

Researches Regarding the Exploitation of the Temporary Pastures which are Resistant to Draught in the 2nd Year of Vegetation with Sheep

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Abstract. The tests were made on a temporary pasture of perennial grain and vegetable plants with high resistance at draught, founded in 2008 and exploited with sheep of *Merinos de Palas* breed. There were organized two lots of young female sheep: the 1st lot fed by grazing the A1 mixture and the 2nd lot foddered by grazing the A2 mixture. Both lots received also a supplement of concentrated fodders (barley) of 0.3 kg/animal/day. The production of dry substance obtained in the 2nd year of vegetation reveals the high potential of production of A1 complex mixture, represented by species of perennial grain plants -*Lolium perenne* 20%, *Dactylis glomerata* 30%, *Festuca pratensis* 15%, *Festuca arundinacea* 20% and perennial vegetable plants -*Trifolium repens* 10% and *Lotus corniculatus* 5% from which it was obtained a production of 5 t/ha S.U. (25 t/ha green mass). The consumption of nutritive substances/animal/day presented almost equal values between the 2 lots, a little higher at the 2nd lot where the pasture had a higher value of vegetable plants. The final body weight was of 45.20-46.30 kg, higher with 2.43% at the 1st lot. The daily average increase was of 101 g at the 2nd lot and of 110g at the 1st lot, being superior at the latter, with 8.91 %.

Keywords: pastures, *Merinos de Palas* sheep, grazing, weight increase

INTRODUCTION

The temporary pastures are an important source of fodders for animal feeding, especially for ruminators. Obtaining quality fodders has influence upon the quality of the animal production. The diversity of the obtained productions from animals (meat, milk, wool), becomes profitable in the economic point of view.

The sheep transform the fodders in aliments with high nutritive qualities (White, C.L. Martin, G.B. 2005).

Minson, D. (2005) shows in the made works that a rational exploitation must be designed to limit the loss of production. The production obtained from the pastures must be found in the productions obtained from animals, only in this way the exploitation can be efficient.

The researches made by Motcă, Gh., Oancea, I. Geamănu L. (1994) showed that choosing the grain and vegetable plants species used in the mixtures for seeding is made depending on the natural conditions, on the duration and way of using the pasture and of their vivacity. Establishing the report between the tall and the short species is made depending on the way of use. For the pasture it is introduced a higher percent of short species (50%), which have high resistance at grazing and high capacity of aftermathing. The tall species with resistance at grazing are not excluded from the mixtures for grazing because they are more productive.

The temporary pastures which are well maintained and improved are the main way to fast redress the sheep breeding in the field area.

MATERIALS AND METHODS

The researches were made on a pasture founded in 2008, in the experimental field of the research sector of ICDCOC Palas. The pasture was made on an area of 5 hectares, divided in 2 experimental lots, of 2,5 ha each. The used mixtures consisted in the following species of perennial grain and vegetable plants: **A1**- *Lolium perenne* 20%, *Daheasesctylis glomerata* 30%, *Festuca pratensis* 15%, *Festuca arundinacea* 20%, *Trifolium repens* 10%, *Lotus corniculatus* 5% and **A2** mixture of *Lolium perenne* 15%, *Lolium hybridum* 10%, *Dactylis glomerata* 20%, *Festuca pratensis* 15%, *Festuca arundinacea* 20% , *Trifolium repens* 10%, *Medicago sativa* 10%. In the 1st year of vegetation, the pasture was exploited only by mowing. To establish the contribution of the vegetable plants to providing with symbiotic nitrogen it was determined the flower composition at all crop cycles. The beginning of grazing in spring was made when the plants had a height of 25 cm.

To determine the production it was used the direct method (method of repeated mowing). The production of dry substance per grazing cycle was determined on micro-parcels of 1 m² each, in two repetitions, the gathering of samples being made on sunny weather, after the dew had risen from the plants.

