CRITERIA AND METHODOLOGICAL APPROACHES TO ASSESS THE CONDITIONS OF FEEDING COWS ON PASTURE

Borschenko V. V., Candidate of agricultural science, associate professor,

Zhitomir National Agroecology University

Classification of cows grazing conditions in the summer pastures of North Zhitomir region, taking into account criteria such as the quality and supply of pasture forage.

Evaluation of nutrition conditions, quality of pasture forage, herbage height and density, the pasture allowance, yield of pasture, dairy cows, milk production.

Evaluation of nutrition conditions of animals on pasture is an important technological element that helps to improve the organization of their grazing, feeding planning and forecasting performance. To date, the literature addresses some criteria for such an assessment, but at the same time, there is no generalized methods for their use, particularly in the fold cows. In this regard, we attempt to systematize the basic criteria and develop methodological approaches in this direction with respect to the pastures of North Zhytomyr.

Analysis of the literature toward assessing the conditions of animal nutrition pasture suggests that such an assessment should take into account such criteria as quality pasture grass or nutritional value. It should focus on such factors as height and density of vegetation, and so on. factors that are directly related to the consumption of animal feed and their performance [1, 4, 13]. One of these factors is the botanical composition of grass. The best ratio is considered in the grass about 60-80% of cereal species, 10-20% and 10-20% legume grasses. It is known that the presence of green fodder legumes increases its consumption, while the share of legumes in the herbage should not exceed 50%. The higher number is the load on the liver due to the high protein content. Feeding exclusively clover can adversely affect the reproductive function of animals.

In general, evaluating the impact of food quality on animals should note the following: low-quality pasture forage consumed by animals significantly fewer productive and has a lower effect than high. Also at low quality pasture forage need a significant amount of concentrates to optimize the level of fiber.

Referring to the experience of national studies on the use of pasture for ruminants should be noted that research focuses mainly on qualitative vegetation, in terms of its nutritional value and almost no attention is paid to offer food (assuming that the pasture in the presence of high-quality pasture grass animals can consume a sufficient amount of food), which ultimately leads to an underestimation of consumption of animal feed, and thus reducing their productivity. Therefore, this traditional approach can not adequately assess the conditions of animal nutrition, and therefore rationally organize their feeding.

At the same time, foreign sources of literature focuses on the need for such criteria as the supply of pasture feed conditions when assessing animal nutrition [2; 3; 5]. It is known that the supply of food is an important factor that affects the food intake of grazing animals and their productivity. It is determined by the number of grazing forage that the animal is offered during the day relative to the daily needs of the animals in this feed. Typically in high demand and the supply of food quantity offered pasture feed 2 times the needs of the animal at the appropriate height of vegetation [6]. This encourages selective or selective feed intake, feed intake increases the volume and productivity of animals. With the lack of vegetation height and if the amount of the proposed grazing forage less than 1.5 times the demand of talk about low supply of food.

So all these factors are directly linked to the consumption of animal feed and pasture use basic strategy is to create conditions for maximum dry matter intake ruminants [10].

Given that the pastures are very difficult to conduct a study evaluating the use of interest because indirect methods for assessing consumption, particularly given the actual duration of grazing animals in relation to the productive characteristics of vegetation and animal productivity. Research cows grazing

conditions in regions that have a significant number of rangelands, including North Zhytomyr we believe has immediate practical guidance as will improve the practice of use of such land in the production not only cows but also other kinds of animal.

So today there is a need for generalization and systematization of the main criteria to assess the nutrition conditions of cows on pasture in the specific context of North Zhytomyr region, which is characterized by a large number of rangelands.

In developing methodological approaches to assess the conditions of the power we have focused on dairy cows just because they differ highest needs for nutrients, and therefore the requirements for quality and quantity of pasture forage, compared to other animal species and areas of performance.

The purpose of research: to the classification of cows grazing in the summer pastures of North Zhytomyr, taking into account criteria such as the quality and supply of pasture forage.

Materials and methods research

Characterization and location of hospitals. Research conducted cows nutrition conditions on research hospitals northern region of Zhytomyr region. Hospital are the main types of grassland used for grazing.

Location hospital: p. Khrystynivka Narodychi District, p. Zbrankivtsi Ovruchsky District, p. Pot Korostensky District, p. Barashivka Zhytomyr region, p. Teterevka Zhytomyr region, m. Baranivka Zhytomyr region.

Animals during grazing season grazing freely placed within hospitals, allowing to study the conditions of grazing animals and evaluate their performance.

In assessing the nutrition conditions of cows in the pasture, we focused just on quality and supply of pasture forage. Thus we tentatively allocated: high, medium and low quality and supply of food.

It should be noted that taking into account the quality and supply of pasture forage is an important aspect of our research with methodological and practical point of view. Quality parameters and offer the stand is easy to determine in

practical conditions of production, even by indirect methods: the organoleptic characteristics of vegetation, its height, pasture yield and the actual level of performance animals. Therefore, when planning a feeding does not necessarily apply to laboratory consumables and chemical research, and make decisions about the nature of feeding animals in the field, which simplifies the procedure for deciding on the dosage of concentrated feed animals in different conditions and grazing practices to improve cost recovery in milk production pastures.

