



EARLY BIRD PARENT STOCK MANAGEMENT GUIDE



PureLine Genetics Early Bird Parentstock Management Guide

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Introduction

The PureLine selection program is aimed at producing Broiler Parentstock with a high production of hatching eggs, superior results in the hatchery and fast growing, feed efficient broilers with a superior livability.

Objective

This management guide will help you to use the full genetic potential of the PLG Parentstock.

Strategy

It is important to realize that the management of any flock is based on the average of the flock and does not take into account differences between individual birds. For this reason differences between individual birds have to be as small as possible. From housing at day-old till the end of the production period the flock manager has to make sure that flock uniformity stays within the limits. The genetic potential of a breed can only be obtained with a uniform and healthy flock.

Separate sex rearing

Males and females have to be reared separately. This is a must since growth rate and feed intake differs between sexes. Amount of daily feed per pen to achieve the recommended body weight at a certain age and the recommended growth rate can only be determined when sexes are reared separately.

Flock uniformity

Determining flock uniformity requires individual weighing of a representative flock sample. In this management guide uniformity is determined as a percentage of the birds that are within 20 or 10% of the mean weight of all the birds. In a uniform flock at least 90% of all weights should be within the range of 20% of the mean, or 80% within the range of 10% of the mean. An example of determining flock uniformity is provided in Tables 1.1, Page 12 and Table 1.2. Page 13.

Factors influencing flock uniformity are:

- Quality day-old chicks
- Temperature at housing, especially floor temperature and humidity
- Feeding space and Water supply
- Quality of beak trimming
- Feed restriction management
- Stocking density
- Light program
- Diseases and vaccinations

The impact of each of these factors on flock uniformity is not discussed in the Management Guide. If more information is needed please contact the PureLine Technical Department.

Rearing Period

The rearing period is a **critical** period with regard to the subsequent performance in the production period. Its importance is often underestimated. The rearing period has a great impact on egg production and fertility of the Parentstock and growth rate of the broiler. Important topics during the rearing period are: controlling bodyweight according to the targets specified, development, flock uniformity and sexual maturity. Good rearing starts with achieving recommended early bodyweights. Make sure that bodyweight development is according to recommendation and flock uniformity is high at all times

Before chick arrival

- Make sure the house is ready well in advance of the chick delivery
- House and equipment has been cleaned and disinfected
- Check that all equipment is functioning properly
- Rearing house has to be heated to the recommended temperature 24 hours before chick placement
- Make sure clean water and fresh feed are available over the entire area

Temperature

It is vital to maintain a comfortable environment and constant temperature to develop a quality uniform chick. The rearing house must be able to maintain and adjust the temperature as the pullet grows. Proper air quality and ventilation are also important to maintain a uniform chick.

Floor temperature of 32° Celsius measured from the edge of the brooder is vital for chick comfort and movement. All heating and brooders should be turned on and in working condition maintaining a floor temperature as mentioned above, 24 hours prior to chick arrival. Observe chicks for overall comfort and make the necessary adjustments particularly the first 24 hours after chick arrival.

TEMPERATURE GUIDE (C)		
Age in Weeks	Floor Temperature at edge of Brooder	House Temperatures
1	32.0	29.5
2	29.5	26.5
3	26.5	24
4	24	21
5	21	21
6	21	21

All Temperatures measured 5 cm above litter

First 24 hours/first week-

Critically Important:

Check chicks often for:

- Overall Chick Comfort
- Temperature, draft
- Chick activity – Are they **all** drinking and eating? Check it!
- Look for signs or distress,
 - too quiet? Perhaps too cool,
 - too noisy? Perhaps too warm,
 - odors? Could be air quality, wet litter, or fuel leaks
- Provide sufficient light to allow chicks to easily find water
 - Too much light: chicks are looking for shadow and are lying next to the wall/fences
- Feed small amounts often to spur activity and weight gain

Brooding Space

Calculate floor density, feeder space, and water space before setting up for chicks using the chart below.

BROODING SPACE RECOMMENDATIONS (0 – 4 WEEKS)		
	Females	Males
Floor	11 birds per m ²	11 birds per m ²
Water	Chick Founts: 1 per 100 chicks Bell Drinker: 1 per 80 - 100 birds Nipple: 10 - 15 birds per nipple	Chicks Founts: 1 per 100 chicks Bell Drinker: 1 per 80 birds Nipple: 10 - 15 birds per nipple
Feed	One feeder lid per 100 Chicks Trough: 5 cm per bird Pans: 20 – 30 chicks per pan	One feeder lid per 100 Chicks Trough: 5 cm per bird Pans: 20 – 30 chicks per pan
Heat	Brooder Stoves: 500 chicks per unit Radiant Brooders: 1000 – 1500 chicks per unit	

Growing period from 0-22 weeks

It is important to grow the birds according to the recommended bodyweight curve. Make sure to check flock uniformity. The recommended bodyweight during rearing for females and males are indicated in Table 2.2, Page 15 for the females and Table 2.3, Page 16 for the males.

