

Version Française : Session 5 : Economic Balance of Dairy Cattle Farming and the Cost of Diseases Towards a Cost-Effective Management of Animal Health Author: **Dr. Nursen OZTURK** (ISTANBUL University),

🌍 International Workshop – Improving Dairy Farming Practices for a High-Performance and Sustainable Dairy Value Chain in MOROCCO, SUPREM-Milk-Prima Project.

📍 [Ibn Tofail University - Kenitra](#) | December 4, 2025
Co-animation in Arabic: **Dr. Abdeljalil EZZAHRAOUI**.

ECONOMIC LOSSESS RELATED TO ANIMAL PRODUCTION DISEASES

التوازن الاقتصادي لوحدة تربية الأبقار وتكلفة الأمراض

Nursen Ozturk
nursen.dogan@iuc.edu.tr



supremmilk
Towards a more sustainable and resilient Mediterranean milk supply chain

"SUPREM-MILK: a project towards a more sustainable and resilient dairy farming in the Southern Mediterranean countries" is part of the PRIMA Programme supported by the European Union.



1. Introduction: Economics for Animal Health

The management of a modern dairy farm is no longer limited to simple zotechnics; It is based on constant decision-making in a context of limited resources (time, money, manpower). Traditionally, animal health has been viewed from a purely clinical perspective: the goal is to cure an animal with visible symptoms.

However, the economics of animal health offers an essential decision-making tool for the farmer and the public authorities. It makes it possible to answer strategic questions:

- Should the animal be treated, kept or culled early?
- Which preventive measure (vaccination, hygiene, nutrition) offers the best return on investment?
- Is the cost of eradicating an endemic disease less than the losses it causes each year?

The objective of this article is to demonstrate that losses related to production diseases, such as mastitis, are often much higher than what the farmer intuitively perceives, and that prevention is the most powerful lever for profitability.

2. The True Cost of Disease: The Hidden Side of the Iceberg

Most breeders estimate the cost of a disease based on immediate expenses. However, economics defines the total cost of a pathology by a simple but revealing equation:

Total Cost = Failure Costs (Losses) + Prevention Costs

A. Failure Costs

These are the losses suffered because the disease has not been prevented. They are divided into several categories:

1. **Losses in milk production:** This is often the heaviest item. In subclinical cases, the cow produces less, but in a way that is invisible to the farmer.
2. **Deterioration in milk quality:** Increased somatic cells resulting in price penalties.
3. **Treatment costs:** Veterinary fees and drug purchases.
4. **Discarded milk:** Dry discharge during withdrawal periods after antibiotic treatment.
5. **Early culling:** Cost of replacing a performing animal with a heifer whose potential is still uncertain.
6. **Reproductive failures:** Lengthening of calving intervals, increasing unproductive days.
7. **Feed conversion ratio (FCR):** A sick animal does not convert its food into milk as well, wasting expensive feed resources.

3. Economic Theory of Sanitary Optimization

Dr. Ozturk draws on McInerney's (1992) theory to illustrate the relationship between prevention and loss. There is an economic equilibrium point for each farm.

- **Under-investment area:** If prevention expenses are too low, production losses and treatment costs soar. The total cost is then maximum.
- **Excess control zone:** Conversely, wanting to achieve absolute "zero disease" can cost more in biosecurity measures and vaccines than what it brings in extra milk.
- **The optimal point:** This is the level of health where the sum of prevention expenses and losses is the lowest.

The major finding: The majority of current farms are located in the underinvestment zone. This means that increasing the "prevention" budget makes it possible to reduce the total cost dramatically by reducing the loss curve.

4. Analysis of Farmers' Perception vs. Reality

A survey carried out on a QR code support during the workshop shows that **76.5%** of farmers identify mastitis as their main problem. However, the perception of the amount of losses is often incorrect:

- The "underestimators" only see the veterinary bills.
- The "good estimators" include the discarded milk and the visible drop in production.
- Reality includes complex parameters such as the impact on the cow's longevity and fertility.

To help farmers, the project proposes the use of "tailor-made" calculation tools. Thanks to Excel models (such as those of the European IMPRO-Dairy project), it is possible to simulate the financial impact of a specific pathology on the scale of a given farm according to its production system.

5. Scenario Comparison: Reaction vs. Proaction

The article contrasts two management philosophies:

Settings	Scenario I: Reactive Management	Scenario II: Proactive Management
Investment Prevention	Low (Legal Minimum)	High (Hygiene, Comfort, Vaccination)
Losses (Failure)	Very high (frequent mastitis, culls)	Low (Healthy animals, long career)
Overall profitability	Unstable and weak	Optimized and sustainable

The move from Scenario I to Scenario II shows that the net benefit increases because the reduction in losses is much greater than the cost of the new preventive measures.

6. Management Levers for Major Production Diseases

The presentation emphasizes that to reduce the costs of failure, the farmer must act on precise control points. Here are the summary tables for the three major pathologies addressed:

A. Breast Health Management (Mastitis)

Mastitis control is based on a combination of hygiene and technique.

Control points	Key actions
Milking hygiene	Wearing gloves, teat disinfection (pre and post-soak).
Environment	Clean and dry litter to limit environmental germs.
Equipment	Regular maintenance of the milking machine (vacuum stability).
Follow-up	Regular Somatic Cell Analysis (SCC) and Subclinical Screening (CMT)

B. Lameness Management

Lameness is often the most important "hidden cost" after mastitis, heavily impacting reproduction and ingestion.

Control points	Key actions
Sleeping comfort	Well-sized stalls and soft bedding to encourage rest.
Soil quality	Non-slippery and clean floors (frequent scraping) to prevent injury.
Preventive trimming	Systematic intervention at least twice a year on the hooves.
Power	Balance of the fibre ration to avoid acidosis, a precursor to laminitis.

C. Management of Metabolic Disorders (Ketosis / Ketosis)

Ketosis occurs mainly at the beginning of lactation when the cow draws too much on her body reserves (Negative energy balance)

Control points	Key actions
Transition	Rigorous management of the dry period and the "calving preparation" for 3 weeks before calving
Appetite	Maximize dry matter intake immediately after calving.
Body Condition (NEC)	Avoid cows that are too fat at calving (ideal BCS score 3.25 - 3.5).
Screening	Measurement of ketones in blood or milk for cows at risk.

7. Towards a "Tailor-Made" Model

Management points must be included in a calculation specific to each farm. The use of Excel tools (such as those of the **IMPRO-Dairy project**) makes it possible to transform these good practices into concrete figures.

Example: By improving the comfort of the stalls (lameness management), the farmer not only reduces veterinary costs, but also increases the conception rate and daily milk production. The return on investment then becomes obvious.

8. Conclusion and Prospects for the Sector in Morocco

In conclusion, Dr. Nursen Ozturk's presentation demonstrates that the profitability of a dairy farm within the **SUPREM-Milk** project does not depend only on genetics, but on the ability to minimize the "costs of failure".

Final recommendations:

1. **Prioritize preventive investments** on the three pillars (Mastitis, Lameness, Ketosis).
2. **Use management charts** as daily checklists.
3. **Take a holistic view** : a cow that does not limp and has a healthy udder is a cow that expresses its full economic potential.