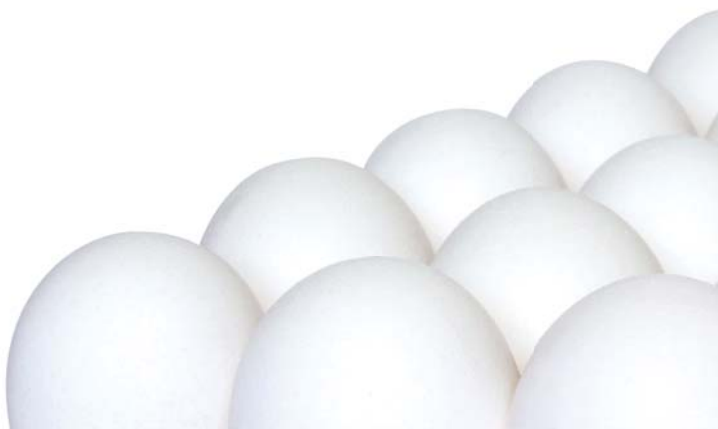
Edition 3

Hy-Line®

W-36

Performance Standards Manual



General Management Recommendations

The genetic potential of Hy-Line varieties can only be realized if good poultry husbandry practices and management are used. This booklet outlines the results of successful flock management programs for Hy-Line's varieties based on field experience compiled by Hy-Line and extensive commercial flock records catalogued by Hy-Line from all parts of the world. Hy-Line International management recommendations and principles taken from industry technical literature are available in the Hy-Line Red Book, *an Online Management Guide*, which is found at http://www.hyline.com/redbook/RedBook.aspx.

The information and suggestions contained in this booklet should be used for guidance and educational purposes only, recognizing that local environmental and disease conditions may vary and a guide cannot cover all possible circumstances. While every attempt has been made to ensure that the information presented is accurate and reliable at the time of publication, Hy-Line cannot accept responsibility for any errors, omissions or inaccuracies in such information or management suggestions. Further, Hy-Line does not warrant or make any representations or guarantees regarding the use, validity, accuracy, or reliability of, or flock performance or productivity resulting from the use of, or otherwise respecting, such information or management suggestions. In no event shall Hy-Line be liable for any special, indirect or consequential damages or special damages whatsoever arising out of or in connection with the use of the information or management suggestions contained in this booklet.

Hy-Line International Performance Standards Manuals are periodically updated as new performance data and/or nutrition information become available. To ensure you are using the latest Edition, please check at our website http://www.hyline.com/aspx/productsandservices/managementmanuals.aspx.

Performance Summary

Growing Period (to 17 weeks):	
Livability	97%
Feed Consumed	5.25 kg
Body Weight at 17 Weeks	1.25 kg
Laying Period (to 110 weeks):	
Percent Peak	95–96%
Hen-Day Eggs to 60 Weeks	255–261
Hen-Day Eggs to 80 Weeks	369–378
Hen-Day Eggs to 110 Weeks	506–517
Hen-Housed Eggs to 60 Weeks	251–257
Hen-Housed Eggs to 80 Weeks	359–368
Hen-Housed Eggs to 110 Weeks	487–497
Livability to 60 Weeks	97%
Livability to 80 Weeks	94%
Days to 50% Production (from hatch)	143
Egg Weight at 26 Weeks	57.0 g/egg
Egg Weight at 38 Weeks	61.2 g/egg
Egg Weight at 70 Weeks	63.6 g/egg
Egg Weight at 84 Weeks	64.0 g/egg
Total Egg Mass per Hen-Housed (18–80 weeks)	22.0 kg
Body Weight at 32 Weeks	1.52 kg
Body Weight at 70 Weeks	1.56 kg
Shell Strength	Excellent
Haugh Units at 38 Weeks	91
Haugh Units at 56 Weeks	88
Haugh Units at 70 Weeks	86
Percent Solids at 38 Weeks	24.6
Percent Solids at 56 Weeks	24.7
Percent Solids at 70 Weeks	24.7
Average Daily Feed Consumption (18–80 weeks)	95 g/day per bird
Feed Conversion Rate, kg Feed/kg Eggs (20–60 weeks)	1.80
Feed Conversion Rate, kg Feed/kg Eggs (20–80 weeks)	1.86
Feed Utilization, kg Egg/kg Feed (20–60 weeks)	0.56
Feed Utilization, kg Egg/kg Feed (20–80 weeks)	0.54
Feed per Dozen Eggs (20–60 weeks)	1.28 kg
Feed per Dozen Eggs (20–80 weeks)	1.33 kg
Condition of Droppings	Dry

Growing Recommendations

Cage Growing

Chicks started in cages should be placed in the upper levels (decks), where the air is warmer and the light brighter. Intermingle seemingly weak and strong chicks (from different transport boxes) to allow the stronger chicks to 'train' the weaker chicks to find water and feed. The starter feed should be placed inside the cage on the cage paper after the chicks have had a chance to drink. Continue feeding on the paper for the first 7 to 10 days after arrival. The chicks can be distributed among all cage levels around 14 days of age when the space has become too restricted in the upper levels.

Place paper on the cage floor during the brooding period. This will allow supplemental feeding on the cage paper to quickly get chicks eating. Place feed on the cage paper in front of the permanent feeder to train chicks to move towards the feeders. Remove the paper by 14 days of age to avoid build up of feces that could lead to enteric disease or coccidia infections.

Water lines should be flushed prior to arrival of the chicks. Drinking water temperature should be 25 to 30°C for the first week. Adjusting water system pressure in nipple drinkers to create a hanging drip will help chicks find water. Cup drinkers should be manually filled during the first 3 days to train chicks to drink.

Floor Growing

Chicks started on the floor should be transferred from the transport boxes to the litter under the water lines or near drinkers to encourage drinking. To make it easier for the chicks to drink, use supplemental drinkers in addition to the automatic drinkers. The supplemental drinkers should be used for the first 10 to 14 days and can also be used for administering the first vaccination if given in the water. When used, gradually move supplemental feeders and drinkers towards the permanent feeders and drinkers in the room to train the chicks to find the permanent feeders and waterers.

Birds should be grown in housing that allows adjustment to the lighting program and the light intensity. The lighting programs are usually similar to those used for birds in cage production, but light intensity may be different. It is important to provide floor-grown birds with enough light intensity to allow them to navigate their environment. A light intensity of 20 to 30 lux (2 to 3 foot-candles) should be used during the first week of age, dropping down to 15 lux (1.5 foot-candles) by week 4 and remaining at the level until week 15 of age. At week 15 of age, gradually increase the light intensity, reaching 20 to 30 lux (2 to 3 foot-candles) by the time the pullets are transferred to the layer house. Birds moving into open-sided housing should have higher light intensities of 30 to 40 lux (3 to 4 foot-candles) at the time of housing.

Pullet Growing Space Recommendations

	Colony/Cage	Floor
Bird Space	310 cm^2/bird	835 cm^2/bird
Feeder	5 cm/bird	5 cm/bird or 1 pan per 50 birds
Cups or nipples drinking system	1 per 8 birds	1 per 15 birds
Fountain drinking system, 46 cm diameter	—	1 per 125 birds

Ambient Temperature and Relative Humidity

Observing the chicks will tell you whether or not the temperature is correct. If they are too cool, they will huddle near the heat source. If they are too warm, they will spread out away from the heat source. If there are drafts, they will huddle in groups to get away from the spot where the cool air enters the heated area. Comfortable chicks will spread out uniformly, without huddling, throughout the brooding area.

Look for signs of overheating (panting and drowsiness) or chilling (huddling and loud chirping) and make appropriate adjustments. Heat control is more critical in cage brooding because the chicks cannot move to find their comfort zone.

