

DIVERSIFICATION OF TURKANA BREED SHEEP PRODUCTION AND OBTAINING NEW FARM PRODUCTS

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Abstract: Improving the efficiency of the breeding and exploitation of Turkana breed sheep, in addition to improving production management, also involves reorienting production, diversifying processing methods to obtain new products, according to the market trend, for better capitalization on the meat market. Obtaining new products through processing helps the professional sheep farm to maintain and gain new consumers, increase sales and stimulate consumption, thus providing opportunities to exercise more control over certain properties of sheep meat and products. It is proposed for a better capitalization of products obtained from sheep, the reorganization of production to be able to offer new products that differentiate farmers from competitors on the market such as sausages, sheep ham and restructured meat, chops and ham restructured mutton but also getting consumers used to products known on the world meat market, burgers, hamburgers, meatballs, pate and sheep ham.

Key words: sheep, production, meat products

INTRODUCTION

Improving the quantitative and qualitative production of sheep meat can be done by controlling the factors that affect the quality of the carcass and meat as critical points that must be identified and analyzed [4,7,11]:

- nutrition and feeding practices: adequate feeding of energy-rich diets increases meat quality by increasing the muscle glycogen reserve, which acts as a buffer against increases in pH and intramuscular fat content; [3,5,10]

- specialization of the breed for the expected production:

- affects the growth rate and quality of meat consumption;

- the choice of the ram requires the most attention in the sheep meat industry in order not to compromise the growth rate with the quality of meat consumption because its choice is a critical control point of the quality of sheep meat consumption based on the requirements of the local market and the international market; [1,16]

- the age of the young sheep at slaughter:

- considering sheep as being secondary to large animals, lack of feed during the long dry season, not supplementing with feed other than grazing are critical problems in the production system because they affect the growth rate and glycogen reserve of the animals, making them have a meat of low quality;

- collagen strengthening is directly proportional to the age of the youth at slaughter, a finding with positive results for producers;

- the negative effect of age on meat tenderness is moderated by the increase in intramuscular fat content, which increases with age and improves juiciness and aroma, which positively influences the overall taste of the meat;

- glycogen depletion also has negative effects due to pre-slaughter stressors such as confinement, long distance storage and transport system and crowding in a very small area.

Carcass size, concomitant changes in body composition [6, 8, 9] and sheep growth rate are of particular economic importance in sheep meat production and reflect industry adjustments towards more efficient sheep growth. Research findings indicate that lean, fast-growing animals are more efficient than slower-growing, fatter breeds in converting feed energy into lean tissue. Much research in the breeding and operation of meat-producing sheep has aimed to elucidate developmental patterns of the major tissues (muscle, bone and fat) and the distribution of these tissues in the carcass. Research has identified many factors that exert an influence on tissue growth and distribution patterns, thus providing opportunities to exert more control over these properties and, finally, on the composition of the carcass and the meat. A high-quality carcass is characterized by a high proportion of muscle tissue, a low proportion of bone and an optimal level of fat. As the amount of fat approaches a more moderate and desirable level, more emphasis can be placed on increasing the proportion of muscle:

- the factors that influence muscle development: [12,15]
 - the proportion of muscle in report to live mass appears to be influenced by fat or live mass: in meat-producing animals, the amount of muscle tissue expressed as a percentage of live mass can be a valuable index of meat production, as genetic differences seem to play an important role;
 - differences represent races classified from light to strong;
 - marked differences in the proportions of muscle mass and live mass appear to be a reflection of the muscle: bone ratio;
 - there appears to be room for considerable increases in the muscle: bone ratio, with a resulting improvement in muscle yield proportional to live mass;
 - the factors that influence the proportion of fat:
 - the proportion of muscle mass to bone mass in the carcass of a normal lamb at birth can be of the order of 2:1, while at a slaughter weight of about 16-20 kg the ratio can be 4:1, meaning that muscle has a much faster relative growth rate than bone;
 - fat growth starts relatively slowly and increases geometrically as the animal matures, a growth pattern that refers to all meat-producing animals;
 - lambs and ewes gain weight earlier and faster in relation to their live mass than rams;
 - some breeds reach maturity and gain weight earlier than others;
 - the nutrition plan has a recognized effect on the weight gain pattern;
 - a high level of nutrition promotes earlier fattening, while a low level leads to a delayed or slower rate of fattening.

