

## EVALUATION OF PLANT AND ANIMAL PRODUCTIVITY OF NATURA 2000 GRASSLAND HABITATS IN THE SECAȘELOR PLATEAU

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### Abstract

The permanent grasslands of the Secașelor Plateau, a component of the Transylvanian Plateau, were studied from a geobotanical point of view. Based on these data, the productivity of 27 grassland associations and 4 Natura 2000 habitats (H) was evaluated, namely H 1530, H 6210, H6440 and H 6520. The highest pastoral value (PV) with an index of 78.7 was evaluated at H 6520 and the highest green fodder mass (GM) production of 15.55 t/ha at H 6440, which ensures an optimal load of 1.55-1.56 LU/ha in 154-155 days of the grazing season. The lowest plant productivity was evaluated at H 6210 invaded mainly by *Botriochloa ischaemum*, with a PV index of 8.1 and a GM of 1.24 t/ha, almost 10 times lower than H 6210 with normal vegetation. On average, the PV was 51.1 and the GM production was 9.72 t/ha, which allowed a load of 0.98 LU/ha, a grazing season of 152 days. The average consumption for 1 liter of cow's milk was 7 kg GM and for 1 kg of live weight gain in young bulls was 75 kg GM, resulting in 1573 L/ha of milk worth €785 or 145 kg/ha of weight gain worth €465. The best animal production results were achieved at H 6440 and H 6520 where an average of 2800 L/ha milk with €1400 or 250 kg/ha weight gain with €800 were evaluated. The lowest animal productions were evaluated at H 6210 with degraded vegetation, 136 L/ha milk or 13 kg/ha weight gain and H 1530 with 593 L/ha milk or 55 kg/ha weight gain, 3-12 times the average of the habitats or 5-19 times lower productions compared to the most valuable grassland habitats.

**Keywords:** Secașelor Plateau grasslands, plant productivity, animal productivity, milk and weight gain value

### INTRODUCTION

To date, numerous geobotanical and typological research has been carried out on permanent grasslands (PUȘCARU-SOROCEANU et al., 1963; BĂRBULESCU, MOTCĂ, 1983).

Knowledge of the plant productivity of permanent grasslands, namely the amount of

green mass and its fodder value, are essential indicators for the preparation of pastoral arrangements and their subsequent optimal management (MARUȘCA et al. 2014).

Plant productivity directly influences animal performance expressed in milk, live weight gain,

wool, etc., which are finished products with economic value.

These indicators that ultimately define the yield of a permanent grassland are determined through experiments with laborious and expensive animals (MOTCĂ et al., 1994; MARUŞCA, 2022).

Productivity assessment based on floristic survey has simplified and substantially reduced

expenses, being sufficiently precise (MARUŞCA, 2019; MARUŞCA, 2026).

Through this new evaluation method, it was possible to establish the plant and animal production of numerous phytocoenoses and ultimately grassland habitats.

This work is a continuation of the productivity assessment of the Secaşelor Plateau.

## MATERIAL AND METHOD

The study of grassland productivity is a continuation of the geobotanical research from the doctoral thesis "Flora and vegetation of the Secaşelor Plateau " prepared by biologist Vasile Cristea under the scientific guidance of Prof. doc. Ştefan Csürös from the

"Babeş- Bolyai" University of Cluj-Napoca, Faculty of Biology, Geography and Geology, defended in 1981.

The outline of the permanent grassland associations was as follows:

### CI. MOLINIO - ARRHENATHERETEA R. Tx. 1937

#### Ord. ARRHENATHERETALIA Pawlowski 1928

##### Al. Arrhenatherion elatioris (Br.-Bl. 1925) W. Koch 1926

1. *As. Arrhenatheretum elatioris* (Br.-Bl.1919) Scherrer 1925
2. *As. Poëto- Festucetum pratensis* Soó 1949

##### Al. Cynosurion cristati R. Tx. 1947

3. *As. Anthoxantho- Agrostietum tenuis* Sillinger 1933, Jurko 1969
4. *As. Lolio - Cynosuretum*, Tx. 1940
5. *As. Trifolio repenti-Lolietum* Krippelova 1967, Resmeriţă et col. 1967

