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PASTURE STANDS FOR FOALS AND PHYTOCENOLOGIC RELATIONSHIPS IN MARGINAL CONDITIONS

PĂŞUNI STANDARD PENTRU MÂNJI ŞI RELAŢIILE FITOCENOLOGICE ÎN CONDIŢII EXTREME

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Yield, botanic composition and chemical analyses of grass and herbage were measured in nine localities with different altitudes between 250 and 700 metres above sea level. Grass and herbage is the most natural and optimal feedstuff for foals. Grazing management should notably regulate the pasture composition, i.e. support dominance of soft stoloniserous strains of grasses and decrease occurrence of weed and less value strain of gramineous grasses.
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Key words: pasture, foals, agrobotanical structure, nutrients

Introduction

The role of livestock as an integrated part of the organic production systems and its importance for future development differs considerably between countries and regions in the EU (Klimeš et al. 2001; Čermák et al. 2004; Holoubek, Čermák 2004).

The pasture nutritional parameters varied in depending of agrobotanical structure, type of phenophase parameters, and agrotechnological service with management of fertiliser, conditions of pasture stands, climate conditions and other conditions. Long time utilisation and management of pasture area can increased of nutrients parameters and their stability through vegetations (Klimeš et al. 2001, 2007).

After pasture cycle the rest of pasture must be to cut or mulch. The balance between production yield and nutrients norms for animal's colud be with good management of pasture area organised (Juršík, Trávníček, Drgáč, 2001, cit. Čermák 2004). In Czech mountains conditions the pasture sezone is 140-155 days. In opposite Teslík (1996, cit. Klimeš 2007) reported the economical parameters are by near 200 days of pasture sezone. For this condition is early of spring and late of autumn the animals transport to the pasture area and ad the nutrients with the conservate feed as silage and concentrate. The aditional of minerals components depend of the evaluation of the feed ration in observed farms (Čermák et al. 2004).

For the cows without milk production 0,7-1 ha of pasture are per 1 cow with calf by low intensity. For high intensity the 1200-1800 kg live weight per 1 ha can calculated (Louda, Mrkvička, Stádník, 2001, cit. Čermák 2004). The same conditions are observed for horses pasture too (Dušek et al. 1999; Jeroch, Čermák, Kroupová 2006).

Material and Methods

9 different experimental locations were chosen in the Sumava in the Czech Republic in 2005-2006 years. Mountains area between 250 to 700 m. The foals was feed without concentrate, only hay was befeed occasionaly. The pasture yield, botanic structure of grass, clover and other plants and the quality of foal growth and healthy were monitored.

The samples of forages were analysed for content of DM, ash and crude protein (CP). Ash, BNLV – nitrogen free extractive components, NDF, ADF and ADL were determined using a Fibertec analyzer (Fibertec System M). NDF was determined according to Van Soest et al. (1991). An overnight pretreatment with α-amylase (A6380, Sigma) at 38 °C according to Ferreira et al. (1983) was followed by addition of sodium sulfite and a heat stable α-amylase (Termamyl, Novo Nordisk, Denmark) during NDF boiling. ADF and ADL were analysed according to Van Soest et al. (1991). CP was analysed according to the Kjeldahl method (AOAC, 1990). Ash was determined after combustion at 525 ^{o}C (AOAC, 1990).

Results and Discussions

Foal farm deviding in group in different altitude

Structure of farms (foals)

Table n.1

Group	Level of altitude	9 Farms
I.	Till 250 m a. s. l.	ŠCHK Kubišta, hřebčín Equus-Kinský
II.	250 – 300 m a. s. l.	Luka-Týn, hřebčín Albertovec, Padělky
III.	300 – 400 m a. s. l.	Hřebčín Suchá, ZH Písek
IV.	400 – 500 m a. s. l.	ZH Tlumačov
V.	over 500 a. s. l.	Horní Město-Skály

The optimum structure of agrobotanical groups could be: grasses 60-65%, trefoils 20-25%, other plants 10-15% (Klimeš et al. 2001; Kadlec et al. 2002; Čermák et al. 2004).

For the better understanding of pasture samples in different nutrients evaluation is the structure of some carbohydrates especially the spectra of NDF and ADF is necessary to evaluate for feed rations. For the cows after calving is 28% of NDF and 21% of ADF in feed rations recommended. The same recomendation in NDF were for horses, but the ADF content could be till 20 % depending of horses age. The average of their parameters are presents in the following tables (1-2). Each pasture stand are with similar method evaluated (Koukolová et.al.2004).

