

# Dietary Nutrient Concentrations for Production Period *(According to Phase and Feed Intake)*

FEEDING PHASE PRODUCTION	PEAKING First egg until production drops 2% below peak						LAYER 2 2% below peak to 89%					LAYER 3 88–85%				LAYER 4 Less than 85%					
	RECOMMENDED CONCENTRATION <sup>1</sup>																				
Metabolizable energy <sup>2</sup> , kcal/kg	2778–2911						2734–2867					2679–2867				2558–2833					
Metabolizable energy <sup>2</sup> , MJ/kg	11.63–12.18						11.44–12.00					11.21–12.00				10.71–11.86					
FEED CONSUMPTION (*Typical Feed Consumption)																					
g/day per bird	88	93	98	<b>103*</b>	108	113	100	105	<b>110*</b>	115	120	100	105	<b>110*</b>	115	120	99	104	<b>109</b>	114	119
Standardized Ileal Digestible Amino Acids																					
Lysine, %	0.94	0.89	0.85	<b>0.81</b>	0.77	0.73	0.80	0.76	<b>0.73</b>	0.70	0.67	0.78	0.74	<b>0.71</b>	0.68	0.65	0.76	0.72	<b>0.69</b>	0.66	0.63
Methionine, %	0.46	0.44	0.42	<b>0.40</b>	0.38	0.36	0.39	0.37	<b>0.36</b>	0.34	0.33	0.38	0.36	<b>0.35</b>	0.33	0.32	0.36	0.35	<b>0.33</b>	0.32	0.30
Methionine+Cystine, %	0.81	0.77	0.73	<b>0.69</b>	0.66	0.63	0.69	0.66	<b>0.63</b>	0.60	0.57	0.66	0.63	<b>0.60</b>	0.58	0.55	0.64	0.61	<b>0.58</b>	0.55	0.53
Threonine, %	0.66	0.62	0.59	<b>0.56</b>	0.54	0.51	0.56	0.53	<b>0.51</b>	0.49	0.47	0.55	0.52	<b>0.50</b>	0.47	0.46	0.53	0.50	<b>0.48</b>	0.46	0.44
Tryptophan, %	0.20	0.19	0.18	<b>0.17</b>	0.16	0.15	0.17	0.16	<b>0.15</b>	0.15	0.14	0.16	0.16	<b>0.15</b>	0.14	0.14	0.16	0.15	<b>0.14</b>	0.14	0.13
Arginine, %	0.98	0.93	0.88	<b>0.84</b>	0.80	0.76	0.83	0.79	<b>0.76</b>	0.72	0.69	0.81	0.77	<b>0.74</b>	0.71	0.68	0.79	0.75	<b>0.72</b>	0.68	0.66
Isoleucine, %	0.74	0.70	0.66	<b>0.63</b>	0.60	0.57	0.62	0.59	<b>0.57</b>	0.54	0.52	0.61	0.58	<b>0.55</b>	0.53	0.51	0.59	0.56	<b>0.54</b>	0.51	0.49
Valine, %	0.83	0.78	0.74	<b>0.71</b>	0.68	0.65	0.70	0.67	<b>0.64</b>	0.61	0.59	0.69	0.65	<b>0.62</b>	0.60	0.57	0.67	0.63	<b>0.61</b>	0.58	0.55
Total Amino Acids <sup>3</sup>																					
Lysine, %	1.03	0.98	0.93	<b>0.88</b>	0.84	0.80	0.88	0.83	<b>0.80</b>	0.76	0.73	0.85	0.81	<b>0.78</b>	0.74	0.71	0.83	0.79	<b>0.75</b>	0.72	0.69
Methionine, %	0.50	0.47	0.45	<b>0.42</b>	0.40	0.39	0.42	0.40	<b>0.38</b>	0.37	0.35	0.41	0.39	<b>0.37</b>	0.36	0.34	0.39	0.37	<b>0.36</b>	0.34	0.33
Methionine+Cystine, %	0.91	0.87	0.82	<b>0.78</b>	0.75	0.71	0.78	0.74	<b>0.71</b>	0.67	0.65	0.75	0.71	<b>0.68</b>	0.65	0.62	0.72	0.68	<b>0.65</b>	0.62	0.60
Threonine, %	0.78	0.74	0.70	<b>0.66</b>	0.63	0.61	0.66	0.63	<b>0.60</b>	0.57	0.55	0.64	0.61	<b>0.58</b>	0.56	0.54	0.62	0.59	<b>0.57</b>	0.54	0.52
Tryptophan, %	0.24	0.22	0.21	<b>0.20</b>	0.19	0.18	0.20	0.19	<b>0.18</b>	0.17	0.17	0.20	0.19	<b>0.18</b>	0.17	0.16	0.19	0.18	<b>0.17</b>	0.16	0.16
Arginine, %	1.05	1.00	0.95	<b>0.90</b>	0.86	0.82	0.90	0.85	<b>0.81</b>	0.78	0.75	0.87	0.83	<b>0.79</b>	0.76	0.73	0.85	0.81	<b>0.77</b>	0.74	0.71
Isoleucine, %	0.79	0.75	0.71	<b>0.68</b>	0.64	0.62	0.67	0.64	<b>0.61</b>	0.58	0.56	0.65	0.62	<b>0.59</b>	0.57	0.55	0.64	0.60	<b>0.58</b>	0.55	0.53
