

112 Nutrient Requirements of Swine

TABLE 10-2 Daily Amino Acid Requirements of Growing Pigs Allowed Feed Ad Libitum (90% dry matter)^a

	Body Weight (kg)					
	3-5	5-10	10-20	20-50	50-80	80-120
Average weight in range (kg)	4	7.5	15	35	65	100
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg) ^b	3,265	3,265	3,265	3,265	3,265	3,265
Estimated DE intake (kcal/day)	855	1,690	3,400	6,305	8,780	10,450
Estimated ME intake (kcal/day) ^b	820	1,620	3,265	6,050	8,410	10,090
Estimated feed intake (g/day)	250	500	1,000	1,855	2,575	3,075
Crude protein (%) ^c	26.0	23.7	20.9	18.0	15.5	13.2
	Amino acid requirements ^d					
	<i>True ileal digestible basis (g/day)</i>					
Arginine	1.4	2.4	4.2	6.1	6.2	4.8
Histidine	1.1	1.9	3.2	4.9	5.5	5.1
Isoleucine	1.8	3.2	5.5	8.4	9.4	8.8
Leucine	3.4	6.0	10.3	15.5	7.2	15.8
Lysine	3.4	5.9	10.1	15.3	17.1	18.9
Methionine	0.9	1.6	2.7	4.1	4.6	4.3
Methionine + cystine	1.9	3.4	5.8	8.8	10.0	9.5
Phenylalanine	2.0	3.5	6.1	9.1	10.2	9.4
Phenylalanine + tyrosine	3.2	5.5	9.5	14.4	16.1	15.1
Threonine	2.1	3.7	6.3	9.7	11.0	10.5
Tryptophan	0.6	1.1	1.9	2.8	3.1	2.9
Valine	2.3	4.0	6.9	10.4	11.6	10.8
	<i>Apparent ileal digestible basis (g/day)</i>					
Arginine	1.3	2.3	3.9	5.7	5.7	4.3
Histidine	1.0	1.8	3.1	4.6	5.2	4.8
Isoleucine	1.7	3.0	5.2	7.8	8.7	8.0
Leucine	3.2	5.7	9.8	14.8	16.5	15.3
Lysine	3.2	5.5	9.4	14.2	15.8	17.4
Methionine	0.9	1.5	2.6	3.9	4.4	4.1
Methionine + cystine	1.8	3.1	5.3	8.2	9.3	8.6
Phenylalanine	1.9	3.3	5.7	8.5	9.4	8.6
Phenylalanine + tyrosine	3.0	5.2	8.9	13.4	15.0	13.9
Threonine	1.9	3.3	5.6	8.5	9.6	9.1
Tryptophan	0.5	1.0	1.6	2.4	2.7	2.5
Valine	2.1	3.7	6.3	9.5	10.6	9.8
	<i>Total basis (g/day)^e</i>					
Arginine	1.5	2.7	4.6	6.8	7.1	5.7
Histidine	1.2	2.1	3.7	5.6	6.3	5.9
Isoleucine	2.1	3.7	6.3	9.5	10.7	10.1
Leucine	3.8	6.6	11.2	16.8	18.4	16.6
Lysine	3.8	6.7	11.5	17.5	19.7	20.3
Methionine	1.0	1.8	3.0	4.6	5.1	4.8
Methionine + cystine	2.2	3.8	6.5	9.9	11.3	10.8
Phenylalanine	2.3	4.0	6.8	10.2	11.3	10.4
Phenylalanine + tyrosine	3.5	6.2	10.6	16.1	18.0	16.8
Threonine	2.5	4.3	7.4	11.3	13.0	12.6
Tryptophan	0.7	1.2	2.1	3.2	3.6	3.4
Valine	2.6	4.6	7.9	11.9	13.3	12.4

^aMixed gender (1:1 ratio of barrows to gilts) of pigs with high-medium lean growth rate (325 g/day of carcass fat-free lean) from 20 to 120 kg body weight.

^bAssumes that ME is 96% of DE. In corn-soybean meal diets of these crude protein levels, ME is 94-96% of DE.

^cCrude protein levels apply to corn-soybean meal diets. In 3-10 kg pigs fed diets with dried plasma and/or dried milk products, protein levels will be 2-3% less than shown.

^dTotal amino acid requirements are based on the following types of diets: 3-5 kg pigs, corn-soybean meal diet that includes 5% dried plasma and 25-50% dried milk products; 5-10 kg pigs, corn-soybean meal diet that includes 5 to 25% dried milk products; 10-120 kg pigs, corn-soybean meal diet.

^eThe total lysine estimates for 3-20 kg pigs are calculated by multiplying the percentages in Table 10-1 (estimated from empirical data) by the estimated feed intake. The other amino acids for 3-20 kg pigs are based on the ratios of amino acids to lysine (true digestible basis); however, there are very few empirical data to support these ratios. The estimates for 20-120 kg pigs are from the growth model.