**Analysis of scientific research on cattle grazing systems in order to save pasture resources**

**UDC 636.2**

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The development of progressive methodological approaches to the use of modern digital technologies for remote sensing of the earth and monitoring allow solving various challenges to restore the bioresource of soil and pastures for animals. The development of tools for the mass assessment of the pasture condition is an important step in optimizing the work on determining the pasture resource and reducing the labor intensity of these activities.

This dissertation work analyzes existing articles in order to derive the main directions and existing methods in the field of application of earth remote sensing technology for pasture resource management. new solutions in this dissertation work.

The articles considered in this literature review can be subdivided according to the following problems. A more detailed analysis of the reviewed articles is given in Table 1.

Table 1. - Detailed analysis of the reviewed articles.

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| **Considered problem** | **Article** | **Conclusion on the article** |
| Harms and benefits of using electric and virtual fences for grazing control | [1] | There is no evidence of a negative effect of virtual fencing on animal behavior |
| [2] | Highly effective virtual collar keeps animals within the pasture |
| [3] | Successful application of a virtual fencing system for herd containment |
| [4] | The virtual fence successfully held back the herd. Quick addiction. Noticeable stress |
| [5] | Virtual Fencing Technology effectively keeps animals within the designated area |

Continuation of the table 1.

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| --- | --- | --- |
|  | [6] | The virtual fence does not affect the normal grazing behavior of the sheep |
| Derivation of the main factors of influence on the pasture resource | [7] | Several approaches to the use of geospatial data are presented |
| [8] | Climate change is the most important driver of vegetation change |
| [9] | The NDVI index and its accumulated amount are fully sufficient signs for assessing and predicting the main pasture indicators. |
| Consideration of the effectiveness of the use of technology for controlling livestock grazing using virtual fences | [10] | High level of learning ability of sheep in the framework of the experiment. Rare boundary violation |
| [eleven] | The virtual fence was effective in preventing sheep from entering the area |
| [12] | The most successful design for grazing cattle was a rear fence following the animals |

The above analysis of the articles allows us to conclude that the development of a decision-making model using remote sensing technology, coupled with machine learning methods based on a web portal, with the correct selection of the key parameters of the system under consideration, can give positive results in determining pasture biomass.

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