The animals on which the experience was made (female young sheep) were divided in two lots, of 40 animals each, separately maintained, on pastures of 2 types of complex mixtures (A1 and A2). Both lots were fed by grazing, but also received a supplement of concentrated fodders (0,3 kg/animal/day). The concentrated fodders (barley) were given at the morning meal.

The total area of pasture was divided in 12 parcels of 1666 m² each. The pasture area for each experimental lot was of 6 parcels. In the beginning of the grazing period the sheep were in the age of 15 months and a weight of 34,5 kg/animal.

The use of the pasture was made after the rules of rational grazing by rotation. The water and salt were assured at discretion. The average period of grazing was of 86 days. It was determined the living weight increase at animals, through individual weighing in the beginning of grazing and in the end of each grazing cycle. As a prevention measure, the sheep were previously used to the regime of foddering with green mass.

At the choice of the optimum moment for the beginning of grazing it was taken into account also the climatic conditions those of air temperature both by day and by night, to be over +5°C. The animals have grazed on a parcel for 6 days, until the height of the vegetal carpet which remained after grazing was of 4-5 cm above the soil, so that, it was created the possibility of remake the vegetal mass for the following vegetation cycle.

RESULTS AND DISCUSSION

The efficiency of the pasture. The reserve of the nutritive elements from the soil, completed with organic fertilizers in a dosis of 40 t/ha has contributed to a production of 3,8-5,0 t/ha S.U. (19,09-25,21 t/ha green mass). The researches made have demonstrated the complexity of the factors, which contribute to a good production for the 2nd year of vegetation, being noticed that the made production is a lot influenced by the flower composition of the grass carpet.

Flower composition. In the 2nd year of vegetation, the flower composition of the pasture is characterized by the domination of the grain plants, with a percent of 79,4% in the case of A1 mixture and 70,7% at A2 mixture. The higher percent of the vegetable plants, that of 27,1% is met in the case of A2 mixture, and in A1 mixture, respectively 17,6%. The percent of weeds which are from other plants families was of 2,2% et A1 mixture and 3,0 % at A2 mixture (table 1). The percent of weeds was relatively reduced in the 2nd year because the dominant weeds were represented by annual species, which disappear after mowing (the 1st year mowing) and also in the next years.

Tab. 1

The flower composition of the temporary pasture in the 2nd vegetation year

Mixture	Year	Number of cycles	height (cm)	Grain plants %	Vegetable plants %	Other plants %
A1	2009	I, II, III	32	79,4	17,6	3,0
A2			28	70,7	27,1	2,2

The production of obtained *raw protein* shows that it is related positively to the production of dry substance. The significant improvement of the fodder quality is determined by the presence of the vegetable plants in A2 mixture in a percent of 27,1%, which led to a higher content of protein in the fodder (11,61%). The perennial vegetable plants let to the increase of the protein content, beside the mixture of perennial grain plants. At A1 mixture it was obtained a protein content of 9.82% (table 2).

Tab. 2

Chemical composition of the mixtures of perennial grain and vegetable plants
(% of Dry Substance - SU)

Mixture	SU 60° C	SU 105° C	Ashes %	Protein %	Celulosis %	Fat %	Org Subst. %	SEN %
A1	73,97	69,51	8,31	9,82	20,23	2,72	28,43	61,20
A2	72,02	67,75	7,96	11,61	21,27	2,21	24,70	59,79

The content of *raw celluloses* was 20,23 % at A1 complex mixture and of 21,27 % at A2 mixture, fact that shows at the both pastures it was not exceeded the moment of the beginning of grazing, so that increasing the degree of consumption and digestion. The beginning of grazing in spring was made when the plants had a height of 25 cm, and the apex of grain plants was at a distance of 6-10 cm from the soil. It was aimed that the apex to be totally consumed during grazing, so that avoiding the gleaning at the next grazing cycle, leading to the increase of the consumption degree. The increase of the content of raw celluloses over the superior limit, which is considered to be optimum, reaches levels, which put the mixture in the area of the content considered at the inferior limit of the protein necessary in the point of view of animal nutrition.

