KRMIVA

GRAZING SYSTEM FOR DAIRY COWS ON LOWLAND DRAINED SOILS

SUSTAV NAPASIVANJA MLIJEČNIH KRAVA NA NIZINSKIM DRENIRANIM TLIMA

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Original scientific paper
Izvorni znanstveni članak
UDK:636.2.084.22.
Received - Primljeno: 16. studeni (november) 1993.

SUMMARY

The continuous system of grazing for dairy cows was investigate in introduce to a farm on lowland grassland with a heavy soil, drained few years back. This land is less suitable for grazing at high stocking density (strip grazing) because of poor physical properties of the soil. Pasture was arrange on three separate fields. Cows grazed pasture during spring at stocking rate 6.8 SU/ha, during late spring and early summer at 4.2 SU/ha and in late summer and autumn at 2.6 SU/ha. All pasture was cut once for to conserve the feed as a hay. During grazing season the mass of available herbage was measure at week intervals under protective cages moved once a week. The cost of erecting permanent fence on small property pasture is prepare too for continuous and rotational system of grazing. To run a system of grazing with high number of paddocks (18) on small property, relatively large portion of field will be waste for to make access roads to paddocks. To arrange a pasture for continuous system of grazing (1:2:3) is much more simple and acceptable for small farms.

Introduction

Agriculture land near by Vrhnika has been drained during previous years. Farmers use this land mainly for forage production. Dairy cows and beef cattle are their main specialisation, and despite this they do not graze much, because of unsuitable physical properties of the soil for grazing at high stocking density (strip grazing) and high dismemberment of their land with open drains or because of the ownership. According to denationalisation program some farmers might round up own land and there will be more chance for to introduce grazing system to their land. Some investigation on sward improvement technique has been investigate already (Korošec, 1983; Vidrih, 1990).

The objective of this work was to investigate the suitability of continuous grazing management for dairy cows on small property farm, and the growth rate of sward on heavy clay soil grazed continuously.

Methods

New pasture has Ben arranged on three fields separated with drains. Only boundary fence was erect round each field. Group of 15 cows grazed during spring first field at the stocking rate 6.8 SU/ha. Two other fields were cut for hay in second part of May. Af-

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ter that time cows grazed at 4.2 SU/ha during spring and early summer. In late summer and autumn whole pasture was graze at stocking rate 2.6 SU/ha. Whole area has been cut once for conserved feed (hay). During grazing season the mass of available herbage was measure at week intervals. The method of protective cages, mowed each week round the grazed field was use. Herbage mass was measure with Pasture Probe, an indirect method for estimating dry matter yield of standing herbage crop. Results obtained this way was use to calculate daily growth of herbage mass on continuosly grazed pasture and the total amount of consumed herbage mass on continuously grazed pasture and the total amount of consumed herbage. Beside this data some remarks on cost for fencing of pasture are given too.

Results

Early in spring boundary two wires permanent electric fence was erect round each field. On April 13 the cows were turn out on the pasture. A week later stayed outside during the night too. Twice a day were milk in cowshed, drinking water had on pasture. At turn out there was 1.5 t/ha (DM) herbage mass over that part of field with grass/clover sward. On part of field with mainly grass sward there was 1.7 t/ha of herbage (DM). During first 10 days of grazing daily growth of grass sward was 3 times higher than the growth of grass/white clover sward (Figure 1). In beginning of May growth rate of both swards was identical. Among 80 and 90 kg/ha (DM) of herbage was daily growth of grazed sward. Because of the lack of the rain during second part of the May the growing rate was as low as 40 kg/ha/day for grass sward and 60 kg/ha/day for grass/w. clover sward. Mass of available herbage dropped substantially by the end of May. There was less than 1.5 t/ha of total herbage in average on pasture (Figure 2). The rainfall in May was only 1/3 of the normal rate.

Good rain in beginning of June helped to recover the growth of sward on previously cut fields. Daily growth rate for sward on field 2 and field 3 was again between 60 - 70 kg/ha. Two fields were grazed alternatively, less than 5 days continuously grazed each. This way the sward has been kept at heights less than 9 cm in average over grazed area. During early summer, because of dry weather, daily herbage growth was between 30 and 40 kg/ha dry matter. From the field grazed in spring aftermath cut has been taken in July and one week later this field was put under grazing. This way the stocking rate was reduced to 2.6 SU/ha. Total herbage mass offered to cows during summer months was round 1.7 t/ha DM. Some buffer feeds (silage corn) has been offered to cows during second part of grazing season, because of not high enough intake on pasture.

