Tetra Americana, LLC

TETRA AMBER

NORTH AMERICAN MANAGEMENT GUIDE

December 2009 Edition

Exclusive Distributor on the American Continent for TETRA SELECTED FOR QUALITY

TETRA AMBER
PERFORMANCE SPECIFICATIONS

Rearing Period:

Livability	96-98%							
	17 Weeks		18 Weeks		19 Weeks		20 Weeks	
	US (lb)	Metric (kg)	US (lb)	Metric (kg)	US (lb)	Metric (kg)	US (lb)	Metric (kg)
Feed Consumption (Cumulative)	13.23	6.00	14.51	6.58	15.85	7.19	17.26	7.83
Body Weight	3.24	1.470	3.46	1.569	3.69	1.675	3.85	1.747

Laying Period:

Age at 50% Production	143 - 145					
Percent Peak Production	95 – 96%					
	60 Weeks		72 Weeks		80 Weeks	
Hen Housed Eggs	247		308		348	
Livability %	97.2		96		95.2	
	US (lb)	Metric (g/kg)	US (lb)	Metric (g/kg)	US (lb)	Metric (g/kg)
Body Weight	4.45	2.02	4.50	2.04	4.52	2.05
Average Egg Weight at: (lbs/360eggs & gms/egg)	52.5	66.2	52.9	66.6	53.0	66.8
HH Egg Mass		15.6		19.8		22.4
Feed/Dozen eggs	3.97		4.05		4.13	
Kg feed/Kg egg		2.4		2.42		2.45

The TETRA AMBER is a white, with some brown, feathered, brown egg layer which has the ability to meet the expectations of a variety of egg producers with different objectives. She is the bird of choice for many alternative production operators who expect a docile easily adaptable bird with excellent livability. The AMBER's beautiful brown egg color and good feathering throughout the lay makes her a preferred product.

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INTRODUCTION

The TETRA AMBER is a docile, feather sex-able AMBER egg layer which produces a large quantity of high quality eggs with a good feed conversion. All this is the result of many years of genetic research.

The favorable genetic characteristics can only be achieved when the bird is provided with all its requirements. These include, but are not limited to, good quality feed, good housing and proper management. The purpose of this Management Guide is to assist the producer in providing the necessities.

Over a period of time, many egg producers have developed their own management program, based on their specific housing-type, climate, feed, market conditions, etc. This approach may also work very well on the TETRA AMBER . Therefore do not hesitate to consider using your own program in conjunction with the guide and in consultation with your TETRA supplier.

In the USA the Scientific Advisory Committee of the United Egg Producers (UEP) has developed a set of animal husbandry guidelines that, when followed, allows participants to market their eggs under the “United Egg Producer Certified” label. (Specific details can be found at www.uepcertified.com)

BROODING AND REARING PROGRAM

Brooding Temperatures and Space Requirements for Growing Period

Age in Weeks				1	2	3	4	5-17
Temperature [1]			°F	92-88[2]	88-82	82-75	75-70	70
			°C	33-31[2]	31-28	28-24	24-21	21
Floor Space		Cage	Sq. in/ Bird	27				54
			Sq. cm/ Bird	175				350
		Floor	Sq. ft/ Bird	0.55				1.1
			Birds/ Sq. m	18				9
Feeder Space	Trough	Cage	In./ Bird	1.2				2.5
			Cm./ Bird	23.0				6.5
		Floor	In./ Bird	1.5				3.0
			Cm./ Bird	4.0				8.0
	Pans	Cage	Birds/ Pan	20				10
		Floor	Birds/ Pan	44				22
Drinker Space	Cups or Nipples	Cage	Birds/ unit	16				8
		Floor	Birds/ unit	20				10
	Founts/ Bells	Floor	Birds/ unit	150				100
	Trough	Floor	In./ Bird	0.6				1.2
			Cm./ Bird	1.5				3.0

Note: 1) Brooding temperatures are at chick level, not caretaker's eye level!
2) Start off at 92F/33C down to 87F/30C by day 7.

Goals

This period (0-17 weeks) is, by far, the most critical time of a bird's life. Errors made during this time are very difficult to overcome. One should strive to achieve the target body weight with good uniformity in a properly vaccinated flock. To assist in reaching these goals, the following recommendations have been developed through research, field experience, and currently accepted field practices.

Isolation and Sanitation

The most effective way to reduce the negative impact of disease causing pathogens on the growth and subsequent performance of a flock is to avoid exposure to these organisms. A sound sanitation program and effective isolation plans are instrumental in achieving this goal.

Sanitation should begin with removal of all organic matter from the previous flock. Organic matter includes alive and dead chickens, rodents, manure, feathers, etc. Growing birds on built-up litter is not recommended at any time. Dry cleaning should be done as soon as possible after the old flock is removed. Down time is very beneficial in allowing pathogens to die naturally. The dry cleaning should include the walls, rafters, ceiling, feed bins and other feed equipment, fans, vents, watering system, cages, etc. After dry cleaning has been completed, all surfaces should be washed with high-pressure washing and an approved surfactant containing detergent. Following this wash down, apply a sanitizing agent approved for use in poultry houses. The sanitizing agent chosen should be broad spectrum in its activity and used according to manufacturer's directions. If allowed, fumigation of the house using an approved fumigant can also be used after returning all equipment to the house. Any equipment removed should be cleaned and disinfected prior to replacement.

Isolation of the house is vitally important to reduce the possibility of introducing a disease organism into a clean house environment. People traffic constitutes the largest threat to isolation and introduction of disease causing agents. Ideally, shower facilities and farm clothing are available for all employees and necessary visitors. If this is not possible, visitors should be limited to those that are necessary and they should be required to wear clean coveralls, new plastic or cleaned rubber boots, and hair covering. Disinfectant footbaths should be present at the entranceway to each house and should be replenished with fresh disinfectant daily. Doors should be kept locked at all times to prevent unwanted, improperly attired visitors from entering. "No Trespassing" signs should be prominently displayed on the doors and "Bio-security Zone" signs should be displayed at the farm entrance to warn visitors that they are entering a bio-secure area. Remembering that people spread many diseases from farm to farm will help to encourage less people traffic to and from farms.

Prior to Chick Arrival

1. All equipment, including cages, brooders, interior surfaces of the building, and any other equipment used should be thoroughly cleaned and disinfected.

2. All mechanical equipment, feeders, fans, curtains, etc. should be tested and brought into good working condition.

3. Rodent control programs should be strictly enforced when the house is cleaned and empty. The use of baits, tracking powders, and any other control method available should be implemented.

4. Feed from previous flock should be removed and the feed bins, troughs, hoppers, and chains or augers cleaned and dried before the delivery of new feed.

5. Raise the house temperature to 85-90 °F (29-32 °C) at least 24 hours prior to chick arrival to ensure the equipment is also warm. The desired relative humidity should be greater than 60%. This humidity level should be maintained for at least three weeks.

6. Set light clocks to 23 hours day length with a light intensity as high as possible. If shadows are being cast onto any drinkers/nipples, the use of droplights is suggested to eliminate these shadows.

7. Trigger nipples to ensure that they are in working order and set at the proper height. Nipples should be at the chick's eye level and bell drinkers should be on the floor. Supplemental drinkers should be used in floor brooding and removed slowly once the chicks are established and are clearly using the main drinking system.

Delivery Day

1. Have the light as bright as possible (brown chicks tend to reflect less light than white chicks, yet they need brighter light to find water and feed!)Encourage the chicks to drink as soon after delivery as possible.
2. Watch chicks for signs of overheating (panting and listlessness) or chilling (huddling and chirping). Adjust temperatures as needed. Remember that chicks that have traveled long distances are thirstier and will drink more water in a short period of time. This will lower the body temperature of the chick and could result in chilling of the chick. Slightly higher house temperatures may be necessary under these circumstances.
3. Use minimum ventilation rates to ensure fresh air and the dilution of pathogens.

Floor Brooding

Brooding chicks on the floor creates certain challenges that need to be addressed. Drafts in a floor house tend to have more effect on the chicks than drafts in a cage house. Drafts should be eliminated to prevent piling and chilling of the chicks. Temperatures under the brooders should be at 90 °F (32 °C) when the chicks arrive. Place no more than 500 chicks under a 6- foot brooder and no more than 750 under an eight-foot brooder. Observe the chicks for comfort in the brooder area. If they are cool, they will huddle under the brooder stove. If they are hot they will try to get as far away from the stove as possible. When comfortable, the chicks will be dispersed throughout the brooder ring area.

Beak Treatment

It is preferred that all pullets are beak treated to ensure better livability, less feather pulling, and better feed conversion. There are many different beak-treatment programs that are used successfully throughout the world. The following are examples of programs proven to work well on the TETRA AMBER layers.

1. Single beak treatment, by laser, at the hatchery. This procedure is gaining popularity. If a second treatment is needed, the advantages of this early treatment are reduced. This program works well for flocks grown with good light control and excellent management. Generally, it is not recommended as the only treatment for cage free production.

2. Single beak treatment at 10-14 days (later is better). This is commonly used and works very well as a single beak-treatment for the TETRA AMBER. Provided it is done well and the flock is placed in a light controlled cage facility, no second treatment should be needed.

3. Single beak treatment at 5 – 7 weeks. This program is commonly used too in areas where pullets are raised in light-controlled environments and destined for a layer facility with little light control or very high light intensity. This later treatment reduces the potential for cannibalism in high light intensity environments and floor operations.

4. Double beak treatment. This program is recommended for use by some producers especially organic producers, who need an early beak treatment to prevent toe pecking and the early beak treatment is not adequate for their layer environment, i.e. expect more stress conditions in the lay period (high light intensity environments or open sided houses or management challenges).

To reduce the bleeding associated with treatment of the beaks, withdraw feed from the pullets 12 hours prior to treatment and give the birds Vitamin K in the water two days before and two days after treatment. Be certain to raise the depth of the feed available to the chicks after treatment to reduce the injury of the beak from hitting metal chains or augers.

Up to 14 days of age, a Precision beak treatment device with the guide plate holes of 4.3, 4.7, and 5.0 mm, can be used. Treat the beaks 2-mm from the nostril for the early treatment. The beak length should be 4 mm for the treatment that occur after 2 weeks of age. A blade temperature of 1,300 °F (between 700- 800 °C) and a cam speed of 2 seconds should provide optimum results. Avoid beak treatment of pullets which are sick or under severe stress.
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Vaccination and Disease Control

The best method of disease control was discussed above in the Isolation and Sanitation section. Ideally, diseases can be prevented by eliminating the exposure to a disease-causing agent. Since it is know that preventing the exposure of birds to certain disease agents is virtually impossible or highly unlikely, we must use a vaccination program that will provide protection against the disease to which exposure is likely. The diseases to which flocks may be exposed vary throughout the world and therefore you should consult with a veterinary professional familiar with the particular disease exposure conditions in your locality.

