THE EFFECT OF PRODUCTION SYSTEM, DIETARY PROTEIN LEVELS AND AMINO ACID SUPPLEMENTATION ON PERFORMANCE, CARCASS TRAITS AND MEAT QUALITY IN GROWING-FINISHING PIGS

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Summary. The objective of this study was to determine the effect of production system (two-stage and three–stage fattening) and a decrease in total protein levels in diets supplemented and not supplemented with lysine, methionine, threonine and tryptophan on fattening performance and carcass quality traits in growing-finishing pigs. The experimental materials comprised 45 young hybrid hogs (Polish Landrace x Polish Large White ♀) x Duroc ♂ allocated to two-stage and three-stage production systems, and further subdivided into three experimental groups. Irrespective of the production system, diet 1-C contained standard protein and amino acid (lysine, methionine, threonine and tryptophan), in diet 2 the levels of protein and amino acids were reduced by 15% relative to the standard levels, and diet 3, with a reduced total protein concentration, was supplemented with essential amino acids to the level of diet 1-C.

The results of this study indicate that in two-stage and three-stage production systems, pigs fed diets with standard total protein levels can have daily gains above 850 g and feed intake per kg body weight gain below 3.0 kg. In the two-stage system, a 15 % reduction in the total protein content of complete diets had no significant adverse effect on pig performance and carcass quality traits. The efficacy of low-protein diets was lower in the three-stage system than in the two-stage system - the growth rate of pigs decreased by 9.3% and feed consumption increased by 7.4%. The addition of lysine, methionine, threonine and tryptophan to low-protein diets improved pig performance, in particular in the three-stage production system. Diet supplementation with exogenous amino acids had no significant beneficial influence on carcass traits and meat quality.

Keywords: production system, dietary protein levels, amino acids, fattening performance, carcass traits, meat quality, growing-finishing pigs.