Birds are very sensitive to extremes of relative humidity. A relative humidity below 30% will cause increased agitation of the chicks and may cause aggressive behavior. Conversely, excessive moisture may cause wet litter conditions, associated with high ammonia concentrations, poor air quality, enteric diseases, and respiratory problems. Ideally, the relative humidity should be between 40 and 60%. Humidity control becomes increasingly important when warm-room brooding in cold climates. To increase the relative humidity, water can be sprayed on the walk ways or floors. Humidity will normally be lowered to 30 to 40% by the end of the growing period.

Recommended Brooding Temperatures[1]

Age (days)	Cage	Floor
1–3	32–33°C	33–35°C
4–7	30–32°C	31–33°C
8–14	28–30°C	29–31°C
15–21	26–28°C	27–29°C
22–28	23–26°C	24–27°C
29–35	21–23°C	22–24°C
36+	21°C	21°C

[1]Modify the temperatures as needed to meet the chicks' comfort needs.

Growing/Laying Recommendations

Water Consumption for Pullets and Layers

Drinking Water

Water is the most important nutrient and good-quality water must be available to the birds at all times. Only in special cases (e.g., prior to vaccine delivery through the drinking water), should drinking water be restricted, and then only for a short time and under careful monitoring.

Monitoring Drinking Water Intake

Water and feed consumption are directly related—when birds drink less water, they consume less feed, and production quickly declines accordingly. As a general rule, healthy adult birds will consume twice as much water as feed, although the ratio increases during periods of warm weather. Installation and use of water meters in each house or barn are recommended to monitor the flock's water intake on a daily basis. Such daily water-intake records can be used as an early warning of problems in the flock.

Water Consumed per 100 Birds per Day

Chicks should consume 0.83 liters per 100 birds on day one of age.

Age in Weeks	Liters
1	0.8–1.1
2	1.1–1.9
3	1.7–2.7
4	2.5–3.8
5	3.4–4.7
6	4.5–5.7
7	5.7–6.8
8	6.1–8.0
9	6.4–9.5
10–15	6.8–10.2
16–20	7.2–15.2
21–25*	9.9–18.2
Over 25*	15.2–20.8

* Chart shows an expected range of water consumption at normal environmental temperatures for bird comfort (21–27°C). At higher temperatures (32–38°C) water consumption may increase up to double the amounts shown.

Lighting Programs

Egg production is very closely related to the changes in day length. Body weight gain in grow, egg numbers, egg size, livability, and total profitability can be favorably influenced by a proper lighting program.

When open-type houses are used, which allow natural daylight to affect the flock, the lighting program must be planned in conjunction with changes in the natural day length. Because no two places have the same sunrise-sunset times year-round, custom lighting programs for any location worldwide are available.

A customizable lighting program is available in multiple languages and will create a downloadable spreadsheet with sunrise and sunset times for any location in the world and the lighting program for your flock. Visit www.hyline.com to access the customizable lighting program.

Controlling Egg Weight

It is recommended to closely monitor feed intake, body condition (through body weight and/or body scoring/fat-pad development), and egg weight of each flock and make nutritional changes as needed to ensure optimal production rate and egg weight. If smaller eggs are desired, the egg weight should be controlled even more aggressively at an early age.

Egg-weight control is achieved through a combination of limiting amino acid consumption and ensuring that the feed intake is not too high (achieved through control of the ambient temperature). To avoid excessively large eggs later in lay, use the peaking and second layer feeding phase diets for less time than shown in the Performance Standards Manual. This will provide a reduced level of added fat or oil, as well as amino acid contents, to control egg weight.

Control of ambient house temperature

At housing, an ambient temperature of 21 to 23°C is desired. Increase the house temperature about 1°C every 2 weeks until reaching a house temperature of 26 to 27°C (assuming the ventilation systems are able to maintain adequate air quality at these temperatures). Lower (colder) house temperatures will lead to greater feed intakes and may be counterproductive to egg-weight control, as well as optimal feed efficiency and adult hen body weights.

Colony/Cage Space Recommendations in Laying House

	U.S. Recommendations (United Egg Producers)	E.U. Recommendations Enriched Colony Systems*
Bird Space	432–555 cm^2/bird	750 cm^2/bird (600 usable cm^2)
Feeder	7.6 cm/bird	12 cm/bird
Cups or nipples drinking system	1 per 12 birds	2 within reach of each bird
Perches	—	15 cm/bird

* See regulations for other requirements such as nests, litter area, clearance, etc. Some countries have more specific requirements.

Target Weights

—Growing Period—

Age in Weeks	Body Weight* g
1	65
2	115
3	180
4	250
5	330
6	420
7	510
8	600
9	690
10	790
11	880
12	960
13	1030
14	1100
15	1170
16	1210
17**	1250
18	1280

* Pullets grown on the floor or in a tropical climate can be 50 g lighter than shown.
** Move to Lay house

Feed Consumption*

—Growing Period—

Age in Weeks	Daily g/day per bird	Cumulative g to date
1	14	98
2	16	210
3	19	343
4	30	553
5	39	826
6	42	1120
7	43	1421
8	46	1743
9	48	2079
10	51	2436
11	53	2807
12	54	3185
13	56	3577
14	57	3976
15	59	4389
16	61	4816
17	62	5250

* Pullet feed consumption varies with feed formulation and environmental temperatures.

Added Vitamins and Trace Minerals

	—Growing Period—	—Laying Period—
Item[1]	In 1000 kg complete diet	In 1000 kg complete diet
Vitamin A, IU	9,900,000	8,800,000
Vitamin D_3, IU	3,300,000	3,300,000
25-hydroxy Vitamin D_3,[2] mg	55	55
Vitamin E, IU	22,100	16,500
Vitamin K (menadione), g	3.3	2.2
Thiamin (B_1), g	2.2	1.7
Riboflavin (B_2), g	6.6	5.5
Niacin (B_3), g	33	28
Pantothenic acid (B_5), g	11.0	6.6
Pyridoxine (B_6), g	4.4	3.3
Biotin (B_7), mg	55	55
Folic acid (B_9), g	0.9	0.6
Cobalamine (B_{12}), mg	22.1	22.1
Choline, g	110	110
Manganese[3], g	88	88
Zinc[3], g	88	88
Iron, g	55	55
Copper, g	11.0	5.5
Iodine, g	1.7	1.7
Selenium, g	0.30	0.30

[1] Minimum recommendations for growing and laying periods. Local regulations may limit the dietary content of individual vitamins or minerals.
[2] If 25-OH Vitamin D_3 is added to the diet, the levels of 'regular' Vitamin D_3 in the premix could be lowered in accordance with the manufacturer's recommendations or to comply with local laws regulating the total amount of Vitamin D_3 added to the diet.
[3] 20% of Manganese or Zinc may be in organic form.

Growing Period Nutrition Recommendations

Item[1]	Starter 1	Starter 2	Grower	Developer	Pre-Lay[5]
Feed to a body weight of	180 g	420 g	960 g	1170 g	1250 g
Approximate age	0–3 weeks	4–6 weeks	7–12 weeks	13–15 weeks	16–17 weeks
Recommended concentration[2]					
Metabolizable energy, kcal/kg	2977–3087	2977–3087	2977–3087	2977–3131	2911–2955
Metabolizable energy, MJ/kg	12.46–12.92	12.46–12.92	12.46–12.92	12.46–13.11	12.18–12.37
Minimum recommended concentration					
Standardized (true) ileal digestible amino acids					
Lysine, %	1.05	0.98	0.88	0.76	0.78
Methionine, %	0.47	0.44	0.40	0.36	0.38
Methionine+cystine, %	0.74	0.74	0.67	0.59	0.66
Threonine, %	0.69	0.66	0.60	0.52	0.55
Tryptophan, %	0.18	0.18	0.17	0.15	0.16
Arginine, %	1.12	1.05	0.94	0.81	0.83
Isoleucine, %	0.74	0.71	0.65	0.57	0.62
Valine, %	0.76	0.73	0.69	0.61	0.66
Total amino acids[3]					
Lysine, %	1.15	1.07	0.96	0.83	0.85
Methionine, %	0.51	0.47	0.44	0.38	0.41
Methionine+cystine, %	0.83	0.83	0.75	0.67	0.74
Threonine, %	0.82	0.77	0.70	0.62	0.64
Tryptophan, %	0.21	0.21	0.20	0.18	0.20
Arginine, %	1.21	1.13	1.01	0.87	0.90
Isoleucine, %	0.79	0.76	0.70	0.61	0.67
Valine, %	0.83	0.80	0.76	0.67	0.73
Crude protein (nitrogen × 6.25),[3] %	20.00	19.00	18.00	17.00	17.00
Calcium,[4] %	1.00	1.00	1.00	1.40	2.50
Phosphorus (available), %	0.50	0.49	0.47	0.45	0.48
Sodium, %	0.18	0.18	0.18	0.18	0.18
Chloride, %	0.18	0.18	0.18	0.18	0.18
Linoleic acid (C18:2 n-6), %	1.00	1.00	1.00	1.00	1.00