In most of the world, Marek's Disease, Newcastle Disease, Infectious Bronchitis, Infectious Bursal Disease, Fowl Pox, Laryngotracheitis and Avian Encephalomyelitis are widespread, and require routine vaccination. The following is a typical vaccination program:

1 day (in hatchery)	Marek's Disease	SubQ or IM Injection
18 days	Newcastle/Bronchitis	Water
	Infectious Bursal Disease	Water
28 days	Infectious Bursal Disease	Water
35 days	Newcastle/Bronchitis	Water or Spray
56-70 days	Newcastle/Bronchitis	Water or Spray
	AE/Fowl Pox	Wing Web
	Laryngotracheitis	Eyedrop
91-98 days	Newcastle/Bronchitis	Spray or Inject

This is a sample vaccination program and is not intended to replace current vaccination programs being used successfully. Contact your local TETRA sales/service person for more information or assistance in developing a vaccination program for your particular flock. Birds that are sick or under stress should not be vaccinated. Vaccines varying in pathogenicity, route of administration, and timing of administration. Always refer to manufacturer recommendations prior to using any vaccine or designing a vaccination program.

FEEDING THE TETRA AMBER PULLET

The goal of managing the TETRA AMBER is to attain the greatest number of eggs in the desired weight range at the most efficient cost per dozen or per pound of egg mass. To attain this goal, birds should be fed correctly during both the growing and egg production phases.

The TETRA AMBER should be started and maintained on a feed program that provides all the known required nutrients for growth and sexual development. The objective is to be certain that pullet reaches the target body weight during each week of growth. Uniformity of body weight is also critical to achieving the goals of efficient and high production. The rations used must be adequate to achieve the targeted body weights and uniformity under normal environmental conditions. Should over-crowding, disease challenges, high temperatures, poor ventilation, etc., stress the birds, a more dense ration may be required to attain the desired results. Always keep your nutritionist or feed company informed of these stresses and the flock's feed consumption level so that appropriate adjustments can be made to the formulas.

The feeds used should contain all the essential amino acids, vitamins, energy, and other non-energy nutrients. Body weight measurements of the pullets should be taken beginning at about six weeks of age and taken every two weeks thereafter. The recommended ration for the first six weeks of the birds' life is a Starter ration (See table). If at the end of six weeks of age, the birds are at the target body weight (450 grams or 1.00 lbs.), the ration can be changed to a Grower ration. If, however, the body weights are low, the flock should remain on a starter ration until the 6-week target body weight is attained.

The Grower ration is designed to be fed from 7 weeks of age to 10 weeks of age. If the flock has continued to grow normally and has reached target body weights, with good uniformity, the flock should be moved to a Developer I ration at 11 weeks of age.

The Developer ration is designed to allow for the rapid body weight growth that occurs at this age. If the flock is not achieving the targets for body weights, adjustments should be made in the nutrient levels of the feed to achieve these goals. This is why monitoring of a flock's body weight is very important. At 16 weeks change birds to developer II rations if body weight is on target. This diet is designed to meet calcium requirements with minimum production stimulation. Insure the birds are fed peak rations at least 7-10 days prior to the first eggs.

All pullet feeds should be fed ad libitum or without restrictions. If body weights are below target due to too low feed intake as a result of hot weather, an additional feeding during the dark period can be given. Turn the lights on for about 45 minutes during which time the feeding system is activated. Midnight feeding has to be stopped once bodyweight and/or feed intake turns back to normal.

If body weights are significantly above the target, the use of fewer feedings and warmer house temperatures will help slow the body weight gains, but be certain to watch uniformity closely. A successful growing program not only entails good housing, management, and good nutrition, but also good feeding management. To ensure the pullets eat a balanced diet, it is important that the finer feed particles also be eaten. To be certain that this occurs, the feeding program should be designed to make sure that the feeders are emptied each day. This is normally achieved by running the feeders in the mornings and in the late afternoons and evenings while allowing the feeders to be eaten empty during the middle part of the day. This program should be applied to both pullets and layers.

Body Weight Uniformity

The goal for flock uniformity is that at least 80% of the birds should be within 10% above or below the average body weight for that flock. For example, you weigh 115 birds individually. This should be done using a scale that is in increments of no more than 50 grams (Preferably 20-25 grams). The average weight is 1050 grams for the birds weighed. Thus the 10% cutoff above and below target includes the birds that weigh between 945 grams and 1155 grams. If 95 birds weighed between these limits, the uniformity of the flock would be about 83%. Although good uniformity in no way guarantees good layer performance, it does indicate that the pullet-growing program is adequate.

Water

An adequate supply of clean potable water is essential for the flock. Water is the most essential nutrient provided to the flock and should not be ignored or taken for granted. Water testing should be performed to ensure that the water supply is clean prior to placing the flock.

MOVING TO THE LAYING HOUSE

Pullets that are ready to be moved should be without feed for approximately 6 to 8 hours prior to loading. This practice will provide cleaner layers going into the lay house and will also ease the transition to new equipment by making the birds more eager for feed and water. For flocks that will be in transit for more than 20 hours, the feed withdrawal period prior to loading can be reduced. Best results will be attained when the pullets are moved at 17 weeks of age. Due to the potential body weight loss associated with moving, body weights taken immediately after moving should not be considered an accurate reflection of the pullet flock's condition.

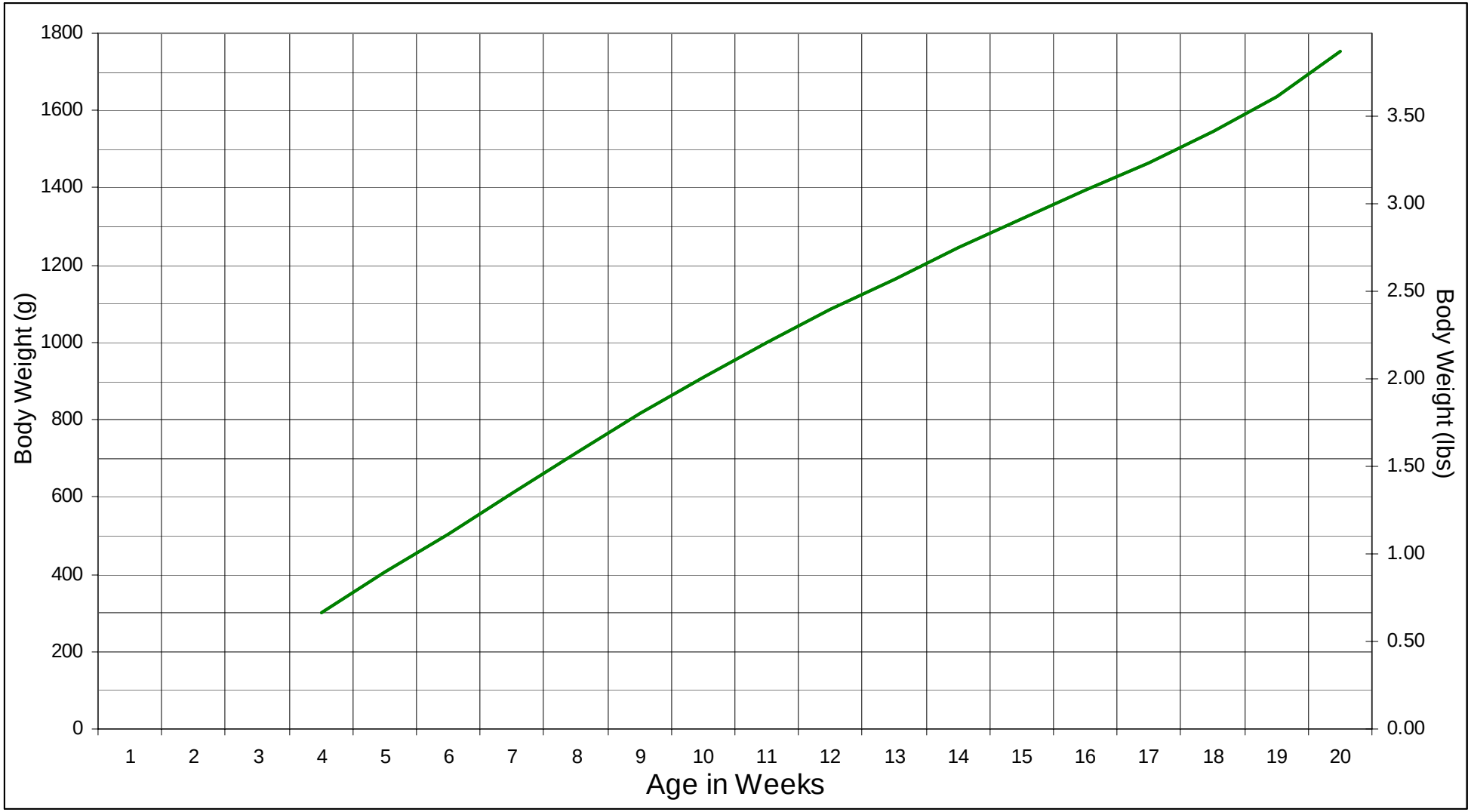
The laying house should be cleaned and disinfected and water lines sanitized prior to moving in the new flock. Vitamins and electrolytes are often used to reduce the stress associated with the move. The birds should be handled as gently as practical to prevent broken bones and rupture of yolks inside the birds' abdomens. Light intensity should be kept high for the first few days after housing to ensure that the flock can find feed and water. Reduce the intensity to the recommended level once the birds are on feed and water and follow the recommended lighting and feeding program.

