VALORIZATION OF AGROPASTORAL PRODUCTS AND BY-PRODUCTS. CASE OF THE WILAYA OF NAÂMA (WESTERN ALGERIA)

Youcefi Ahmed Toufik[1], *Marouf Abderrazak*[2]

**Corresponding author E-mail: ahmed.youcefi@cuniv-naama.dz*

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ABSTRACT

The present work aims to design an approach of valorization of agropastoral products and by-products in the wilaya of Naâma (West Algeria). The analysis of the surveys carried out on 364 breeders reveals that lamb production is characterized by a high economic value with a share 85 % of sold products in total production, followed by «Milk» with a rate of 24%. The rate of wool shows that this resource is classified as a low-value by-product since 77% of producers are unable to sold their fleeces. The skin is classified as a by-product without significant value, since only about 03% of breeders sold their product. Our approach of valorization of this production is initiated in a broad conception that integrates several actors. The SWOT matrix for the valorization of agro-pastoral products highlights the internal strengths and strengths and external opportunities offered, identifying internal weaknesses to resolve them while limiting external threats.

Introduction

Located west of the Algerian steppes, the wilaya of Naâma (Figure 1) covers an area of 29,819.30 km², characterized by a remarkable geographical diversity where the steppe area represents 74% of the total area according to the budget planning and monitoring directorate of the wilaya of Naâma (DPMD 2021). It is renowned for its agropastoral vocation resulting from the climatic and edaphic conditions characterizing the region

1 Youcefi Ahmed Toufik, PhD student, Department of natural and life sciences, sustainable management of natural resources in arid and semi-arid areas laboratory, institute of science and technology, Salhi Ahmed University centre of Nâama, BP 66, 45.000 Nâama, Algeria, Phone: +213673672545, E-mail: ahmed.youcefi@cuniv-naama.dz, ORCID ID (https://orcid.org/0000-0002-3569-0959).

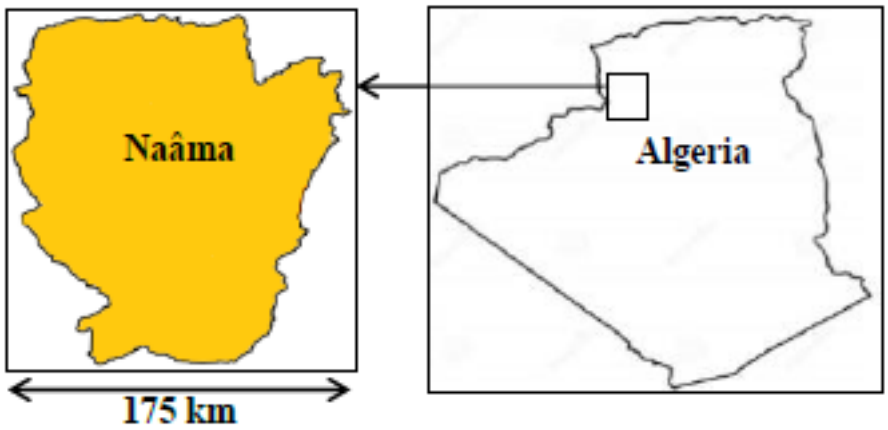
2 Marouf Abderrazak, Professor, Department of natural and life sciences, sustainable management of natural resources in arid and semi-arid areas laboratory, institute of science and technology, Salhi Ahmed University centre of Nâama, BP 66, 45.000 Nâama, Algeria, Phone: +213772543166, E-mail: abderrazakmarouf@hotmail.com, ORCID ID (https://orcid.org/0000-0002-6266-502X).

since time immemorial, where sheep farming is the pillar business of the local economy (Youcefi and Marouf, 2023).

The main agricultural production can be summarized in the following order: winter cereals, market gardening, artificial fodder, arboriculture and phoeniciculture. The total number of livestock is estimated at more than 1.7 million heads where sheep represent about 92%, followed by goats with a rate of more than 5% and cattle 2%.