[1] Change diets at the recommended target body weight—the approximate age is a guide only.
[2] Differences in the metabolizable energy value assigned to feed ingredients of the same name can differ substantially; in some cases, the recommended dietary energy content may have to be adjusted accordingly (see the Hy-Line Red Book, *an Online Management Guide* for additional information).
[3] The minimum recommendations for total amino acids and crude protein are only appropriate with a corn and soybean meal diet; please formulate the diet on digestible amino acid basis instead.
[4] Calcium should be supplied as a fine calcium carbonate source (mean particle size less than 2 mm).
[5] Feed the Pre-Lay Diet for one or two weeks before the onset of egg production, when most pullets show some enlargement and reddening of their combs. Be prepared to change to the Peaking Diet at no later than 0.5–1.0% daily egg production, as the Pre-Lay Diet does not contain sufficient calcium to sustain egg production.

Laying Period Nutrition Recommendations

Item[1]	First Egg to Peak of Egg Production[5]	Post-peak to 90% Egg Production[6]	89% to 85% Egg Production	Less than 85% Egg Production
Recommended concentration[2]				
Metabolizable energy, kcal/kg	2844–2955	2844–2944	2822–2922	2800–2844
Metabolizable energy, MJ/kg	11.90–12.37	11.90–12.32	11.81–12.23	11.72–11.90
Minimum recommended concentration Standardized (true) ileal digestible amino acids				
Lysine, mg/day	805	750	710	695
Methionine, mg/day	394	368	348	334
Methionine+cystine, mg/day	676	630	596	570
Threonine, mg/day	564	525	497	487
Tryptophan, mg/day	169	158	149	146
Arginine, mg/day	861	803	760	744
Isoleucine, mg/day	636	593	561	549
Valine, mg/day	725	675	639	626
Total amino acids[3]				
Lysine, mg/day	881	821	777	761
Methionine, mg/day	424	395	374	359
Methionine+cystine, mg/day	763	711	673	643
Threonine, mg/day	663	618	585	572
Tryptophan, mg/day	202	188	178	174
Arginine, mg/day	926	863	817	800
Isoleucine, mg/day	684	637	603	590
Valine, mg/day	799	744	705	690
Crude protein (nitrogen × 6.25),[3] g/day	16.00	15.50	15.25	15.00
Calcium,[4] g/day	4.00	4.20	4.35	4.50
Phosphorus (available), mg/day	500	480	460	400
Sodium, mg/day	180	180	180	180
Chloride, mg/day	180	180	180	180
Linoleic acid (C18:2 n-6), g/day	1.00	1.00	1.00	1.00
Choline, mg/day	100	100	100	100

[1] Consumption of amino acids, fat, linoleic acid, and/or energy may be changed to optimize egg size.
[2] The recommended energy range is based on the energy values shown in the Hy-Line Red Book, *an Online Management Guide*. Differences in the metabolizable energy value assigned to feed ingredients of the same name can differ substantially; in some cases, the recommended dietary energy content may have to be adjusted accordingly (see the Hy-Line Red Book, *an Online Management Guide* for additional information).
[3] Total amino acids are only appropriate with a corn and soybean meal diet; please formulate the diet on digestible amino acid basis if a substantial amount of other protein-supplying ingredients are used.
[4] Approximately 65% of the added calcium carbonate (limestone) should be in particle sizes of 2–4 mm.
[5] This Peaking Diet should immediately follow the Pre-Lay Diet.
[6] Change to Post-peak Diet when egg production has decreased 2% from peak egg production.

Laying Period Nutrition Recommendations

Item[1]	First Egg to Peak of Egg Production[5]					Post-peak to 90% Egg Production[6]					89% to 85% Egg Production					Less than 85% Egg Production				
Recommended concentration[2]																				
Metabolizable energy, kcal/kg	2844–2955					2844–2944					2822–2922					2800–2844				
Metabolizable energy, MJ/kg	11.90–12.37					11.90–12.32					11.81–12.23					11.72–11.90				
Feed consumption																				
g/day per bird	74	79	**84***	89	94	85	90	**95***	100	105	85	90	**95***	100	105	83	88	**93***	98	103
Standardized (true) ileal digestible amino acids																				
Lysine, %	1.09	1.02	**0.96**	0.90	0.86	0.88	0.83	**0.79**	0.75	0.71	0.84	0.79	**0.75**	0.71	0.68	0.84	0.79	**0.75**	0.71	0.67
Methionine, %	0.53	0.50	**0.47**	0.44	0.42	0.43	0.41	**0.39**	0.37	0.35	0.41	0.39	**0.37**	0.35	0.33	0.40	0.38	**0.36**	0.34	0.32
Methionine+cystine, %	0.91	0.86	**0.80**	0.76	0.72	0.74	0.70	**0.66**	0.63	0.60	0.70	0.66	**0.63**	0.60	0.57	0.69	0.65	**0.61**	0.58	0.55
Threonine, %	0.76	0.71	**0.67**	0.63	0.60	0.62	0.58	**0.55**	0.53	0.50	0.58	0.55	**0.52**	0.50	0.47	0.59	0.55	**0.52**	0.50	0.47
Tryptophan, %	0.23	0.21	**0.20**	0.19	0.18	0.19	0.18	**0.17**	0.16	0.15	0.18	0.17	**0.16**	0.15	0.14	0.18	0.17	**0.16**	0.15	0.14
Arginine, %	1.16	1.09	**1.03**	0.97	0.92	0.94	0.89	**0.85**	0.80	0.76	0.89	0.84	**0.80**	0.76	0.72	0.90	0.85	**0.80**	0.76	0.72
Isoleucine, %	0.86	0.81	**0.76**	0.71	0.68	0.70	0.66	**0.62**	0.59	0.56	0.66	0.62	**0.59**	0.56	0.53	0.66	0.62	**0.59**	0.56	0.53
Valine, %	0.98	0.92	**0.86**	0.81	0.77	0.79	0.75	**0.71**	0.68	0.64	0.75	0.71	**0.67**	0.64	0.61	0.75	0.71	**0.67**	0.64	0.61
Total amino acids[3]																				
Lysine, %	1.19	1.12	**1.05**	0.99	0.94	0.97	0.91	**0.86**	0.82	0.78	0.91	0.86	**0.82**	0.78	0.74	0.92	0.86	**0.82**	0.78	0.74
Methionine, %	0.57	0.54	**0.50**	0.48	0.45	0.46	0.44	**0.42**	0.40	0.38	0.44	0.42	**0.39**	0.37	0.36	0.43	0.41	**0.39**	0.37	0.35
Methionine+cystine, %	1.03	0.97	**0.91**	0.86	0.81	0.84	0.79	**0.75**	0.71	0.68	0.79	0.75	**0.71**	0.67	0.64	0.77	0.73	**0.69**	0.66	0.62
Threonine, %	0.90	0.84	**0.79**	0.74	0.71	0.73	0.69	**0.65**	0.62	0.59	0.69	0.65	**0.62**	0.59	0.56	0.69	0.65	**0.62**	0.58	0.56
Tryptophan, %	0.27	0.26	**0.24**	0.23	0.21	0.22	0.21	**0.20**	0.19	0.18	0.21	0.20	**0.19**	0.18	0.17	0.21	0.20	**0.19**	0.18	0.17
Arginine, %	1.25	1.17	**1.10**	1.04	0.99	1.02	0.96	**0.91**	0.86	0.82	0.96	0.91	**0.86**	0.82	0.78	0.96	0.91	**0.86**	0.82	0.78
Isoleucine, %	0.92	0.87	**0.81**	0.77	0.73	0.75	0.71	**0.67**	0.64	0.61	0.71	0.67	**0.63**	0.60	0.57	0.71	0.67	**0.63**	0.60	0.57
Valine, %	1.08	1.01	**0.95**	0.90	0.85	0.88	0.83	**0.78**	0.74	0.71	0.83	0.78	**0.74**	0.71	0.67	0.83	0.78	**0.74**	0.70	0.67
Crude protein (nitrogen × 6.25),[3] %	21.62	20.25	**19.05**	17.98	17.02	18.24	17.22	**16.32**	15.50	14.76	17.94	16.94	**16.05**	15.25	14.52	18.07	17.05	**16.13**	15.31	14.56
Calcium,[4] %	5.41	5.06	**4.76**	4.49	4.26	4.94	4.67	**4.42**	4.20	4.00	5.12	4.83	**4.58**	4.35	4.14	5.42	5.11	**4.84**	4.59	4.37
Phosphorus (available),%	0.68	0.63	**0.60**	0.56	0.53	0.56	0.53	**0.51**	0.48	0.46	0.54	0.51	**0.48**	0.46	0.44	0.48	0.45	**0.43**	0.41	0.39
Sodium, %	0.24	0.23	**0.21**	0.20	0.19	0.21	0.20	**0.19**	0.18	0.17	0.21	0.20	**0.19**	0.18	0.17	0.22	0.20	**0.19**	0.18	0.17
Chloride, %	0.24	0.23	**0.21**	0.20	0.19	0.21	0.20	**0.19**	0.18	0.17	0.21	0.20	**0.19**	0.18	0.17	0.22	0.20	**0.19**	0.18	0.17
Linoleic acid, (C18:2 n-6), %	1.35	1.27	**1.19**	1.12	1.06	1.18	1.11	**1.05**	1.00	0.95	1.18	1.11	**1.05**	1.00	0.95	1.20	1.14	**1.08**	1.02	0.97