RECOMMENDED PULLET FEEDING PROGRAM

	Starter (0-6 weeks)	Grower (7-10 weeks)	Developer I (11-15 weeks)	Developer II * (16 -17 weeks)
Crude Protein (%)	20	18	16	17
ME (Kcal/lb.)	1360	1330	1360	1370
ME (kcal/kg)	2980	2940	2980	3000
Linoleic Acid %	1.3	1.3	1.2	1.2
Lysine %	1.10	1.00	0.85	0.80
Dig. Lysine %	0.90	0.86	0.73	0.69
Methionine %	0.45	0.4	0.35	0.35
Dig. Methionine %	0.39	0.35	0.30	0.30
Dig. M + C %	0.67	0.60	0.52	0.52
Dig. Threonine %	0.59	0.55	0.47	0.43
Dig. Tryptophan %	0.17	0.16	0.13	0.13
Calcium %	1	1	1	2.50
av. Phosphorus %	0.5	0.50	0.45	0.45
Sodium (%)	0.18	0.17	0.17	0.18

* Note: The Developer II diet should be discontinued and a layer ration used at the onset of production

TETRA AMBER PULLET BODY WEIGHT GRAPH



TETRA AMBER PULLET FLOCK PERFORMANCE RECORD

Name: _____ Hatch Date: _____

Address: _____ Date (17 wks): _____

Hatchery: _____ No. Chicks: _____

Started _____ Housed _____

WEEK	Mortality											Lighting			Feed Intake					
	Day							Total							Actual		Goal			
																	Per Day		Cum. /bird Hsd	
								For Week	To Date Total	%	Goal %	On AM	Off PM	Hours	Week	Total	grams	lb/100	kg	lb
1											0.7						13	2.9	0.1	0.2
2											1.2						19	4.3	0.2	0.5
3											1.5						28	6.3	0.4	0.9
4											1.7						29	6.6	0.6	1.4
5											1.8						32	7.1	0.9	1.9
6											1.9						39	8.6	1.1	2.5
7											2.0						45	10.0	1.5	3.2
8											2.1						48	10.7	1.8	4.0
9											2.2						51	11.4	2.2	4.8
10											2.3						54	12.1	2.5	5.6
11											2.4						58	12.9	2.9	6.5
12											2.5						64	14.2	3.4	7.5
13											2.6						68	15.1	3.9	8.6
14											2.7						71	15.7	4.4	9.7
15											2.8						75	16.7	4.9	10.8
16											2.9						77	17.1	5.5	12.0
17											3.0						78	17.4	6.0	13.2

BODY WEIGHT

Age weeks	Body Weight Actual	% within ±10%	Goal grams	Goal Lbs
1				
2				
3				
4			300	0.66
5			405	0.89
6			505	1.11
7			610	1.34
8			715	1.58
9			815	1.80
10			910	2.01
11			1000	2.20
12			1085	2.39
13			1165	2.57
14			1245	2.74
15			1320	2.91
16			1395	3.08
17			1465	3.23

NUTRITION

Age weeks	Kcal Actual	Suggest kg	Suggest lb	Protein Actual %	Protein Sugg %
1		2980	1360		20
2		2980	1360		20
3		2980	1360		20
4		2980	1360		19
5		2980	1360		19
6		2980	1360		18.5
7		2940	1330		18
8		2940	1330		18
9		2940	1330		17.5
10		2940	1330		17
11		2980	1360		16.5
12		2980	1360		16
13		2980	1360		16
14		2980	1360		16
15		2980	1360		16.5
16		3000	1370		17
17		3000	1370		17

GROWING PERIOD BODY WEIGHTS, FEED & WATER CONSUMPTION

Age in Weeks	Body Weights		Feed Consumption				Water Consumption	
	Lbs.	Grams	Lbs./100 Daily	Lbs./bird Cum.	Grams		Gallons/ 100 birds	Liters/ 100 birds
					Daily	Cum.		
1			2.9	0.2	13	92	0.50	1.90
2			4.3	0.5	20	229	0.80	3.00
3			6.3	0.9	29	429	1.15	4.35
4	0.66	300	6.6	1.4	30	638	1.55	5.90
5	0.89	405	7.1	1.9	32	864	1.80	6.80
6	1.11	505	8.6	2.5	39	1137	2.10	7.95
7	1.34	610	10.0	3.2	45	1454	2.35	8.90
8	1.58	715	10.7	4.0	49	1794	2.55	9.65
9	1.80	815	11.4	4.8	52	2156	2.70	10.20
10	2.01	910	12.1	5.6	55	2540	2.85	10.80
11	2.20	1000	12.9	6.5	59	2950	3.00	11.35
12	2.39	1085	14.2	7.5	64	3401	3.15	11.90
13	2.57	1165	15.1	8.6	68	3880	3.30	12.45
14	2.74	1245	15.7	9.7	71	4379	3.45	13.00
15	2.91	1320	16.7	10.8	76	4909	3.60	13.60
16	3.08	1395	17.1	12.0	78	5452	3.75	14.20
17	3.23	1465	17.6	13.2	80	6009	3.90	14.80
18	3.41	1545	18.3	14.5	83	6590	4.10	15.50
19	3.60	1635	19.3	15.9	88	7203	4.40	16.65
20	3.87	1755	20.5	17.3	93	7854	4.80	18.20

Note: This data assumes the use of a moderate energy, corn/soy based diet and temperatures of 72°F (22°C) after brooding. Significant variations from these conditions could result in higher feed consumption or slower body weight gain. Feed quality and nutrient levels can have a profound impact on the weights achieved.

LIGHTING PROGRAM

The onset of egg production is stimulated by many factors, the most important being body weight and an increasing number of daylight hours. In the commercial egg industry, we utilize this knowledge to develop lighting programs, which promote optimal egg numbers, egg size, livability and overall profitability. To optimize the genetic potential of the TETRA AMBER egg layer, the following basic lighting programs should be followed.

Age		Light	
Days	**Week**	**Total Hours**	**Intensity (10 lux = 1 fc)**
1 – 3	1	23[*1)]	20 lux
4 – 7	1	22[*1)]	10-20 lux
8 – 14	2	18	10 lux
15 – 21	3	14	5-10 lux
22 – 28	4	12	5 lux
29 – 112	5-16	8[2)]	5 lux
113 – 119	17	10	5 lux[*3)]
120 – 126	18	12	5 lux
127 – 133[*4)]	19	13	5 lux
Increasing by ½ hour each week to 16 hrs[*5)]			5 lux

*1) To help chicks get off to a better start, intermittent lighting during the first week can be used. Alternating periods of about 4 hours of light and 2 hours of darkness is recommended.

*2) If the birds are grown in a house with light leakage, then the minimum hours in growing should be the maximum outside day length between 43 and 140 days of age.

*3) Light intensity should be increased to 10 lux for 24-48 hours after the birds are moved to the layer house. When they have found the feed and water, intensity should be reduced to the level on which they were grown.

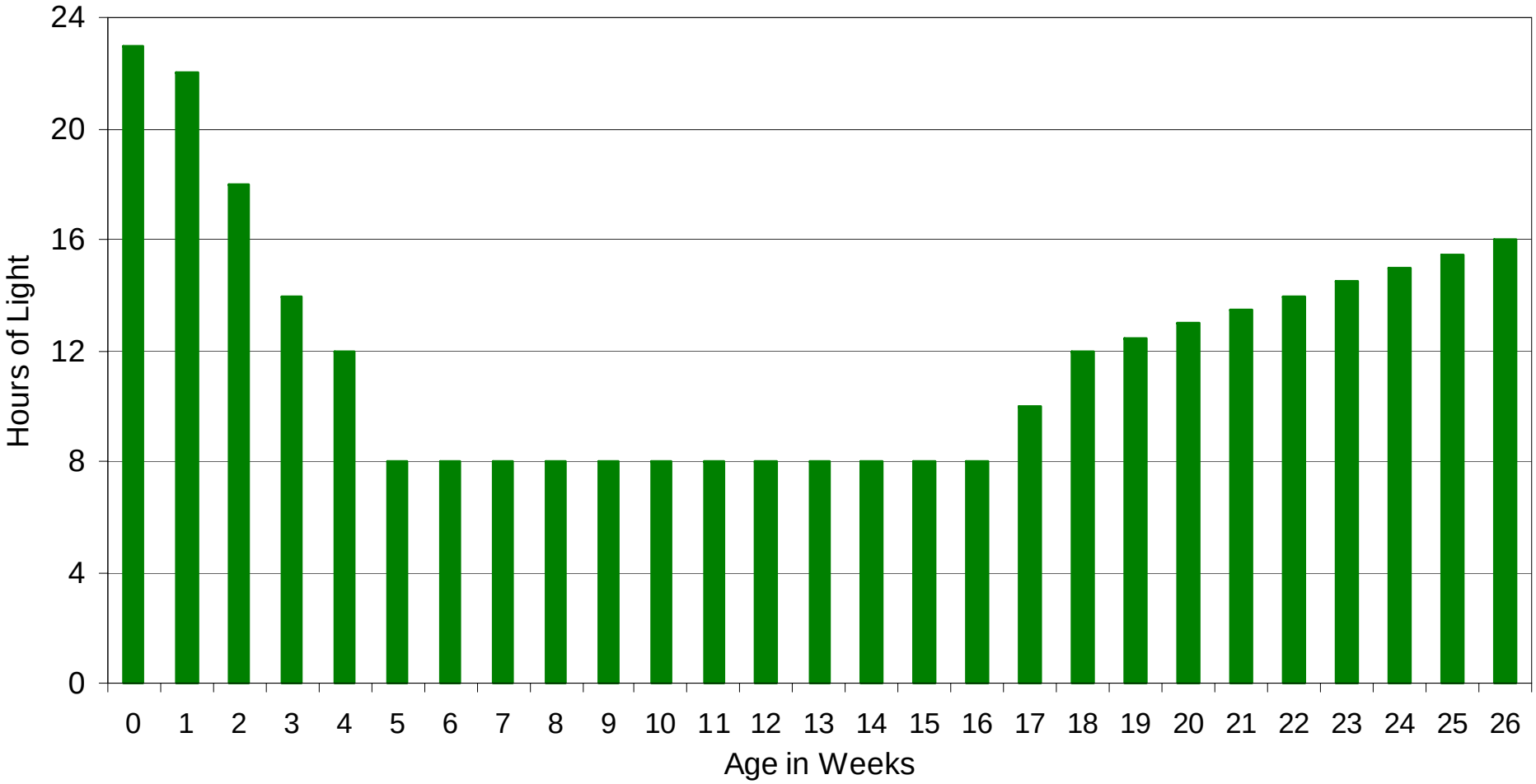
*4) The birds should be housed at 16-17 weeks of age. Light stimulation should begin at 17 weeks or 3 lbs (1400 grms) bodyweight, (whichever comes first) If the move to the layer house is delayed, stimulation in the pullet house may be needed, but should not take place more than 7 days prior to moving the birds.

*5) In layer houses with light leakage, the maximum hours should be increased to the maximum hours of outside daylight that the birds will be exposed to during lay. Never expose layers to decreasing day length during the lay period.

For Producers preferring lower egg size, bringing the birds into production earlier by light stimulating the birds at younger age may be advisable. Never light stimulate birds before they have reached 2.85 lbs (1300 grms) body weight.

To achieve the maximum genetic potential of the TETRA AMBER, high light intensity is not required. The TETRA AMBER will lay adequately on dim lights, once they have been able to find the feed and water.

