NUTRIENT SPECIFICATION

COMMERCIAL NUTRITION RECOMMENDATIONS FOR B.U.T. AND NICHOLAS BREEDS

The nutritional guidelines in the following tables have been revised according to:

- The latest research conducted in Aviagen Turkeys trial facilities.
- Published scientific information.
- Aviagen Turkeys scientific publications.
- Environmental and welfare concerns.
- The performance potential of the latest Aviagen Turkeys genetics.
- The economics associated with feeding different diet nutrient densities.

FEEDING PROGRAMMES

There are three different feeding programmes based on the end objectives of the operation.

1. Attaining optimum performance and economic return for farm objectives.
2. Attaining optimum performance and economic return for processing objectives.
3. Supporting enteric health.

The guideline levels of key nutrients for each of these recommendations are provided in tables 1, 2 and 3 and apply to all breeds.

These nutrient levels are a guide only and should not be considered a guarantee with respect to bodyweight or other production targets.

The energy values in the diet nutrient specification levels are expressed in megajoules (MJ/kg), and kilocalories (kcals/kg or lb) of metabolisable energy (ME).

Nutrient recommendations for farm and processing objectives are based on both research findings and practical experience and show that farm economic objectives are achieved at higher amino acid levels and lower energy levels than previously recommended, see table 1.

Nutrient recommendations for processing objectives are different to farm objectives, optimal processing economic objectives are achieved at higher amino acid and energy densities than recommended for farm objectives, see table 2.

Nutrient recommendations to support enteric condition involves lower amino acid density relative to farm and processing objectives see table 3.

Applied to all of the above recommendations are revised mineral levels in line with up to date research and environmental concerns and revised amino acid profiles for each objective to support optimum performance, health and minimize nitrogen output.

The more diets there are in the feeding programme the more efficiently the feeding schedule will match the bird's nutrient requirements during each phase. The recommended feeding schedules are split into seven phases, different number of phases can be used to fit with the company's requirements.

The recommended ideal amino acid profile expresses the level of each amino acid relative to the lysine level. The specific levels are provided in table 4 to 6 for each of the three above objectives. The amino acid profiles differ between the different objectives to take into account the different requirements for processing traits and requirements under different growing conditions.

TABLE 1: FEEDING RECOMMENDATIONS FOR FARM OBJECTIVES

RATION NUMBER		1		2		3		4		5		6		7	
Males	Days	0–21		22–42		43–63		64–84		85–105		106–126		127–147	
Females	Days	0–21		22–42		43–56		57–70		71–84		85–98		99–126	
Energy	Cals/lb	1279		1301		1333		1366		1398		1431		1463	
	Kcals/kg	2814		2862		2933		3005		3076		3148		3219	
	Mj/kg	11.8		12.0		12.3		12.6		12.9		13.2		13.5	
AMINO ACIDS*	%	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible
Lysine	%	1.76	1.67	1.57	1.48	1.44	1.33	1.28	1.17	1.13	1.05	1.01	0.93	0.89	0.81
Methionine	%	0.63	0.60	0.56	0.53	0.55	0.51	0.50	0.46	0.44	0.41	0.43	0.39	0.40	0.36
Methionine + Cystine	%	1.14	1.09	1.04	0.97	0.99	0.91	0.88	0.82	0.82	0.75	0.78	0.70	0.70	0.65
Threonine	%	1.02	0.97	0.92	0.87	0.86	0.80	0.79	0.71	0.71	0.65	0.63	0.58	0.56	0.51
Tryptophan	%	0.25	0.24	0.25	0.24	0.23	0.21	0.20	0.19	0.21	0.19	0.20	0.18	0.19	0.16
Arginine	%	1.80	1.71	1.61	1.52	1.48	1.37	1.31	1.21	1.16	1.08	1.06	0.97	0.92	0.85
Valine	%	1.18	1.12	1.07	1.00	0.99	0.92	0.88	0.82	0.82	0.75	0.74	0.67	0.66	0.60
iso-Leucine	%	1.08	1.02	0.95	0.90	0.89	0.82	0.80	0.73	0.71	0.66	0.65	0.60	0.58	0.53
MINERALS															
Calcium	%	1.40		1.26		1.13		1.03		0.90		0.82		0.73	
Available Phosphorus	%	0.71		0.63		0.56		0.52		0.45		0.41		0.37	
Sodium	%	0.16		0.16		0.16		0.15		0.15		0.15		0.15	
Chloride	%	0.18		0.18		0.18		0.18		0.18		0.18		0.18	

*Amino acid density can be increased by 5% to 10% in Period 1, 2 and 3 diets to support bodyweight development of medium strain flocks.

