

SHORT- AND LONG-TERM CONDITIONING AND EXPANDER PROCESSING OF MAIZE AND ITS IMPACT ON ANIMAL PERFORMANCE, NUTRIENT DIGESTIBILITY AND PRODUCT QUALITY OF FATTENING PIGS AND BROILER CHICKS

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Abstract: Feed manufacturers are constantly trying to reduce processing costs with few losses in quality of processed feed. Especially processing feed with high temperature short time (HTST) technology like the expander processing yields technological and nutritional benefits such as improved physical pellet quality as well as feed efficiency. While this treatment may yield benefits in terms of performance of monogastric animals, it may possibly damage heat sensitive ingredients. In this context, a study with 2 experiments was conducted to determine the effects of expander processing on the nutritive value of the single component maize, fed to barrows and/or broiler chicks. Short-term conditioned (SC; 60 s) maize was quantitatively replaced by long-term conditioned (LC; 1080 s) and both were subsequently expanded. SC and LC expander processed maize had no effect on daily feed intake and on the average daily gain in both trials. Also, no effect of the preconditioning time on feed conversion ratio of broiler chicks or fattening pigs was observed. In contrast to the broiler chicks, a positive effect on the apparent total tract digestibility of DM and, as a result, the ATTD of GE in fattening pigs was observed in SC. A higher amount of breast meat proportion was measured in broiler chicks fed LC and expanded maize. Results of the specific carcass characteristics and meat quality parameters showed an increased chewiness and springiness of breast muscles of the broiler chicks, while the fattening pigs only showed a decreased meat lightness of loin affected by the expander LC processing of maize. In conclusion, LC conditioning showed no improvement on zootechnical performance but declined nutrient digestibility in pigs. Specific carcass characteristics were hardly modified between treatments in both monogastric animals.

Keywords: maize, HTST technology, performance, carcass characteristics, digestibility, product quality