

Nutrition and Food in the Reproduction of Cattle

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ABSTRACT

At the beginning of the 1980s, a series of very profound changes were initiated in the milk cow nutrition approaches, as a consequence of the highest levels of production per cow that were reached by the productive systems of the northern hemisphere. Nutrition is defined as the series of processes through which an organism acquires and assimilates food to promote its growth and replace worn or damaged tissues. The nutrients are fundamental for the animals to carry out their different productive functions. When we consider the aspects that touch the field of nutrition of ruminants, we understand the importance of this group of animals of zootechnical interest, which are able to process plant components that are not consumed by other mammals, the structural carbohydrates (fiber). Ruminant comes from the word "rumen", which is the largest of the compartments in the stomach of four compartments of a bovine, sheep, or goat. This structure is where microbial fermentation takes place. The ruminants, through evolutionary processes, developed life relationships with microorganisms which enabled them to use fiber as food, that is, they developed in some way their "food factory". They eat the forage to be transformed by the rumen's microbiota into substances that are the source of energy for the animal and for the microbial synthesis, the microbial cells are an excellent source of proteins for the animal. However, the processes that make the ruminal microbiota are, in a certain way, inefficient. Grass degradation produces volatile fatty acids, microbial protein and gases. Within these gases, some are environmental pollutants such as CO₂, methane and nitrous oxide. Millions of bacteria, protozoa, and fungi live in the rumen and degrade parts of the plant rich in energy, making them digestible to the animal host. After the forage has been digested in the rumen and degraded to smaller parts, it can pass through the reticulum and omasum, which function as colanders that trap large pieces of material preventing them from reaching the abomasum, or "true stomach", where digestion continues. The nutritional concern for ruminants focuses on energy (ie, carbohydrates), protein, minerals, vitamins, and water. The energy (carbohydrates) is responsible for the functions of growth and maintenance of the animal, and the generation of heat. The protein makes the tissue grow and performs other vital functions. Other nutrients and minerals such as vitamin A and E, calcium, phosphorus, and selenium can be fed to "free choice" as a mineral supplement. Dairy cows of high productive potential (9000-12000 / liters / lactation) currently represent a real challenge for nutrition. For many years, there has been evidence of the impact of nutrition on the reproductive behavior of the bovine female. The main factor that affects reproduction is the undernourishment due to the scarcity and quality of the food. Subsequent research has shown that nutritional effects are exerted through complex interrelations between various aspects such as: content and use of body reserves, distribution of nutrients between different systems and organs and prioritization of the use of nutrients for various functions in addition to reproduction.

Keywords: Nutrition, food, ruminants, reproduction.

Submitted : March 1, 2021

Published : May 07, 2021

ISSN: 2684-1827

DOI: 10.24018/ejfood.2021.3.3.184

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I. FOUNDATIONS OF ANIMAL NUTRITION

Animal nutrition is the part of animal husbandry that studies the use of different foods – or, more specifically, the immediate principles that constitute them – to satisfy the

needs of animals useful to man [2]. This is defined as the series of processes through which an organism acquires and assimilates food to promote its growth and replace worn or damaged tissues. The nutrients are fundamental for the animals to carry out their different productive functions [13].



VOLUME | ISSUE | YEAR
3 3 2021

EUROPEAN JOURNAL of
AGRICULTURE AND FOOD SCIENCES

EJFOOD

ISSN: 2684-1827





EUROPEAN JOURNAL of
AGRICULTURE and FOOD SCIENCES

Certificate of Publication

is awarded to

**Alejandro Córdova Izquierdo, Adrian E. Iglesias Reyes,
Gustavo Ruiz Lang, Jorge Saltijeral Oaxaca,
Juan Eulogio Guerra Liera, Edmundo Abel Villa Mancera,
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Raúl Sánchez Sánchez**

for the paper titled

“Nutrition and Food in the Reproduction of Cattle”

Published in

European Journal of Agriculture and Food Sciences

Volume-3, Issue-3, 2021

ISSN: 2684-1827