TETRA BROWN Lighting Program



LAYING PERIOD

The following management recommendations will assist the producer in achieving the optimum performance results with the TETRA AMBER layer.

Space Recommendations

The TETRA AMBER is bred to tolerate the challenges of various housing conditions. In general, there is a “happy medium” in regards to how much space a bird needs. The initial investment in housing and equipment is reduced when less space is allocated for each bird. Too little space will reduce performance. Too much space, on the other hand, may result in higher energy costs for warming the building and over consumption of feed may occur, etc.

The following recommendations are issued by the Scientific Advisory Committee on Animal Welfare for United Egg Producers (UEP).

	U.S.	Metric
Cage Space	76 Sq. in./ bird	490 Sq. cm./ bird
Floor	1.2 Sq. ft./ bird	8.3 birds/ Sq. m.
Feeder Space (linear/round)	4 / 2 in./bird	10.5 / 5 cm./ bird
Nesting Space (Floor Birds)	10 Sq. ft./ 100 birds	92 Sq. cm./ bird
Water	Max 100 birds/bell or 12 birds/nipple or cup with access to 2 units/ cage	

Temperature

Although the TETRA AMBER laying hen can tolerate a wide range of temperature and still perform well, excessive fluctuations in environmental temperatures are detrimental to productivity and efficiency. The ideal house temperature is between 70-75°F (21-24°C) at the beginning of production and slowly increasing as the bird ages. Temperatures below 54°F (12°C) and above 82°F (28°C) will negatively affect performance. Cooler house temperatures will lead to higher egg size and more feed consumption. Warmer house temperatures, can slow egg size increase and limit feed consumption early in lay, but can be utilized later in lay to control feed consumption and prevent excessive egg size. It is necessary to maintain good air quality at all times.

Feeding Program

The TETRA AMBER laying hen should be allowed to consume feed ad libitum until the flock reaches its maximum egg mass output or the desired case weight has been achieved. Feed troughs should allow for access to feed throughout the morning and evening hours. NO harm is done when the flock is allowed to clean the troughs during the middle part of the day. Body weights are an excellent tool to help determine if feed consumption for the flock is adequate for production and growth. Body weights should continue to increase, although very slowly, throughout the laying cycle. Decreasing body weights should be viewed as an indication that nutrient intake has not been adequate and egg production may soon suffer. Many nutrition programs successfully utilize the reduction of protein and amino acid density of the diets with increased environmental temperature later in the life of a flock to control egg size and maximize profits. The feeding program that follows is a general guideline and should not be viewed as the only correct feeding program to use on the TETRA AMBER layer. For more details or other options, contact the Tetra Americana Technical Support Department. A Professional Nutritionist is available to help modify the requirements for your situation, if that need should arise.

Mid-Night Feeding

During times of very hot weather when the flock is not consuming adequate feed to maintain egg production and/or egg size, a feeding during the night has been shown to be beneficial.

About 3-4 hours after the lights go out, preferably during the cooler part of the night, and half way of the dark period, the lights should be turned on for one hour. During this time the feeders should be activated to stimulate feed consumption. The feeders should run a complete cycle to ensure that all birds have adequate access to additional fresh feed. Once the weather cools off and production and egg size return to normal, the midnight feeding can be removed without harming the flock.

Use this program ONLY to correct significant variation from the expected.

Water

Sufficient drinking water of good quality must be provided. Test the water from a well before using the water for poultry. Water systems should be checked daily and water consumption records should be maintained. Water consumption and feed consumption are excellent indicators of flock health.

After housing young pullets in a layer house, be certain that the birds are using the nipples or cups. Air locks in water lines, shadows on the drinkers, and placement of drinkers outside the cage can result in the flock not getting sufficient water. This could result in poor performance and ultimately in higher than desired mortality. Installing water meters and keeping records of daily water consumption allows for early detection of problems, which may occur. As a general rule of thumb, at normal house temperatures (68-82^{o} F / 20-28^{o}C) birds will consume twice as much water as feed consumed.

Lighting

Follow the lighting program as described on page 13 and 14 under the GROWOUT section. Be certain that the lighting program setup is synchronized with the lighting program used in the pullet house. Day length hours should never be decreased in the layer house. If desired, the maximum day length can be extended to 18 hours, but the effects may be limited.

Intermittent Lighting Program

Intermittent lighting programs have been developed over the years to assist the producer when feed consumption is excessive, egg size is too large, electrical costs are very high, or when cannibalism or feather loss are a problem. These programs have also been utilized in extremely hot weather to reduce heat generated by bird activity and thereby reducing heat stress mortality.

The most commonly used intermittent lighting program is one that entails dividing each daylight hour into light and dark segments. This program is normally instituted over a period of five weeks and should not be initiated before a flock reaches 35 weeks of age. The first two hours of the day and the last two hours of the day should remain unchanged (have no dark periods). The remaining hours of the day are initially altered to contain 15 minutes of darkness followed by 45 minutes of light. Maintain this change for two weeks to allow the flock to adjust to the added dark periods. The next change alters these daylight hours to 30 minutes of darkness followed by 30 minutes of light. Again maintain this adjustment for two weeks. The final stage of the intermittent lighting program entails each hour of the day (except the first two hours and the last two hours) be divided to be 15 minutes of light and 45 minutes of darkness. The night hours never change during this program, as the birds recognize the longest continuous period of darkness as the day length.

MANAGEMENT OF THE TETRA AMBER IN FLOOR SYSTEMS

Floor Growing

Lighting programs are very important to achieving optimal performance. Variations and adjustments in light intensity and day length should be taken into consideration when planning a placement in floor systems. Under similar light control systems, cage and floor operations have similar lighting programs. (See also pages 13-14).

Light intensity adjustments need to be made as it is more difficult to find feed and water on the floor than in a cage environment. During the first week of life, light intensity should be very high (2-3 foot candles at the feed and water level. This intensity should remain for the first week until the birds have found feed and water and are off to a good start. After that, the intensity can be slowly lowered to achieve about 1-1.5 ft candles throughout the remainder of growing. At about 15 weeks of age or estimated one week before day length increase and at least one week prior to moving to the layer house, light intensity should be increased to approximately 2 foot candles. Flocks going from a light controlled environment in the pullet house to an open sided layer house environment should be prepared for this increased light intensity by increasing the light intensity to 3 to 4 foot candles prior to moving. Also remember that moving a flock from a light controlled pullet facility to an open layer facility will act as a large stimulation into production and if done too early, small egg size can result.

Similar feeding and water systems assist tremendously in the transition time from pullet house to layer house. Since birds raised on the floor get more exercise and therefore burn more calories, it is not unusual to have body weights slightly lower in floor raised pullets compared to those raised in cages. Stimulation of the birds into production should be based on a combination of body weight and age. Stimulation should be at 3.0 lbs/1400 grams of body weight, but no earlier than 16 weeks of age and no later than 19 weeks of age.

The floor environment can be an added stressor when the litter gets wet or extremely dry. Wet litter leads to excessive ammonia release from the litter and can lead to corneal burns and respiratory stress if good air quality is not maintained. Wet litter can also increase the exposure of the flock to viable coccidiosis oocysts which can retard growth and increase mortality if not treated. Excessively dry litter can lead to dusty conditions which result in respiratory stress and occasionally aggressive behavior in the chicks. The appropriate Relative Humidity in a floor pullet house should be maintained at about 50-60%.

A common challenge with brown egg layer strains on floor systems is piling. Common causes of piling of pullets are sudden cool nights, drafts in the barn, varmints, and commotion in a certain area of the house or anything that scares the pullets. It is beneficial to eliminate the corners of the building using wire screen to prevent the pullets from getting into corners and smothering.

The use of perches in a pullet house is essential in training of the pullets for the transition to conventional lay house nesting and aviary production. Perches help to teach the pullets to roost, jump up onto slats, and aides in reducing floor eggs. Pullets destined for certain laying house configurations benefit from slowly elevating the feed and water to teach the pullets that it is necessary to perch to eat and drink. Perches are usually designed in A-frame style and such that they are easily removed for cleaning and disinfection. For information on the number and style of perches deemed acceptable, refer to the UEP Animal Husbandry Guidelines which can be found at the following website **www.uepcertified.com**.

Beak treatment is recommended, as a single treatment, at 12-14 days in systems with good light control and plenty of space. In systems with very high light intensity, all-slat housing, and high density environments, a later and/or second beak treatment (5-6 weeks of age) is recommended to reduce feather pulling and cannibalism. To minimize the weight loss effect of this later beak treatment, increasing the density of the feed the week following treatment is beneficial.

Floor Laying

Feed and water systems should be compatible between the grow and lay facilities. Access to water early in the lay house is essential for good performance. To ease the transition to finding feed and water, light intensity should be 2 foot candles. Monitor feed and water consumption early and often after housing to ensure all birds are drinking. Check for nipples or drinkers that are not functioning and birds that are not finding water. Check the lighting program used in the pullet house and match that with the lighting program to be followed in the lay house. The newly housed pullet should have immediate access to the nests throughout the day to help them getting familiar with the nest boxes. Always close nest boxes during the night. To help the flock acclimate to the new environment, walking the house several times a day is recommended. During housing, it is also beneficial to place the birds directly on the slats and not on the litter in a two-thirds slat house.

Training the birds to go to the nests is an important task at the onset of production. Shadows and other dark areas attract the birds as potential spots for laying their eggs. These should be eliminated as much as possible. Birds also like to lay against solid surfaces or in corners. Eliminating corners by rounding the corners with a wire barrier or the use of electric fences discourages the floor eggs. The electric fence should be in place and functioning as soon as the birds are housed to be of maximum benefit. These fences are generally installed about 3-4 inches above the floor and about 2-2.5 inches away from the walls. They are used only until the flock is trained and should then be turned off and no longer used. Keep nest boxes clean to be attractive to the birds. Always close off access after the last eggs are laid and open the nests before the light comes on in the morning.

Slats should be no more than 2 feet above the litter to allow for ease of jumping from slat to litter and back. Be certain that the birds are moving freely from floor to slats and back soon after housing. This may take some helping hands in the evening for a few weeks after housing. Floor eggs are a constant concern for floor production systems. To prevent excess floor eggs, it is a good rule to walk the birds hourly once production has commenced to gather floor eggs and prevent the flock from getting into the habit of laying eggs on the floor.

The United Egg Producers has published their Animal Husbandry Guidelines for both cage egg producers and cage free egg producers. Compliance and passing annual audits is required for marketing the eggs under the UEP Certified label. The guidelines can be found at **www.uepcertified.com** .

