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Feed restriction programs and slaughter age in growing rabbits

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The present study aimed at evaluating the effects of the feeding system (AL: *ad libitum vs.* D: day-by-day restriction *vs.* W: week-by-week restriction) and the slaughter age (73 *vs.* 80 d) on health status, growth performance, carcass and meat quality, and material balance of growing rabbits. A total of 300 commercial crossbred rabbits were housed in individual cages from weaning (36 d of age) to slaughter. The feed restriction was based on the administration of a restricted amount of the diet varying from 80% of the *ad libitum* intake at the beginning of the trial to 100% of the *ad libitum* intake at the beginning of the 4th week. The restriction level (about 90% on average) was obtained by two restriction curves: a day-by-day curve with small daily increments (+4 g/d; D group) and a week-by-week intake curve with large weekly increments (+23 g/week on average; W group). Mortality was significantly higher in the AL group compared to the daily and weekly restricted groups (20.7% *vs.* 11.0% and 6.5%; $P<0.05$). Final live weight (on average 2749 g), feed conversion (3.07), cold dressing percentage (59.9%) and other carcass and meat quality traits were not affected by the feeding system. However, the restricted rabbits evidenced increased empty body fat and energy gains ($P<0.01$) as a consequence of the compensatory growth during the second half of the trial. The delay of slaughter from 73 to 80 d of age significantly increased final live weight (2,647 *vs.* 2,847 g; $P<0.001$), reduced daily weight gain (47.3 *vs.* 44.3 g/d; $P<0.001$), increased feed intake, and impaired feed conversion (2.92 *vs.* 3.22; $P<0.001$). Besides, lipid and energy body content raised in the older rabbits ($P<0.001$). No substantial interaction between feeding regime and slaughter age was found. In conclusion, feed restriction improved rabbit health status and did not affect either growth performance or carcass and meat quality, whereas increased the body fat and energy deposition compared to the *ad libitum* feeding. A progressive day-by-day restriction curve appeared to be less risky and more respectful of the feeding behaviour of growing rabbits in comparison with a discontinuous week-by-week increment of feed administration and permitted to obtain a restriction level nearer to what expected (91% in D group *vs.* 93% in W group). The increase of slaughter age was much more effective in modifying growth and slaughter performance as well as body composition of rabbits than the feeding system.