT RECOMMENDATIONS: G/KG PER 1000 KCAL (MCAL) OF METABOLISABLE ENERGY – FLOOR SYSTEM

PHASE	PRE-STARTER		STARTER		PULLET		TRANSITION		ONSET OF LAY		BREEDER I		BREEDER II		MALE	
Age fed (days)	Optional 0 to 10		0 or 10 to 28 / 35		28 or 35 to 140 or 1%		Optional 140 to 1% lay		Optional 1% to 60g egg weight		1% or 60g egg weight to 280/cull		Optional 280 to cull		Optional 140 to cull	
Suggested kcal	2 800 - 3 000		2 750 - 2 900		2 400 - 2 900		2 600 - 2 900		2 650 - 2 900		2 650 - 2 900		2 650 - 2 900		2 400 - 2 900	
ME per Kg MJ	11.70 - 12.50		11.50 - 12.10		10.00 - 12.10		10.90 - 12.10		11.10 - 12.10		11.10 - 12.10		11.10 - 12.10		10.00 - 12.10	
Min. amino-acids	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.
Lysine	3.80	3.39	3.71	3.32	2.59	2.26	2.62	2.31	2.81	2.50	2.75	2.45	2.69	2.40	2.06	1.80
Methionine	1.60	1.45	1.55	1.40	1.24	1.08	1.25	1.10	1.47	1.32	1.36	1.23	1.32	1.19	0.95	0.83
Meth. & Cystine	2.90	2.58	2.80	2.50	2.16	1.88	2.18	1.92	2.55	2.27	2.40	2.14	2.35	2.09	1.76	1.53
Valine	2.61	2.30	2.55	2.22	2.00	1.70	2.04	1.73	2.29	2.01	2.25	1.97	2.21	1.93	1.89	1.61
Isoleucine	2.55	2.25	2.50	2.21	1.96	1.68	2.00	1.71	2.18	1.90	2.14	1.86	2.10	1.82	1.85	1.59
Arginine	4.00	3.58	3.81	3.42	2.70	2.30	2.70	2.30	3.06	2.60	3.00	2.55	2.94	2.50	2.55	2.17
Tryptophan	0.75	0.64	0.73	0.62	0.61	0.51	0.62	0.52	0.70	0.59	0.69	0.58	0.67	0.56	0.58	0.48
Threonine	2.58	2.25	2.55	2.22	1.85	1.57	1.86	1.58	2.04	1.76	2.00	1.72	1.96	1.69	1.75	1.48
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Crude protein (1)	65.00	69.00	64.00	68.00	54.00	56.00	54.50	56.50	59.00	62.00	59.00	61.00	57.00	60.00	48.00	50.00
Calcium	3.60	3.80	3.60	3.70	3.30	3.50	4.50	5.00	11.50	12.25	11.75	12.50	12.50	13.50	3.30	3.50
Av. Phosphorus	1.60	1.70	1.50	1.60	1.40	1.50	1.40	1.50	1.40	1.50	1.40	1.45	1.30	1.40	1.40	1.50
Sodium	0.60	0.70	0.58	0.70	0.55	0.70	0.55	0.70	0.60	0.70	0.60	0.70	0.60	0.70	0.55	0.75
Chloride	0.60	0.80	0.60	0.80	0.60	0.80	0.60	0.80	0.60	0.80	0.60	0.80	0.60	0.80	0.60	0.80

1) The progress made in raw material analyses and digestible amino acid evaluation should avoid unnecessary protein excess which can be the cause of excessive muscle deposition, poor litter quality and low hatchability.

