

REDUCING FEED COSTS IN SHEEP FARMING BY INTEGRATING AGRO-INDUSTRIAL BY-PRODUCTS

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Abstract: This paper examines strategies for reducing feed costs in sheep farming through the integration of agro-industrial by-products, combining both theoretical insights and practical applications. Drawing on recent scientific literature, the authors highlight the growing importance of alternative feed resources in improving economic efficiency and sustainability in livestock production systems. The theoretical component outlines the nutritional potential and relevance of commonly available agro-industrial by-products, emphasizing their role as cost-effective substitutes for conventional feed ingredients. Examples include residues from cereal processing, oilseed meals, fruit and vegetable by-products, and brewery waste, all of which can provide valuable energy, protein, or fiber when properly incorporated into sheep diets. In addition to economic advantages, the paper underscores the environmental benefits of utilizing such by-products, particularly in reducing waste and supporting circular agricultural practices. By redirecting materials that would otherwise be discarded, farmers can contribute to more sustainable resource management while lowering feeding expenses. The practical component of the study focuses on the development of a cost-optimized feeding plan based on by-products available in the Banat region of Romania. This plan takes into account local availability, nutritional balance, and animal requirements, offering concrete guidance for implementation at farm level. Overall, the paper aims to support farmers in adopting more efficient feeding strategies by demonstrating how agro-industrial by-products can be successfully integrated into sheep production systems without compromising animal performance or health.

• Introduction

Studies show that many by-products (e.g. date seeds, olive pulp) can maintain or even improve growth and feed efficiency in sheep when properly balanced.

Reducing feed costs in sheep farming by integrating agro-industrial by-products is both economically attractive and increasingly important for sustainable livestock systems. The most effective strategies combine cost savings with maintaining / improving animal performance, while ensuring nutritional balance and safe inclusion levels.

Agro-industrial by-products matter because they help address rising feed costs and shortages of conventional feeds like maize and soybean meal, thus offering an alternative source of nutrients, valuable particularly during dry seasons or periods of forage scarcity. Agro-industrial by-products are often locally available, environmentally beneficial (they reduce waste streams), and inexpensive.

• Results and discussion

A. Agro-industrial by-products in Sheep Farming: Overview

Agro-industrial by-products have important nutritional and environmental benefits :

- Cost reduction, because they are typically cheaper than conventional concentrates;
- Enhanced rumen function, because fibrous by-products support umen health;
- Improved sustainability, because they lower environmental impact and reduce competition with human food;
- Potential methane reduction, because polyphenol-rich materials can modify fermentation patterns.

B. A Cost-Optimized Feeding Plan Using The By-Products Available in Banat (Romania)

Romania's agro-industrial landscape provides several accessible by-products that can be integrated into sheep diets depending on availability and price:

- Brewers' grains (from breweries);
- Corn residues (cobs, husks, stover from field cropping);
- Fruit pomaces (apple, grape, or plum from juice and wine industries);
- Sugar beet pulp (from sugar factories);
- Sunflower cake and meal (from oil processing).

• Conclusions

To keep cereal use low while covering higher energy and protein needs with by-products, sheep farmers need to optimise their farms by listing all necessary feeds with their price per kg "as fed", including moisture content if he/she knows it (wet brewers' grains, wet beet pulp, etc.); converting to cost per kg of dry matter, bearing in mind that wet feeds can look cheap but may be mostly water; using feed tables for nutrient values by getting crude protein and energy for beet pulp, brewers' grains, corn residues, grape pomace, and sunflower meal; ranking ingredients depending on cheapest energy sources (e.g. beet pulp, corn residues, grape pomace) and on cheapest protein sources (e.g. brewers' grains, sunflower meal); and by building the ration (starting with forage – hay / pasture; adding cheapest protein sources up to safe inclusion levels; filling remaining energy needs with the cheapest safe energy by-products; and finishing with minerals/vitamins).