For the general requirements for Organic Egg Production, please refer to the National Organic Program website **www.ams.usda.gov/nop**. For specific requirements regarding Organic production, refer to state and local Organic Certifying agents.

TETRA AMBER FEEDING RECOMMENDATIONS LAYING PERIOD

RATION	PHASE I (PEAKING DIET)	PHASE II	PHASE III	PHASE IV
Age Range	18-30 Weeks	31-45 Weeks	46-60 Week	60+ Weeks
Feed Cons. Range	<23.0 lbs/100h/d <104 g/h/d	23.0-24.0 lbs/100h/d 104-109 g/h/d	24.0-25.0 lbs/100h/d 109-113 g/h/d	>25.0 lbs/100h/d >113 g/h/d
Egg Prod. Range	>93%	92-87%	86-80%	<80%
ME (kcal/lb.)	1325	1325	1315	1305
ME (kcal/kg.)	2920	2920	2900	2870
CP %	17.5	17.0	16.3	15.3
Calcium %	4.00	4.10	4.15	4.20
Av. Phosphorus %	0.44	0.42	0.40	0.37
Sodium %	0.19	0.19	0.18	0.18
TDAA %	0.65	0.65	0.60	0.58
Lysine %	0.88	0.83	0.80	0.75
Methionine %	0.39	0.37	0.34	0.28
Tryptophan %	0.22	0.20	0.19	0.18
Linoleic Acid %	1.45	1.45	1.25	1.10

Notes: The above shown range represents minimum to optimum values of the feed rations. Bird health, ingredient quality etc. may affect the utilization of the nutrients present in the ration.

When egg size approaches within ½ lbs of desired case weight (½ gram egg), shift to Phase II feed. If egg size becomes excessive, it may be desirable to go from phase I to phase II, even though production is greater than 90%. In addition to changing the rations, house temperatures can be gradually increased to help control feed intake and egg size. During the summer months, birds may need to be fed the Peaking diets for a longer period of time. Substitute a minimum of 50% fine granular limestone (16 X 120) U.S. mesh for a minimum limestone particle of 8 X 12 U.S. mesh in the peaking diet and all diets thereafter. Flocks that are laying at a higher rate than the target, or flocks that are eating less, and are not reaching the egg size goals may need to be fed a diet with higher nutrient density than shown above. The reverse applies, for flocks, which are consuming more than target with an excessive egg size. Always keep your Nutritionist informed on flock performance to ensure the appropriate diet is being fed.

Based on the results of many trials, the TETRA AMBER can perform well with only small changes in egg production and egg weight with a fairly wide range of nutrient levels. Because of that and because egg prices and feed cost vary, there can be no fixed requirement for optimal returns (egg income – feed cost). With low ingredient (protein, energy) costs and large spreads in egg price due to size, increased returns may be obtained by feeding the optimum levels specified. On other occasions with high ingredient (protein, energy) costs and low egg price, greater returns can be obtained by feeding the minimum nutrient levels specified above. Because feed and egg prices vary and have a mayor influence on the returns, there can be no fixed requirement that will optimize returns.*

The diets specified are formulated based on amino acids (lysine). It is highly recommended that when ingredients other than corn and soy are used, the diets should be formulated based on **available** amino acids and not total amino acids. In most instances (especially under summer conditions), it is recommended to use 1-2% added fat until optimal egg size is obtained. After optimal egg size, a minimum of 0.5% added fat is recommended.

*Industry experts have developed certain econometric programs to facilitate fine tuning of that. An example can be found at **www.feedingonline.com** .

Vitamin and Mineral Supplementation

ADD PER TON OF FEED	Unit	GROWING PERIOD	LAYING PERIOD
Selenium (Se)	mg	250	250
Iron (Fe)	mg	45,000	45,000
Manganese (Mn)	mg	70,000	70,000
Copper (Cu)	mg	7,000	10,000
Zinc (Zn)	mg	70,000	70,000
Iodine (I)	mg	1,000	1,000
Vitamin A (Retinol)	I.U.	8,000,000	8,000,000
Vitamin D3 (Cholecalciferol)	I.U.	3,000,000	3,000,000
Vitamin E (Tocopherol)	I.U.	18,000	18,000
Vitamin K3 (Menadione)	mg	3,000	2,500
Vitamin B1 (Thiamine)	mg	1,500	1,500
Vitamin B2 (Riboflavin)	mg	5,000	5,000
Vitamin B6 (Pyridoxine)	mg	3,000	3,000
Vitamin B12 (Cyanocobalamin)	mg	15	20
Nicotinic Acid (Niacin)	mg	30,000	30,000
Panyothenic Acid	mg	7,500	7,500
Folic Acid	mg	500	500
Choline	mg	300,000	300,000
Biotin	mg	100	70

Note: 1Kcal = 4.184 KJoule / 1 KJoule = 0.239 Kcal.

TETRA AMBER MINIMUM DAILY NUTRIENT REQUIREMENTS PER BIRD

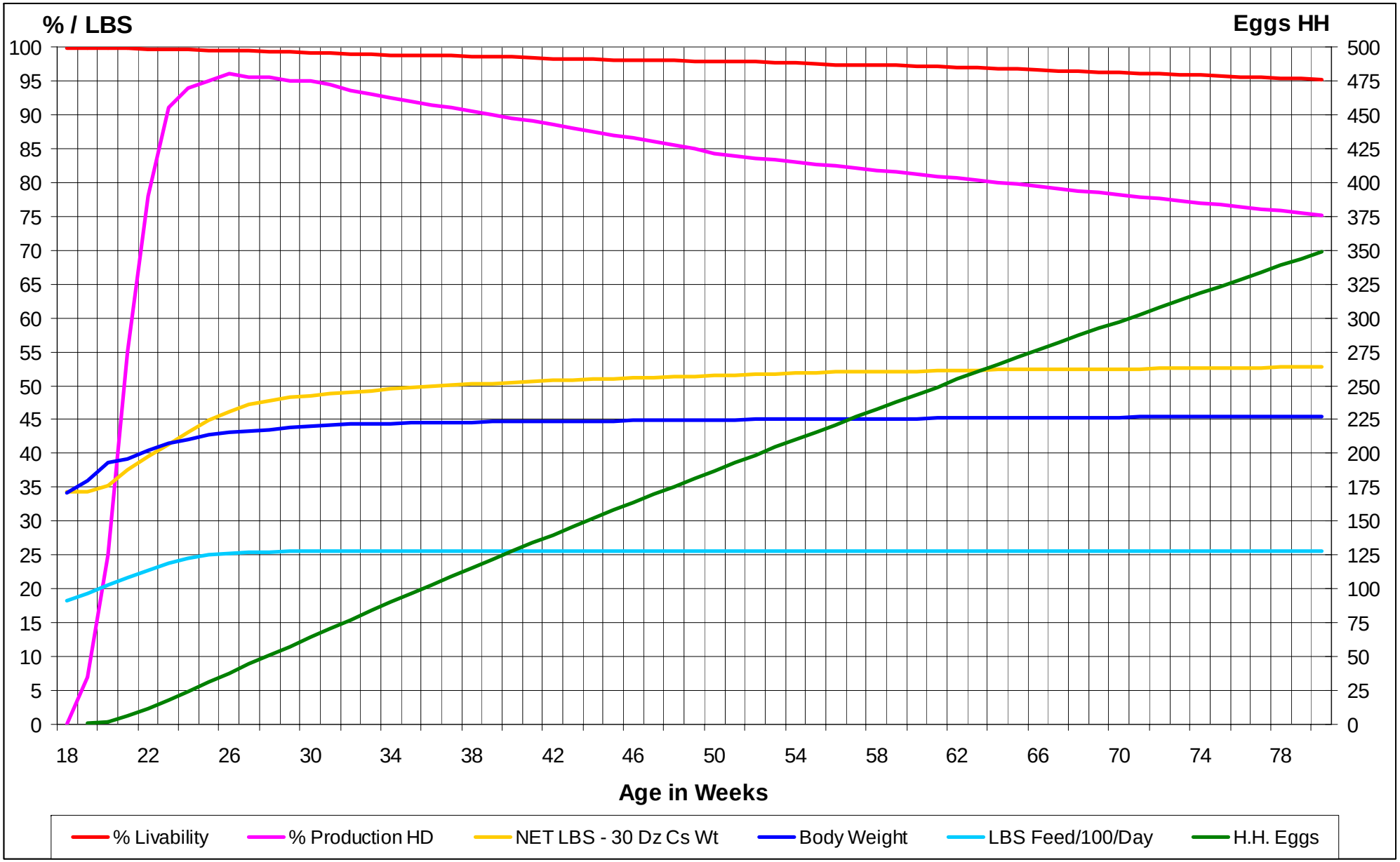
Age in Weeks	Feed Consumption		ME K.cal	C.Protein Grams	Methionine mg	TSAA mg	Lysine mg	Calcium Grams	A.Phos. mg
	Lbs / 100	Grams / Bird							
18	17.0	77.1	218	13.5	301	540	700	2.86	340
20	19.0	86.2	268	15.1	337	604	803	3.20	380
22	20.9	94.8	308	16.6	371	665	895	3.52	418
24	22.3	101.2	321	18.2	406	729	940	3.85	458
26	24.1	109.3	322	19.2	419	751	943	3.98	473
28	24.7	112.0	316	19.6	432	773	947	4.12	487
30	25.0	113.4	321	19.9	445	795	950	4.25	502
32	25.0	113.4	322	19.9	445	795	948	4.26	503
34	25.0	113.4	322	19.9	445	795	959	4.27	504
36	25.0	113.4	323	19.9	445	795	945	4.28	505
38	25.0	113.4	323	19.9	445	795	935	4.29	505
40	25.0	113.4	323	19.9	445	795	928	4.30	505
42	25.1	113.9	323	19.8	440	788	920	4.31	502
44	25.1	113.9	324	19.6	435	780	915	4.32	501
46	25.1	113.9	324	19.5	430	773	910	4.33	496
48	25.1	113.9	324	19.3	425	765	907	4.34	492
50	25.1	113.9	324	19.2	420	758	904	4.35	488
52	25.1	113.9	324	19.0	415	750	900	4.36	485
54	25.2	114.3	324	18.9	408	742	896	4.38	479
56	25.2	114.3	324	18.7	402	733	892	4.39	473
58	25.2	114.3	324	18.6	395	725	890	4.41	467
60	25.2	114.3	324	18.5	388	717	887	4.42	461
62	25.2	114.3	324	18.3	382	708	885	4.44	455
64	25.2	114.3	324	18.2	375	700	883	4.45	449
66	25.2	114.3	324	18.1	370	694	881	4.46	444
68	25.2	114.3	323	18.0	365	688	877	4.47	439
70	25.2	114.3	323	17.9	360	682	871	4.48	434
72	25.2	114.3	322	17.8	355	676	866	4.49	430
74	25.2	114.3	322	17.7	350	670	860	4.50	425
76	25.2	114.3	322	17.5	344	664	854	4.51	420
78	25.2	114.3	321	17.4	339	658	848	4.52	415
80	25.2	114.3	321	17.3	334	652	842	4.53	410

NOTE:
The above requirements are based on extensive research under average temperature of about 68°F in the first part of the laying cycle, easing up to about 78°F average temperature at about 35 weeks of age. Because many variances in feed ingredients, climate, health of the birds, etc., above recommendations in no way constitutes a warranty or guarantee, expressed or implied.