Growing Space

GROWING SPACE RECOMMENDATIONS (5 - 22 Weeks)		
	Females	Males
Floor	7 birds per m ²	4 birds per m ²
Water	Bell Drinker: 1 per 80 - 100 birds Nipple: 10 birds per nipple	Bell Drinker: 1 per 80 birds Nipple: 10 birds per nipple
Feed	Trough: 15 cm per bird Pans: 10 birds per pan	Trough: 20 cm per bird Pans: 8 birds per pan

Water Control

Water restriction should start around 5 weeks of age until transfer to the production farm. Water restriction plays a critical role to control litter moisture. Don't water restrict if house temperatures exceed 29 Celsius.

Water Supply and Sanitation

The farm water source, either from well or water company, should be chlorinated to 3 ppm for open water systems and 1 ppm on closed nipple systems. Water should be tested at the furthestmost drinker from the incoming water supply weekly.

All well water should be checked monthly to insure the well is safe and contamination free. High levels of chlorine can corrode nipple water parts and other drinker components. Avoid leaky drinkers and water spills. The water system should be inspected daily to ensure they are clean, at the correct height, and functioning properly.

Chicks should have easy access to water. The rearing house should provide a minimum of one mini-drinker per 100 chicks along with access to the adult drinker system. All chick waters such as mini-drinkers and water jugs should be gradually removed by 7 days. Clean and refill the mini-drinker systems two or three times daily.

Nipple water systems or drinkers should be level and at bird height requiring the chick to drink from the nipple flat footed. One should activate the nipples so there is a water droplet on each nipple to attract and encourage the chick to peck the nipple for water. Always follow the manufacturer's instructions. Maintain a uniform and level litter condition under the nipple drinkers.

DAILY WATER CONSUMPTION TABLE PER 1000 PULLETS																				
Age in Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Liter	19	34	60	76	83	95	110	121	129	136	151	162	170	178	185	189	189	189	189	189

Feeding

Use a high quality feed. Avoid sudden changes in the raw materials. Nutrient recommendations for PLG Parentstock are given in Table 2.1 Page 14.

The amount of feed to be given always has to be based on the actual bodyweight and growth rate.

Determining average flock bodyweight

Start sample weighing at one week of age. The sample should be taken at different spots in the house, but every week at the same spots! Take at least three samples per house. At each spot weigh at least 50 birds. Very important is that all birds in the catching frame are weighed to prevent selective weighing. Sample weighing to determine flock weight can be done in bulk. Per house a minimum total of 5% of all birds should be weighed.

When average flock weight deviates from the target weight adjust the amount of feed accordingly.

Underweight, below target: adjust the weekly increase upwards

Overweight, over target: adjust the weekly increase downwards, but never decrease the amount provided per day.

From 14 weeks onwards new bodyweight targets have to be set when birds show to weigh more than the original target. Do not try to slim the birds when the birds are over 14 weeks of age. That will hurt later performance.

In any case avoid large changes and never lower the amount of feed given!

Determining flock uniformity

At 4, 8 and 12 weeks of age birds have to be weighed individually to determine flock uniformity. Most electronic weighing scales do calculate flock average, coefficient of variation (CV) and uniformity (evenness) automatically. Using conventional weighing scales requires more labor since all statistics needed have to be calculated manually. Although the coefficient of variation is a better indicator of flock uniformity it is much easier to make a frequency distribution and determine how many birds are within a weight range of +/- 20% of the average flock weight (Table 1.1, Page 12 and Table 1.2, Page 13). Many breeders use a weight range of +/- 10% of the average flock weight. However in practice only a few flocks do meet that standard. A wider range is less sensitive for small differences in numbers per weight class (Table 1.1 Page 12).

Electronic scales usually calculate the coefficient of variation (CV) and the percentage of weights within a range of +/-10% of the average. Genetic differences in a flock result in a CV of about 8%. Environmental circumstances can easily increase the differences between birds. CV should never be higher than 10%. However as a practical approach a CV of up to 11% is acceptable. When CV in a flock is higher action is required. Conversion from uniformity to CV and reverse is provided in Table 1.3. Page 13.

Flock uniformity can be improved by grading the birds. Separate the small birds from the rest and feed them to meet the targeted weight at 20 weeks of age. Do not return them to the original flock during the remaining rearing period.

After 12 weeks of age it is too late to restore uniformity before sexual maturity. If the flock is uneven it is recommended to grade the birds before the production period and grow the groups separate all the way through and delay light stimulation. Even in the production house these groups should be in separate pens to allow appropriate management.

Feeding

Use a high quality feed. Nutrient recommendations for PureLine Parentstock are presented in Table 2.1 Page 14. The amount of feed to be given has always to be based on the actual bodyweight and growth rate.

0-3 weeks:

During the first four weeks it is recommended to provide feed ad libitum for males and for females up to a limit of 44 grams per bird per day (Table 2.2. Page 15 for the females and Table 2.3 Page 16 for the males) Make sure that daily feed consumption is monitored to know how much the birds actual are consuming.