#### Ord. MOLINIETALIA Koch 1926

##### Al. Agrostion stoloniferae (Soó 1943) 1971

6. *As. Agrostietum stoloniferae* Ujvárosi 1941, Soó 1971

### CI. FESTUCO-BROMETEA Br.-Bl.1931

#### Ord. FESTUCETALIA VALESIIACAE Br.-Bl. et Tx. 1943

##### Al. Festucion rupicolae Soó 1940

7. *As. Agrostio - Festucetum rupicolae* M. Csürös 1964
8. *As. Festuco rupicolae - Caricetum humilis praerossicum* Soó 1949
9. *As. Medicagini- Festucetum valesiaca* Wagner 1941
10. *As. Botriochloetum ischaemi* I. Pop 1977
11. *As. Chrysopogonetum grylli campinensis* Borza 1959
12. *As. Stipetum capillatae* (Hueck1931) Krausch. 1961

13. *As. Artemisietum pontico-serriceae* Soó ( 1927) 1942  
**Al. Danthonio-Stipion stenophyllae** Ghişa 1947, Soó 1947
14. *As. Stipetum stenophyllae transsilvanicum* Soó 1946  
**Al. Cirsio-Brachypodion** Hadac et Kilka 1944 em. Krausch. 1961
15. *As. Festuco rupicolae -Brachypodietum pinnati transsilvanicum* E. Schneider-Binder 1971  
**Al. Seslerio-Festucion pallentis** Kilka 1934
16. *As. Seslerietum heufflerianae austro-transsilvanicum* Borza 1959
- Cl. PUCCINELLIO-SALICORNIETEA** Țopa 1939  
**Ord. THERO-SALICORNIETALIA** Br.-Bl. (1931) Tx. 1950  
**Al. Thero-Salicornion** Br.-Bl. (1930) 1933. em. Tx. 1950
17. *As. Salicornietum europaeae* Soó 1927, 1964, Wendelbg. 1943  
**Al. Puccinellion peisonis** (Wendelbg. 1943), Soó 1957
18. *As. Puccinellietum distantis* Soó 1939, Knapp 1948  
**Al. Puccinellion limosae** (Klika 1937), Wendelbg. 1943
19. *As. Puccinellietum limosae* (Rapaics 1927), Soó 1930  
**Al. Juncion gerardii** Wendelbg. 1943
20. *As. Plantaginetum (cornuti)-Agrostietum stoloniferae* Soó et. Csűrös 1944, corr. 1973
21. *As. Astero (tripolio)-Triglochinietum* Țopa 1939  
**Ord. ARTEMISIO-FESTUCETALIA PSEUDOVINAE** Soó 1933  
**Al. Festucion pseudovinae** Soó 1933
22. *As. Artemisio-Festucetum pseudovinae* (Magyar 1928) Soó (1933) 1945
- Cl. PLANTAGINETEA MAJORIS** Tx. et Prsg. 1950  
**Ord. PLANTAGINETALIA MAJORIS** Tx. (1947) 1950  
**Al. Polygonion avicularis** Br.-Bl. 1931, em. Tx. 1950
23. *As. Polygonetum avicularis* Gams 1927
24. *As. Poëtum annuae* Gams 1927
25. *As. Lolio-Plantaginetum majoris* (Linkola 1921) Beger 1930
26. *As. Matricario-Lolietum* (Beger 1930) Tx. 1937  
**Al. Agropyro-Rumicion crispi** Nordh. 1940
27. *As. Lolio-Potentilletum anserinae* (Rapaics 1927) Knapp 1946

Geobotanical research on grassland vegetation was carried out according to the Braun-Blanquet method of the Phytosociological School Zurich - Montpellier (CRISTEA et al., 2004).

The scores of the abundance-dominance (AD) rating scale were transformed into participation percentages in order to perform statistical calculations (Table 1).

Floristic surveys thus prepared, with the component species in percentages of participation in the grassland carpet, multiplied by quality and plant mass indices, made it possible to establish the pastoral value (PV) and green forage mass production (GM) indices according to a new method (MARUŞCA, 2019).