Carcass composition in sheep is influenced by a number of production factors [2,17]:

- the carcasses of Turkana sheep vary in composition due to nutritional effects, the effects of the exploitation environment, genetics, sex and age;
- carcass composition of different species differs considerably in terms of carcass weight and percentages of fat, muscle and bone;
- at a certain level of fat, the value of a carcass is influenced by the ratio of muscle: bone;
 - uncastrated males produce carcasses with more muscles than castrated males;
 - as animals get older and heavier, the proportion of fat in their carcasses increases and the proportion of muscle and bone decreases;
 - meat production depends on several environmental factors and management practices;
 - a muscle: bone ratio is obviously better as it equates to more salable lean meat and better carcass conformation.

The conclusions reached about the impact of age at slaughter on lamb meat quality were as follows:

- there is little or no difference in nutritional quality between "spring (young) lambs" and "autumn (old) lambs" measured in several large carcass pieces, which contradicts the current perception that "spring lambs" have a better quality than "autumn lambs": that is, "autumn lambs" should command the same premium price as "spring lambs" at retail;

- there is a real potential to produce high quality 'autumn lambs' which can be used to obtain optimal cuts for roasts, demonstrating that in lambs 'cut type' has a more significant impact on eating quality than age the animal;

- the differences in the quality of lamb meat were observed only within two "types of cuts" - lamb shank and leg of lamb - and are attributed to low collagen solubility rates: therefore, the change in collagen solubility between the different "chunk types".

Sheep meat quality can be improved with [13,14]:

- mineral-phytobiotic additives/supplements containing sodium sulfate and metasilicate as sources of sulfur and silicon;

- a phytobiotic additive containing hot peppers, which has a fungicidal effect and exhibits antibacterial properties, intensifying the digestion process;

- cinnamon essential oil, which contributes to the normalization of the composition of the intestinal microflora and its stabilization;

- oregano oil, which contains carvacrol with antibacterial and antifungal and antiseptic properties (destroys parasites that cause intestinal dysfunction).

The following conclusions can be drawn regarding the influence of production management on the organoleptic and qualitative characteristics of the meat obtained from sheep: [18]

- the taste qualities indicate a quality meat obtained from young animals that is lighter and more delicate to the taste;

- the nutritional value and dietary properties of meat are expressed by color, tenderness, aroma, taste, juiciness and appearance;

- the meat of adult sheep has a pleasant, tender and juicy smell.

MATERIALS AND METHODS

In order to make good use of sheep production and increase the consumption of meat and sheep meat products, it is necessary to readjust farm production to market requirements and new consumption trends. Within this scientific approach, to diversify production and increase consumption, we used the methods and practices of the best production and marketing management which consisted in retechnological production to development of new farm products, farm brands or brands of sheep meat products to identify and differentiate the products obtained from other existing products on market and to contribute to stimulating and increasing the consumption of products obtained from sheep. We also propose to process other new products so that they remain at the top of sales and satisfy the consumption needs of on market.

RESEARCH RESULTS

Development of products, farm brands or brands of sheep meat products, is a marketing practice that consists in creating a name, symbol or design that identifies and differentiates a sheep meat product from other existing products on the market. Brands are important because they are what distinguish products from those of the competition. The resulting farm brand helps the sheep farm to:

- keeping customers focused on the image of the sheep farm;
- maintaining sales of meat and meat products;
- increase in sales;
- stimulating consumption.

