RISK MANAGEMENT IN BEEF CATTLE FARMS

MANAGEMENTUL RISCULUI ÎN FERMELE DE TAURINE DE CARNE

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***Abstract**: The association of the biological cow type with the proper environment is important in risk management and in the achievement of optimal animal performance levels, given the constraints generated by natural resources. The attention paid to the number of animals, grazing systems, cattle category and season confers critical control points that affect this tendency at individual and collective level. When the animal livestock increases, the competition relationship between plant species becomes modified and may cause changes of plant species composition, favouring the intrusive plant species to the detriment of the desired plants. The long-term effect is represented by the reduction of animal performances.*

***Key words**: cattle, management, meat, rick*

INTRODUCTION

The beef production systems capitalize land resources that cannot be efficiently used for vegetal production. Usually rainfalls are rare in these regions, and this limits the forage production and, eventually, the beef production per surface unit. On its turn, this limits the number of expensive interventions in the production system. Beside the limited production capacity of the natural resources used in beef production systems, forage quantity and quality as well trend to be very variable and, sometimes, hard to be predicted in time and space. This variation encourages the inclusion of various risk management strategies in the projection of successful

management systems, which should be applied in beef production. The exploitation of heterosis and of other differences between breeds facilitates the achievement of an optimal beef production level. [2, 4]. Grazing on the indigenous pastures is considered to be the most durable of all the agricultural production systems. The beef dependence, based on natural resources, requires the first management level to deal with this aspect. The determination of a constant or increasing long-term tendency of the supporting capacity is considered to be essential for the economic durability of the production system. This may be carried out by mixing the ecologic, economic and animal management principles. The increase of animal livestock represents the main factor that affects the relative success of each grazing management strategy, because the increase of livestock generates the forage amount available per individual.

MATERIAL AND METHOD

The optimal livestock increasing rhythm, in terms of beef production per surface unit, ranges widely in time and space. Within beef production systems, the managerial challenge of optimizing production in very variable environments supposes a high degree risk. This is why it is necessary to identify the critical control points, in order to optimize beef production; this is the reason why we approached this scientific procedure.

RESULTS AND DISCUSSIONS

For long term, the increase of livestock above the specific limit generates a forage intake that is below the optimal limit, leading to the decrease of animal performances. Moreover, because of the fact that the grazing animals are selective (they prefer certain plants), the frequency and seriousness of defoliation differs from one plant to another. The effect of livestock increase per surface unit directly depends on animals' individual performances and animal density. In this viewpoint, the production per surface unit increases with the livestock increasing rhythm, up to a maximal value; beyond this limit, the production decreases quickly.The fundamental relationships become even more complicated due to the variation in time and space of the forage quantity available for animal consumption. The grazing systems serve the modification of grazing intensities in time and

space. The reduction of grazing's pressure on plants in their vegetative stage allows them accumulate energy reserves and consequently enhance their vitality. On the contrary, the increase of grazing's pressure on plants in their vegetative stage leave less chances for plant to accumulate energy sources, reducing their vitality. However, perennial plants' nutritional qualities are the highest in the vegetative stage. Consequently, a grazing system should provide a long term maximal benefit. To have an efficient grazing system, it should meet the following managerial principles: to meet the physiological requirements and to be adequate for all grazing species; to improve the vigour of the desired species with reduced vigour or to maintain the desirable species vigour; to be adapted to the available soil conditions; to increase forage productivity; to be not extremely harmful for animal performances; to correspond to operational constraints and managerial capacities.The pasture's surrounding with fences facilitates grazing management in several production systems. However, the capital investment in fences should be assessed according to the financial profits obtained from an adequate grazing system. The alternative managerial interventions may complete some of the objectives usually attributed to the grazing systems. For example, the elaboration of supplementary water drinking points, the strategic placing of saltlicks and the constitution of herds may be applied to change the distribution of grazing pressure and may represents economically-viable strategies in the extensive beef producing systems. The changes occurred in the kidling and weaning periods may also affect the grazing pressure, as a response to the changes generated by the energy requirements of the lactating cows, compared with the cows do not lactate.

The production systems miss the energy forage used in beef cattle improvement. However, the participation in an alliance, the advanced contracting or the retained property represent options for the achievement of benefits that come from improved feed conversion and from high-quality carcasses, due to animal selection. Alternatively, the managers of extensive cattle breeding systems may choose to sell their animals by determining the prices in a competitional way, when cows leave their farms. The second approach requires less managerial input and may reduce the relative risk generated by the alternatives when the change of property occurs nearly animal commercialization.The intensive beef cattle management is consisted of the units where cattle are more efficiently farmed and fed in order to gain more weight than in the extensive production units. [1, 3, 5].