3-22 weeks:

From three weeks onwards feed intake has to be restricted to prevent the birds growing too rapidly. This implies that installed feed equipment must enable all birds to eat at the same time. Also feed equipment must be able to provide a given amount of feed distributed equally to all birds within a few minutes. Small amounts of feed are difficult to distribute evenly to all birds. Every day feeding is recommended, but in case feeding equipment is not suited to do so skip-a-day that can be applied. It is also possible to apply other methods of feeding the birds. However it is always the manager's responsibility to choose which feeding program is applied to make sure that the flock remains uniform and growth rate is according to the targets set.

Light program (Table 3.1 Page 20)

Sexual maturity and the production % once birds have started laying is influenced by changes in day length and light intensity. For that reason it is essential to have full control over the light schedule and intensity during rearing. Grandparents have to be reared in light controlled houses.

Difference between day and night:

Light intensity during daytime has to be at least 10 times the light intensity during night time.

First 2 days:

When day old chicks are placed they have to learn where to find water and food. For flock uniformity it is important that all chicks start drinking and eating right from the beginning. For this reason it is recommended to supply 23 hours of light per day of a minimum of 60 lux during the first 2 days.

Day 3 onwards:

Starting with 20 hours of light at day 3 every day the hours of light per day are decreased with 1 hour until 8 hours at day 15 (Table 3.1, Page 18). Light intensity has to be decreased from 60 lux at day 6 to 15 lux at day 14. Control of light intensity is not only important to control pecking but also to achieve a good production later in life. Rearing Parentstock at light intensities below 5 lux affects the control over onset of sexual maturity. Rearing at light intensities over 20 lux affects the control over rate of lay. To stimulate egg production light intensity at the start of the laying period should be at least 4 times higher than light intensity during rearing; preferable 5 times higher.

Important

- Never increase light intensity or increase day length during the rearing period. Rearing period should not end before 21-22 weeks of age.
- If flock uniformity is not good postpone increase of day length at least 1 week.
- If bodyweight is over target postpone increase of day length to enable the hens with a lower bodyweight to catch up with the others.

Transferring from rearing to production house

In case all-in-all-out is not applied birds should be moved into the laying house at 21-22 weeks of age.

Make sure production house is fully prepared before the birds arrive. That implies that all equipment has been checked and housing temperature is as close to 20 °C as possible. Clean water must be available but no feed for the first 6-12 hours.

Birds should be placed on the slats. Provide the first day 24 hours of light to enable birds to accommodate and to find water and feed easily. Make sure to return the next day to the recommended light program (Table 3.1. Page 18)

Production Period

Production Space Recommendations

PRODUCTION SPACE RECOMMENDATIONS (22 - 65 Weeks)		
	Females + Males	Males
Floor	6 birds per m ²	
Water	Bell Drinker: 1 per 80 - 100 birds Nipple: 8 birds per nipple	
Feeder	Trough: 15 cm per bird Pans: 10 Birds per pan	Trough: 19 cm per bird Pans: 8 birds per pan
Nest	5.5-6 Hens per Nest Hole	

Pre –Production Period - 22 Weeks to 1st Eggs

Objective:

To accelerate the bodyweight gains while maintaining growth according to frame size. Transition from rearing to production is crucial to a successful flock!

- Nutrient requirements – Continue to increase to
 - complete growth
 - complete sexual maturity
 - initiate egg production
- Lighting – At housing provide all birds a minimum of 12 hours duration, increasing intensity if feasible. This is based on housing at 22 weeks. If housing takes place at a different age follow Table 3.1. Page 18.
- Nests – Fill with clean nesting material, open just prior to first eggs laid
- Note – Males may be aggressive! Do not mate until females are sexually receptive.

Production Period Objectives

To maximize the number of quality broiler chicks per hen housed. Production standards are indicated in Table 6 Page 22.

Recommended management

- Feed daily ration continuously until fully consumed. Do not “Split-Feed”
- When feeding prior to peak, use recommended small daily feed increases according to Table 4.1. Page 19 for the females and Table 4.2. Page 19 for the males.
- Watch “clean up” time, normally should be 1-2 hours for females, males take more time.
 - If too fast, birds may be underfed
 - If too slow, birds may be overfed
- Maintain as comfortable an environment (temperature, air movement) as possible
- Do not decrease light duration or intensity during the production period

Floor eggs:

Although PureLine Parentstock birds have a good nesting behaviour it is important to check as often as possible for floor eggs and remove each floor egg as soon as possible. The earlier in the morning checking for floor eggs starts, the better. This is especially important when birds are coming into production. Once birds are used to laying eggs on the floor instead of in the nests they will persist doing so during the entire production period.

Feeding and Bodyweight control

Feeding Females:

From Housing to Peak Production

Parentstock birds are very sensitive to overfeeding. The main purpose of feed restriction programs is to limit the number of large follicles on the ovary. “Slow” feeding programs in which feed increases are made daily and very conservatively can result in a reduction of the number of large follicles. The University of Alberta Research Group showed that the period from 2-4 weeks after photo stimulation is the most critical in terms of “over-feeding” with regard to follicle development. Increasing day length at 22 weeks as has been recommended results in a critical period from 24 until 26 weeks of age. Challenge feeding to prevent underfeeding, can easily result in a poor hatching egg production if carried too far. For this reason it is recommended to follow the feeding program as indicated in Table 4.1. Page 19. Do not to apply challenge feeding.