### 6.2. EXAMPLE OF DIET SPECIFICATIONS FOR TEMPERATE CLIMATES

PHASE	STARTER		PULLET		TRANSITION		BREEDER I		BREEDER II		MALE	
Age (days)	0 to 28		28 to 140		140 to 5% lay		5% lay to 280		280 to cull		140 to cull	
ME kcal/kg	2 800		2 600		2 675		2 700		2 700		2 650	
MJ/kg	11.70		10.90		11.30		11.30		11.30		11.10	
Min. amino-acids	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.
Lysine %	1.04	0.93	0.67	0.59	0.70	0.62	0.74	0.66	0.73	0.65	0.55	0.48
Methionine %	0.43	0.39	0.32	0.28	0.34	0.29	0.37	0.33	0.36	0.32	0.25	0.22
Meth. and Cyst. %	0.78	0.70	0.56	0.49	0.58	0.51	0.65	0.58	0.63	0.57	0.47	0.41
Valine %	0.71	0.62	0.52	0.44	0.55	0.46	0.61	0.53	0.60	0.52	0.50	0.43
Isoleucine %	0.70	0.62	0.51	0.44	0.53	0.46	0.58	0.50	0.57	0.49	0.49	0.42
Arginine %	1.07	0.96	0.70	0.60	0.72	0.62	0.81	0.69	0.79	0.67	0.68	0.58
Tryptophan %	0.20	0.17	0.16	0.13	0.17	0.14	0.19	0.16	0.18	0.15	0.15	0.13
Threonine %	0.71	0.62	0.48	0.41	0.50	0.42	0.54	0.47	0.53	0.46	0.46	0.39
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Crude protein %	18.00	19.00	14.00	14.50	15.00	15.50	16.00	16.50	15.50	16.00	13.00	13.50
Crude fiber %	2.50	3.50	3.50	8.00	3.00	6.00	3.50	6.00	4.00	6.50	3.50	7.00
Calcium %	1.00	1.05	0.90	0.95	1.25	1.50	3.10	3.30	3.30	3.40	0.90	0.95
Av. Phosphorus %	0.45	0.50	0.37	0.40	0.39	0.41	0.39	0.41	0.36	0.39	0.37	0.40
Sodium %	0.16	0.20	0.15	0.18	0.15	0.18	0.16	0.18	0.16	0.18	0.15	0.18
Chloride %	0.18	0.22	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20
Potassium %	0.70	0.75	0.55	0.70	0.60	0.75	0.60	0.75	0.55	0.70	0.55	0.70
Crude fat %	3.50	4.00	2.50	4.00	3.00	4.00	3.00	4.00	3.00	3.50	2.50	4.00
Linoleic acid %	1.20	1.60	1.00	1.30	1.30	1.60	1.50	1.70	1.20	1.40	1.30	1.70

6.3. EXAMPLE OF DIET SPECIFICATIONS FOR A HOT CLIMATE (>25°C) ON CORN SOJA DIETS – FLOOR SYSTEM

PHASE	STARTER		PULLET		TRANSITION		ONSET OF LAY		BREEDER I		BREEDER II		MALE	
Age (days)	0 to 35		35 to 140		140 to 5% lay		5% lay to 245		245 to 315		315 to cull		140 to cull	
ME - Floor	Kcal/kg		2 800		2 650		2 750		2 825		2 800		2 650	
	MJ/kg		11.70		11.10		11.50		11.80		11.70		11.10	
Min. amino-acids	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.
Lysine %	1.04	0.93	0.69	0.60	0.72	0.63	0.79	0.71	0.77	0.69	0.75	0.67	0.55	0.48
Methionine %	0.43	0.39	0.33	0.29	0.34	0.30	0.42	0.37	0.38	0.34	0.37	0.33	0.25	0.22
Meth. and Cyst. %	0.78	0.70	0.57	0.50	0.60	0.53	0.72	0.64	0.67	0.60	0.65	0.58	0.47	0.41
Valine %	0.71	0.62	0.53	0.45	0.56	0.48	0.65	0.57	0.63	0.55	0.61	0.54	0.50	0.43
Isoleucine %	0.70	0.62	0.52	0.45	0.55	0.47	0.62	0.54	0.60	0.52	0.58	0.51	0.49	0.42
Arginine %	1.07	0.96	0.72	0.61	0.74	0.63	0.86	0.73	0.84	0.71	0.82	0.69	0.68	0.58
Tryptophan %	0.20	0.17	0.16	0.14	0.17	0.14	0.20	0.17	0.19	0.16	0.19	0.16	0.15	0.13
Threonine %	0.71	0.62	0.49	0.42	0.51	0.43	0.58	0.50	0.56	0.48	0.54	0.47	0.46	0.39
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Crude protein %	18.00	19.00	14.50	15.00	15.00	15.50	16.75	17.25	16.50	17.00	16.00	16.50	13.00	13.50
Crude fiber %	2.50	3.50	3.50	8.00	3.00	6.00	3.00	6.00	3.00	6.00	3.50	6.50	3.50	6.50
Calcium %	1.00	1.05	0.90	0.95	1.25	1.50	3.10	3.30	3.20	3.40	3.40	3.60	0.90	0.95
Av. Phosphorus %	0.42	0.45	0.37	0.40	0.39	0.41	0.40	0.42	0.39	0.41	0.36	0.39	0.37	0.40
Sodium %	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20
Chloride %	0.18	0.22	0.16	0.22	0.16	0.22	0.16	0.22	0.16	0.22	0.16	0.22	0.16	0.22
Potassium %	0.65	0.75	0.55	0.70	0.55	0.75	0.60	0.75	0.60	0.75	0.55	0.70	0.55	0.70
Crude fat %	3.00	4.00	2.50	4.00	3.00	4.00	4.50	5.00	4.00	4.50	3.50	4.00	2.50	4.00
Linoleic acid %	1.20	1.60	1.00	1.30	1.40	1.70	1.90	2.10	1.60	1.80	1.30	1.50	1.30	1.70