Every year, tens of millions of beef cattle individuals leave to beef processing units. Of these tens of millions cows, approximately 87% come from farms with over 1000 individuals each. Although the number of cattle farms has decreased in the U.S.A., the quantity of meat per animal individual has increased because of the increase of carcass weight. Every year, the cattle livestock ranges along one year and is, on the whole, smaller during the summer months. Cattle are fed energy diets – mainly cereals. Farm cattle production and management lead to the production of good quality beef, accessible in terms of price. Cattle are fed, on the whole, up to a certain point wished by consumers, where beef is sure, tasty and tender. In this case, fat represents 28-30% of the carcass, according to the American standards.

Cattle are classified as calves for growing or one-year calves. Calves are bred, weaned and sent directly to farms; then the weaned calves are fed forage, on pastures, or growth diets for 30-300 days before being sent to cattle corral. The different cattle categories exert a great impact on health, initial and market weights, on the time spent in farm and on the general performance. Performance may be measured as ingested forage, daily weight gain and feed efficiency (feed conversion). Of all these parameters, the last is mostly applied. For example, we may consider that an animal that initially weights 338 kg, has a body gain of 1.42 kg, consumes 8.84 kg dry forage/day, will weight 554 kg at the sale date and will require 153 days of feeding. [1, 5]. Cattle performance depends on several factors, like the cattle type, nutrition program, animal health status, general management and weather conditions. Cereals are frequently used in cattle nutrition: maize, sorghum, barley and soybean. The utilization of cereals in cattle feeding depends on price, availability and geographic region. The maize, which contains approximately 70% starch, represents an abundant and cheap energy source. On the whole, the diet of animals bred in farms includes 85% maize, 5-12% alfalfa, maize silage or gramineae and 3-8% supplements. The diet may also contain sub-product forage (maize gluten, remnants from distilleries, potato remnants, molasses, beet pulp etc.), which may replace 5-40% of the cereals, according to available goods, cost, protein content and forage energy. The supplements supply protein, minerals, vitamins and alimentary additives in proportions adequate to animals' nutritional requirements. In the case of farms, Calcium supplementation is necessary in all cases, due to the reduced Calcium quantity within the cereal-type

ingredients. In most of the cases, it is necessary to supplement with proteins to assure optimal animal breeding, in the lack of protein-including sub-products. Table 1 presents a common diet for the cattle farms where animals are bred in corrals.

Table 1. Values of nutrients in beef cattle diet

Nutrient	**Mean concentration**	**Minimal concentration**	**Maximal concentration**
Cereal protein, % of dry matter	13.310	12.500	14.000
Phosphorus, % of dry matter	0.310	0.250	0.500
Calcium, % of dry matter	0.700	0.600	0.900
Potassium, % of dry matter	0.740	0.600	1.000
Magnesium, % of dry matter	0.210	0.150	0.300
Sulphur, % of dry matter	0.190	0.100	0.340
Sodium, % of dry matter	0.138	0.098	0.197
Copper, mg/kg	14.800	6.000	20.000
Zinc, mg/kg	74.000	50.000	150.000
Selenium, mg/kg	0.210	0.100	0.300

To understand the nutrition of corral-bred cattle, in farms, it is necessary to have the basic knowledge on ruminants. The main feature of ruminants is represented by fermentation, digestion and the microbial growth that occurs in the reticular rumen. During fermentation, the microbes digest the feed, grow up and produce acid compounds as digestion sub-products. These acids are called volatile fatty acids and are used by animal as energy and growth source. The short-chain volatile fatty acids produced during fermentation include the acetic acid, the propionic acid and the butyric acid. The rumen-level fermentation is important because: when the starch (from maize or other cereals) is too quickly digested, animals may suffer of acidosis (a series of biochemical events that generate pH reduction in rumen and reduced dry matter or more severe symptoms, including death at a very small pH – pH < 5.0, namely acute acidosis), sub-acute and acute, or of too many volatile fatty acids; animals should pass step by step from the forage-based diet to the cereal-based diet, during a period of 18-28 days, called adaptation to cereals or advancing programs. Normally, cereals are processed, but they also may be administrated as whole. In the big farms, cereals may be minced, administrated as silage in association with water (24-30% humidity) or flakes. Although the processing is expensive, animals' performances are improved when starch's digestion is improved. The diet sub-products are important within the intensive beef cattle breeding

systems, especially the cereal-based gluten, the cereals from distilleries and the potato sub-products.

CONCLUSIONS

Profit variability (or of losses) is given by the variation of weather conditions, forage production, animal performances or price – factors that contribute to the economic risk. In risk management, the profit variation caused by the production system is reduced, with a simultaneous reduction of the mean profit, during time. In this viewpoint, risk reduction does not correspond with profit increase. The risk management may provide the long-term economic durability of meat production systems, in cattle. The strategies of risk management frequently applied include: the conservative classification of production systems; forage storage for later; selection of animal breeds that are genetically adequate for the production system and adapted to the nutritional and climatic environment; application of marketing strategies that should capitalize the products properly.

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