Table 1

Participation assessment (P%) from synthetic surveys, depending on the intervals abundance + dominance (AD) scale and average constancy (K%) for permanent grassland phytocoenoses (restored after Marușca 2019)

AD scale Br. – Bl.	AD based on K (%)				
	I (<20)	II (21 – 40)	III (41 – 60)	IV (61 – 80)	V (81 – 100)
<b>5</b>	<b>8.8</b>	<b>26.3</b>	<b>43.8</b>	<b>61.3</b>	<b>87.5</b>
4 - 5	7.5	22.5	37.5	52.5	75.0
3 - 5	6.3	18.8	31.3	43.8	62.5
2 - 5	5.3	15.8	26.3	36.8	52.5
1 - 5	4.6	13.9	23.2	32.4	46.3
+ - 5	4.4	13.2	22.0	30.8	44.0
<b>4</b>	<b>6.3</b>	<b>18.8</b>	<b>31.3</b>	<b>43.8</b>	<b>62.5</b>
3 - 4	5.0	15.0	25.0	35.0	50.0
2 - 4	4.0	12.0	20.0	28.0	40.0
1 - 4	3.4	10.1	16.9	23.7	33.8
+ - 4	3.2	9.5	15.8	22.1	31.5
<b>3</b>	<b>3.8</b>	<b>11.3</b>	<b>18.9</b>	<b>26.3</b>	<b>37.5</b>
2 - 3	2.8	8.3	13.8	19.3	27.5
1 - 3	2.1	6.4	10.7	14.9	21.3
+ - 3	1.9	5.7	9.5	13.3	19.0
<b>2</b>	<b>1.8</b>	<b>5.3</b>	<b>8.8</b>	<b>12.3</b>	<b>17.5</b>
1 - 2	1.1	3.4	5.7	7.9	11.3
+ - 2	0.9	2.7	4.5	6.3	9.0
<b>1</b>	<b>0.5</b>	<b>1.5</b>	<b>2.5</b>	<b>3.5</b>	<b>5.0</b>
+ - 1	0.3	0.8	1.4	2.0	2.8
<b>+</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>

Phytosociological alliances and associations were further included in Natura 2000 Habitats (DONIȚĂ et al. 2005, Gafta, MOUNTFORD 2008).

The duration of the grazing season was established according to

altitude and the duration of the interval with average daily temperatures between 10-20 ° Celsius (MARUȘCA 2001) according to the formula:

$$\mathbf{D.s.p. (100-500\ m\ alt.) = 100 \times 0.15 \times Alt.}$$

$$\mathbf{D.s.p. (500-2500\ m\ alt.) = 212 - 0.075 \times Alt.}$$

in which:

D.s.p. = duration of grazing season (days)

Alt. = altitude (m)

The optimal loading and grazing capacity of a pasture is

determined by the following formula:

$$\text{GC (LU/ha)} = \text{GM Production (kg/ha)} / \text{D.s.p.} \times 65$$

in which:

GC = grazing capacity (animal load)

LU = large cattle unit

GM = green fodder mass

D.s.p. = grazing season duration

65 = amount of GM (kg) required for 1 LU/day (50 kg+30% annual and seasonal fluctuations of GM) (MARUȘCA, 2019)

Of particular importance are the conversion coefficients of green mass production into animal production, which are based on consumption indices for 1 liter of milk or 1 kg of live weight gain in cattle ( MARUȘCA, 2025, 2026).

The green fodder consumption index for 1 liter (L) of milk was calculated using the formula:

$$\text{GM consumption (kg) for 1 L milk} = 9.5 - 0.05 \times \text{PV}$$

in which:

GM (kg) = green fodder mass

PV (ind.) = pastoral value

Cow milk production per hectare was calculated using the formula:

$$\text{Milk production (L/ha)} = \text{GM (kg/ha)} / \text{GM consumption (kg) for 1L}$$

The GM consumption index (kg) for 1 kg of live weight gain in

young bovine was calculated according to the formula:

$$\text{GM consumption (kg) for 1kg gain} = 100 - 0.5 \times \text{PV}$$

Similarly, the consumption of GM for 1 kg of live weight gain varies between 50 kg GM for the maximum PV index of 100 to 100 kg GM for the lowest PV index.