6.4. EXAMPLE OF DIET SPECIFICATIONS FOR HOT CLIMATE (> 28°C) ON CORN SOYA DIETS – CAGE HOUSING

PHASE	STARTER		PULLET		TRANSITION		ONSET OF LAY		BREEDER I		BREEDER II		MALE	
Age (days)	0 to 35		35 to 140		140 to 5% lay		5% lay to 224		224 to 315		315 to cull		140 to cull	
ME	kcal/kg		2 800		2 650		2 750		2 825		2 800		2 650	
	MJ/kg		11.70		11.10		11.50		11.80		11.70		10.90	
Min. amino-acids	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.	Tot.	Dig.
Lysine %	1.04	0.93	0.70	0.61	0.76	0.67	0.83	0.74	0.81	0.72	0.79	0.70	0.57	0.50
Methionine %	0.43	0.39	0.34	0.29	0.36	0.32	0.44	0.39	0.40	0.36	0.39	0.35	0.27	0.23
Meth. and Cyst. %	0.78	0.70	0.58	0.51	0.63	0.55	0.75	0.67	0.71	0.63	0.69	0.61	0.49	0.43
Valine %	0.71	0.62	0.54	0.46	0.59	0.50	0.68	0.60	0.66	0.58	0.64	0.56	0.53	0.45
Isoleucine %	0.70	0.62	0.53	0.45	0.58	0.49	0.65	0.56	0.63	0.55	0.61	0.53	0.52	0.44
Arginine %	1.07	0.96	0.73	0.62	0.78	0.66	0.91	0.77	0.88	0.75	0.86	0.73	0.71	0.60
Tryptophan %	0.20	0.17	0.16	0.14	0.18	0.15	0.21	0.17	0.20	0.17	0.20	0.16	0.16	0.13
Threonine %	0.71	0.62	0.50	0.42	0.54	0.45	0.61	0.52	0.59	0.51	0.57	0.49	0.49	0.41
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Crude protein %	18.00	19.00	14.50	15.00	15.00	15.50	17.00	17.50	16.75	17.25	16.25	16.75	13.50	14.00
Crude fiber %	2.50	3.50	3.50	8.00	3.00	6.00	3.00	6.00	3.00	6.00	3.50	6.50	3.50	6.50
Calcium %	1.00	1.05	0.90	0.95	1.25	1.50	3.20	3.40	3.30	3.50	3.50	3.70	0.90	0.95
Av. Phosphorus %	0.42	0.45	0.37	0.40	0.39	0.41	0.40	0.42	0.40	0.42	0.37	0.40	0.37	0.40
Sodium %	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20	0.16	0.20
Chloride %	0.18	0.22	0.16	0.22	0.16	0.22	0.16	0.22	0.16	0.22	0.16	0.22	0.16	0.22
Potassium %	0.65	0.75	0.55	0.70	0.55	0.75	0.60	0.75	0.60	0.75	0.55	0.70	0.55	0.70
Crude fat %	3.00	4.00	2.50	4.00	3.00	4.00	3.50	4.50	3.00	4.00	2.50	4.00	2.50	4.00
Linoleic acid %	1.20	1.40	1.00	1.30	1.40	1.70	1.70	2.00	1.50	1.80	1.20	1.50	1.30	1.70

Note: Increasing vitamin levels by 20% at the start of production is an additional precaution

Note: it is not recommended to use Lasalocid (Avatec) for dwarf breeders

## OTHER HUBBARD TECHNICAL DOCUMENTS

BREEDER MANUAL

JV PERFORMANCE SUMMARY

MALE PERFORMANCE SUMMARY

BROILER JV PERFORMANCE SUMMARY

INCUBATION GUIDE

NUTRITION GUIDE

OTHER SPECIFIC TECHNICAL DOCUMENTS

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