The research results

Our studies allowed: to the classification of cows grazing in the summer pastures of North Zhytomyr, taking into account criteria such as the quality of food and feed supply, estimate the level of milk production animals.

High quality and offer pasture forage is observed mainly in grass-legume mixtures height 15 - 25 cm in their middle and high density at the level of crude protein in dry matter more than 15%, in a context where the yield of grass (mowing grass at ground level) is 12 - 20 kg dry matter / ha [8; 11; 12], and 2 times the needs of the animals.

Under these conditions, the power animals consume the maximum amount of dry matter (up to 3.5% of dry matter of live weight [7]) and have a maximum level of performance (which no additional feeding is the 18th of 20 kg milk / day). At the same time, according to the literature [9] in terms of feeding concentrates are less effective, and there is the lowest conversion concentrates in milk, because of "substitution effect."

Duration of grazing cows in these conditions is minimal and does not exceed 9 hours / day.

High quality and offer pasture forage in continuous grazing occurs mainly in the first cycle using pastures in the early grazing season.

Average quality or supply of pasture forage is observed at lower herbage height 10 - 14 cm, the predominance of cereal components, reducing the concentration of crude protein in the dry matter of 13-to 14% and the exchange energy to level 9 - 10 MJ / kg CP; in a context where the yield of herbage (when

mowing grass at ground level) is about 9 - 11.5 kg dry matter / ha [8; 11; 12] and 1.5 times the needs of the animal. Also high quality vegetation can be observed with increasing vegetation height 30 - 35 cm and pasture yield over 20 kg dry matter / ha [8; 11; 12], which is accompanied by a decrease in quality.

Under these conditions, the power consumption of food animals, their performance, and conversion to milk concentrates characterized by intermediate indicators [9]. Feed intake is about 2,5-3,0% dry matter of live weight of animals [7]), and the level of milk production of cows without additional feeding them is about 14 - 15 kg / day.

Duration of grazing cows in such circumstances should be about 12 hours / day.

Low quality or supply of pasture forage adverse conditions typical for grazing at altitudes lower herbage 8 - 10 cm; them at low density when herbage yield (when mowing grass on level ground) does not exceed 9 kg dry matter / ha [8; 11; 12]; Where the proposal does not exceed pasture feed animals in need of it; as well as grazing animals on grass overripe when the level of crude protein in the dry matter is reduced to 10 to 12%, and the concentration of metabolizable energy is lower than the 8 - 8.5 MJ / kg CP; Where a part of the stand dominated by grasses and sedge species.

Under these conditions, the power animals consume a minimal amount of pasture forage (less than 2.5% of dry matter of live weight [7]), have low productivity. The level of milk production of cows without additional feeding them is low and does not exceed 12 kg / day.

At the same time, the conversion efficiency of concentrates in milk is the maximum [9].

Duration of grazing cows in such circumstances should be the maximum and reach 16 hours / day.

Such adverse conditions often seen grazing in North Zhytomyr region, indicating that extensive forms of pasture and keeping dairy cattle.

It should be noted that in the summer the best vypasayutsya animals on pastures located in open terrain. But in the absence of sufficient growth of pasture grass forage animals use forests, which are characterized by higher stocks of green phytomass. Such conditions grazing should be considered medium or even low, as evidenced by the relatively high quality of pasture forage and low milk production animals.

Summary data on the criteria for assessing nutrition conditions of animals on pasture are shown in Table 1.

1. Classification grazing conditions, taking into account criteria such as the quality and supply of pasture feed

Indicators of grazing conditions evaluation	Conditions of grazing		
	High quality and offer pasture forage	Average quality or supply of pasture forage	quality or offer pasture feed is poor
Yield before grazing, centner DM/ha	12-20	9-11,5 or 20 - 25	< 9
Offer food	2 times higher than demand	1,5 times higher than demand	Equals to demand
The height of the grass, cm	15-25	10-14 або 30-35	<10
Density, kg DM/ha at 2.5 cm layer of vegetation	200-350	150-190	60-140
Share legume in the herbage,%	>20	10- 20	are not significant
The concentration of energy, MJ/kg DM	>10	9-10	<8 – 8,5
The concentration of crude protein in DM,%	>15	13-14	10 - 12
Approximate consumption of DM, %BW	3,5	2,5-3	<2,5
Approximate grazing time duration, hours / day	9	12	14-16
Approximate milk yield, kg / day	18-20	14-15	<12

Table 2 shows the main factors that limit the power performance of animals grazing in specific circumstances (in pastures of varying quality). The data obtained as a result of optimization calculations diets of dairy cows on different pasture forage quality and ethological research. The results should be used in the planning of feeding cows.