From Peak Production until End of Lay

Also in this period full feeding is detrimental for a good hatching egg performance and liveability. However take into account that in this period the feed quantity allocated to Parentstock is not much lower than what fully fed birds would voluntarily consume. Feed allocation has to be reduced beginning at 2 weeks after peak production.

However make sure that birds do not reduce in bodyweight.

Control of female bodyweight

It is very important to weigh the birds to make sure that the mean weight is not reduced but does show a steady but slow increase every week according to the recommended weight as presented in Table 4.3. Page 20.

Monitoring body weight development requires that each week a representative sample of females is weighed. Females have to be weighed individually as this reduces stress.

Never allow a reduction in female bodyweight gain.

Male Feeding

During the production period separate male feeding is required. If a chain feeder is used, grills should be put up around 28-30 weeks as Pure-Line males are so active at start of production that they tend not to eat sufficiently in that period.

For recommended feed rations in the production period see Table 4.2. Page 19.

Control of male bodyweight

It is very important to weigh the breeders to make sure that the mean weight is not reduced but does show a steady but slow increase every week according to the recommended weight.

Monitoring body weight development requires that each week a representative sample of males are weighed. Males have to be weighed individually to reduce stress.

For male bodyweights in the production period see Table 4.4. Page 21.

Never allow a reduction in male bodyweight gain.

Selection of males

At 6 weeks of age a selection should be made to reduce the percentage to approx. 13%.

A second selection should be done at 15 weeks and a last selection in rearing should be done at transfer to start on the production farm with 10% males.

If no spiking at 40 weeks these males can all stay, if you are spiking at 40 weeks 8.5% males at start of production is enough as PureLine males are very active!

Even better to start after transfer with 6% males and add some males daily as production increases.

Spiking

Spiking should only be done after comparing hatch- and fertility results (and the percentage of present active males).

Remove (select) some of the old males and add up with young good developed (mature) males.

Maximum % of spiking males should not overreach 2.5% to have a maximum of 8% good males afterwards.

To keep good fertility until depletion a daily control of the male activity and flock health is very important.

Light program in the production period

From 22 weeks of age it is recommended to provide 12 hours of light per day of 60 Lux (Table 3.1, Page 18). As soon as egg production has started increase day length to 14 hours of light. From then on light intensity and day length have to be tuned to season and local circumstances. Artificial day length should never exceed 16 hours per day.

Tables:

Table 1.1: Example of accepted flock uniformity

Body weight	Frequency	Number	Average class weight	Number* average class weight	Number within +/- 20%	Number within +/- 10%
700-750		0	725	0		
750-800	Xx	2	775	1550	{(800-778)/50}*2=1	
800-850	Xx	2	825	1650	2	
850-900	Xxxx	4	875	3500	4	{(900-876)/50}*4=2
900-950	XXXXXXXXXX	9	925	8325	9	9
950-1000	XXXXXXXXXXXXXX	13	975	12675	13	13
1000-1050	XXXXXXXXXXXXXX	12	1025	12300	12	12
1050-1100	XXXXXXXXXX	9	1075	9675	9	{(1070-1050)/50}*9=4
1100-1150	X	1	1125	1125	1	
1150-1200	Xx	2	1175	2350	{(1168-1150)/50}*2=1	
1200-1250	Xx	2	1225	2450		
1250-1300		0	1275	0		
1300-1350		0	1325	0		
1350-1400		0	1375	0		
	Total	56		54475	52	40
				Average	range	range
				973	778-1168*)	876-1070*)
Number within range	Required				90% of 56 = 50+	80% of 56 = 45+
	Realized				52/56=93%	40/56=71%
Uniformity					Good	Not good

*) When the figures of the range do not coincide with class limits calculate how many birds in that particular weight class are estimated to be within the weight range:

In case of under limit:

Under limit amounts 778

Class limits amount 750-800

Class size amounts 50 gram

Accepted weight is 800-778 being only 22 grams of the 50 grams of the class size

So it is assumed that 44% (22/50) of the birds in that particular weight class do have a bodyweight of over 778 gram

In formulation: $\{(800-778)/50\}*2=1$

In case of upper limit:

Upper limit amounts 1168

Class limits amount 1150-1200

Class size amounts 50 gram

Accepted weight is 1168-1150 being only 18 grams of the 50 grams of the class size

So it is assumed that 36% (18/50) of the birds in that particular weight class do have a bodyweight of less than 1168 gram

In formulation: $\{(1168-1150)/50\}*2=1$

Table 1.2: Example of poor flock uniformity

Body weight	Frequency	Number	Average class weight	Number* average class weight	Numbers within +/- 20%	Numbers within +/- 10%
700-750	X	1	725	725		
750-800	Xx	2	775	1550		
800-850	Xx	2	825	1650	2	
850-900	Xxxx	4	875	3500	4	
900-950	Xxxxxxxx	8	925	7400	8	8
950-1000	xxxxxxxxxxxx	13	975	12675	13	13
1000-1050	xxxxxxxxxxxx	11	1025	11275	11	11
1050-1100	Xxxxxxx	7	1075	7525	7	7
1100-1150	X	1	1125	1125	1	
1150-1200	Xxxx	4	1175	4700	4	
1200-1250	Xx	2	1225	2450		
1250-1300		0	1275	0		
1300-1350	X	1	1325	1325		
1350-1400		0	1375	0		
	Total	56		55900	50	39
				average	range	range
				998	798-1198	898-1098
Number within range	Required				90% of 56 = 50+	80% of 56 = 45+
	Realized				47/56=89%	39/56=70%
Uniformity					Not good	Not good