FEED INGREDIENTS	Dry matter %	Crude protein %	Ether extract %	Crude fiber %	Calcium %	Phosphorus %	Avail. phosphorus %	Ash %	M.E. Kcal/ L.B. Poultry	Arginine %	Lysine %	Methionine %	Cystine %	Typtophan %	Threonine %	Choline mg/lb	Potassium %	Sodium %	Chlorine %	Xanthophyll mg/Lb.	Linolenic acid %
Alfalfa Dehydrated	93.0	17.5	3.0	25.0	1.30	0.27	0.27	9.0	750	0.75 (81)*	0.73 (62)	0.28 (75)	0.18 (41)	0.45 (-)	0.75 (70)	680	2.49	0.09	0.46	100	-
Bakery Product, dried	91.0	10.0	11.5	0.7	0.06	0.40	0.10	5.4	1700	0.40 (81)	0.30 (59)	0.50 (83)	0.16 (75)	0.09 (84)	0.60 (69)	560	0.80	1.14	1.48	-	1.5
Barley, Grain	89.0	11.6	1.8	5.0	0.07	0.36	0.11	3.0	1250	0.50 (84)	0.50 (79)	0.16 (79)	0.25 (82)	0.13 (-)	0.36 (77)	450	0.49	0.05	0.03	-	-
Brewers Dried Grains	93.0	27.0	7.5	12.0	0.27	0.66	0.18	4.6	1000	1.30 (63)	0.90 (62)	0.57 (78)	0.39 (75)	0.40 (-)	1.00 (73)	960	0.08	0.25	0.12	-	-
Canola Meal	92.5	38.0	3.8	11.0	0.70	1.17	0.30	7.2	960	2.30 (88)	2.30 (89)	0.68 (84)	0.47 (73)	0.44 (-)	1.70 (79)	3042	1.30	0.05	0.06	-	-
Corn, Yellow	86.0	7.9	3.8	1.9	0.02	0.25	0.08	1.1	1540	0.36 (91)	0.26 (82)	0.20 (92)	0.18 (83)	0.06 (80)	0.26 (83)	250	0.31	0.03	0.04	10.0	10.0
Corn Grain, High Oil	86.0	8.2	6.0	1.9	0.02	0.26	0.09	1.2	1625	0.40 (-)	0.28 (-)	0.20 (-)	0.19 (-)	0.07 (-)	0.30 (-)	250	0.31	0.03	0.04	10.0	3.0
Corn Gluten Feed	90.0	22.0	2.1	10.0	0.20	0.80	0.21	7.8	800	1.30 (88)	0.45 (70)	0.20 (84)	0.50 (65)	0.10 (-)	0.80 (75)	1100	0.60	0.14	0.20	10.0	1.0
Corn Gluten Meal, 60% CP	90.0	62.0	2.0	2.0	0.02	0.50	0.18	1.5	1690	1.90 (94)	1.00 (88)	1.90 (96)	1.10 (87)	0.26 (85)	2.00 (91)	1000	0.45	0.03	0.06	140	1.0
Cottonseed Meal, Mech. 41% CP	91.0	41.0	3.9	12.5	0.15	0.93	0.28	6.2	1000	4.30 (85)	1.60 (63)	0.50 (72)	0.59 (71)	0.50 (80)	1.35 (67)	1270	1.25	0.04	0.04	-	1.2
Cottonseed Meal, Solv. 41% CP	90.5	41.0	0.8	12.4	0.15	0.98	0.28	6.4	900	4.60 (85)	1.70 (63)	0.46 (72)	0.62 (71)	0.45 (80)	1.35 (67)	1300	1.26	0.04	0.04	-	0.4
Distillers Dried Grains, Solubles	91.0	28.0	8.0	8.0	0.27	0.77	0.34	4.5	1090	1.00 (68)	0.80 (57)	0.45 (85)	0.50 (77)	0.20 (-)	1.00 (71)	1780	0.86	0.55	0.17	1.0	4.0
Distillers Dried grains	92.0	27.0	9.0	13.0	0.90	0.41	0.17	2.2	910	1.00 (-)	0.90 (-)	0.45 (-)	0.32 (-)	0.21 (-)	0.30 (-)	841	0.08	0.26	0.12	1.0	4.0
Fat, Animal	98.0	-	95.0	-	-	-	-	-	3700	-	-	-	-	-	-	-	-	-	-	-	-
Fat, vegetable blend	98.0	-	95.0	-	-	-	-	-	3800	-	-	-	-	-	-	-	-	-	-	-	20.0
Fat, poultry	98.0	-	95.0	-	-	-	-	-	3850	-	-	-	-	-	-	-	-	-	-	-	20.5
Feather Meal	92.0	85.0	2.5	1.5	0.20	0.70	0.70	3.7	1050	3.90 (83)	1.05 (65)	0.55 (74)	4.00 (61)	0.37 (83)	3.00 (73)	400	0.30	0.70	0.28	-	-
Fish Meal (Menhaden)	92.0	62.0	9.5	1.0	5.00	2.90	2.90	19.6	1340	3.60 (93)	4.80 (90)	1.70 (93)	0.50 (78)	0.55 (88)	2.86 (91)	2200	0.73	0.59	0.60	-	-
Meat and Bone Meal	94.0	50.0	9.5	2.8	9.70	4.40	4.40	32.0	1075	3.40 (89)	2.50 (85)	0.65 (88)	0.35 (66)	0.29 (81)	1.70 (84)	870	0.46	0.72	0.84	-	-
Oat Grain	89.0	11.5	4.0	11.0	11.50	0.10	0.35	3.2	1150	0.80 (93)	0.38 (87)	0.18 (86)	0.20 (84)	0.14 (-)	0.30 (83)	425	0.42	0.08	0.10	-	-
Peanut Meal (Expeller)	92.0	45.0	5.2	12.0	0.15	0.55	0.20	5.7	1050	4.80 (89)	1.60 (78)	0.41 (86)	0.70 (79)	0.46 (76)	1.40 (84)	700	1.12	0.08	0.03	-	-
Poultry By-product Meal	93.0	60.0	13.0	2.0	3.60	1.90	1.90	1.8	1325	3.80 (90)	2.55 (83)	1.00 (89)	1.00 (72)	0.50 (80)	2.00 (84)	2720	0.55	0.28	0.54	-	-
Rice Bran (Solvent)	90.0	14.0	1.0	13.5	0.10	1.40	0.15	11.1	660	1.00 (86)	0.60 (73)	0.30 (77)	0.30 (67)	0.14 (79)	0.40 (68)	520	1.34	0.04	0.06	-	-
Sorghum Grain (Milo)	89.0	9.8	2.8	2.0	0.04	0.30	0.10	1.8	1500	0.36 (80)	0.27 (73)	0.12 (85)	0.18 (76)	0.10 (79)	0.30 (77)	300	0.35	0.03	0.06	-	-
Soybeans full, fat	90.0	38.0	18.0	5.0	0.25	0.59	0.20	4.6	1520	2.80 (89)	2.40 (87)	0.54 (85)	0.55 (74)	0.52 (-)	1.69 (83)	1100	1.70	0.04	0.03	-	-
Soybean Meal Solvent 44% CP	90.0	44.0	0.5	7.0	0.25	0.60	0.20	6.0	1020	3.40 (91)	2.90 (91)	0.65 (91)	0.67 (82)	0.60 (88)	1.70 (84)	1247	1.97	0.04	0.02	-	-
Soybean Meal Solvent 48% CP	88.0	47.8	1.0	3.0	0.20	0.65	0.21	6.0	1125	3.60 (93)	3.02 (91)	0.70 (92)	0.71 (84)	0.70 (88)	2.00 (89)	1296	1.90	0.04	0.02	-	-
Sunflower Seed Meal Solvent	93.0	42.0	2.3	21.0	0.40	1.00	0.25	7.0	800	3.50 (93)	1.70 (80)	1.50 (91)	0.70 (79)	0.50 (-)	1.50 (84)	1318	1.60	0.20	0.01	-	-
Wheat Grain, Hard	89.0	12.5	1.7	1.7	0.05	0.38	0.15	2.1	1450	0.62 (87)	0.39 (82)	0.24 (87)	0.26 (88)	0.16 (97)	0.36 (82)	390	0.45	0.06	0.07	-	-
Wheat Grain, soft	89.0	10.5	1.8	1.8	0.05	0.30	0.12	1.8	1455	0.45 (87)	0.30 (82)	0.15 (87)	0.21 (88)	0.12 (97)	0.28 (82)	395	0.39	0.06	0.07	-	-
Wheat bran	89.0	15.0	3.5	3.5	0.12	1.15	0.40	6.1	590	1.05 (84)	0.57 (75)	0.18 (80)	0.30 (73)	0.27 (83)	0.50 (75)	445	1.23	0.06	0.07	-	-
Wheat Middlings, flour	89.0	16.0	4.0	4.0	0.10	0.66	0.18	7.8	1150	1.00 (87)	0.80 (79)	0.20 (80)	0.26 (83)	0.22 (84)	0.49 (78)	430	0.89	0.06	0.05	-	-
Wheat Middlings, standard	89.0	15.5	3.6	15.5	0.14	0.88	0.23	5.4	940	1.10 (87)	0.70 (79)	0.16 (80)	0.20 (83)	0.20 (84)	0.50 (78)	480	0.59	0.06	0.07	-	-

* Values in parenthesis are digestible amino acids based on Ajinomoto Heartland table, revision 7.
** Values based on Feedstuffs ingredient analysis table, 2005 edition.