A comparison was made on cost of pasture arrangement for rotational grazing and continuous grazing (Table 1). To set the fence around 18 paddocks on 5.8 ha large pasture it will cost farmer over twice more than to set down only boundary fence for three fields what is all needed for continuous grazing. And to bring the drinking water for cows on pasture is additional cost, again higher for rotational grazing which is hard to justify on small farms.

Conclusions

On pasture arranged for continuous grazing of dairy cows, during spring period 37% of available land has been grazed, in early summer 62% and through late summer/autumn period the whole area has been grazed. One cut over entire pasture has been accomplished in first grazing season. In relatively dry year sward withstand grazing very well; no damage from trampling or sward poaching did occur. October was very wet again, but cows stayed outside until mid November. Botanical composition of the sward improved substantially in the way to have higher content of white clover and dense sward with a few herbs developed despite very dry season.

Some research work on introducing continuous grazing to large state farm has been successfully done after mid eighties (Vidrih, Vidic and Jovičić, 1987). With the big herds of dairy cows and less conscientious farm workers, the main reason for such system was the simplification of grazing technology. And it worked very well. The main reason for to develop simple grazing system on small farm is the low cost of putting the pasture under the fence and the drinking water and to have an open ability for a farm to change to crop production on part of their fields if they can get higher income from crop than from rearing the cows. In the future continuous system of grazing must be further tested under normal rainfall condition to see if any kind of soil reconditioning will be needed after grazing under wery wet soil. Some measurement on coin penetrometer resistance has been done for this purpose already.

Fig. 1: Daily herbage growth (kg/ha of DM)

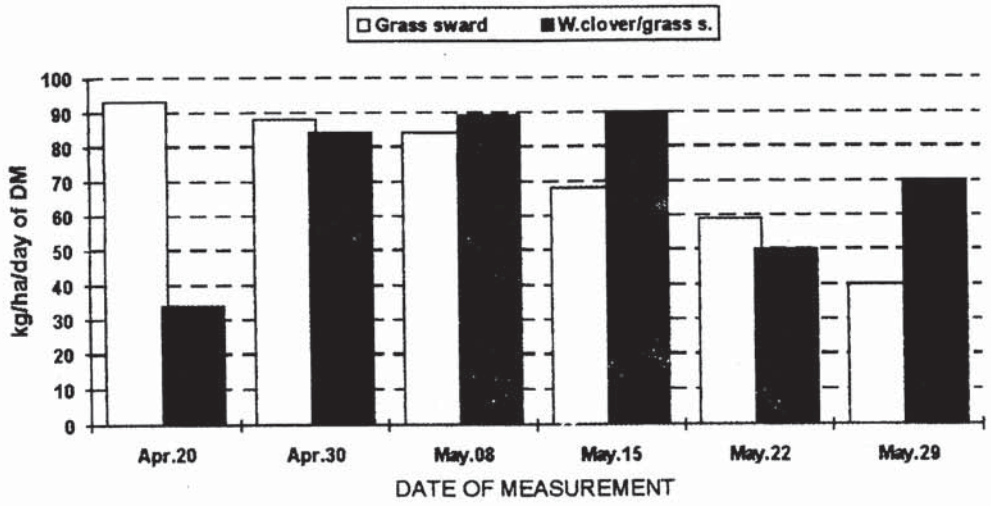

Fig. 2: Total herbage mass and regrowth of grazed sward - Field 1/Spring - GRASS SWARD