The production of growth (meat) in young bovine per hectare is calculated according to the formula:

$$\text{Gain production (kg/ha)} = \text{GM (kg/ha)} / \text{GM consumption (kg) for 1 kg gain}$$

The prices of animal products at EU level, namely cow's milk is 0.5 Euro/L and live meat is

3.2 Euro/kg higher. (MADR, Carcass Classification Commission, 2026).

The productivity of habitats mainly used as hayfields or mixed

in the Carpathians was calculated with the formula:

$$\text{Hay production (t/ha)} = \text{GM (t/ha)} \times 0.24$$

in which:

GM = green fodder mass

0.24 = transformation coefficient (PUIA et al., 1976)

By applying these formulas to the evaluation of plant and animal production during the grazing

season, the basic elements for the preparation of pastoral arrangements, optimal management and economic efficiency achieved on permanent grasslands are established.

## RESULTS AND DISCUSSIONS

The 27 associations described in the Secaşelor Plateau located in South-West Transylvania

between 280-440 m altitude, belong to 14 phytosociological alliances (Table 2).

Table 2

General data on the resort and grassland vegetation

No. crt.	Associations	Altitude (m)	Exposition	Inclination (degrees)	Cormophyte (no.)	Covering (%)
<b><i>Arrhenatherion elatioris</i></b>						
1.	<i>Arrhenatheretum elatioris</i>	285	Plan (P)	-	61	100
2.	<i>Poëto- Festucetum pratensis</i>	320	NW, P	3	61	94
<b><i>Cynosurion cristati</i></b>						
3.	<i>Anthoxantho-Agrostietum tenuis</i>	380	N,NW,NE	8	95	96
4.	<i>Lolio - Cynosuretum</i>	400	N, NE, NW	2	54	90
5.	<i>Trifolio repenti-Lolietum</i>	310	M,N,F,W	4	55	89
<b><i>Agrostion stoloniferae</i></b>						
6.	<i>Agrostietum stoloniferae</i>	360	-	-	44	100
<b><i>Festucion rupicolae</i></b>						
7.	<i>Agrostio - Festucetum rupicolae</i>	370	NW,N,W,NE, E,P	12	188	96
8.	<i>Festuco rupicolae - Caricetum humilis praerossicum</i>	370	W,SW,NW	16	57	90

No. crt.	Associations	Altitude (m)	Exposition	Inclination (degrees)	Cormophyte (no.)	Covering (%)
9.	<i>Medicagini-Festucetum valesiaca</i>	350	S,E,SW,NE	17	83	83
10.	<i>Botriochloetum ischaemi</i>	340	S,SW,SE,W	23	127	82
11.	<i>Chrysopogonetum grylli campinensis</i>	440	S,SE	20	29	93
12.	<i>Stipetum capillatae</i>	400	S,P	15	28	93
13.	<i>Artemisietum pontico-serriceae</i>	340	SW,SE,S,W	27	26	49
<b><i>Danthonio-Stipion stenophyllae</i></b>						
14.	<i>Stipetum stenophyllae transsilvanicum</i>	340	NW,P	5	56	85
<b><i>Cirsio-Brachypodion</i></b>						
15.	<i>Festuco rupicolae - Brachypodietum pinnati transsilvanicum</i>	340	N,NW,SE,NE, SV,V,P	11	109	98
<b><i>Seslerio-Festucion pallentis</i></b>						
16.	<i>Seslerietum heufflerianae austro-transsilvanicum</i>	290	P,NW	-	14	75
<b><i>Thero-Salicornion</i></b>						
17.	<i>Salicornietum europaeae</i>	280	S,P	30	7	63
<b><i>Puccinellion peisonis</i></b>						
18.	<i>Puccinellietum distantis</i>	290	Plan (P)	-	20	96
<b><i>Puccinellion limosae</i></b>						
19.	<i>Puccinellietum limosae</i>	300	Plan (P)	-	17	87
<b><i>Juncion gerardii</i></b>						
20.	<i>Plantagineto (cornute)-Agrostietum stoloniferae</i>	290	Plan (P)	-	17	100
21.	<i>Astero (tripolio)-Triglochinietum</i>	295	Plan (P)	-	17	90
<b><i>Festucion pseudovinae</i></b>						
22.	<i>Artemisio-Festucetum pseudovinae</i>	315	Plan (P)	-	16	90
<b><i>Polygonion avicularis</i></b>						
23.	<i>Polygonetum avicularis</i>	360	Plan (P)	-	28	83

No. crt.	Associations	Altitude (m)	Exposition	Inclination (degrees)	Cormophyte (no.)	Covering (%)
24.	<i>Poëtum annuae</i>	360	-	-	28	93
25.	<i>Lolio-Plantaginetum majoris</i>	360	-	-	28	73
26.	<i>Matricario-Lolietum</i>	360	-	-	28	80
<b><i>Agropyro-Rumicion crispi</i></b>						
27.	<i>Lolio-Potentilletum anserinae</i>	360	-	-	23	85
<b>AVERAGE</b>		<b>341</b>	<b>-</b>	<b>7</b>	<b>49</b>	<b>87</b>

A total of 13 associations are located on flat land and 14 associations on sloping land with inclinations between 5-30 degrees.

