

Increasing the productive potential of permanent grasslands from the forest steppe area of Romania

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Introduction In Romania permanent grasslands represent 32 % of the total agricultural area, stretching over 4,872 million hectares, out of which 340,000 ha are located in the forest steppe area, on less productive soils, which explains their inadequate botanical composition and low quality and yields (Vintu, 2003). One of the main measures taken to increase the productivity of grasslands is through fertilisation (Birch, 1999). This paper presents the results obtained during 2000-2004 on the effect of organic fertiliser on degraded grasslands made up of *Festuca valesiaca* L.

Material and methods The unreplicated experiment comprised the following treatments: V1 – control (unfertilised); V2 – 10 t/ha cattle manure annually + N₅₀P₃₆ annually; V3 - 10 t/ha cattle manure every 2 years + N₁₀₀P₇₂ annually; V4 – 20 t/ha cattle manure annually + N₅₀P₃₆ annually; V5 - 20 t/ha cattle manure every 2 years + N₁₀₀P₇₂ annually; V6 – 10 t/ha sheep manure annually + N₅₀P₃₆ annually; V7 - 10 t/ha sheep manure every 2 years + N₁₀₀P₇₂ annually; V8 – 20 t/ha sheep manure annually + N₅₀P₃₆ annually; V9 - 20 t/ha sheep manure every 2 years + N₁₀₀P₇₂ annually. Harvesting was carried out within a hay field pattern when the dominant grasses were at the start of flowering.

Results The data, presented in Table 1, show the positive influence of fertilisation upon production depending on the fertiliser rate, manure application period and manure type. The dry matter (DM) production varied between 4.46-4.90 t /ha on those treatments fertilized with cattle manure and between 5.24-5.67 t/ha on those fertilised with sheep manure, compared to a 3.21 t/ha obtained on the unfertilised control treatment. Fertiliser application changed the botanical composition (Table 2) by increasing the cover of graminaceae from 64 % up to 67 %, that of leguminous species from 13 % up to 17 % and by decreasing the cover other species from 23 % to 16 %.

Table 1 Production of herbage and difference between the control and other treatments (Dif.) (t DM/ha)

Treatment	Mean 2000-2004		Significance
	t/ha	Dif.	
V ₁	3.21	-	-
V ₂	4.46	1.25	*
V ₃	4.76	1.55	*
V ₄	4.54	1.33	*
V ₅	4.90	1.69	**
V ₆	5.24	2.03	**
V ₇	5.64	2.43	***
V ₈	5.27	2.06	**
V ₉	5.67	2.46	***

*, P<0.05; **, P<0.01; ***, P<0.001

Table 2 Vegetation cover (%) in 2000 and 2004

Treatment	2000			2004		
	G	L	OS	G	L	OS
V ₁	60	12	28	71	11	18
V ₂	60	15	25	68	16	16
V ₃	60	14	26	64	20	16
V ₄	68	10	22	68	15	17
V ₅	60	16	24	63	18	19
V ₆	70	11	19	72	14	14
V ₇	64	13	23	68	17	15
V ₈	71	10	19	64	17	19
V ₉	61	14	25	62	20	18
Average	64	13	23	67	17	16

G - grasses; L - legumes; OS - other species

Conclusions Permanent grasslands of *Festuca valesiaca* L., from Romania present a very good answer to the organic-mineral fertilisation; thus, yield outputs of 39 up to 53% are obtained by the variants fertilised with cattle muck in comparison with the variants fertilized with sheep muck, which presented an output of 63 up to 77%. The use of fermented farmyard manure is an important measure of rehabilitating the permanent grasslands from Romania with the framework of promoting the concept of organic agriculture.

References

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