** Typical feed consumption for the age based on available data.*

[1] Consumption of amino acids, fat, linoleic acid, and/or energy may be changed to optimize egg size.
[2] The recommended energy range is based on the energy values shown in the Hy-Line Red Book, *an Online Management Guide*. Differences in the metabolizable energy value assigned to feed ingredients of the same name can differ substantially; in some cases, the recommended dietary energy content may have to be adjusted accordingly (see the Hy-Line Red Book, *an Online Management Guide* for additional information).
[3] Total amino acids are only appropriate with a corn and soybean meal diet; please formulate the diet on digestible amino acid basis if a substantial amount of other protein-supplying ingredients are used.
[4] Approximately 65% of the added calcium carbonate (limestone) should be in particle sizes of 2–4 mm.
[5] This Peaking Diet should immediately follow the Pre-Lay Diet.
[6] Change to Post-peak Diet when egg production has decreased 2% from peak egg production.

Non-Fast Molting Recommendations

Non-Fast Molting

Many producers use a Non-Fast Molting Program to induce molting. The Hy-Line laying hens will perform very well after a rest, particularly in the latter weeks of the molt cycle with excellent shell quality and persistency. The optimum age for molting depends on the current flocks' performance, local egg markets, and scheduling of the next pullet flock, but is usually between 65 to 75 weeks of age.

Induced molting can extend the productive life of a flock by improving rate of lay, shell quality, and albumen height. However, these levels will be somewhat lower than the best pre-molt values. Egg size will essentially remain unaffected and will continue to increase after egg production resumes.

Free access to water at all times during the non-fast molt is essential. It is important to know the sodium (Na) content of the drinking water. High sodium levels (i.e., 100 ppm or higher) can adversely affect this molt program.

The best post-molt egg production is achieved after a complete cessation of egg production that lasts for at least 2 weeks and a concomitant loss of body weight to the 18 week target weight. After the initial body weight loss, the body weight can be held steady by a combination of adjusting the number of feedings per day and/or a shift to a higher-energy (laying-hen-type) diet.

Because of the importance of the body weight loss during molt, it is recommeded to closely monitor the body weight of the flock during the molt process. Body weights should be collected twice per week from the same cages every time. The cages should be selected from bottom, middle, and top tiers; all rows; and from the front, middle, and end of the house.

The following table outlines the recommendations for the Non-Fast Molting Program recommended by Hy-Line.

Molt day	Light	Feed type	Feed modification[1]	Feed intake[2]	House temperature[3]	Comments
	Hours per day			g/day per bird	°C	
-7 to -5	16	Layer diet	Fine-particle $CaCO_3$	Full feed	24–25	Fine-particle $CaCO_3$ diet: Remove all large-particle size $CaCO_3$ and replace with fine-particle $CaCO_3$ (less than 2 mm mean diameter). Do NOT change the percent calcium in the laying-hen diet.
-4 to -1	24	Layer diet	Fine-particle $CaCO_3$, no added salt (NaCl)	Full feed	24–25	
0–6	6–8[4]	Molt diet[5]	Fine-particle $CaCO_3$	54–64	27–28	The higher house temperatures will help reduce feed intake and, in turn, facilitate a reduction in body weight to the 18 week target weight (note that white laying hens should not lose more than 24–25% of their pre-molt body weight).
7–17	6–8	Molt diet	—	54-64	27–28	Maintain body weight.
18–19	12 or 16[6]	Layer diet[7]	Mixture of fine- and coarse-particle $CaCO_3$ as in a normal layer diet	64–73	27–28	Control (limit) feed intake to avoid fat birds.
20–21	16[6]	Layer diet[7]	—	Full feed	26–27	Lower house temperature as needed to increase feed intake.
22–24	16	Layer diet[7]	—	Full feed[7]	24–25	Lower the ambient temperature to "normal."

[1] Include a probiotic or a complex-carbohydrate product (e.g., mannan-oligo-saccharide; MOS) at 0.5 kg per metric ton finished diet through all stages of the molt program.
[2] Feed intake depends on house temperature. Lower temperatures (colder) may require more feed.
[3] Depends on air quality in house. The suggested house temperatures may not be achievable in cold weather.
[4] Set lights at 8 hours or natural day length in open-sided houses. Normally, it is not necessary to change the light intensity.
[5] The Molt Diet is high in fiber (low in energy) and contains no added sodium (Na) (i.e., no added NaCl or $NaHCO_3$).
[6] Light-stimulate the birds to bring the birds into production by increasing the light hours to the number of hours they were given before the molt (e.g., 15 or 16 hours). This increase can be performed over 1 week (i.e., from 8 hours to 16 hours in a single day) or over 2 weeks (i.e., from 8 to 12 hours and then from 12 to 16 hours). Monitor and control feed intake for the first few days after light stimulation to avoid fat birds as they are getting back into lay (which would significantly increase egg weight in the second cycle).
[7] According to the post-molt nutrition recommendations.

