

Carcass characteristics of Neuquén Criollo kids in Patagonia region, Argentina

M. Zimerman*, E. Domingo, M.R. Lanari

Instituto Nacional de Tecnología Agropecuaria (INTA), Estación Experimental Agropecuaria Bariloche, C.C. 277 (8400) S.C. de Bariloche, Río Negro, Argentina

Abstract

Carcass characteristics of 336 kids from the Neuquén Criollo breed were evaluated. Two categories were taken into account: three months and 5 to 7 months kids. Live weight, carcass weights, measurement and indexes of 304 kids were calculated in a study done in a commercial slaughterhouse located in Chos Malal town. Thirty two carcass left sides were dissected into the major components: muscle, bone, fat and remaining tissues. Three months kids were compared with 5 to 7 months kids. The slaughter live weight of the former was 16.3 kg and the latter was 22.4 kg. Cold carcass weight and dressing percentage differed significantly ($p < 0.001$) between age categories. Three months kids had a higher percentage of bones (26.8 vs. 21.7%; $p < 0.001$) and a lower percentage of fat (10.8 vs. 15%; $p < 0.01$) than those at 5–7 months, but both had similar percentages of muscle (56.4 vs. 57%; $p = \text{NS}$). There were significant differences in the percentages of primal carcass cuts: hind leg (32 vs. 34%; $p < 0.001$), shoulder (22 vs. 20%; $p < 0.001$) and neck, (10 vs. 8%; $p < 0.01$) for three months vs. 5–7 months old kids, respectively.

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1. Introduction

In the north part of Neuquén province, in the Argentinian Patagonia, some 410,000 (INDEC, 2002) Neuquén Criollo goats are herded under natural grazing conditions. The region has approximately 30,000 km² and is located between longitude 71° and 68° W, and between latitude 36° and 38° S. The traditional production system is extensive, and transhumance is practiced from the chaparral winter fields to the summer meadows at the Andes footsteps in the spring and then back to the winter fields in autumn.

The main commercial product of this system is the kid. Slaughter age ranges from two to seven months and the commercial season is from October to June.

The overall objective of the research is to preserve the production system and to increase the income of the goat holders. Studies are needed to improve our knowledge of the production chain from the grasslands to the presentation of kid meat to consumers, continuing previous studies (Lanari, Domingo, & Pérez Centeno, 2005; Lanari, Domingo, Pérez Centeno, & Gallo, 2005; Pérez Centeno et al., 2006). The present work characterizes kid carcasses at different ages – at the beginning and at the end of the harvest season.

The final aim of these studies is to apply for the protected origin designation (POD) “Chivito Criollo del Norte Neuquino”. The implementation of the POD will give the goat keepers of the area the incentive to keep on producing according to traditional methods. The resulting kid meat is in high demand by regional consumers, which is of paramount importance for the sustainability of a POD (Texeira, Batista, Delfa, & Cadavez, 2005).

* Corresponding author.

E-mail address: mzimerman@bariloche.inta.gov.ar (M. Zimerman).

2. Materials and methods

2.1. Sample one

2.1.1. Location

The study was conducted in the experimental Station of INTA (Instituto Nacional de Tecnología Agropecuaria) in Bariloche, Río Negro, Argentina.

2.1.2. Animals and management

Thirty two male kids of approximately three months ($n = 13$) and 5–7 months ($n = 19$) were used. These animals were reared on natural grassland in the north region of Neuquén, following a traditional and extensive production system. In winter fields the following species are predominant grasses: *Stipa* sp., *Poa ligularis*, *Panicum* sp., *Bromus* sp.; bushes: *Schinus* sp., *Prosopis* sp., *Senecio* sp., *Lycium* sp. In summer meadows the graminoid *Juncus balticus* is predominant, other important species were *Festuca pallescens* and *Poa ligularis* among grasses and *Mullinum* sp., *Berberis* sp. and *Chusqueira* sp. among bushes.

Animals were separated from their dams and transported 600 km to the experimental Station of INTA Bariloche the day before slaughter.

2.1.3. Slaughter

Animals were kept overnight in covered yards, deprived of food and with free access to water. Slaughter live weight (SLW) was recorded immediately prior to slaughter. Kids were electrically stunned and slaughtered by exsanguination. The dressed carcass comprised the body after removing the skin, the head (at the occipital–atantal joint) the fore feet (at the carpal–metacarpal joint), the hind feet (at the tarsal–metatarsal joint) and the viscera. The tail, diaphragm, kidneys and fat around the kidneys and pelvic area and testes were kept in the carcass.

2.1.4. Carcass measurements

Hot carcass weight (HCW) was recorded immediately after slaughter and cold carcass weight (CCW) 24 h after, at a temperature of 4 °C.

The dressing percentage was calculated as follows: $CCW/LW * 100$ (%) = (cold carcass weight/live weight) * 100.

Objective carcass conformation and indices were measured as described by Ruiz de Huidobro, Miguel, Cañeque, and Yelasco (2005). The measurements that were taken are as follows: internal carcass length (L), hind limb length (F), buttock perimeter (B), buttock width (G), thorax depth (Th) and thorax width (Wr), while carcass compactness indices were CCW/L, L/G, G/F, Wr/Th, Th/L and Th/G.

Kidney fat cover (KFC) was estimated comparing carcasses with photographic models of a five points scale according to the kidneys surface covered with fat (Domingo, Abad, Lanari, & Bidinost, 2007).

2.1.5. Carcass dissection and fat deposition

Carcass was split along the vertebral column in two halves using a band saw. Weights of both halves were recorded: carcass left side weight (CLSW) and carcass right side weight (CRSW). The left side was divided into five primal cuts (hind leg, shoulder, neck, ribs and flank) as described by Delfa, Teixeira and Colomer-Rocher (2005). After weighing, each cut was separated into dissectible muscle, bone, fat (subcutaneous, intermuscular and fat depots were registered separately) and the remaining tissues (major blood vessels, ligaments, tendons and fascias). The amount of subcutaneous and intermuscular fats was doubled to obtain total carcass fat (TCF).

The sum of all dissectible tissues in each cut was taken as the corrected carcass left side weight (CCLSW). All the calculations to estimate carcasses or cuts composition were expressed in relation to this value.

2.2. Sample two

2.2.1. Location

The study was conducted in a commercial slaughterhouse located in the town of Chos Malal, Neuquén province.

2.2.2. Animals and management

Data were obtained from a total of 304 kids. Kids belonging to different goat holders were allocated to 16 batches and a sample of approximately 20 kids of both sexes were randomly selected from each batch. Animals were identified using numbered seals which were replaced along the slaughter line to keep the carcass identification.

The first sampling was carried out in December 2004 ($n = 120$), before flocks were transferred to the summer rangelands. These animals were proximately three months of age and basically milk fed by their dams. The second sampling was made in February 2005 ($n = 87$), when animals were already in the summer range lands and the kids were proximately five months of age. The third sampling was made in April 2005 ($n = 97$), when flocks were back to the winter fields. These animals were about seven months of age. Data from the first sampling are referred to as three months old kids and from the second and third sampling as 5–7 months old kids.

2.2.3. Slaughter

The slaughter took place at a commercial slaughterhouse in the town of Chos Malal. The kids had an overnight rest in covered yards, deprived of food and with free access to water. Slaughter live weight was recorded immediately prior to slaughter. Animals were slaughtered as described for the first sample.

2.2.4. Carcass measurements

HCW and CCW were recorded. Calculation of dressing percentage, measurement of objective carcass conformation and classification of carcasses were carried out as in

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