The wilaya of Naâma is renowned for its animal production, qualified as important, both quantitatively and qualitatively. Lambs, milk, wool and hides are the main products resulting from breeding activities. In this context, several essential questions can be asked regarding the real economic value of these products and by-products, their sold and the possibility of their valorization.

Figure 1. General representation of the study area



The purpose of this work is to: evaluation of the real economic value represented by the share (%) of sold products in total production from sheep farming, design an approach to the valuation of products by integrating as many actors as possible into a recovery strategy of lost or underestimated richness, and initiation of a SWOT analysis that aims to create richness and promote agropastoral products by finding ways to best exploit internal strengths and assets by seizing the external opportunities offered, thus identifying internal weaknesses and resolving them in a general context that overcomes and limits external threats.

In order to gather the information necessary for this study, we opted for a field survey by interviewing a number of people, in order to interpret the various observations and remarks (Lhoste 2001; Bienvenu 2023).

Materials and methods

The methodology chosen in this work is based on a survey in the form of semi-structured interviews (Dockès and Kling-Eveillard 2007) carried out during a unique passage in each breeding, because it allows to approach the reality of breeding in short time (Lhoste 2001). The estimated sample size of 364 breeders was calculated by setting the confidence level and margin of error at the most used thresholds 95% and 5% respectively (Giezendanner 2012), relative to the total population of 6700 breeders (DPMD 2021).

Our sample is composed of breeders encountered randomly during our movements and circulations through the territory of Naâma. The movements were made to cover the entire study area.

The SWOT analysis carried out in this work is presented in the form of a matrix by dividing the information into internal and external factors, then into positive and negative factors (UNIL 2018). Strengths and weaknesses form the internal environment of the company, while opportunities and threats represent its external environment (Mehadi et Kezzar 2021).

Results and discussions

Evaluation of the economic value of livestock products (lamb, milk, wool, skin)

To better express the real economic value of livestock products and by-products, we have chosen to calculate the share (%) of sold products in total production by die.

The estimated annual lamb sold rate is based on the number of lambs sold in the year versus the number kept for herd renewal. Our survey, reveals that lamb production is characterized by a very high economic value with an average the share of sell of 85 %.

Faced with insufficient local production, the milk sector in Algeria is in a critical period, aggravated by a very low collection rate and an increase in the prices of the raw material internationally (Belhadia et al 2009).

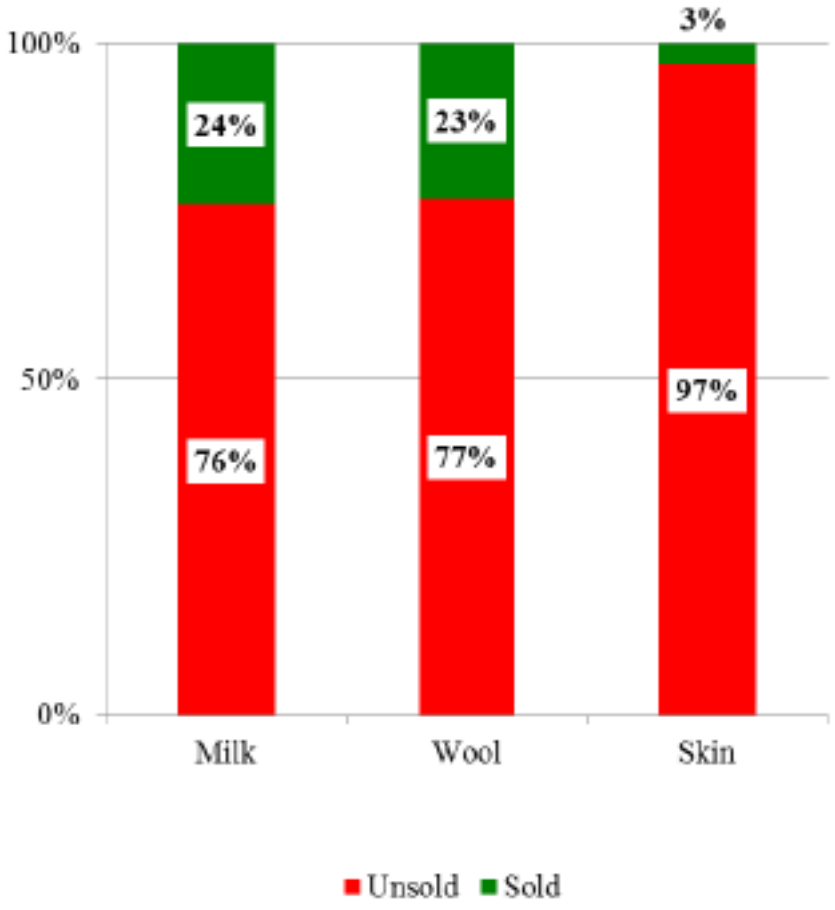
The analysis of the information from our survey, relating to the «milk» die, shows that only 24% of farmers succeed in sell their milk production (Fig. 2), the remaining rate, 76%, represents those who are unable to sell their products, or who favor the self-consumption of their production, either in its raw state or after traditional processing into dairy derivatives.