Under these stationary conditions, an average of 49 cormophytes per association were recorded, the most, 188 species, were found in the *Agrostio – Festucetum rupicolae* association and the fewest, only 7 species in *Salicornietum europaea*.

100% vegetation cover was reported only in *Arrhenatheretum*

*elatioris*, *Agrostietum stoloniferae*, *Plantaginetum (cornuti)- Agrostietum stoloniferae* associations.

The lowest vegetation covers were observed in *Artemisietum pontico-serriceae* (49%) and *Salicornietum europaea* (63 %).

The average participation in the grassy carpet of species with forage value is 64% and of harmful species 23% of the total 87% average vegetation cover (Table 3).

Table 3

Forage species participation, pastoral value, green mass production and animal loading

No. crt.	Associations	Species structure		Pastoral value (ind.)	GM output (t/ha)	Grazing season duration (days)	Loading with animals (LU/ha)
		Fodder	Harmful				
<b><i>Arrhenatherion elatioris</i></b>							
1	<i>Arrhenatheretum elatioris</i>	88	12	74.4	19.51	x	x
2	<i>Poëto- Festucetum pratensis</i>	92	2	81.9	16.66	x	x
<b><i>Cynosurion cristati</i></b>							
3	<i>Anthoxantho-Agrostietum tenuis</i>	94	2	71.8	12.59	157	1.23
4	<i>Lolio - Cynosuretum</i>	89	1	80.7	16.63	160	1.60
5	<i>Trifolio repenti-Lolietum</i>	88	1	83.6	17.09	147	1.85
<b><i>Agrostion stoloniferae</i></b>							
6	<i>Agrostietum stoloniferae</i>	92	8	71.6	15.55	154	1.55

No. crt.	Associations	Species structure		Pastoral value (ind.)	GM output (t/ha)	Grazing season duration (days)	Loading with animals (LU/ha)
		Fodder	Harmful				
<b><i>Festucion rupicolae</i></b>							
7	<i>Agrostio - Festucetum rupicolae</i>	92	4	68.4	13.04	156	1.29
8	<i>Festuco rupicolae - Caricetum humilis praerossicum</i>	73	17	39.9	7.78	156	0.77
9	<i>Medicagini-Festucetum valesiaca</i>	82	1	48.2	8.05	139	0.89
10	<i>Botriochloetum ischaemi</i>	19	63	11.0	1.73	151	0.18
11	<i>Chrysopogonetum grylli campinensis</i>	86	7	41.8	15.20	166	1.41
12	<i>Stipetum capillatae</i>	7	86	4.2	0.64	160	0.06
13	<i>Artemisietum pontico-serriceae</i>	3	46	1.6	0.23	151	0.02
<b><i>Danthonio-Stipion stenophyllae</i></b>							
14	<i>Stipetum stenophyllae transsilvanicum</i>	25	60	15.7	2.35	151	0.24
<b><i>Cirsio-Brachypodion</i></b>							
15	<i>Festuco rupicolae - Brachypodietum pinnati transsilvanicum</i>	93	5	52.5	16.50	151	1.68
<b><i>Seslerio-Festucion pallentis</i></b>							
16	<i>Seslerietum heufflerianae austro-transsilvanicum</i>	25	50	13.5	2.30	144	0.25
<b><i>Thero-Salicornion</i></b>							
17	<i>Salicornietum europaeae</i>	62	1	29.5	2.59	142	0.28
<b><i>Puccinellion peisonis</i></b>							
18	<i>Puccinellietum distantis</i>	83	13	55.3	5.89	144	0.63
<b><i>Puccinellion limosae</i></b>							
19	<i>Puccinellietum limosae</i>	85	2	65.9	5.85	145	0.62
<b><i>Juncion gerardii</i></b>							
20	<i>Plantagineto (cornuti)-Agrostietum stoloniferae</i>	83	17	56.9	2.93	144	0.31
21	<i>Astero (tripolio)-Triglochinietum</i>	12	78	9.2	0.64	144	0.07

