

Digestible lysine requirement of pigs from 60 to 90 kg live weight

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Three experiments were carried out with the aim to establish pig digestible lysine requirements from 60 to 90 kg live weight. One hundred and twenty pigs of three genders were used (n=40 for each gender) with average weight of 59.95 ± 2.01 kg for gilts, 60.33 ± 2.06 kg for barrows and 59.24 ± 2.12 kg for boars. The pigs were from the progeny of Embrapa MS-115 sire line crossed with F1 sows. In each experiment (gender), the pigs were sorted, considering initial weight, in one of five levels of digestible lysine, with eight replicates and one pig per experimental unit. The lysine levels evaluated were: 0.56, 0.70, 0.84, 0.98, 1.12% for gilts, 0.52, 0.66, 0.80, 0.94, 1.08% for barrows and 0.64, 0.78, 0.92, 1.06, 1.20% for boars. Experimental period lasted 35 days for gilts and boars and 28 days for barrows. The variables evaluated were: daily weight gain (GPD, kg), daily feed consumption (CRD, kg), feed to gain ratio (CA, kg kg^{-1}), daily lysine consumption (CLD, g), lysine intake to gain ratio (CLGP, g kg^{-1}), and lysine efficiency for weight gain (ELGP, g g^{-1}). Statistical analysis was performed using SAS GLM procedure. There were no treatment effects ($P > 0.05$) on CRD in the three genders and on GPD for boars. The GPD showed a quadratic increase for barrows ($y = 0.3296 + 1.6756x - 0.8711x^2$, $P < 0.08$ and $R^2 = 0.65$) and linear increase for gilts ($y = 0.7312 + 0.2647x$, $P < 0.003$ and $R^2 = 0.55$). The CLD increased linearly ($P < 0.001$) and the following equations were adjusted: $y = -1.2457 + 27.2702x$ ($R^2 = 0.93$) for gilts, $y = -0.3204 + 29.6502x$ ($R^2 = 0.97$) for barrows, and $y = 2.6138 + 22.8827x$ ($R^2 = 0.91$) for boars. CA showed quadratic responses to the digestible lysine levels with $y = 5.4385 - 6.1632x + 3.2961x^2$ ($P < 0.002$ and $R^2 = 0.68$) for gilts, and $y = 4.2371 - 23.4778x + 1.6925x^2$ ($P < 0.03$ and $R^2 = 0.58$) for boars, and linear effect $y = 3.2460 - 0.6475x$ ($P < 0.002$ and $R^2 = 0.63$) for barrows. A quadratic response of CLGP to the digestible lysine levels was observed ($y = 17.3601 - 12.3581x + 20.9339x^2$, $P < 0.02$ and $R^2 = 0.93$) for gilts and linear response with $y = 3.5512 + 22.5239x$ ($P < 0.001$ and $R^2 = 0.94$) for barrows and $y = 3.5548 + 18.9167x$ ($P < 0.0001$ and $R^2 = 0.81$) for boars. ELGP had linear responses for gilts with $y = 84.5697 - 45.5511x$ ($P < 0.0001$ and $R^2 = 0.94$) and for boars with $y = 90.1539 - 45.5999x$ ($P < 0.0001$ and $R^2 = 0.81$) and quadratic effect for barrows with $y = 116.7712 - 123.0063x + 44.6062x^2$ ($P < 0.006$ and $R^2 = 0.95$). Considering the GPD, the recommended digestible lysine level for barrows is 0.96%, corresponding to a daily lysine intake of 28.14 g. Based on CA, the recommended digestible lysine levels for gilts and boars are 0.95 and 1.03%, respectively, with corresponding estimated daily digestible lysine consumption of 24.93 and 26.41 g.

Keywords: amino acid, barrows, boars, gilts, performance, swine nutrition

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