2. The main factors of the power limiting milk production of cows in pastures of varying quality.

Milk yield, kg /day	Conditions of grazing		
	High quality and offer pasture forage	Average quality or supply of pasture forage	quality or offer pasture feed is poor
	The main factors of the nutrition which limit of cows milk production		
10	None	None	Partly of Energy
15	None	Partly of Energy	Energy
20	Partly of Energy	Energy	Energy and sometimes protein
25	Energy	Energy and sometimes protein	Energy and partly protein
30	Energy and sometimes protein	Energy and partly protein	difficult achievable level performance
35	Energy and partly protein	difficult achievable level performance	difficult achievable level performance

Our studies show that under North Zhytomyr not always provided high power conditions of dairy cows on pasture. This is primarily due to their poor condition, a small number of cultivated pastures, lack of enclosure system of pasture use. This situation leads to relatively low productivity of dairy cows in summer and a loss of milk. This situation producers to some extent corrected by additional feeding of animals. While this approach is not always highly profitable event, especially for low quality pastures.

Conclusions

1 Examined the conditions of grazing cows on pasture in North Zhytomyr held their classification, taking into account criteria such as the quality and supply of pasture forage. In particular, take into account such factors as yield before grazing pastures, feed supply, the height and density of vegetation, the proportion of legume in the herbage concentration of energy and crude protein and hopes cows. Based on the data estimated approximate dry matter intake of pasture forage and duration of grazing animals.

2 The basic nutrients limiting the productivity of cows under different grazing them and because of the level of daily milk yield.

3 Thus, studies made it possible to organize the basic criteria for the evaluation of nutrition conditions of cows in pastures of North Zhytomyr, allowing

ultimately improve the management of pastures and improve the decision-making process in planning grazing animals and their feed.

4 Prospects for future research is to conduct regular analysis of the content in milk fat, protein and urea which makes it possible to obtain a lot of information about the quality of feeding cows on pastures under different grazing. It certainly will better orient yourself and provide better support decisions in the management of pastures.

References

1. Попков Н. А. Менеджмент пастбищ / Н. А. Попков, А. М. Лапотко, А. Л. Зиновенко // Белорусское сельское хазяйство. - РУП «Научно-практический центр НАН Беларуси по животноводству», 2008. - № 7 (75): Режим доступа: http://www.unibox.by/press/articles/79.html
2. Burstedt E. The effect of summer feedind systems on the performance of spring-calving dairy cows. II. Effect of cyclical variation in herbage allowance./ E. Burstedt // Acta Agr. Scand. - 1983.
3. Caird L. The prediction of voluntary intake of grazing dairy cows. / Caird L. and W. Holmes // J. Agric. Sci. (Camb.).- 1986.- 107.- P. 43-54.
4. Calculating Dry Matter Intake in Organic Pastures Using Pasture Stick Режим доступу: http://www.youtube.com/watch?v=bSYflqjP6B0
5. Clark J.H. Some aspects of feeding high producing dairy cows. / J.H. Clark & C.L. Davis // J. Dairy Sci. – 1980.- 63.- P. 873- 885.
6. Herbage intake and milk production by grazing dairy cows. / Y.L.P. Le Du, J. Combellas, J. Hodgson, R.D. Baker // Grass and Forage Sci. – 1979.- 34.- P. 249-260.
7. Managing to Get More Milk and Profit from Pasture. Lawrence D. Muller. [інтернет ресурс].- Режим доступу: http://extension.psu.edu/animals/dairy/health/nutrition/forages/pasture/articles-on-pasture-and-grazing/managing-to-get-more-milk-and-profit-from-pasture

8. / [інтернет ресурс].- Режим доступу: http://www.teagasc.ie/publications/2013/2788/Moorepark2013.pdf
9. Response of lactating cows to grain-based concentrates in northern Australia / T.M. Davison and R. Elliott // [інтернет ресурс].- Режим доступу: http://www.tropicalgrasslands.info/public/journals/4/Historic/Tropical%20Grasslands%20Journal%20archive/PDFs/Vol_27_1993/Vol_27_03_93_pp229_237.pdf
10. Restricting access time to pasture – effects on dry matter intake, grazing behaviour and dairy cow milk production. E. Kennedy and M. O'Donovan / [інтернет ресурс].- Режим доступу: http://www.agresearch.teagasc.ie/moorepark/Publications/pdfs/Research%20Report%202007.pdf
11. The effect of varying pre-grazing herbage mass on milk production, dry matter intake and grazing behaviour of spring calving dairy cows. G. Tuñon, D. Hennessy, E. Kennedy, N. Lopez Villalobos, P. Kemp and M. O'Donovan / [інтернет ресурс].- Режим доступу: http://www.teagasc.ie/publications/2012/1484/Moorepark_Research_Report_2010.pdf
12. Using a Grazing Stick for Pasture Management/ Режим доступу: http://www.caes.uga.edu/commodities/fieldcrops/forages/events/GS09/notebookitems/09%20Grazing%20arithmetic/Using%20a%20Grazing%20Stick%20for%20Pasture%20Management.pdf
13. Van Soest P J 1994 Nutritional ecology of the ruminant: the free ranging animal. New York: Cornell University Press. 93-107.