TABLE 2: FEEDING RECOMMENDATIONS FOR PROCESSING OBJECTIVES

RATION NUMBER		1		2		3		4		5		6		7	
Males	Days	0–21		22–42		43–63		64–84		85–105		106–126		127–147	
Females	Days	0–21		22–42		43–56		57–70		71–84		85–98		99–126	
Energy	Cals/lb	1290		1323		1366		1399		1431		1464		1496	
	Kcals/kg	2838		2909		3005		3076		3148		3219		3291	
	Mj/kg	11.9		12.2		12.6		12.9		13.2		13.5		13.8	
AMINO ACIDS*	%	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible
Lysine	%	1.76	1.67	1.61	1.52	1.50	1.38	1.35	1.23	1.19	1.10	1.07	0.98	0.94	0.85
Methionine	%	0.65	0.62	0.59	0.56	0.57	0.52	0.52	0.48	0.46	0.43	0.46	0.41	0.42	0.37
Methionine + Cystine	%	1.17	1.11	1.10	1.03	1.03	0.95	0.92	0.86	0.86	0.79	0.82	0.74	0.73	0.68
Threonine	%	1.02	0.97	0.95	0.90	0.89	0.83	0.83	0.75	0.75	0.68	0.67	0.62	0.60	0.54
Tryptophan	%	0.25	0.24	0.25	0.24	0.24	0.22	0.21	0.20	0.22	0.20	0.21	0.19	0.20	0.17
Arginine	%	1.80	1.71	1.66	1.57	1.54	1.42	1.37	1.27	1.23	1.14	1.13	1.03	0.97	0.89
Valine	%	1.18	1.12	1.11	1.03	1.03	0.95	0.92	0.86	0.86	0.78	0.78	0.71	0.70	0.63
iso-Leucine	%	1.08	1.02	0.98	0.93	0.92	0.86	0.84	0.76	0.75	0.69	0.68	0.63	0.61	0.55
MINERALS															
Calcium	%	1.40		1.26		1.13		1.03		0.90		0.82		0.73	
Available Phosphorus	%	0.71		0.63		0.56		0.52		0.45		0.41		0.37	
Sodium	%	0.16		0.16		0.16		0.15		0.15		0.15		0.15	
Chloride	%	0.18		0.18		0.18		0.18		0.18		0.18		0.18	

*Amino acid density can be increased by 5% to 10% in Period 1, 2 and 3 diets to support bodyweight development of medium strain flocks.

TABLE 3: FEEDING RECOMMENDATIONS TO SUPPORT ENTERIC CONDITION

RATION NUMBER		1		2		3		4		5		6		7	
Males	Days	0–21		22–42		43–63		64–84		85–105		106–126		127–147	
Females	Days	0–21		22–42		43–56		57–70		71–84		85–98		99–126	
Energy	Cals/lb	1279		1323		1333		1399		1398		1464		1463	
	Kcals/kg	2814		2862		2933		3005		3076		3148		3219	
	Mj/kg	11.8		12		12.3		12.6		12.9		13.2		13.5	
AMINO ACIDS*	%	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible	Total	Digestible
Lysine	%	1.76	1.67	1.57	1.48	1.37	1.26	1.22	1.11	1.13	1.05	1.01	0.93	0.89	0.81
Methionine	%	0.65	0.62	0.58	0.55	0.52	0.48	0.47	0.43	0.44	0.41	0.43	0.39	0.40	0.36
Methionine + Cystine	%	1.17	1.11	1.08	1.00	0.94	0.87	0.83	0.77	0.82	0.75	0.78	0.70	0.70	0.65
Threonine	%	1.02	0.97	0.92	0.87	0.81	0.76	0.75	0.68	0.71	0.65	0.64	0.59	0.57	0.52
Tryptophan	%	0.25	0.24	0.25	0.24	0.22	0.20	0.19	0.18	0.21	0.19	0.20	0.18	0.19	0.16
Arginine	%	1.80	1.71	1.61	1.52	1.40	1.30	1.24	1.14	1.18	1.09	1.07	0.98	0.92	0.85
Valine	%	1.18	1.12	1.08	1.01	0.94	0.87	0.83	0.78	0.82	0.75	0.74	0.67	0.66	0.60
iso-Leucine	%	1.08	1.02	0.95	0.90	0.84	0.78	0.76	0.69	0.71	0.66	0.65	0.60	0.58	0.53
MINERALS															
Calcium	%	1.40		1.26		1.10		0.98		0.86		0.78		0.69	
Available Phosphorus	%	0.71		0.63		0.53		0.51		0.43		0.39		0.35	
Sodium	%	0.16		0.16		0.16		0.15		0.15		0.15		0.15	
Chloride	%	0.18		0.18		0.18		0.18		0.18		0.18		0.18	

*Amino acid density can be increased by 5% to 10% in Period 1, 2 and 3 diets to support bodyweight development of medium strain flocks.