PERFORMANCE GRAPH TETRA AMBER (US STANDARD)



PERFORMANCE OBJECTIVES TETRA AMBER (US STANDARD)

									GRADE OUT TARGET PERCENTAGE (23 OZ)						
AGE IN WKS	LIVABILITY %	HEN DAY %	EGGS HEN HOUSED	CASE WEIGHT LBS	FEED LBS/ 100	FEED CUM LBS	FEED LBS/ DZN	BODY WEIGHT LBS	Jumbo & Over	Extra Large	Large	Medium	Small	PeeWee & Under	Cum Large (23oz) & Above
18	99.9	0		34.4	18.3	1.3		3.41	0	0	1	7	52	40	1.0
19	99.9	7	0.5	34.4	19.3	2.6	33.1	3.60	0	0	2	18	49	31	1.9
20	99.8	25	2.2	35.3	20.5	4.1	9.8	3.87	0	0	4	47	31	18	3.6
21	99.8	55	6.1	37.6	21.7	5.6	4.7	3.93	0	0	9	52	27	12	6.8
22	99.7	78	11.5	39.5	22.8	7.2	3.5	4.04	0	0	20	44	27	9	12.6
23	99.7	91	17.9	41.3	23.7	8.8	3.1	4.15	0	0	32	42	21	5	18.8
24	99.6	94	24.4	43.1	24.5	10.6	3.1	4.20	0	0	43	36	18	3	24.9
25	99.5	95	31.0	44.9	25.0	12.3	3.2	4.28	0	0	58	26	15	1	31.6
26	99.4	96	37.7	46.1	25.3	14.1	3.2	4.31	0	0	61	28	11	0	36.6
27	99.4	95.5	44.4	47.2	25.3	15.8	3.2	4.33	0	2	64	26	8	0	40.9
28	99.3	95.5	51.0	47.8	25.4	17.6	3.2	4.35	0	6	65	24	5	0	44.7
29	99.2	95	57.6	48.2	25.5	19.4	3.2	4.38	0	10	66	21	3	0	48.2
30	99.1	95	64.2	48.6	25.5	21.2	3.2	4.40	0	13	68	17	2	0	51.5
31	99.1	94.5	70.7	48.9	25.6	23.0	3.2	4.42	0	19	66	13	2	0	57.0
32	99.0	93.5	77.2	49.1	25.6	24.8	3.3	4.43	0	19	67	13	1	0	57.0
33	98.9	93.0	83.7	49.3	25.6	26.6	3.3	4.44	0	22	64	13	1	0	61.1
34	98.8	92.5	90.1	49.5	25.6	28.4	3.3	4.44	0	22	65	13	0	0	61.1
35	98.8	92.0	96.4	49.7	25.6	30.1	3.3	4.45	0	24	63	13	0	0	64.3
36	98.7	91.5	102.7	49.9	25.6	31.9	3.4	4.45	0	24	63	13	0	0	64.3
37	98.7	91.0	109.0	50.0	25.6	33.7	3.4	4.46	1	26	62	11	0	0	67.0
38	98.6	90.5	115.3	50.2	25.6	35.5	3.4	4.46	1	26	62	11	0	0	67.0
39	98.5	90.0	121.5	50.3	25.6	37.3	3.4	4.47	1	28	61	10	0	0	69.2
40	98.5	89.5	127.7	50.5	25.6	39.1	3.4	4.47	1	28	61	10	0	0	69.2
41	98.4	89.0	133.8	50.7	25.6	40.9	3.5	4.47	1	30	59	10	0	0	71.0
42	98.3	88.5	139.9	50.8	25.6	42.7	3.5	4.48	1	30	59	10	0	0	71.0
43	98.3	88.0	145.9	50.9	25.6	44.5	3.5	4.48	1	32	58	9	0	0	72.6
44	98.2	87.5	151.9	51.0	25.6	46.3	3.5	4.48	1	32	58	9	0	0	72.6
45	98.1	87.0	157.9	51.0	25.6	48.1	3.5	4.48	2	34	56	8	0	0	74.0
46	98.1	86.5	163.9	51.1	25.6	49.9	3.6	4.49	2	34	56	8	0	0	74.0
47	98.0	86.0	169.8	51.2	25.6	51.7	3.6	4.49	2	36	54	8	0	0	75.2
48	98.0	85.5	175.6	51.3	25.6	53.5	3.6	4.49	2	36	55	7	0	0	75.2
49	97.9	85.0	181.5	51.4	25.6	55.3	3.6	4.49	2	37	54	7	0	0	76.4
50	97.9	84.2	187.2	51.5	25.6	57.1	3.7	4.49	2	37	54	7	0	0	76.4
51	97.8	83.9	193.0	51.6	25.6	58.9	3.7	4.49	2	38	53	7	0	0	77.3
52	97.8	83.6	198.7	51.7	25.6	60.7	3.7	4.50	2	38	54	6	0	0	77.3
53	97.7	83.3	204.4	51.7	25.6	62.5	3.7	4.50	2	38	54	6	0	0	78.2
54	97.6	83.0	210.1	51.8	25.6	64.3	3.7	4.50	2	38	54	6	0	0	78.2
55	97.5	82.7	215.7	51.9	25.6	66.0	3.7	4.50	2	39	53	6	0	0	79.1
56	97.4	82.4	221.3	52.0	25.6	67.8	3.7	4.50	2	39	53	6	0	0	79.1
57	97.4	82.1	226.9	52.1	25.6	69.6	3.7	4.51	2	39	53	6	0	0	79.8
58	97.3	81.8	232.5	52.1	25.6	71.4	3.8	4.51	2	40	52	6	0	0	79.8
59	97.3	81.5	238.0	52.1	25.6	73.2	3.8	4.51	2	40	52	6	0	0	80.4
60	97.2	81.2	243.6	52.1	25.6	75.0	3.8	4.51	2	40	53	5	0	0	80.4
61	97.1	80.9	249.1	52.2	25.6	76.8	3.8	4.52	2	41	52	5	0	0	81.0
62	97.0	80.6	254.5	52.3	25.6	78.6	3.8	4.52	3	41	51	5	0	0	81.0
63	96.9	80.3	260.0	52.3	25.6	80.4	3.8	4.52	3	41	51	5	0	0	81.6
64	96.8	80.0	265.4	52.4	25.6	82.2	3.8	4.52	3	41	52	4	0	0	81.6
65	96.7	79.7	270.8	52.4	25.6	84.0	3.9	4.52	4	41	51	4	0	0	82.1
66	96.6	79.4	276.2	52.4	25.6	85.8	3.9	4.53	4	42	51	3	0	0	82.1
67	96.5	79.1	281.5	52.5	25.6	87.6	3.9	4.53	4	42	51	3	0	0	82.7
68	96.4	78.8	286.8	52.5	25.6	89.4	3.9	4.53	4	42	51	3	0	0	82.7
69	96.3	78.5	292.1	52.5	25.6	91.2	3.9	4.53	4	42	51	3	0	0	83.2
70	96.2	78.2	297.4	52.5	25.6	93.0	3.9	4.53	4	42	52	2	0	0	83.2
71	96.1	77.9	302.6	52.5	25.6	94.8	4.0	4.54	4	42	52	2	0	0	83.7
72	96.0	77.6	307.8	52.5	25.6	96.6	4.0	4.54	4	43	52	1	0	0	83.7
73	95.9	77.3	313.0	52.5	25.6	98.4	4.0	4.54	5	43	51	1	0	0	84.1
74	95.8	77.0	318.2	52.6	25.6	100.2	4.0	4.54	5	43	51	1	0	0	84.1
75	95.7	76.7	323.3	52.6	25.6	102.0	4.0	4.54	5	44	50	1	0	0	84.6
76	95.6	76.4	328.4	52.6	25.6	103.7	4.0	4.54	5	44	50	1	0	0	84.6
77	95.5	76.1	333.5	52.6	25.6	105.5	4.0	4.54	5	44	50	1	0	0	85.0
78	95.4	75.8	338.6	52.7	25.6	107.3	4.1	4.54	5	44	50	1	0	0	85.0
79	95.3	75.5	343.6	52.7	25.6	109.1	4.1	4.54	5	45	49	1	0	0	85.4
80	95.2	75.2	348.6	52.7	25.6	110.9	4.1	4.55	5	45	49	1	0	0	85.4

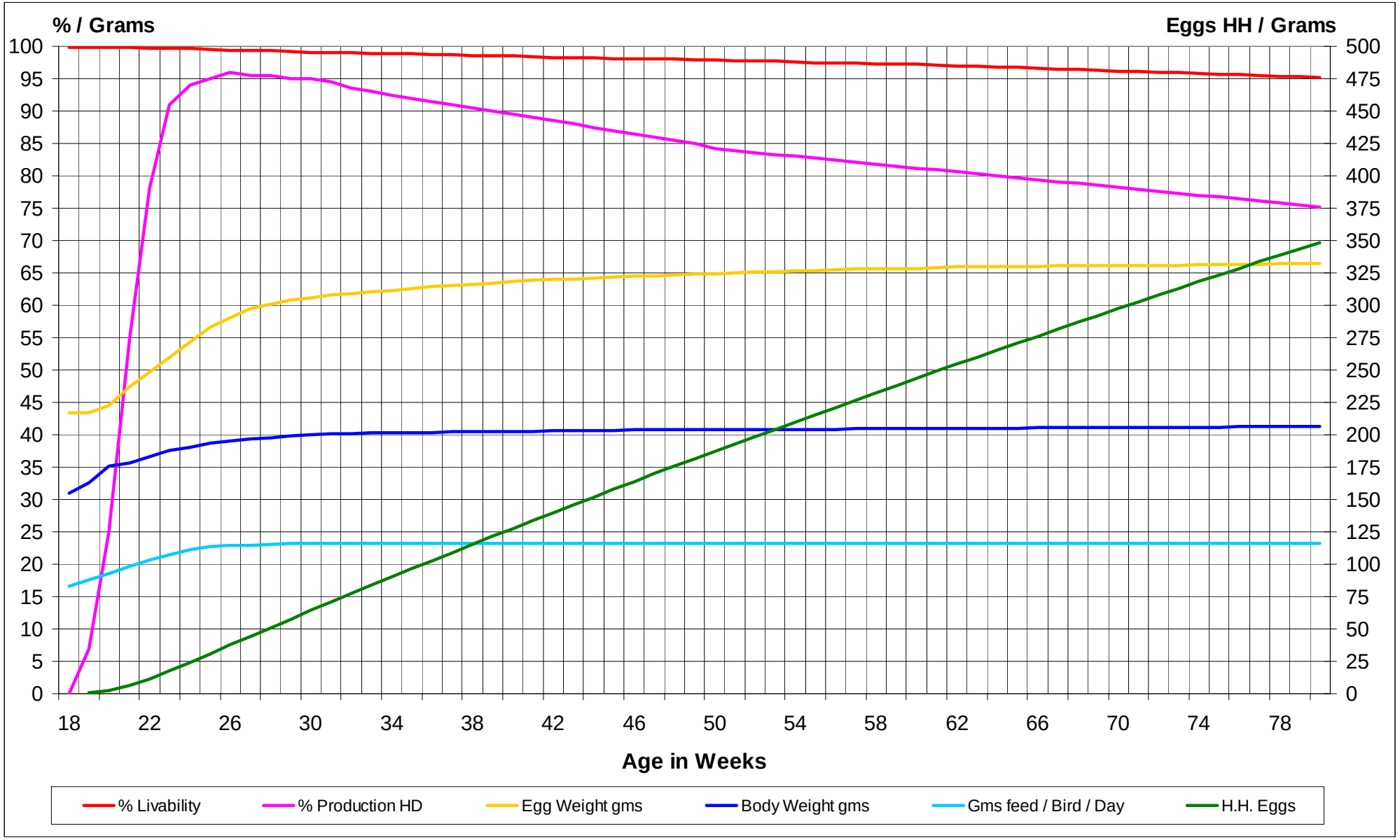
NOTE: Above performance objectives are based on actual field results of top performing flocks under excellent management conditions and fed according to the suggested rations in the management guide.