Table 1.3: Uniformity and Coefficient of Variation

Uniformity +/- 10%	% CV
90	6.1
86	6.8
83	7.3
80	7.8
76	8.5
73	9.1
70	9.6
66	10.5
63	11.1
60	11.9
56	12.9
53	13.9
50	14.9

Table 2.1 Pureline Genetics Parentstock Nutrient Recommendations

Nutrient	Chick Starter Developer Breeder-1 Breeder-2				
	0-5 wks	5-20 wks	20-40wks	40wks+	
M.E./Kg	2850	2750	2825	2825	
Protein	18,5	14,5	15,5	14,0	
Calcium	1,00	0,90	3,25	3,50	
Av. Phos	0,45	0,40	0,40	0,38	
Sodium	0,18	0,18	0,18	0,18	
Chloride	0,19	0,20	0,20	0,20	
Arginine Total	1,06	0,80	0,70	0,70	
Arginine Available	0,91	0,66	0,63	0,60	
Lysine Total	1,00	0,72	0,70	0,70	
Lysine Available	0,90	0,60	0,62	0,62	
Methionine Total	0,40	0,30	0,32	0,32	
Methionine Available	0,35	0,27	0,30	0,29	
Met+Cys Total	0,75	0,60	0,60	0,59	
Met+Cys Available	0,68	0,53	0,53	0,53	
Tryptophan Total	0,19	0,16	0,17	0,17	
Tryptophan Available	0,16	0,14	0,15	0,14	
Threonine Total	0,70	0,55	0,52	0,52	
Threonine Available	0,62	0,48	0,45	0,45	
Vitamins Units					
Vit. A	MIU	10,00	8,00	9,90	9,90
Vit. D3	MIU	3,50	2,80	3,00	3,00
Vit. E	TIU	30,00	24,00	50,00	50,00
Vit. K3	gm	2,00	1,60	2,00	2,00
Vit. B12	mg	18,00	14,40	20,00	20,00
Riboflavin (B2)	gm	8,80	7,04	10,00	10,00
Niacin (B3)	gm	40,00	32,00	40,00	40,00
Pantothenic Acid (B5)	gm	15,00	12,00	15,00	15,00
Folic Acid (B9)	gm	1,20	0,96	1,50	1,50
Thiamine (B1)	gm	2,00	1,60	2,00	2,00
Pyridoxine (B6)	gm	3,00	2,40	4,00	4,00
Choline	gm	660,00	528,00	600,00	600,00
Biotin	gm	0,20	0,16	0,20	0,20
Minerals Units					
Iodine	gm	1,00	1,00	1,00	1,00
Copper	gm	8,00	8,00	12,00	12,00
Iron	gm	40,00	40,00	40,00	40,00
Manganese	gm	100,00	100,00	100,00	100,00
Zinc	gm	80,00	80,00	120,00	120,00
Selenium	gm	0,30	0,30	0,30	0,30

Table 2.2 :

**Recommended Bodyweights PLG Parentstock females
Rearing Period**

Age days	week	Body Wt *) Grams	Weekly Gain grams	Feed**) per bird per day
7	1	115		Full Feed
14	2	230	115	Full Feed
21	3	345	115	44
28	4	435	90	46
35	5	525	90	50
42	6	615	90	53
49	7	705	90	56
56	8	795	90	59
63	9	885	90	61
70	10	975	90	63
77	11	1065	90	66
84	12	1155	90	69
91	13	1245	90	72
98	14	1355	110	76
105	15	1465	110	80***)
112	16	1590	125	85
119	17	1715	125	90
126	18	1840	125	100
133	19	1970	130	110
140	20	2100	130	115
147	21	2240	140	120
154	22	2400	160	127

*) Bodyweight in this table refer to weighing the birds before eating.

**) Presented feed quantities are only a guideline.

Amount of feed given should be based to achieve the targeted bodyweight.

***) From 15 weeks onwards amount of feed has to be increased weekly at least with 4 g per bird per day.

**Table 2.3 : Recommended Bodyweights PLG Parentstock Males,
Rearing Period**

Age days	week	Body Wt *) grams	Weekly Gain grams	Feed**) per bird per day
7	1	160	120	Full Feed
14	2	320	160	Full Feed
21	3	545	225	Full Feed
28	4	725	180	Full Feed
35	5	885	160	64
42	6	1020	135	69
49	7	1155	135	73
56	8	1290	135	77
63	9	1425	135	81
70	10	1560	135	84
77	11	1695	135	87
84	12	1830	135	90
91	13	1965	135	93
98	14	2100	135	96
105	15	2235	135	99
112	16	2370	135	102
119	17	2505	135	105
126	18	2640	135	108
133	19	2775	135	111
140	20	2910	135	114
147	21	3045	135	117
154	22	3180	135	120

*) Bodyweight in this table refer to weighing the birds before eating.