We propose the following marketing strategies to help ensure good market positioning and good branding to increase sales and make buyers feel confident that the product is superior and consistently distributed by retooling production so that:

- the sale of lambs raised on pasture or fed in stables for a unique taste and quality, to be able to be slaughtered when the demand is the highest;
- the development of a new name and a logo of the farm, to serve to identify the product / products obtained from sheep;
- highlighting the characteristics of sheep meat and products;
- highlighting the new production management practices at the existing sales points on the market;
- identifying the genetic and/or visual characteristics of the meat, which attract buyers interested in sheep products;
- the offer by farms for sale of organic lambs, requested by consumers on the market;
- identifying the unique aspects that differentiate the product from other mutton, fattened youth or lamb products.

In the area under analysis, an area with a tradition in the breeding and exploitation of sheep, relatively few mutton preparations are marketed: lamb chops, mutton pastrami, lamb pastrami, mutton pastrami, sloi prepared from mutton, with or without onions and stored in tallow or lard for a longer time. We propose that processors, in order to make good use of their products, reorganize their production, offering new products that differentiate them from competitors on the market through new products.

We also propose to process other new products with are:

- the "Frankfurter" type sausage made in natural sheep meat and distributed in a jar;
- "Frankfurter" type sausage with fatty pieces of sheep meat where they are processed together with high amounts of skin and fat emulsions (5-15%);

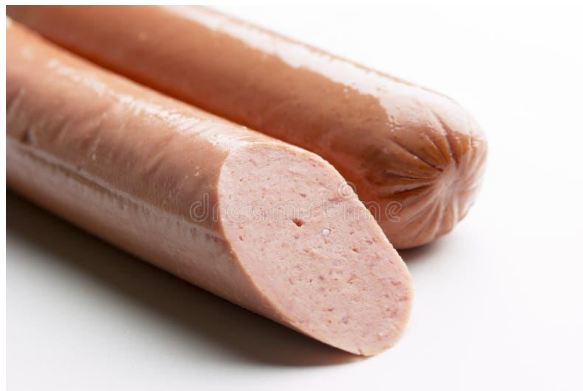


Figure 1. Franckfurter lamb sausages

- sheep ham, of the type (30-35% lean meat, 20-24% fat, 30-35% water and ice, 5-10% additives in powder form, including phosphates, nitrites, ascorbate, soy proteins and fillers such as starch and grain binder) in which sheep meat is used;



Figure 2. Sheep ham

- restructured sheep meat. We have summarized the principles of production, processing and marketing of restructured meat products. These are products ground into flakes or shreds and transformed into chops, various steaks or steak-like products for retail consumers and institutional food preparation. These products have a texture that can be more closely identified with an intact steak or chop than that of a ground product (Figure 3).



Figure 3 a – original meat; b – restructured meat

After reducing the particle size, the meat is mixed with salt, phosphate and protein materials or hydrocolloid binders, alginate or linseed meal. Research has found that:

- a. tamarin seed powder and linseed meal lead to cost reduction of production of the product;
- b. salt and phosphate act to solubilize myofibrillar proteins to ensure a stable binding of meat products;
- c. protein materials and carbohydrate binders serve to maintain structure the product.

The product can be shaped, cooked and packaged for retail markets. The beauty of restructuring is that it allows the use of quality meat that can be turned into even more valuable products by the processor.

We conclude that from the meat of sheep of the Turkana or mestizo breed, processors can make according to the needs of the market:

- restructured mutton chops;
- slices of restructured mutton;
- restructured mutton steak;

- restructured mutton ham.

In order to stimulate consumption, we believe, that several categories of sheep meat products must be produced in order for farms to remain at the top of sales and to satisfy the consumption needs of on market:

- dry and semi-dry products naturally or artificially dehydrated, salted, smoked or not, with a special focus on all products produced worldwide, to stimulate the consumption of meat products with reduced carbon footprints and to overcome the deficits of proteins by food preservation:

- charqui / jerky (in South America), pieces of meat dried in the sun and wind or smoked;
- frenalår and pinnekjøtt (Norway), dried pieces of meat;
- gueddid / kaddid (Algeria, Morocco, Tunis), meat salted and dried outside;
- hangikjò (Iceland), pieces of meat salted and dried or preserved in brine;
- pastrami (Romania), traditional dry meat product, without heat treatment, preserved with nitrite or nitrate salts and seasoned with fenugreek and garlic.

