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NUTRITIONAL MANAGEMENT IN FARM ANIMALS: A REVIEW

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Abstract: Nutritional management is a key factor in the health, well-being, productive performance, and reproductive efficiency of farm animals. Nutritional requirements vary according to species, age, body weight, stage of gestation, lactation, and production level. This paper synthesizes the principles of nutritional management across production stages and the mechanisms of fetal programming, with an emphasis on ruminants and practical optimization solutions. Key areas addressed include: ***Nutrition of females across physiological stages***, ***Nutrition of breeding males***, ***Fetal programming***.

In conclusion, a balanced diet tailored to individual physiological needs is essential for optimizing livestock production, safeguarding animal welfare, and enhancing economic sustainability.



INTRODUCTION

Nutritional management is a key factor in the health, well-being, productive performance, and reproductive efficiency of farm animals.

Health · Well-being · Productive performance · Reproductive efficiency

Nutritional requirements vary according to species, age, body weight, stage of gestation, lactation, and production level.

This paper synthesizes the principles of nutritional management across production stages and the mechanisms of fetal programming, with an emphasis on ruminants and practical optimization solutions.

KEY FACTORS IN NUTRITIONAL REQUIREMENTS

Species · Age · Body weight · Stage of gestation · Lactation · Production level



Proper nutrition supports health, productivity and long-term fertility.

1. NUTRITION OF FEMALES ACROSS PHYSIOLOGICAL STAGES

Growth · Reproduction · Gestation · Lactation · Dry period

Tailoring diets to each stage helps prevent metabolic imbalances, maintain immune function, and optimize reproductive performance.

SPECIAL ATTENTION IN RUMINANTS
The transition period between gestation and lactation requires special attention, as metabolic shifts and increased energy demands predispose animals to periparturient disorders.



ECONOMIC IMPACT



2. NUTRITION OF BREEDING MALES

Energy · Proteins · Vitamins · Minerals · Fatty acids

An appropriate intake of energy, proteins, vitamins, minerals, and fatty acids is vital for:
- testicular development
- hormone synthesis
- semen quality
- libido

Both undernutrition and overnutrition, as well as oxidative stress, impair endocrine function and overall fertility.



3. FETAL PROGRAMMING



The nutritional status of the female during gestation directly shapes fetal development.

KEY INFLUENCES
- Maternal nutrition
- Heat stress
- Placental function

LONG-TERM EFFECTS ON OFFSPRING
- Metabolism
- Muscle development
- Immunity
- Reproductive capacity

These mechanisms persist into adulthood and directly impact a farm's economic performance, influencing growth rate, feed conversion, and milk production.

CONCLUSION

In conclusion, a balanced diet tailored to individual physiological needs is essential for optimizing livestock production, safeguarding animal welfare, and enhancing economic sustainability.

Healthy animals → Efficient production → Sustainable future