**) Presented feed quantities are only a guideline.

Amount of feed given should be based to achieve the targeted bodyweight.

***) From 15 weeks onwards amount of feed has to be increased weekly at least with 4 g per bird per day.

Table 2.4:

**Curve Feeding Program and Bodyweight Parentstock
females and males**

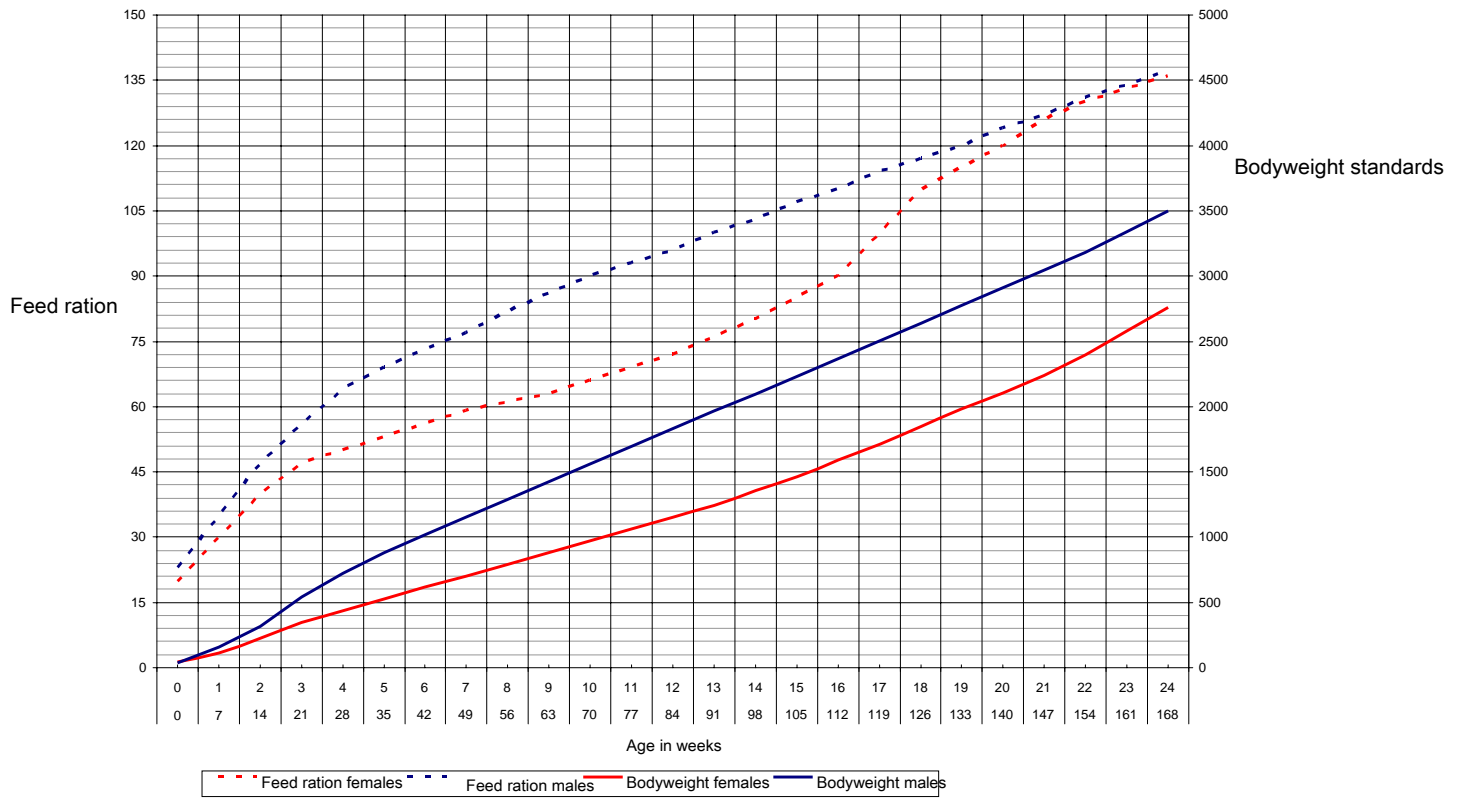


Table 3.1 Light program PureLine Parentstock

Day	Hours light	Intensity
1	23	Minimum of 60 Lux
2	23	60 Lux
3	20	60
4	19	60
5	18	60
6	17	60
7	16	50 Lux
8	15	45
9	14	40
10	13	35
11	12	30
12	11	25
13	10	20
14	9	15 Lux
15 - 153	8	15 Lux
Placement production house	24 hours during 1 day	60 Lux
154	12 *	60 Lux **
First eggs	14	
Week 32	15-16***	80 Lux

- *) in case of insufficient uniformity it may be necessary to delay stimulation by 1 week
- **) light intensity should be at least 4 times light intensity during rearing; preferable 5 times, especially during out of season.
- ***) depending on seasonal and local circumstances