The researches and scientific observations on animals were made on female young sheep *Merinos de Palas* breed, organizing two lots which were homogenous and analog, under the aspect of the genetic type, body weight, age, dropping period and lambs' weaning. The experience was made after the experimental scheme presented in table 3. Through the elaborated experimental scheme it was aimed to establish the optimum level of food which to assure the efficiency of the production potential of the pasture.

Tab. 3

The experimental scheme of developing the experiment

Lot	Fodder ratio
L I	Pasture (A1) + 300 g concentrated fodders (barley)
L II	Pasture (A2) + 300 g concentrated fodders (barley)

Consumption of fodders and nutritive substances. The researches made on the temporary pasture from ICDCOC Palas, exploited by grazing, demonstrated the complexity of the factors, which contribute to the vegetal and animal production. The factors, which affect the animal production, are dependant both on the pasture, and also on the grazing animals. From them, we can mention the total production of grass, the quality of the vegetative mass that can be consumed, the species, the breed, the age and the productive potential of the grazing animals, the grazing method and the number of animals /ha.

In table 4 it is presented the average consumption of fodders and nutritive substances per lots.

Tab.4

The average consumption of fodders and nutritive substances

Specification	U.M.	Lot	
		L I	L II
Green fodder (grazing)	Kg	5,8	6,1
Barley	Kg	0,3	0,3
Dry substance	Kg	1,40	1,48
UNL	-	1,52	1,59
PDI (PDIN/PDIE)	g	102/95	116/107

The average quantity of green fodder consumed per day and animal was of 5,8-6,1 kg, higher with 5,17% at the 2nd lot.

The consumption of dry substance presented close values at the two lots, 1,40-1,48, being higher at the 2nd lot with 5,71%.

The consumption of energetic substances, expressed in milk nutritive units (UNL) was of 1,52 UNL at the 1st lot and 1,59 UNL at the 2nd lot, at the latter it was higher with 4,6%.

The level of the protein on nitrogen basis at both lots was higher comparatively to the level of the protein on energy basis with 7,37-8,41%.

The body weight of the female young sheep. The female young sheep were weighed individually in the beginning and in the end of experimental period (86 days). In table 5 there are shown the body weighs of the female young sheep and the average daily gain at the two lots.

Tab. 5

The body weight (kg) and the average daily gain (g) at the female young sheep

Lot	n	Body weight (kg)				Average daily gain (g)	
		In the beginning		At the end		X ± sx	V%
		X ± sx	V%	X ± sx	V%		
I	40	36,5±1,15	19,93	45,20±1,33	18,61	101±3,2	20,04
II	40	36,8±1,10	18,90	46,30±1,41	19,26	110±3,5	20,12

In the beginning of the experimental period the body weight of the two lots presented values sensitively equal, they being of 36,5-36,8 kg, the differences not being significant (Fisher Test, P>0,05). The final body weight was of 46,30 kg at the 2nd lot and of 45,20 kg at the 1st lot, the 2nd lot having a final average body weight of 2,43% higher.

The average daily gain was between 101 g and 110 g, higher at the 2nd lot with 8,91%, the differences being significant (Fisher test, $P < 0,05$).

CONCLUSIONS

- The obtained production of dry substance, of 5 t/ha S.U. (25 t/ha green mass) evidences the high potential of production of the A1 complex mixture, represented by perennial species of grain plants as *Lolium perenne* 20%, *Dactylis glomerata* 30%, *Festuca pratensis* 15%, *Festuca arundinacea* 20% and perennial vegetable plants, *Trifolium repens* 10%, *Lotus corniculatus* 5% – 9,6 t/ha S.U.

-The consumption of nutritive substances/animal/day presented relatively equal values between the two lots, a little bit higher at the 2nd lot where the pasture had a higher rate of the vegetable plants.

-The final body weight was of 45,20-46,30 kg, higher with 2,43% at the 2nd lot.

-The average daily gain was of 101 g and the 1st lot and of 110g at the 2nd lot, at the latter being superior with 8,91 %.

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