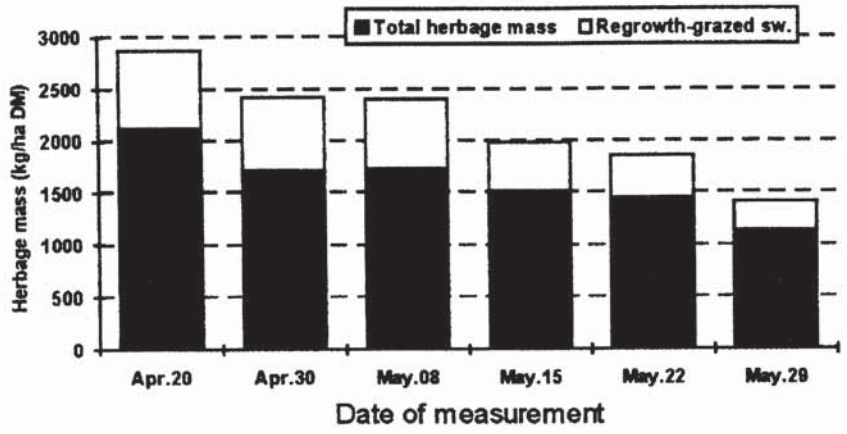

Table 1: Comparison of cost on permanent electric fence for pasture set for rotational or continuous system of grazing (in DEM)

Number of items Broj pojedinosti	Rotational grazing Pregonsko napasivanje	Continuous grazing Stalno napasivanje
No. of paddocks - Broj ograđenih pašnjaka	18	3
Length of fence (m) - Duljina ograde (m)	3800	1870
Strainer posts - Naponski stupovi	31	17
No. of gates - Broj ulaza	18	3
Cost of material - Troškovi materijala	4860 DEM	2356 DEM
Cost of labour - Troškovi rada	1458 DEM	707 DEM
Total cost for fence - Ukupni troškovi za ogradu	6318 DEM	3063 DEM

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SAŽETAK

Na nizinskim pašnjacima na teškim tlima, dreniranim prije nekoliko godina, ispitivan je sustav intenzivnog napasivanja mliječnim kravama. Ova tla su manje prikladna za napasivanje s velikim opterećenjem (obročna ispaša) zbog loših fizikalnih svojstava zemljišta. Pašnjak je bio podijeljen drenažnim jarcima na tri dijela. U proljeće je pašnjak napasivan s opterećenjem od 6,8 UG/ha, u kasno proljeće i rano ljeto sa 4,2 UG/ha, a u kasno ljeto i jesen s 2,6 UG/ha. Pašnjak je jedanput pokošen, a zelena masa je osušena za sijeno. Za vrijeme pašne sezone ponuđena paša utvrđivana je uz pomoć zaštitnih kaveza u razmacima od tjedan dana i iz dobivenih vrijednosti izračunat je dnevni prirast paše. Također prikazan je i proračun troškova ograde za pašnjak koji se koristi u pašno-košnom sustavu i za pašnjak koji je intenzivno napasivan bez pregona.

Pri podjeli pašnjaka na veći broj pregona (18), razmjerno se mnogo površine, manjeg gospodarstva, beskorisno potroši za putove (tjeranje stoke) i uređenje napajališta na svakom pregonu.

Uređenje pašnjaka za intenzivno-korištenje bez pregona, znatno je jednostavnije i stoga je lakše prihvatljivo i za manja gospodarstva.

IZVLEČEK

Razvoj sistema paše krav za meliorirana zemljišča v ravnini

Na območju KZ Vrhnika je bil preizkušan in uvajan v prakso sistem intenzivne paše povprek za vzrejo krav molznic na kmetijah, ki imajo meliorirana zemljišča na težkih ilovnatih tleh. Zaradi slabih fizikalnih lastnosti zemlje površine niso primerne za pašo ob visoki gostoti zasedbe (obročna paša). Pašnik je bil urejen na treh zemljiščih ločenih z drenažnimi jarki. Spomladi je paša potekala pri obtežbi 6.8 GVŽ/ha, poleti pri 4.2 GVŽ/ha, v poznem poletju in jeseni pa pri obtežbi 2.6 GVŽ/ha. Ves pašnik je bil enkrat tudi pokošen. V času trajanja paše je bil vsak teden določen pridelek razpoložljive paše s pomočjo varovalnih kletk in iz dobljeni podatkov izračunan dnevni prirast pašene ruše. Prikazan je tudi izračun stroškov za ograditev pašnika urejenega za pašnokosno rabo in za intenzivno pašo povprek. Pri razdelitvi pašnika na večje število čredink (18), je relativno precej površine na majhni kmetiji nekoristno porabljeno za gonske poti in ureditev napajališč v vseh čredinkah. Ureditev pašnika za intenzivno pašo povprek je veliko bolj preprosto in bo lažje sprejemljivo tudi za manjše kmetije.