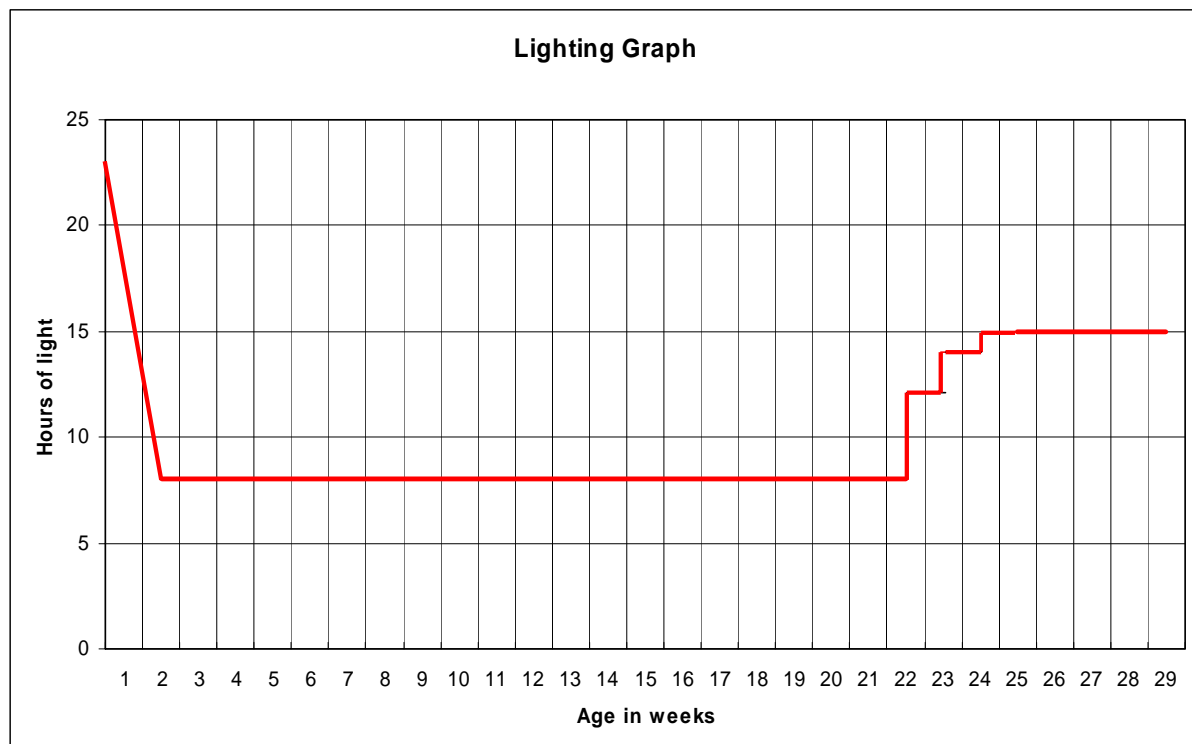


Table 4.1: Feeding Program Females during Production Period

Age /production	Indication of amount of feed per hen per day (g)*
154 days	126
161days	130
168 days	133
5% production	136
10% production	140
15% production	145
For each 5% increase in production until 65 %	+2
65 %	165
From 28 weeks until 2 weeks after peak production	Maximum of 168-170
Remaining production period	Decrease feed allocation based on achieving recommended weight gain and production

*) feed allocation has to be based on bodyweight development and production

Table 4.2.: Feeding Program Males during Production Period

Age	Indication of amount of feed per male per day (g)*
20 weeks	117
21 weeks	120
22 weeks	124
23 weeks	127
24 weeks	131
25 weeks	134
26 weeks	137
Remaining production period	Maximum of 145-150

*) feed allocation has to be based on bodyweight development and production

**Table 4.3: Recommended Bodyweights PLG Parentstock females
Production Period**

Age		Body Wt *) grams	Weekly Gain grams	Feed per bird per day
days	week			
154	22	2400	160	127
161	23	2580	180	130
168	24	2760	180	Daily feed allocation has to be based on development of bodyweight and temperature Important: Each male loosing weight will stop mating and will not start mating again
175	25	2940	180	
182	26	3090	150	
189	27	3215	125	
196	28	3315	100	
203	29	3390	75	
210	30	3440	50	
224	32	3490	25	
238	34	3530	20	
252	36	3560	15	
266	38	3590	15	
280	40	3620	15	
308	44	3660	10	
336	48	3700	10	
385	55	3770	10	
420	60	3820	10	
455	65	3870	10	

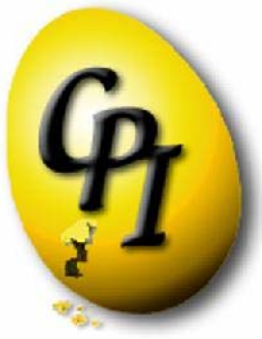
**Table 4.4: Recommended Bodyweights PLG Parentstock Males
Production Period**

Age Week	Body Wt *) grams	Weekly Gain grams	Feed per male per day
22	3180	135	128
23	3340	160	132
24	3500	160	135
25	3635	135	138
26	3725	90	141
30	4005	70	Remaining production Period maximum 145-150 gram per male per day
34	4105	25	
38	4205	25	
42	4305	25	
46	4405	25	
50	4485	20	
54	4565	20	
58	4645	20	
62	4725	20	