Molt Nutrition Recommendations

Recommended concentration[1]	Molt Diet
Metabolizable energy, kcal/kg	2205–2800
Metabolizable energy, MJ/kg	9.23–11.72
Minimum recommended concentration	
Standardized (true) ileal digestibility	
Lysine, %	0.30
Methionine, %	0.15
Methionine+cystine, %	0.32
Threonine, %	0.18
Tryptophan, %	0.10
Arginine, %	0.38
Isoleucine, %	0.18
Valine, %	0.23
Total amino acids[2]	
Lysine, %	0.33
Methionine, %	0.16
Methionine+cystine, %	0.36
Threonine, %	0.21
Tryptophan, %	0.12
Arginine, %	0.41
Isoleucine, %	0.20
Valine, %	0.26
Crude protein (nitrogen × 6.25),[2] %	8.50
Calcium,[3] %	1.3–2.0
Phosphorus (available), %	0.25
Sodium,[4] %	0.03
Chloride, %	0.03

[1] The recommended energy range is based on the energy values shown in the Hy-Line Red Book, *an Online Management Guide*. Differences in the metabolizable energy value assigned to feed ingredients of the same name can differ substantially; in some cases, the recommended dietary energy content may have to be adjusted accordingly (see the Hy-Line Red Book, *an Online Management Guide* for additional information).

[2] Total amino acids are only appropriate with a corn and soybean meal diet; please formulate the diet on digestible amino acid basis if a substantial amount of other protein-supplying ingredients are used.

[3] The added calcium carbonate (limestone) should be in particle sizes of less than 2 mm.

[4] The sodium content in the Molt Diet should not exceed 0.035%.

Post-Molt Nutrition Recommendations

After the Molt diet, when egg production commences, formulate diets according to level of desired percentage egg production and egg weight. The Post-Molt diets are formulated similar to that of the last laying hen diet fed, albeit with the following modifications:

- 20 kcal/kg (0.08 MJ/kg) less energy
- 5% reduction in amino acid levels (corresponding to about 0.25 percentage points less crude protein)
- increased calcium content (see tables below)
- decreased available-phosphorus content (see tables below)

Minimum recommended daily consumption	Peaking	83% to 78% egg production	77% to 75% egg production	Less than 75% egg production
Calcium, g/day	4.35	4.55	4.75	4.95
Phosphorus (available), mg/day	500	450	400	350

Recommended post-molt dietary calcium and available phosphorus contents					
Peaking					
Feed consumption. g/day per bird	81	86	91*	96	101
Calcium.[1] %	5.37	5.06	4.78	4.53	4.31
Phosphorus (available). %	0.62	0.58	0.55	0.52	0.50
83% to 78% egg production					
Feed consumption. g/day per bird	83	88	93*	98	103
Calcium.[1] %	5.48	5.17	4.89	4.64	4.42
Phosphorus (available). %	0.54	0.51	0.48	0.46	0.44
77% to 75% egg production					
Feed consumption. g/day per bird	85	90	95*	100	105
Calcium.[1] %	5.59	5.28	5.00	4.75	4.52
Phosphorus (available). %	0.47	0.44	0.42	0.40	0.38
Less than 75% egg production					
Feed consumption. g/day per bird	86	91	96*	101	106
Calcium.[1] %	5.76	5.44	5.16	4.90	4.67
Phosphorus (available). %	0.41	0.38	0.36	0.35	0.33

** Typical feed consumption based on available data.*

[1] Approximately 65% of the added calcium carbonate (limestone) should be in particle sizes of 2–4 mm.

Performance Table

Age in Weeks	% Hen-Day Production		Mortality Cumulative	Hen-Day Eggs Cumulative		Hen-Housed Eggs Cumulative		Body Weight	Average Egg Weight*	Feed Consumption	Hen-Housed Egg Mass Cumulative	Egg Quality		
	Optimum Conditions	Average Conditions	%	Optimum Conditions	Average Conditions	Optimum Conditions	Average Conditions	kg	g/egg	g/day per bird	kg	Haugh Units	% Solids**	Breaking Strength
18	2	3	0.0	0.1	0.2	0.1	0.2	1.28	44.4	68	0.01	98.0	22.4	4280
19	22	15	0.1	1.7	1.3	1.7	1.3	1.34	45.4	70	0.06	97.8	22.5	4270
20	50	35	0.1	5.2	3.7	5.2	3.7	1.38	46.0	72	0.2	97.6	22.9	4260
21	75	62	0.2	10.4	8.1	10.4	8.0	1.43	48.8	74	0.4	97.2	23.1	4250
22	88	82	0.3	16.6	13.8	16.6	13.8	1.46	51.0	76	0.7	96.8	23.2	4250
23	92	90	0.4	23.0	20.1	23.0	20.0	1.47	53.1	81	1.0	96.4	23.4	4240
24	94	93	0.4	29.6	26.6	29.5	26.5	1.48	54.8	85	1.4	96.0	23.5	4240
25	95	94	0.5	36.3	33.2	36.1	33.1	1.49	56.2	88	1.7	95.6	23.6	4230
26	96	95	0.6	43.0	39.8	42.8	39.7	1.50	57.0	90	2.1	95.3	23.7	4220
27	96	95	0.7	49.7	46.5	49.5	46.3	1.51	57.5	91	2.5	95.0	23.8	4210
28	96	95	0.8	56.4	53.1	56.2	52.9	1.51	58.0	92	2.9	94.6	23.9	4200
29	96	95	0.9	63.1	59.8	62.8	59.5	1.52	58.6	93	3.3	94.2	24.0	4190
30	96	95	1.0	69.9	66.4	69.5	66.1	1.52	59.2	93	3.6	93.9	24.1	4180
31	96	94	1.0	76.6	73.0	76.1	72.6	1.52	59.6	94	4.0	93.6	24.2	4170
32	95	94	1.1	83.2	79.6	82.7	79.1	1.52	59.7	94	4.4	93.2	24.3	4160
33	95	94	1.2	89.9	86.2	89.3	85.6	1.52	60.2	95	4.8	92.9	24.4	4150
34	95	93	1.3	96.5	92.7	95.8	92.0	1.53	60.7	95	5.2	92.6	24.4	4140
35	95	93	1.3	103.2	99.2	102.4	98.4	1.53	60.8	96	5.6	92.3	24.5	4130
36	94	93	1.4	109.8	105.7	108.9	104.8	1.53	61.0	96	6.0	92.0	24.5	4120
37	94	92	1.5	116.3	112.1	115.4	111.2	1.54	61.1	97	6.4	91.7	24.6	4110
38	94	92	1.5	122.9	118.6	121.9	117.5	1.54	61.2	97	6.8	91.4	24.6	4110
39	93	92	1.6	129.4	125.0	128.3	123.9	1.54	61.3	97	7.1	91.1	24.6	4100
40	93	92	1.7	135.9	131.5	134.7	130.2	1.54	61.5	98	7.5	90.8	24.6	4100
41	93	92	1.7	142.5	137.9	141.1	136.5	1.54	61.7	98	7.9	90.5	24.6	4090
42	92	91	1.8	148.9	144.3	147.4	142.8	1.54	62.2	98	8.3	90.3	24.7	4090
43	92	91	1.9	155.3	150.6	153.7	149.0	1.54	62.2	99	8.7	90.0	24.7	4085
44	92	90	1.9	161.8	156.9	160.0	155.2	1.55	62.3	99	9.1	89.7	24.7	4085
45	91	90	2.0	168.1	163.2	166.3	161.4	1.55	62.4	99	9.5	89.5	24.7	4080
46	91	90	2.0	174.5	169.5	172.5	167.6	1.55	62.5	100	9.9	89.2	24.7	4080
47	91	89	2.1	180.9	175.8	178.7	173.7	1.55	62.6	100	10.2	89.1	24.7	4075
48	90	89	2.2	187.2	182.0	184.9	179.8	1.55	62.6	100	10.6	88.9	24.7	4075
49	90	89	2.3	193.5	188.2	191.1	185.8	1.55	62.7	100	11.0	88.6	24.7	4070
50	90	88	2.4	199.8	194.4	197.2	191.9	1.55	62.7	101	11.4	88.5	24.7	4070
51	89	88	2.5	206.0	200.6	203.3	197.9	1.55	62.8	101	11.8	88.3	24.7	4065
52	89	88	2.6	212.2	206.7	209.4	203.9	1.56	62.9	101	12.1	88.1	24.7	4065
53	88	87	2.7	218.4	212.8	215.3	209.8	1.56	63.0	101	12.5	87.9	24.7	4060
54	88	87	2.8	224.6	218.9	221.3	215.7	1.56	63.0	100	12.9	87.7	24.7	4060
55	88	87	2.9	230.7	225.0	227.3	221.6	1.56	63.1	100	13.3	87.6	24.7	4050
56	88	86	3.0	236.9	231.0	233.3	227.5	1.56	63.1	100	13.6	87.5	24.7	4050
57	87	86	3.1	243.0	237.0	239.2	233.3	1.56	63.2	100	14.0	87.3	24.7	4045
58	87	86	3.2	249.1	243.0	245.1	239.1	1.56	63.2	100	14.4	87.2	24.7	4045
59	87	85	3.3	255.2	249.0	251.0	244.9	1.56	63.3	100	14.7	87.1	24.7	4040
60	87	85	3.4	261.2	254.9	256.9	250.7	1.56	63.3	100	15.1	87.0	24.7	4040