Under less favorable management conditions, lower feed quality and temperatures, egg production may be lower and feed intake higher.

Decreasing or increasing temperatures in the second half of lay and/or adjusting nutrient levels can achieve a higher or lower egg weight.

The performance goals and specifications set forth in no way constitute a WARRANTY or GUARANTEE EXPRESSED or IMPLIED OF PERFORMANCE, HEALTH, MERCHANTABILITY or TOLERANCE TO A DISEASE

PERFORMANCE GRAPH TETRA AMBER (METRIC)



PERFORMANCE OBJECTIVES TETRA AMBER (METRIC)

AGE IN WKS	LIVABILITY %	HEN DAY %	EGGS HEN HOUSED	WEIGHT GRAMS EGG	KGS EGGS CUM	FEED GRAMS BIRD	FEED CUM KGS	KGS/ KGS EGGS	BODY WEIGHT GRAMS	X LARGE OVER 73 GRAMS	LARGE 63-73 GRAMS	MEDIUM 53-63 GRAMS	SMALL UNDER 53 GRAMS
18	99.9	0		43.3	0.00	83.0	0.6		1547	0.0	0.0	0.0	100.0
19	99.9	7	0.5	43.3	0.02	87.6	1.2	28.9	1633	0.0	0.0	0.0	100.0
20	99.8	25	2.2	44.5	0.10	93.0	1.8	8.4	1755	0.0	0.0	8.0	92.0
21	99.8	55	6.1	47.4	0.28	98.4	2.5	3.8	1780	0.0	0.0	18.0	82.0
22	99.7	78	11.5	49.7	0.56	103.2	3.3	2.7	1830	0.0	0.0	25.0	75.0
23	99.7	91	17.9	52.0	0.89	107.5	4.0	2.3	1880	0.0	2.0	43.0	55.0
24	99.6	94	24.4	54.3	1.24	111.0	4.8	2.2	1905	0.0	3.0	50.0	47.0
25	99.5	95	31.0	56.6	1.62	113.5	5.6	2.1	1939	0.0	5.0	57.0	38.0
26	99.4	96	37.7	58.1	2.01	114.6	6.4	2.1	1956	0.0	8.0	62.0	30.0
27	99.4	95.5	44.4	59.5	2.41	114.9	7.2	2.0	1965	0.0	10.0	65.0	25.0
28	99.3	95.5	51.0	60.2	2.81	115.3	8.0	2.0	1974	0.0	12.0	70.0	18.0
29	99.2	95	57.6	60.8	3.22	115.8	8.8	2.0	1989	0.0	14.0	76.0	10.0
30	99.1	95	64.2	61.2	3.62	115.8	9.6	2.0	1998	0.0	15.0	81.0	4.0
31	99.1	94.5	70.7	61.6	4.03	115.9	10.4	2.0	2004	0.0	16.0	80.0	4.0
32	99.0	93.5	77.2	61.8	4.43	115.9	11.2	2.0	2009	0.0	17.0	50.0	33.0
33	98.9	93.0	83.7	62.1	4.84	115.9	12.0	2.0	2013	0.0	8.0	89.5	2.5
34	98.8	92.5	90.1	62.3	5.24	115.9	12.9	2.0	2013	0.0	19.0	78.5	2.5
35	98.8	92.0	96.4	62.6	5.65	115.9	13.7	2.0	2018	0.0	20.0	77.9	2.1
36	98.7	91.5	102.7	62.8	6.05	116.3	14.5	2.0	2018	0.0	21.0	76.9	2.1
37	98.7	91.0	109.0	63.0	6.45	116.3	15.3	2.0	2022	0.0	22.0	76.1	1.9
38	98.6	90.5	115.3	63.2	6.85	116.3	16.1	2.0	2022	0.0	23.0	75.1	1.9
39	98.5	90.0	121.5	63.4	7.25	116.3	16.9	2.0	2027	0.0	24.0	74.3	1.7
40	98.5	89.5	127.7	63.6	7.65	116.3	17.7	2.0	2027	0.0	25.0	73.3	1.7
41	98.4	89.0	133.8	63.8	8.05	116.3	18.6	2.0	2027	0.0	26.0	72.5	1.5
42	98.3	88.5	139.9	64.0	8.44	116.3	19.4	2.1	2032	0.0	27.0	71.5	1.5
43	98.3	88.0	145.9	64.1	8.84	116.3	20.2	2.1	2032	0.1	28.0	70.6	1.3
44	98.2	87.5	151.9	64.2	9.23	116.3	21.0	2.1	2032	0.1	29.0	69.6	1.3
45	98.1	87.0	157.9	64.3	9.62	116.3	21.8	2.1	2032	0.1	30.0	68.9	1.0
46	98.1	86.5	163.9	64.4	10.01	116.3	22.6	2.1	2036	0.1	31.0	67.9	1.0
47	98.0	86.0	169.8	64.5	10.40	116.3	23.4	2.1	2036	0.1	32.0	67.0	0.9
48	98.0	85.5	175.6	64.7	10.79	116.3	24.3	2.1	2036	0.1	33.0	66.0	0.9
49	97.9	85.0	181.5	64.8	11.17	116.3	25.1	2.1	2036	0.2	34.0	65.0	0.8
50	97.9	84.2	187.2	64.9	11.55	116.3	25.9	2.1	2038	0.2	35.0	64.0	0.8
51	97.8	83.9	193.0	65.0	11.94	116.3	26.7	2.1	2038	0.2	36.0	63.0	0.8
52	97.8	83.6	198.7	65.1	12.32	116.3	27.5	2.1	2041	0.2	37.0	62.0	0.8
53	97.7	83.3	204.4	65.2	12.70	116.3	28.3	2.1	2041	0.2	38.0	61.1	0.7
54	97.6	83.0	210.1	65.3	13.08	116.3	29.1	2.1	2041	0.2	39.0	60.1	0.7
55	97.5	82.7	215.7	65.4	13.46	116.3	30.0	2.2	2041	0.3	40.0	59.0	0.7
56	97.4	82.4	221.3	65.5	13.83	116.3	30.8	2.2	2041	0.4	41.0	57.9	0.7
57	97.4	82.1	226.9	65.6	14.21	116.3	31.6	2.2	2045	0.5	42.0	57.0	0.5
58	97.3	81.8	232.5	65.6	14.59	116.3	32.4	2.2	2045	0.6	42.0	56.9	0.5
59	97.3	81.5	238.0	65.7	14.96	116.3	33.2	2.2	2045	0.7	42.0	56.7	0.6
60	97.2	81.2	243.6	65.7	15.33	116.3	34.0	2.2	2045	0.7	42.0	56.7	0.6
61	97.1	80.9	249.1	65.8	15.71	116.3	34.8	2.2	2050	1.1	43.0	55.3	0.6
62	97.0	80.6	254.5	65.9	16.08	116.3	35.7	2.2	2050	1.4	43.0	55.0	0.6
63	96.9	80.3	260.0	65.9	16.45	116.3	36.5	2.2	2050	1.7	43.0	54.7	0.6
64	96.8	80.0	265.4	66.0	16.82	116.3	37.3	2.2	2050	1.9	43.0	54.5	0.6
65	96.7	79.7	270.8	66.0	17.19	116.3	38.1	2.2	2050	2.2	43.5	53.8	0.5
66	96.6	79.4	276.2	66.0	17.55	116.3	38.9	2.2	2053	2.4	43.5	53.6	0.5
67	96.5	79.1	281.5	66.1	17.92	116.3	39.7	2.2	2053	2.6	43.5	53.4	0.5
68	96.4	78.8	286.8	66.1	18.28	116.3	40.5	2.2	2053	2.6	43.5	53.4	0.5
69	96.3	78.5	292.1	66.1	18.65	116.3	41.4	2.2	2053	2.6	44.0	53.0	0.4
70	96.2	78.2	297.4	66.1	19.01	116.3	42.2	2.3	2053	2.6	44.0	53.0	0.4
71	96.1	77.9	302.6	66.1	19.37	116.3	43.0	2.3	2058	2.7	44.0	52.9	0.4
72	96.0	77.6	307.8	66.2	19.73	116.3	43.8	2.3	2058	2.7	44.0	52.9	0.4
73	95.9	77.3	313.0	66.2	20.09	116.3	44.6	2.3	2058	2.7	46.0	51.0	0.3
74	95.8	77.0	318.2	66.3	20.44	116.3	45.4	2.3	2058	2.7	46.0	51.0	0.3
75	95.7	76.7	323.3	66.3	20.80	116.3	46.2	2.3	2058	2.7	48.0	49.0	0.3
76	95.6	76.4	328.4	66.3	21.15	116.3	47.1	2.3	2061	2.8	48.0	48.9	0.3
77	95.5	76.1	333.5	66.3	21.51	116.3	47.9	2.3	2061	2.8	50.0	47.0	0.2
78	95.4	75.8	338.6	66.4	21.86	116.3	48.7	2.3	2061	2.8	50.0	47.0	0.2
79	95.3	75.5	343.6	66.4	22.21	116.3	49.5	2.3	2061	2.8	51.0	46.0	0.2
80	95.2	75.2	348.6	66.4	22.46	116.3	50.3	2.3	2064	2.8	51.0	46.0	0.2

NOTE: Above performance objectives are based on actual field results of top performing flocks under excellent management conditions and fed according to the suggested rations in the management guide.
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Decreasing or increasing temperatures in the second half of lay and/or adjusting nutrient levels can achieve a higher or lower egg weight.
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