The data in relation to wool production shows that this resource is classified as a by-product of little value, 77% of producers of this material do not market their products (Fig. 2), while the remaining 23% have difficulty selling their fleeces at low prices that do not even cover mowing costs.

Like wool, the skin is also classified as a worthless by-product, of which only about 03% of farmers sell their product (Fig. 2), knowing that, apart from the number of

heads marketed annually, the farmer produces on average between 15 and 20 skins per year, which means that annually about 0.1 million units of skin is not sold to tanneries or traditionally exploited by households.

Figure 2. The share (%) of sold products in total production



Approach of valorization of agropastoral products and by-products

The quantity of milk not sold, skin units not sold and not exploited see thrown away! , the volume of unprocessed wool and «organic» agricultural products sold at prices equivalent to the prices of conventional products represent an important part of a wealth lost, and which is likely to allow the creation of small industries producing local raw materials or processing and conditioning. This industry can be initiated in a broad conception that integrates as many actors as possible namely: producers, households, local authority and processing units. The main components of this axis can be summarized as follows:

Valorization and sold of milk

Give great importance to the sold of milk produced locally, this operation will begin with the establishment of a strict and meticulous system to collect the maximum amount of milk produced, and the installation of a sufficient number of milk production and processing units.

Valorization of sheep's milk

Given the emergence of industries based on goat and camel milk, we imagine that sheep milk deserves its place in the market, because it is renowned for its nutritional richness and recognized by its excellent quality, which gives right to the promotion of its commercialization while creating systems that guarantee its labeling with its derivatives.

Establish campaigns of shearing and valorization of wool

Faced with the difficulty faced by farmers to mow their animals, as well as to sell their products, and faced with the insignificance of the selling prices of wool, we consider it useful to organize annual campaigns devoted to shearing at the charge of state services, or wool units. Breeders will be exempt from payment of mowing fees.

Creation of collection points of skins

Estimated at 97%, the production of unsold hides suffered heavy losses since it is a very important by-product, given the economic value of hides from livestock, especially sheep. To remedy this situation, the first thing to do is to create collection points for the skins throughout the municipalities of our wilaya, to then sell them to the nearest tanneries.

Integration of households in the hide's conservation chain

We will insist on the need to integrate households in the chain of conservation of skin quality at home by its immediate salting to avoid its rot while waiting for its evacuation.