- sausage products:

- Vienna sausage (Austria), smoked sausage;
- fjellmorr and lambaspaeipylsa (Iceland), dry fermented sausages;
- fjellmorr, fårepølse and lambaspaeipylsa (Norway), dry fermented sausages;
- sucuk / sujuk (Romanian sugiuc) (Middle East), fermented sausages with garlic, salt, sugar, nitrates and/or nitrites.

- boiled or pre-boiled products, many of which are unknown to the general public, but which form the basis of the diet for populations in developing countries, with special sensory qualities and, at the same time, with high nutritional values and nutritional characteristics; most of them deserve to be recognized as cultural heritage of the gastronomy of these countries and with worldwide recognition with support and protection:

- aab gosht (Bangladesh, India, Nepal, Pakistan, Sri Lanka), lamb curry cooked in milk;
- barbacoa (Mexico), meat cooked in an underground oven;
- bekbouka (Algeria, Morocco, Tunisia);
- boubnit / member (Algeria, Egypt);
- chanfana (Portugal), aged mutton cooked in red wine with herbs and spices;
- döner kebab (India, Pakistan, Turkey), roasted and finely chopped lamb;
- goshtba and rista (Bangladesh, India, Nepal, Pakistan, Sri Lanka), ground lamb cooked in mutton sauce;
- kabiba (Egypt);
- kebbah / kibbeh (Arab countries), mixture of bulgur and ground meat;
- khliaa ezir, Laknaf, tha Cachir (Algeria);
- kofta (Rom. meatball) (Arab countries), ground meat;
- kolhapui (Bangladesh, India, Nepal, Pakistan, Sri Lanka), mutton with curry;
- lechazo de Castilla (Spain), milk lamb cooked on low heat;
- mcharmia (Algeria, Morocco);
- mkila, tangia and tehal (Morocco);
- mrouzia (Morocco, Tunisia);
- osbana (Algeria, Libya, Morocco, Tunisia);
- rogan josh (Bangladesh, India, Nepal, Pakistan, Sri Lanka), lamb meat marinated with hot peppers;
- shaorma (Arab countries), marinated and baked meat.

In addition to sugiuc sausages, mititii and mutton pastrami, which have become traditional in Romania, we propose that processors try to produce the following categories of prepared / semi-prepared products from fattened young lamb and mutton:

- burger, a dish consisting of a flat round "cake" of minced meat fried or grilled and served in a bun or roll cut in half with various condiments and sauces;
- meatball, a small flat "cake" made of shredded or finely chopped food, especially meat;
- hamburger, fried flat patty served in a bun;
- pâté, liver or meat paste mixed with spices;
- ham, pulp specially prepared (salted and smoked) so that it can be preserved for a long time.

CONCLUSIONS

Good sheep meat processing practices help differentiate farm brands from others on the market and force farmers to readjust their production to face competition. Offering new quality products by farms contributes to improving their economic activity, keeping customers focused on the image of the farm, maintaining and increasing sales as well as stimulating the consumption of meat and sheep meat preparations. Because relatively few mutton dishes are sold in the researched area, they are proposed. for better capitalization, new sheep meat products, which will differentiate the processors from the competitors on the national and international market.

These products are sausages with fatty pieces of mutton and emulsions or in mutton mats, mutton ham but also mutton meat and restructured ham, along with semi-prepared burgers, hamburgers, meatballs, pate and specially prepared ham, with duration long use. In order to stimulate the consumption of sheep meat on the regional and national market, the distribution will be carried out in the form of chops. sliced meat and restructured meat steak, to meet the new trends in the sheep meat market.

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