TABLE 4: FARM OBJECTIVE OPTIMAL BALANCED PROTEIN PROFILE (% OF LYSINE)

Male Age (Days)	1–21	22–42	43–63	64–84	85–105	106–126	127–147
Female Age (Days)	1–21	22–42	43–56	57–70	71–84	85–98	99–126
Lysine	100	100	100	100	100	100	100
Methionine	37	37	38	39	39	42	44
Methionine + Cystine	67	68	69	70	72	76	80
Threonine	58	59	60	61	62	62	63
Tryptophan	14	16	16	16	18	19	20
Arginine	102	103	103	103	103	104	105
Valine	67	68	69	70	71	72	74
iso-Leucine	61	61	62	62	63	64	65

TABLE 5: PROCESSING OBJECTIVE OPTIMAL BALANCED PROTEIN PROFILE (% OF LYSINE)

Male Age (Days)	1–21	22–42	43–63	64–84	85–105	106–126	127–147
Female Age (Days)	1–21	22–42	43–56	57–70	71–84	85–98	99–126
Lysine	100	100	100	100	100	100	100
Methionine	37	37	38	39	39	42	44
Methionine + Cystine	67	68	69	70	72	76	80
Threonine	58	59	60	61	62	63	64
Tryptophan	14	16	16	16	18	19	20
Arginine	102	103	103	103	104	105	105
Valine	67	68	69	70	71	72	74
iso-Leucine	61	61	62	62	63	64	65

TABLE 6: ENTERIC CONDITION OBJECTIVE OPTIMAL BALANCED PROTEIN PROFILE (% OF LYSINE)

Male Age (Days)	1–21	22–42	43–63	64–84	85–105	106–126	127–147
Female Age (Days)	1–21	22–42	43–56	57–70	71–84	85–98	99–126
Lysine	100	100	100	100	100	100	100
Methionine	37	37	38	39	39	42	44
Methionine + Cystine	67	68	69	70	72	76	80
Threonine	58	59	60	61	62	63	64
Tryptophan	14	16	16	16	18	19	20
Arginine	102	103	103	103	104	105	105
Valine	67	68	69	70	71	72	74
iso-Leucine	61	61	62	62	63	64	65

TABLE 7: VITAMIN AND TRACE MINERAL ADDITIONS

		0–3 weeks		4–6 weeks		7–12 weeks		13–16 weeks		17+ weeks	
Added Vitamins* Per Kg	Unit	Wheat Based	Maize Based	Wheat Based	Maize Based	Wheat Based	Maize Based	Wheat Based	Maize Based	Wheat Based	Maize Based
Vitamin A	iu	12000	11000	11000	9000	9000	8000	8000	7000	7000	6000
Vitamin D3	iu	5000	5000	4000	4000	3500	3500	3500	3500	3000	3000
Vitamin E	iu	110	110	60	60	40	40	30	30	25	25
Vitamin K	mg	4	4	3	3	3	3	3	3	2.5	2.5
Thiamin (B1)	mg	4	4	3	3	2	2	2	2	1.5	1.5
Riboflavin (B2)	mg	12.5	12.5	7.5	7.5	5	5	5	5	4	4
Nicotinic Acid	mg	85	90	70	75	55	60	45	50	40	45
Pantothenic Acid	mg	28	30	18	19	18	19	15	16	13	14
Pyridoxine (B6)	mg	7	6	5	4	4	3	4	3	3	2
Biotin	mg	0.3	0.2	0.3	0.2	0.2	0.15	0.15	0.1	0.15	0.1
Folic Acid	mg	4	4	2	2	2	2	1.5	1.5	1.5	1.5
Vitamin B12	mg	0.04	0.04	0.02	0.02	0.015	0.015	0.015	0.015	0.01	0.01
Choline	mg	1200	1200	1200	1200	800	800	600	600	400	400
Added Trace Minerals Per Kg											
Copper	mg	12		12		12		12		10	
Iron	mg	100		80		60		45		45	
Manganese	mg	130		120		110		110		110	
Selenium	mg	0.4		0.3		0.3		0.25		0.25	
Zinc	mg	110		100		100		90		80	
Iodine	mg	3		2		2		1		1	

*Levels of some vitamins and minerals may be controlled by local regulations and these should be observed. Vitamin stability can be affected by heat processing of the feed, an allowance may be required to offset such losses.