No. crt.	Associations	Species structure		Pastoral value (ind.)	GM output (t/ha)	Grazing season duration (days)	Loading with animals (LU/ha)
		Fodder	Harmful				
<b><i>Festucion pseudovinae</i></b>							
22	<i>Artemisio-Festucetum pseudovinae</i>	85	5	47.8	5.90	147	0.62
<b><i>Polygonion avicularis</i></b>							
23	<i>Polygonetum avicularis</i>	82	1	45.6	5.50	154	0.55
24	<i>Poëtum annuae</i>	92	1	57.2	5.26	154	0.53
25	<i>Lolio-Plantaginetum majoris</i>	72	1	53.8	9.18	154	0.02
26	<i>Matricario-Lolietum</i>	11	69	10.0	1.31	154	0.13
<b><i>Agropyro-Rumicion crispi</i></b>							
27	<i>Lolio-Potentilletum anserinae</i>	18	67	16.5	2.41	154	0.24
<b>AVERAGE</b>		<b>64</b>	<b>23</b>	<b>44.8</b>	<b>7.90</b>	<b>151</b>	<b>0.68</b>

With participations of 90% and above, species with forage value were found in *Arrhenatherion elatioris*, *Cynosurion cristati*, *Cirsio-Brachypodion* and the association *Agrostio - Festucetum rupicolae*.

With the lowest participation of forage species in the grassy carpet of less than 20% were the *Artemisietum pontico-serriceae* (3 %), *Stipetum capillatae* (7 %), *Matricario-Lolietum* (11 %), *Lolio-Potentilletum anserinae* (18 %) and *Botriochloetum ischaemi* (19%) which are considered economically degraded, having a grazing capacity between 0.02-0.24 LU/ha in 151-160 days.

The highest animal load was assessed at the *Trifolio repenti-Lolietum* (1.85 LU/ha) și *Lolio - Cynosuretum* (1.60 LU/ha) associations in 147-160 days of grazing season, where 16.6-17 t/ha

GM was ensured with an index of 81-84 PV.

The average GM production of all phytosociological associations was 7.9 t/ha with a PV index of 44.8 which ensures an average load of 0.68 LU/ha in an optimal grazing period of 151 days.

The only alliance used almost exclusively in haymaking is *Arrhenatherion elatioris* where 18 t/ha GM (4.34 t/ha hay) is achieved with a very good average PV index of 78.

These data on plant productivity, together with the results of long-term experiences with dairy cows and young bovine on feed-animal product conversion, led to the final economic phase of evaluating milk production or live weight gain per hectare for grassland habitats in the study area.

The following grassland habitats (H) were highlighted:

➤ H 1530, Pannonian salt - steps and salt marshes with the following phytosociological alliances: *Puccinellion peisonis*, *P. limosae*, *Juncion gerardii* and *Festucion pseudovinae*;

➤ H 6210, Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometea*) alliance *Festucion rupicolae* with normal vegetation of the associations: *Agrostio-Festucetum rupicolae*, *Festuco rupicolae-Caricetum humilis praerossicum*, *Medicagini-Festucetum valesiaca*, *Chrysopogonetum grylli campinensis* and *Cirsio-Brachypodion* alliance;

➤ H 6210 alliance *Festucion rupicolae* with degraded vegetation

forage of associations: *Botriochloetum ischaemi*, *Stipetum capillatae*, *Artemisietum pontico-serriceae* and *Danthonio-Stipion stenophyllae* alliance;

➤ H 6440, Alluvial grasslands of the river valley of the *Cnidion dubii* alliance with *Agrostion stoloniferae*;

➤ H 6520, Mountain grasslands with *Cynosurion cristate* alliance.

The highest pastoral value with an index of 78.7 was assessed at habitat (H) 6520 and the highest production of GM at H 6440 of 15.55 t/ha which ensures a load of 1.55-1.56 LU/ha in 154-155 days of grazing (Table 4).