Valine, %	0.92	0.87	0.82	<b>0.78</b>	0.75	0.71	0.78	0.74	<b>0.71</b>	0.67	0.65	0.76	0.72	<b>0.69</b>	0.66	0.63	0.74	0.70	<b>0.67</b>	0.64	0.61
Crude protein <sup>4</sup> , %	19.32	18.28	17.35	<b>16.50</b>	15.74	15.04	16.75	15.95	<b>15.23</b>	14.57	13.96	16.00	15.24	<b>14.55</b>	13.91	13.33	15.66	14.90	<b>14.22</b>	13.60	13.03
Sodium, %	0.20	0.19	0.18	<b>0.17</b>	0.17	0.16	0.18	0.17	<b>0.16</b>	0.16	0.15	0.18	0.17	<b>0.16</b>	0.16	0.15	0.18	0.17	<b>0.17</b>	0.16	0.15
Chloride, %	0.20	0.19	0.18	<b>0.17</b>	0.17	0.16	0.18	0.17	<b>0.16</b>	0.16	0.15	0.18	0.17	<b>0.16</b>	0.16	0.15	0.18	0.17	<b>0.17</b>	0.16	0.15
Linoleic acid (C18:2 n-6), %	1.14	1.08	1.02	<b>0.97</b>	0.93	0.88	1.00	0.95	<b>0.91</b>	0.87	0.83	1.00	0.95	<b>0.91</b>	0.87	0.83	1.01	0.96	<b>0.92</b>	0.88	0.84
CALCIUM, PHOSPHORUS AND LIMESTONE PARTICLE SIZE CHANGES BASED ON AGE																					
Feed Consumption, g/day per bird	Weeks 17–35						Weeks 36–55					Weeks 56–74				Weeks 75–90					
	88	93	98	<b>103*</b>	108	113	100	105	<b>110*</b>	115	120	100	105	<b>110*</b>	115	120	99	104	<b>109</b>	114	119
Calcium <sup>5,6</sup> , %	4.77	4.52	4.29	<b>4.08</b>	3.89	3.72	4.30	4.10	<b>3.91</b>	3.74	3.58	4.50	4.29	<b>4.09</b>	3.91	3.75	4.85	4.62	<b>4.40</b>	4.21	4.03
Phosphorus (available) <sup>5,7</sup> , %	0.52	0.49	0.47	<b>0.45</b>	0.43	0.41	0.42	0.40	<b>0.38</b>	0.37	0.35	0.38	0.36	<b>0.35</b>	0.33	0.32	0.36	0.35	<b>0.33</b>	0.32	0.30
Calcium Particle Size (fine:coarse) (see page 14)	50% : 50%						40% : 60%					35% : 65%				35% : 65%					

<sup>1</sup> Crude protein, methionine+cystine, fat, linoleic acid, and / or energy may be changed to optimize egg size.

<sup>2</sup> Recommended energy range is based on energy values shown in feed ingredient table at back of this guide. It is important that target concentrations of dietary energy are adjusted according to energy system applied to raw material matrix if values differ from those referred for raw materials in this guide.

<sup>3</sup> Recommendation for Total Amino Acids is only appropriate to corn and soybean meal diet. Where diets utilize other ingredients, recommendations for Standardized Ileal Digestible Amino Acids must be followed.

<sup>4</sup> Diets should always be formulated to provide required intake of amino acid. Concentration of crude protein in diet will vary with raw material used. Crude protein value provided is an estimated typical value only.

<sup>5</sup> Calcium and available phosphorus requirements are determined by flock age. When production remains higher and diets are fed for longer than ages shown, it is recommended to increase to calcium and phosphorus concentrations of next feeding phase.

<sup>6</sup> Calcium carbonate particle size recommendation varies throughout lay. Refer to Calcium Particle Size Table. Dietary calcium levels may need to be adjusted based on limestone solubility.

<sup>7</sup> Where other phosphorus systems are used, diets should contain recommended minimum level of available phosphorus.