

## **Forage particle size and starch content in lambs diet – effects on productivity and product quality**

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Thirty-two Merino lambs were used in experiment designed to evaluate the effects of forage particle size and starch level in complete mixed diets, on growth performance, carcass and meat quality traits. All the diets were supplemented with 6% soybean oil and include 40% of alfalfa. The lambs were randomly allocated to eight diets that combined two forms of presentation of alfalfa hay – chopped or ground – with four levels of barley in the diet – 33.0, 21.3, 11.2 and 0%. The lambs were individually housed and stayed on trial during six weeks until slaughter. Feed intake was controlled daily and live weight weekly. Dry matter intake was 17% higher (1,239 vs 1,061 g/day) and average daily weight gain (ADG) was 10.4% higher (328 vs 297 g/day) when forage was grounded. Carcass and meat quality traits were not affected by treatments except carcass weight that was about 6% higher for ground alfalfa (16.3 vs 15.4 kg). The reduction of barley caused a linear reduction of intake and of ADG. The treatments had no effect on feed conversion ratio. The effects on carcass traits were not relevant but meat shear force decreased and tenderness increased. Fatty acid (FA) composition of *m. longissimus thoracis* was influenced by treatments. Grinding alfalfa caused a decrease in the sums of saturated, branched chain and n-3 polyunsaturated FA (PUFA) and an increase of the sum of n-6 PUFA and the sum of PUFA. The reduction of barley increased the sums of branched chain, n-6 PUFA and n-3 PUFA. Concerning biohydrogenation intermediates, all the lambs presented meat with high proportion of healthy FA t11-18:1 (6.49% of total FA) and c9,t11-18:2 (1.49% of total FA) and low proportion of unhealthy FA t10-18:1 (2.58% of total FA). The reduction of barley in diet had a moderate positive impact in meat nutritional value decreasing t10-18:1 and this effect has been enhanced by the increase in forage particle size.