

Influence of organic breeding on heavy pig live performance, carcass and meat quality

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ABSTRACT

There is limited information on the performance and the quantity and quality characteristics of carcass and meat of pigs reared organically and fed soybean and/or alternative protein crops. A study was conducted in a certified organic pig farm, where upon reaching a mean weight of 45.2 ± 7.9 kg, 30 crossbred subjects were divided into a control group (CG) and a soybean group (SG). Rations contained barley, maize and faba bean (CG), or barley, maize and whole extruded soybean (SG). The CG ration provided (% as fed) DM 86.7, CP 12.5, EE 2.7, CF 4.3 and lysine 0.54, DE 3280 kcal/kg. The SG feed provided (% as fed) DM 86.6, CP 12.6, EE 4.5, CF 3.9 and lysine 0.50, DE 3290 kcal/kg. During the growing period pigs were weighed at intervals of about 45 days to compute weight gain. They were slaughtered upon reaching the desired weight for heavy pig production. The following data were obtained on carcasses: weight, % lean meat, pH 45 min *post mortem* on the *semimembranosus* muscle, and slaughter yield. The day after quartering the weight of lean cuts was determined; a sample cut steak was collected from all subjects for colour (Minolta Chroma Meter CR-200), drip-loss and chemical analyses according to ASPA guidelines. All data were subjected to analysis of variance with the JMP statistical package (SAS). Live-animal parameters did not demonstrate significant differences due to the diet effect. Age at slaughter was 178.6 ± 4.0 (CG) and 190.3 ± 4.7 (SG) days; growth over the entire period was 0.523 (CG) vs. 0.569 (SG) kg/d. *Post-mortem* performances were not significantly different in terms of the diet effect. Carcass weight was 149 ± 3.6 kg (CG) and 158 ± 4.2 kg (SG); ham weights were also similar (CG 16.1 ± 0.29 kg and SG 16.1 ± 0.34 kg). Slaughter yield was 83.4% (CG) vs. 83.3% (SG). The proportion of lean meat was 48.0% vs. 44.3%, and pH 45 min *post mortem* was also similar (6.3 vs. 6.1). As regards the colour parameters (L, a*, b*), CG samples were significantly more luminous ($P < 0.001$) than SG ones (L: 51.8 vs. 48.2); b* was significantly higher ($P < 0.05$) in SG than in CG samples (7.9 vs. 7.3) and the Chroma parameter was significantly higher ($P < 0.05$) in SG meat (13.04 vs. 14.3). Meat chemical composition was not significantly different in the two groups (CG: protein 21.9%, fat 6.1%, ash 1.2%; SG: protein 22.2%, fat 6.1%, ash 1.1%). Only drip loss was lower in SG than in CG meat (2.1 vs. 3.1). It may therefore be concluded that only meat colour was influenced by feed type; in particular, the sample steak obtained from subjects fed faba beans exhibited a more abundant aqueous film on the cut surface and a lower water retention capacity.