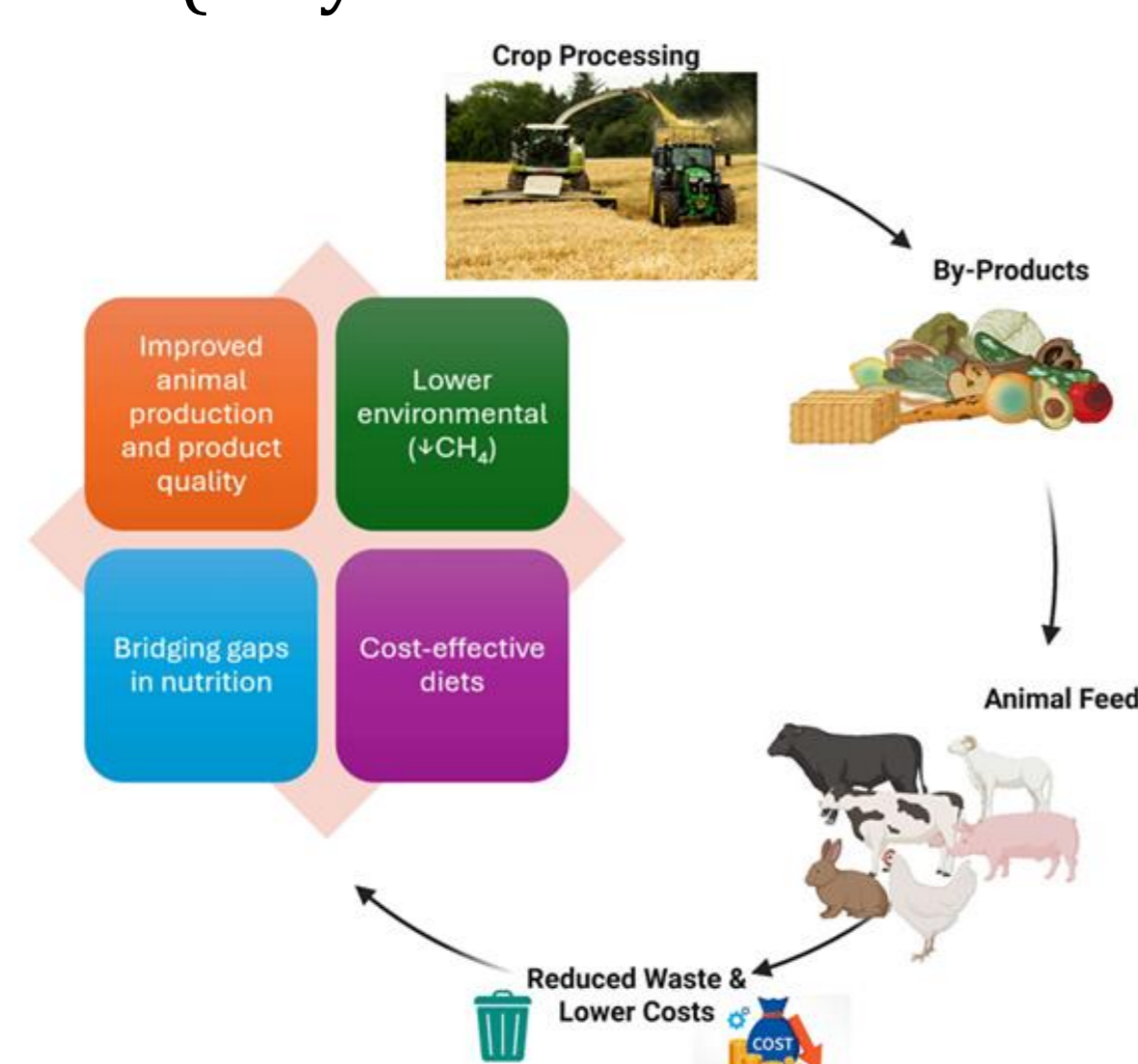


Figure 1. Integrating agro-industrial by-products in sheep farming

• Material and method

The authors of this paper have used the most recent scientific papers on the reduction of feed costs in sheep farming by integrating agro-industrial by-products in an attempt to provide sheep farmers in the Banat area with the latest solutions to be implemented in the field. The research method is the bibliographic one.