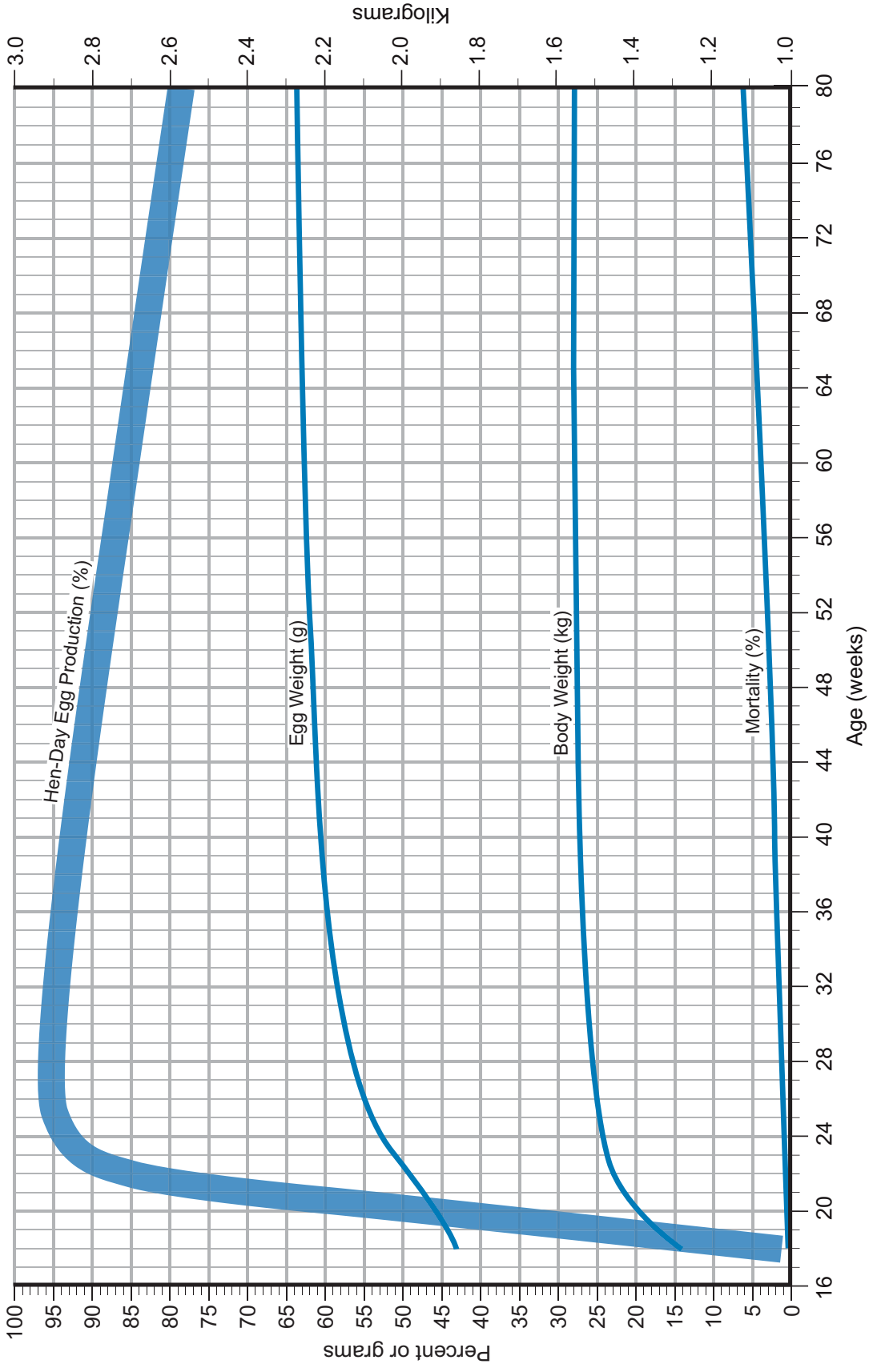
* Egg weights after 40 weeks of age assume phase feeding of protein to limit egg size.
** Percent solids in liquid egg mix of white and yolk.

Performance Table

Age in Weeks	% Hen-Day Production		Mortality Cumulative	Hen-Day Eggs Cumulative		Hen-Housed Eggs Cumulative		Body Weight	Average Egg Weight*	Feed Consumption	Hen-Housed Egg Mass Cumulative	Egg Quality		
	Optimum Conditions	Average Conditions	%	Optimum Conditions	Average Conditions	Optimum Conditions	Average Conditions	kg	g/egg	g/day per bird	kg	Haugh Units	% Solids**	Breaking Strength
61	86	85	3.5	267.3	260.9	262.7	256.4	1.56	63.4	99	15.5	86.9	24.7	4035
62	86	84	3.6	273.3	266.8	268.5	262.1	1.56	63.4	99	15.8	86.8	24.7	4030
63	86	84	3.7	279.3	272.7	274.3	267.7	1.56	63.4	99	16.2	86.7	24.7	4020
64	85	83	3.8	285.3	278.5	280.0	273.3	1.56	63.5	99	16.5	86.6	24.7	4010
65	85	83	3.9	291.2	284.3	285.7	278.9	1.56	63.5	99	16.9	86.5	24.7	4005
66	85	83	4.0	297.2	290.1	291.5	284.5	1.56	63.6	98	17.2	86.4	24.7	3990
67	84	82	4.2	303.0	295.8	297.1	290.0	1.56	63.6	98	17.6	86.3	24.7	3985
68	84	82	4.3	308.9	301.6	302.7	295.5	1.56	63.6	98	17.9	86.2	24.7	3970
69	84	82	4.4	314.8	307.3	308.3	301.0	1.56	63.6	98	18.3	86.1	24.7	3960
70	83	81	4.5	320.6	313.0	313.9	306.4	1.56	63.6	98	18.6	86.0	24.7	3955
71	83	81	4.7	326.4	318.6	319.4	311.8	1.56	63.6	98	19.0	85.9	24.7	3950
72	83	81	4.8	332.2	324.3	325.0	317.2	1.56	63.6	98	19.3	85.8	24.7	3945
73	82	80	4.9	338.0	329.9	330.4	322.5	1.56	63.6	98	19.7	85.7	24.7	3940
74	82	80	5.0	343.7	335.5	335.9	327.8	1.56	63.7	98	20.0	85.6	24.7	3940
75	82	80	5.1	349.4	341.1	341.3	333.1	1.56	63.7	98	20.3	85.5	24.7	3930
76	81	79	5.3	355.1	346.6	346.7	338.4	1.56	63.7	97	20.7	85.4	24.7	3930
77	81	79	5.4	360.8	352.2	352.0	343.6	1.56	63.7	97	21.0	85.3	24.7	3920
78	81	78	5.5	366.5	357.6	357.4	348.8	1.56	63.8	97	21.3	85.2	24.7	3920
79	80	78	5.6	372.1	363.1	362.7	353.9	1.56	63.8	97	21.7	85.1	24.7	3910
80	80	77	5.7	377.7	368.5	368.0	359.0	1.56	63.8	97	22.0	85.0	24.7	3910

* Egg weights after 40 weeks of age assume phase feeding of protein to limit egg size.
** Percent solids in liquid egg mix of white and yolk.