Table 4

Vegetative productivity, grazing season length and optimal stocking with animals of the grasslands

Habitat	Status vegetation	Pastoral value (ind.)	Green table		Grazing season duration (days)	Loading with animals (LU/ha)
			t/ha	%		
1530	Normal	47.0	4.24	44	145	0.45
6210	Normal	50.2	12.11	125	154	1.21
	Degraded	8.1	1.24	13	153	0.12
6440	Normal	71.6	15.55	160	154	1.55
6520	Normal	78.7	15.44	159	155	1.56
<b>AVERAGE</b>	<b>X</b>	<b>51.1</b>	<b>9.72</b>	<b>100</b>	<b>152</b>	<b>0.98</b>

The lowest productivity was recorded in degraded H 6210, where the PV index was 8.1 and GM was 1.24 t/ha, almost 10 times lower than in H 6210 with normal vegetation.

On average, the PV was 51.5 and the GM production was 9.72 t/ha with a loading of 0.98 LU/ha in the 152-day optimal grazing season.

The main end products of a permanent grassland used by cattle

grazing are milk and live weight gain (Table 5).

Table 5  
Feed-to-animal product conversion, production per hectare and economic value

Habitat	GM conversion feed-product		Animal production per hectare				Value (Euro)	
	1 L milk	1 kg gain	Milk		Gain		Cow milk	Weight gain
1530 N *	7.2	77	593	38	55	38	297	177
6210 N	7	75	1732	110	162	112	866	517
6210 D **	9.1	96	136	9	13	9	68	42
6440 N	5.9	64	2627	167	242	167	1313	775
6520 N	5.6	61	2774	176	255	176	1387	815
<b>AVERAGE</b>	<b>7</b>	<b>75</b>	<b>1573</b>	<b>100</b>	<b>145</b>	<b>100</b>	<b>785</b>	<b>465</b>

\*) normal, \*\*) degraded

The average consumption of GM for 1 liter of cow's milk was 7 kg with variations between 5.6 kg GM at H 6520 and 9.1 at H 6210 with degraded vegetation.

The average cow milk production per hectare was 1573 L/ha worth €785 with variations between 2774 L/ha on H 6520 and 136 L/ha on degraded H 6210, 20 times lower.

The average consumption of GM for 1 kg of live weight gain in young bulls was 75 kg with variations between 61 kg GM/kg gain in H 6520 and 96 kg GM in degraded H 6210 and the average

production was evaluated at 145 kg/ha/year worth €465/ha.

According to the PV quality index and GM production with its conversion, the highest growth production of 255 kg/ha was evaluated at H 6520 and the lowest of 13 kg/ha at H 6210 with degraded forage vegetation.

The average economic value of milk production per hectare, respectively profitability, is 69% higher than the live weight gain (785 ha compared to 465 €/ha), but the expenses for producing cow's milk are also higher than for maintaining young cattle on pasture.

## CONCLUSIONS

The permanent grasslands of the Secaşelor Plateau with forage value have a high phytodiversity, belonging to 27 associations, 14

alliances, 6 orders and 4 vegetation classes.

Four Natura 2000 habitats were identified, namely H 1530, H 6210 (normal and degraded variant),

H 6520 and H 6440 with an average pastoral value (PV) of 51.1, green fodder production of 5.72 t/ha with a grazing capacity of 0.98 LU/ha in 152 days of optimal grazing season.

The average feed-animal production conversion was 7 kg GM/1 L milk or 75 kg GM/1 kg weight gain, achieving an average of 1573 L/ha milk worth €785 or 145 kg/ha live weight gain in young bovine worth €465/ha.

The highest plant productivity was evaluated at H 6440 (*Al. Agrostion stoloniferae*) and H 6520 (*Al. Cynosurion cristati*) with 71.6-78.7 PV, 15.44-

15.55 t/ha GM, loading 1.55-1.56 LU/ha in 154-155 days of grazing.

The highest animal productivity was evaluated at the same H 6440 and H 6520 with a feed-milk conversion of 5.6-5.9 kg GM/ 1L or feed-gain weight of 61-64 kg GM/ 1kg, resulting in 2627-2774 L/ha milk worth 1313-1387 € or 167-176 kg/ha gain worth 775-815 €/ha/year.

The lowest plant and animal productivity was recorded at H 1530 on saline soils and H 6210, the degraded variant on slopes exposed to aridification and overgrazing.

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