*) Bodyweight in this table refer to weighing the birds before eating

Table 4.5.
PureLine Parentstock Production Standards

Wk.of age	Wk of Prod.	% Total Prod. /Hen Day	% Liva-bility	Eggs /HH	Cum. eggs Prod HH	Av.Egg Wt. G/egg	% HE	Total HE Prod/Hen Week HH	Cum. Total HE Prod/HH	% Total Hatch	Chicks/ Wk/ HH	Cum Chicks /HH
24	1	5.0	100.00	0.4	0.4	-	-	-	-	-	-	-
25	2	15.0	99.60	1.0	1.4	50.5	35	0.4	0.4	73	0.3	0.3
26	3	38.0	99.20	2.6	4.0	52.3	60	1.6	1.9	75	1.2	1.5
27	4	65.0	98.80	4.5	8.5	54.1	83	3.7	5.7	79	2.9	4.4
28	5	78.0	98.40	5.4	13.9	55.9	90	4.8	10.5	81	3.9	8.3
29	6	82.0	98.00	5.6	19.5	57.7	95	5.3	15.9	82	4.4	12.7
30	7	85.0	97.60	5.8	25.3	59.0	95	5.5	21.4	83	4.6	17.3
31	8	84.0	97.20	5.7	31.1	59.8	95	5.4	26.8	84	4.6	21.8
32	9	83.0	96.80	5.6	36.7	60.8	96	5.4	32.2	85	4.6	26.4
33	10	82.0	96.40	5.5	42.2	61.4	96	5.3	37.5	86	4.6	31.0
34	11	81.0	96.00	5.4	47.7	62.0	97	5.3	42.8	87	4.6	35.6
35	12	80.0	95.60	5.4	53.0	62.6	97	5.2	48.0	88	4.6	40.2
36	13	79.0	95.20	5.3	58.3	63.2	97	5.1	53.1	89	4.5	44.7
37	14	78.0	94.80	5.2	63.4	63.6	98	5.0	58.1	89	4.5	49.2
38	15	77.0	94.40	5.1	68.5	64.0	98	5.0	63.1	89	4.4	53.6
39	16	76.0	94.00	5.0	73.5	64.4	98	4.9	68.0	89	4.3	58.0
40	17	75.0	93.60	4.9	78.4	64.8	98	4.8	72.8	89	4.3	62.2
41	18	74.0	93.20	4.8	83.3	65.2	98	4.7	77.5	89	4.2	66.4
42	19	73.0	92.80	4.7	88.0	65.5	98	4.6	82.1	88	4.1	70.5
43	20	72.0	92.40	4.7	92.7	65.8	98	4.5	86.6	88	4.0	74.5
44	21	71.0	92.00	4.6	97.2	66.1	98	4.5	91.1	88	3.9	78.4
45	22	70.0	91.75	4.5	101.7	66.4	98	4.4	95.5	88	3.9	82.3
46	23	69.0	91.50	4.4	106.2	66.7	98	4.3	99.8	87	3.7	86.0
47	24	68.0	91.25	4.3	110.5	67.0	98	4.2	104.0	87	3.7	89.7
48	25	67.0	91.00	4.3	114.8	67.3	98	4.2	108.2	87	3.6	93.3
49	26	66.0	90.75	4.2	119.0	67.6	98	4.1	112.3	86	3.5	96.8
50	27	65.0	90.50	4.1	123.1	67.9	98	4.0	116.3	86	3.5	100.3
51	28	64.0	90.25	4.0	127.1	68.2	98	3.9	120.2	86	3.4	103.7
52	29	63.0	90.00	4.0	131.1	68.5	98	3.9	124.1	85	3.3	107.0
53	30	62.0	89.75	3.9	135.0	68.8	98	3.8	127.9	85	3.2	110.2
54	31	61.0	89.50	3.8	138.8	69.1	98	3.7	131.6	84	3.1	113.3
55	32	60.0	89.25	3.7	142.6	69.3	98	3.7	135.3	84	3.1	116.4
56	33	59.0	89.00	3.7	146.2	69.5	98	3.6	138.9	83	3.0	119.4
57	34	58.0	88.75	3.6	149.8	69.7	98	3.5	142.4	82	2.9	122.2
58	35	57.0	88.50	3.5	153.4	69.9	98	3.4	145.8	81	2.8	125.0
59	36	56.0	88.25	3.5	156.8	70.1	98	3.4	149.2	79	2.7	127.7
60	37	55.0	88.00	3.4	160.2	70.3	98	3.3	152.5	78	2.6	130.3
61	38	54.0	87.75	3.3	163.5	70.5	97	3.2	155.7	77	2.5	132.7
62	39	53.0	87.50	3.2	166.8	70.7	97	3.1	158.9	76	2.4	135.1
63	40	52.0	87.25	3.2	170.0	70.9	97	3.1	161.9	75	2.3	137.4
64	41	51.0	87.00	3.1	173.1	71.1	97	3.0	165.0	74	2.2	139.7
65	42	50.0	86.75	3.0	176.1	71.3	97	2.9	167.9	73	2.1	141.8



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