Performance Graph

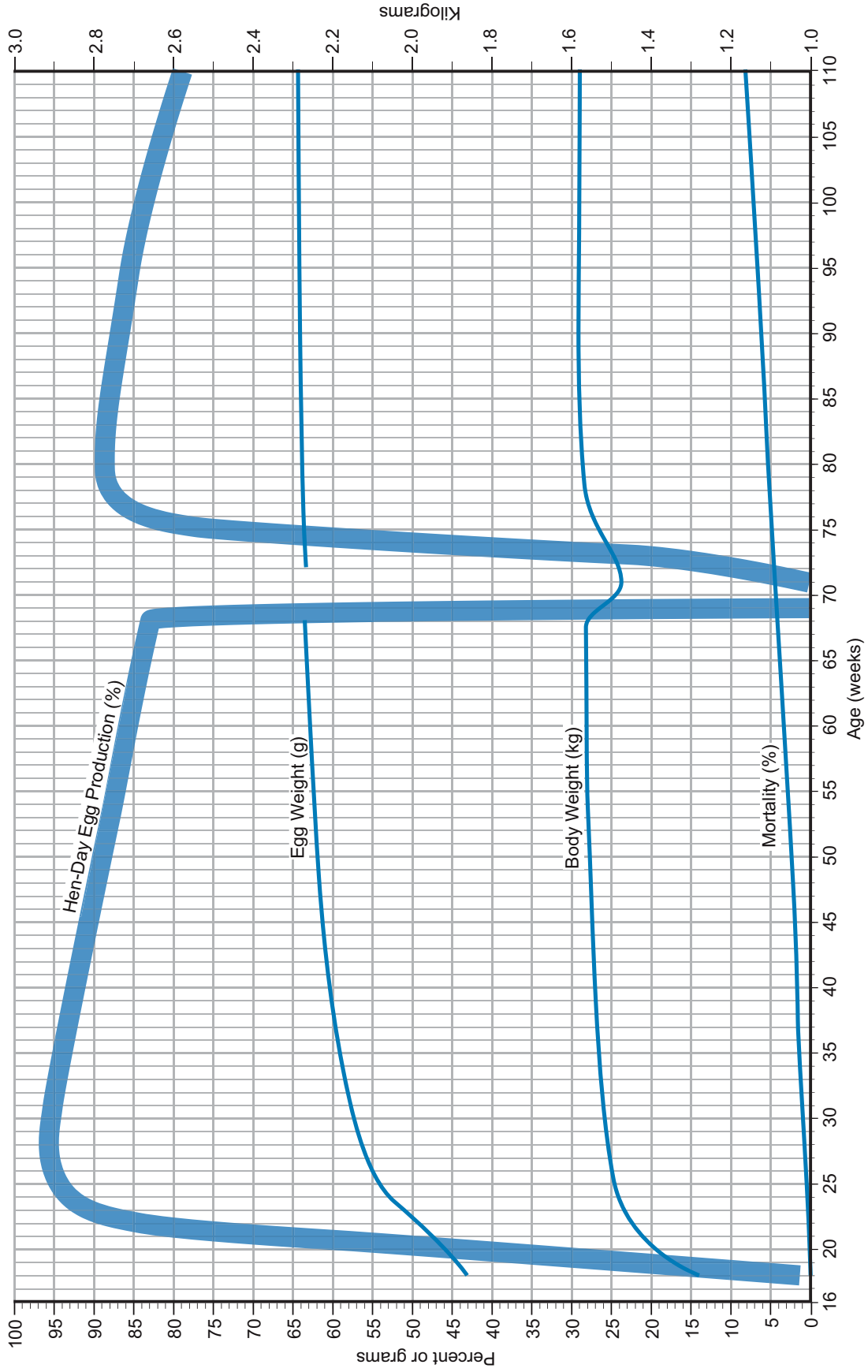


Post-Molt Performance Table

Age in Weeks	% Hen-Day Production	% Mortality Cumulative	Eggs Cumulative		Body Weight	Average Egg Weight*	Feed Consumption	Hen-Housed Egg Mass Cumulative
			Hen-Day	Hen-Housed	kg	g/egg	g/day per bird	kg
69	0	4.4	298.3	292.3	1.51	-	-	17.7
70	0	4.5	298.3	292.3	1.48	-	47	17.7
71	0	4.6	298.3	292.3	1.48	-	64	17.7
72	9	4.7	298.9	292.9	1.48	63.4	78	17.8
73	22	4.8	300.4	294.4	1.49	63.5	85	17.9
74	48	4.9	303.8	297.6	1.52	63.6	90	18.1
75	77	4.9	309.2	302.7	1.54	63.8	95	18.4
76	84	5.0	315.1	308.3	1.55	63.9	97	18.8
77	87	5.1	321.1	314.1	1.56	63.9	99	19.1
78	88	5.2	327.3	319.9	1.56	63.9	100	19.5
79	88	5.2	333.5	325.8	1.57	63.9	100	19.9
80	89	5.3	339.7	331.7	1.57	64.0	101	20.3
81	89	5.4	345.9	337.6	1.57	64.0	101	20.6
82	88	5.5	352.1	343.4	1.58	64.0	101	21.0
83	87	5.5	358.2	349.1	1.58	64.0	101	21.4
84	87	5.6	364.3	354.9	1.58	64.0	101	21.7
85	87	5.7	370.4	360.6	1.58	64.0	101	22.1
86	87	5.8	376.4	366.4	1.58	64.0	102	22.5
87	87	5.9	382.5	372.1	1.58	64.1	102	22.8
88	86	6.0	388.6	377.8	1.58	64.1	102	23.2
89	86	6.1	394.6	383.4	1.58	64.1	102	23.6
90	86	6.2	400.6	389.1	1.58	64.1	102	23.9
91	86	6.2	406.6	394.7	1.58	64.1	102	24.3
92	86	6.3	412.6	400.4	1.58	64.1	102	24.7
93	86	6.4	418.7	406.0	1.58	64.1	102	25.0
94	86	6.5	424.7	411.6	1.58	64.1	102	25.4
95	86	6.6	430.7	417.2	1.58	64.1	102	25.7
96	85	6.7	436.6	422.8	1.58	64.1	102	26.1
97	85	6.8	442.6	428.3	1.58	64.1	102	26.5
98	85	6.9	448.5	433.9	1.58	64.4	102	26.8
99	85	7.0	454.5	439.4	1.58	64.4	102	27.2
100	84	7.1	460.4	444.9	1.58	64.4	102	27.5
101	84	7.2	466.3	450.3	1.58	64.4	102	27.9
102	83	7.3	472.1	455.7	1.58	64.4	103	28.2
103	82	7.4	477.8	461.0	1.58	64.4	103	28.6
104	82	7.5	483.5	466.3	1.58	64.4	103	28.9
105	81	7.6	489.2	471.6	1.58	64.4	103	29.2
106	80	7.7	494.8	476.7	1.58	64.4	103	29.6
107	80	7.8	500.4	481.9	1.58	64.4	103	29.9
108	80	7.9	506.0	487.0	1.58	64.4	103	30.2
109	79	8.1	511.5	492.1	1.58	64.4	103	30.6
110	79	8.2	517.1	497.2	1.58	64.4	103	30.9

* These egg weights are those which can be achieved through controlled feeding of protein. Larger egg sizes can be achieved by feeding higher protein levels.