Valorization of «Organic» agricultural products

Ensuring food security for a population is a challenge for agriculture. Intensive farming systems rely on the massive use of inputs such as chemical fertilizers and pesticides, in order to stimulate production by achieving high yields but threatening human health is threatened (Stoian et al 2022). Through our survey, we noticed that more than 67% of the farmland by agro-pastoralists does not benefit from livestock manure or industrial fertilizers, and only 30% of agro-pastoralists use phytosanitary substances, the remaining 70% have a potential for the «organic» product from natural agricultural practices that do not use any chemical or industrial substances. It is a production method that excludes the use of synthetic chemicals and limits the use of inputs. This valorization can be ensured through a commercial device that guarantees the labeling and reasonable prices of these products classified with high nutritional value and sought by a large part of consumers.

Integration of local authorities in the commercial chain

Initiate a device that allows local authorities represented by municipalities to integrate into the commercial chain of products and by-products from livestock activities (skin and wool), for enhance this production by finding a link between producer breeders and processors on the one hand, and on the other hand to strengthen the communal recipe.

Establishment of a sheep meat industry chain

Set up a sheep meat industry chain that will start with slaughter and cutting up to the processing and maturation of meat products intended for human consumption. This device will allow the valorization of all products and by-products from livestock farming activities, and will offer variations for farmers to sell their livestock, other than in livestock markets.

Promote the integration of small livestock units

Popularize and generalize the diversification of secondary economic activities through the integration of small livestock units (beekeeping, cuniculture, etc.), to improve family recipes and diversify the diet of their members.

Integration of fish farming in agricultural activities

Integrate fish farming into agricultural activities using the irrigation basins available to agro-pastoralists, in order to initiate a culture of production and consumption of freshwater fish among the rural population.

SWOT analysis

In order to create wealth and enhance the value of agro-pastoral products, the sale of «lost wealth» represented by the unsold quantities of «milk, wool and skin» by-products, the diversification of economic activities and the improvement of incomes of the rural population, should be a main objective of future visions, where any steps taken must take into account the points of strength and weakness crossed with the opportunities and threats as presented in Table 1.

Table 1. SWOT analysis

	Positive	**Negative**
Internal	**Strengths**	**Weaknesses**
	Availability of significant animal production, both quantitatively and qualitatively (lambs, milk, wool and hides) Availability of a potential of the «Organic» product from natural agricultural practices Recruitment of the workforce alien to the family Existence of a large rural female ratio	Underestimation and neglect of the real economic value of by-products Low integration of households in the chain of conservation of livestock products, especially skins Dominance of stereotyped production and lack of innovation, creation and diversification Insufficient marketing and sales channels
External	**Opportunities**	**Threats**
	The importance given to food security by public authorities Growing demand for livestock and agricultural products Increased international needs of consumers of organic agricultural products Increased desire to consume traditional dairy products Existence of significant natural tourism potential, which can create points of sale for traditional products	Insufficient production and processing units (dairy, tannery, wool). Insufficient collection device for livestock products The absence of a sheep meat industry chain Lack of a real culture of consumerism, where consumers prefer quantity to quality Weak infrastructure and tourist flow in the region that can participate and encourage the flow of local products

Conclusions

Through this work, we have noticed that lamb production is characterized by a very important economic value followed by the «Milk» sector, while the skin and wool are classified as by-products without great value. This production, not sold, is likely to allow the creation of small industries of production of local raw materials or processing, in a broad design that integrates as many actors as possible namely: producers, households, local government and processing units.

The SWOT analysis carried out at the end of this work, shows that the region has its own strengths summarized as follows: availability of an important animal production and a potential of the «Bio» product resulting from natural agricultural practices. The opportunities to be seized are numerous, the main one being the importance given to food security by the state authorities, the growing demand for livestock and agriculture products, the increased needs of «Organic» products and traditional dairy products.

The main weaknesses can be summarized in the underestimation of the value of by-products, poor integration of households in the chain of conservation of livestock products and insufficient commercial circuits.

Threats may be posed by insufficient production and processing units and collection facilities for livestock products, the absence of a chain of sheep meat industry and the absence of a real culture of consumerism where consumers prefer quantity to quality.

Conflict of interests

The authors declare no conflict of interest.

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