Performance Graph for Two Lay Cycles



Egg Size Distribution—E.U. Standards

Age in Weeks	Average Egg Weight (g)	% Very Large Over 73 g	% Large 63–73 g	% Medium 53–63 g	% Small 43–53 g
22	51.0	0.0	0.3	32.2	67.5
24	54.8	0.0	3.7	61.5	34.8
26	57.0	0.0	10.1	70.2	19.7
28	58.0	0.1	14.3	71.3	14.4
30	59.2	0.1	20.3	70.7	8.9
32	59.7	0.2	23.7	69.3	6.8
34	60.7	0.3	29.8	65.9	4.0
36	61.0	0.3	31.8	64.8	3.1
38	61.2	0.3	33.2	64.0	2.5
40	61.5	0.4	36.0	61.2	2.4
42	62.2	0.6	42.0	55.5	1.9
44	62.3	0.8	42.9	54.6	1.7
46	62.5	0.9	44.6	52.9	1.7
48	62.6	1.0	45.4	51.9	1.7
50	62.7	1.3	46.1	51.0	1.7
52	62.9	1.4	47.7	49.3	1.6
54	63.0	1.6	48.6	48.2	1.6
56	63.1	1.8	49.1	47.6	1.6
58	63.2	2.1	49.6	46.7	1.6
60	63.3	2.3	50.3	45.9	1.6
62	63.4	2.5	50.8	45.1	1.6
64	63.5	2.6	51.4	44.3	1.6
66	63.6	2.8	52.1	43.6	1.5
68	63.6	2.8	52.1	43.6	1.5
70	63.6	2.8	52.1	43.6	1.5
72	63.6	2.8	52.1	43.6	1.5
74	63.7	2.9	52.8	42.9	1.5
76	63.7	2.9	52.8	42.9	1.5
78	63.8	3.0	53.5	42.1	1.4
80	63.8	3.0	53.5	42.1	1.4

Egg Size Distribution—U.S. Standards

Age in Weeks	Average Egg Weight (lb/case)	% Jumbo Over 30 oz/dozen	% Extra Large 27–30 oz/dozen	% Large 24–27 oz/dozen	% Medium 21–24 oz/dozen	% Small 18–21 oz/dozen	% Peewee Under 18 oz/dozen
22	40.5	0.0	0.2	16.5	45.8	34.8	2.7
24	43.5	0.0	2.5	43.6	41.0	12.5	0.4
26	45.2	0.2	7.3	57.1	29.7	5.7	0.1
28	46.0	0.3	10.6	61.2	24.2	3.7	0.1
30	47.0	0.6	15.4	64.6	17.7	1.8	0.0
32	47.4	0.7	17.5	65.7	14.9	1.2	0.0
34	48.2	1.0	23.1	65.1	10.2	0.6	0.0
36	48.4	1.1	24.7	65.1	8.7	0.4	0.0
38	48.6	1.1	25.8	65.3	7.5	0.3	0.0
40	48.8	1.5	28.3	63.0	7.0	0.3	0.0
42	49.4	2.2	33.1	59.1	5.5	0.2	0.0
44	49.4	2.6	34.2	57.8	5.3	0.2	0.0
46	49.6	2.8	35.6	56.3	5.1	0.2	0.0
48	49.7	3.3	36.3	55.3	4.9	0.2	0.0
50	49.8	3.8	37.0	54.2	4.8	0.2	0.0
52	49.9	4.1	38.2	52.9	4.7	0.2	0.0
54	50.0	4.4	39.0	51.7	4.7	0.2	0.0
56	50.1	4.9	39.3	51.1	4.6	0.2	0.0
58	50.2	5.5	39.6	50.0	4.6	0.2	0.0
60	50.2	6.1	40.3	49.0	4.5	0.2	0.0
62	50.3	6.3	40.5	48.5	4.4	0.2	0.0
64	50.4	6.6	41.0	47.8	4.3	0.2	0.0
66	50.5	6.9	41.6	47.1	4.2	0.2	0.0
68	50.5	6.9	41.6	47.1	4.2	0.2	0.0
70	50.5	6.9	41.6	47.1	4.2	0.2	0.0
72	50.5	6.9	41.6	47.1	4.2	0.2	0.0
74	50.6	7.1	42.1	46.5	4.0	0.2	0.0
76	50.6	7.1	42.1	46.5	4.0	0.2	0.0
78	50.6	7.4	42.7	45.9	3.9	0.2	0.0
80	50.6	7.4	42.7	45.9	3.9	0.2	0.0

Post-Molt Egg Size Distribution—E.U. Standards

Age in Weeks	Average Egg Weight (g)	% Very Large Over 73 g	% Large 63–73 g	% Medium 53–63 g	% Small 43–53 g
72	63.4	2.5	50.8	45.1	1.7
74	63.6	3.0	51.8	43.5	1.7
76	63.9	3.5	53.2	41.6	1.7
78	63.9	3.7	53.3	41.4	1.6
80	64.0	4.2	53.5	40.8	1.6
82	64.0	4.2	53.5	40.7	1.6
84	64.0	4.2	53.5	40.7	1.6
86	64.0	4.2	53.5	40.7	1.6
88	64.1	4.4	54.0	40.1	1.5
90	64.1	4.4	54.0	40.1	1.5
92	64.1	4.4	54.0	40.1	1.5
94	64.1	4.4	54.0	40.1	1.5
96	64.1	4.4	54.0	40.1	1.5
98	64.4	4.9	55.7	38.0	1.4
100	64.4	4.9	55.7	38.0	1.4
102	64.4	4.9	55.7	38.0	1.4
104	64.4	4.9	55.7	38.0	1.4
106	64.4	4.9	55.7	38.0	1.4
108	64.4	4.9	55.7	38.0	1.4
110	64.4	4.9	55.7	38.0	1.4

Post-Molt Egg Size Distribution—U.S. Standards

Age in Weeks	Average Egg Weight (lb/case)	% Jumbo Over 30 oz/dozen	% Extra Large 27–30 oz/dozen	% Large 24–27 oz/dozen	% Medium 21–24 oz/dozen	% Small 18–21 oz/dozen	% Peewee Under 18 oz/dozen
72	50.3	6.3	40.5	44.4	8.4	0.4	0.0
74	50.5	7.3	41.2	43.1	8.1	0.3	0.0
76	50.7	8.0	42.1	42.0	7.7	0.3	0.0
78	50.7	8.6	42.3	41.2	7.7	0.3	0.0
80	50.8	8.9	42.3	40.9	7.7	0.3	0.0
82	50.8	9.3	42.3	40.4	7.7	0.3	0.0
84	50.8	9.3	42.3	40.4	7.7	0.3	0.0
86	50.8	9.3	42.3	40.4	7.7	0.3	0.0
88	50.9	9.6	42.8	39.9	7.5	0.3	0.0
90	50.9	9.6	42.8	39.9	7.5	0.3	0.0
92	50.9	9.6	42.8	39.9	7.5	0.3	0.0
94	50.9	9.6	42.8	39.9	7.5	0.3	0.0
96	50.9	9.6	42.8	39.9	7.5	0.3	0.0
98	51.1	10.6	44.0	38.4	6.7	0.2	0.0
100	51.1	10.6	44.0	38.4	6.7	0.2	0.0
102	51.1	10.6	44.0	38.4	6.7	0.2	0.0
104	51.1	10.6	44.0	38.4	6.7	0.2	0.0
106	51.1	10.6	44.0	38.4	6.7	0.2	0.0
108	51.1	10.6	44.0	38.4	6.7	0.2	0.0
110	51.1	10.6	44.0	38.4	6.7	0.2	0.0

Notes

Hy-Line International Welfare Goals and Principles

To promote animal well-being and produce birds of the highest quality, we adhere to the following welfare goals and principles. These goals and principles are the essential building blocks for the humane and professional care of our birds:

- Feed and Water
  Provide access to good quality water and nutritionally balanced diets at all times
- Health and Veterinary Care
  Provide science-based health programs and prompt veterinary care
- Environment
  Provide shelter that is designed, maintained and operated to meet the bird's needs and to facilitate daily inspection
- Husbandry and Handling Practices
  Provide comprehensive care and handling procedures that ensure the bird's well-being throughout its life
- Transportation
  Provide transportation that minimizes travel time and stress

Hy-Line®

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