Evaluation of quality pasture stands in may 2005 year

Table n.2

Sample	Lab.drymatter.	orig.dry matter.	NL	SNL	fet	ash.	CF	ADF	NDF	BNLV	DE_H
number	%	%	%	%	%	%	%	%	%	%	MJ/kg
1	87.94	14.65	18.56	12.71	2.64	10.73	20.19	26.05	46.2	47.88	10.45
2	88.18	10.38	18.56	12.71	3.00	11.68	19.23	25.98	38.7	47.53	10.43
3	88.78	14.79	16.50	11.30	2.18	10.45	24.10	32.25	54.61	46.77	10.17
4	88.76	14.25	16.28	11.15	2.45	10.18	20.45	28.45	44.43	50.64	10.38
5	88.78	13.32	16.36	9.83	3.86	10.81	20.41	26.47	40.68	50.56	10.40
6	88.86	13.33	19.35	13.25	2.32	9.09	21.47	27.96	42.84	47.77	10.58
7	89.38	14.89	16.81	11.51	2.34	11.45	20.27	28.64	41.76	49.13	10.25
8	88.66	14.29	16.11	11.03	2.39	10.03	20.81	27.97	41.19	50.66	10.37
9	88.62	16.83	26.18	17.93	3.17	10.76	18.95	22.75	37.53	40.94	10.89
10	88.74	17.44	20.22	13.85	3.29	11.96	16.57	25.31	36.51	47.96	10.62
11	88.26	23.83	19.70	13.49	2.73	7.36	19.63	25.15	49.49	50.58	10.92
12	89.24	25.49	14.01	9.59	1.92	7.44	23.43	30.19	58.15	53.20	10.40
13	87.32	24.94	20.35	13.93	2.38	11.26	15.34	21.48	29.03	50.67	10.65
14	88.60	26.58	18.77	12.85	2.09	10.69	19.74	26.92	35.96	48.71	10.42
17	87.80	18.07	15.15	10.37	2.47	12.55	21.36	27.84	39.63	48.47	10.02
18	88.88	29.23	11.13	7.62	2.05	10.71	26.10	32.85	53.55	50.01	9.80
19	88.36	23.25	13.97	9.56	2.68	10.95	21.91	27.21	44.04	50.49	10.16
20	88.40	24.55	14.26	9.76	2.46	9.91	21.71	29.52	46.42	51.66	10.27
21	88.76	19.88	18.34	12.56	2.62	12.03	16.67	23.29	38.15	50.34	10.44
22	88.36	18.22	19.22	13.16	2.54	10.29	16.52	22.41	34.19	51.43	10.68
23	88.20	22.21	18.96	12.98	2.71	9.14	20.58	24.66	45.8	48.61	10.64
24	89.26	23.28	14.22	9.74	2.66	10.50	21.64	27.61	37.42	50.98	10.23

Data are in 100% dry matter.

DE_H - diggestible energy for horse

Evaluation of quality pasture stands in august 2005 year

Table n. 3

Sample	Lab.drymatter.	orig.dry matter.	NL	DNL	fet	ash.	CF	ADF	NDF	BNLV	DE_H
number	%	%	%	%	%	%	%	%	%	%	MJ/kg
1	90.12	23.51	12.25	8.17	2.01	11.11	24.58	31.31	48.21	50.05	9.60
2	89.66	22.42	12.52	8.35	1.73	11.71	25.10	32.31	48.22	48.94	9.49
3	90.18	28.18	10.33	6.89	1.63	8.98	31.39	36.52	63.33	47.67	9.43
4	90.54	25.87	12.95	8.63	1.88	9.63	28.82	34.03	59.72	46.72	9.61
5	89.80	24.49	13.92	9.28	2.36	9.82	23.65	31.05	42.72	50.25	9.90
6	89.82	29.94	11.47	7.65	2.04	8.39	30.98	37.77	55.66	47.12	9.62
7	90.16	43.98	8.14	5.42	1.62	7.05	32.19	40.59	64.11	51.00	9.52
8	89.74	26.51	9.89	6.59	1.85	7.39	33.20	42.53	57.82	47.67	9.55
9	89.46	22.36	11.64	7.76	1.84	11.73	25.04	33.76	48.12	49.75	9.47
10	89.90	21.79	10.51	7.01	2.12	9.96	25.97	31.4	53.61	51.44	9.61
11	90.66	41.84	8.23	5.48	2.49	5.93	27.54	36.62	65.18	55.81	9.94
12	90.20	41.60	7.71	5.14	1.96	5.41	29.15	36.15	65.15	55.77	9.85
13	89.66	29.88	15.67	10.45	1.92	9.92	24.17	29.27	47.51	48.32	9.88
14	90.06	15.01	14.79	9.86	2.28	9.74	24.82	32.29	44.85	48.37	9.89
15	90.90	28.41	11.82	7.88	2.02	8.53	27.17	32.27	56.42	50.46	9.76
16	90.38	20.66	12.96	8.64	2.10	9.13	27.05	32.39	55.10	48.76	9.76
17	89.46	17.89	13.93	9.29	2.38	12.07	22.22	29.39	38.14	49.40	9.71
18	90.00	22.50	9.80	6.53	2.36	11.53	25.23	29.17	48.88	51.08	9.47
19	89.49	20.34	10.5	7.00	2.49	13.00	22.92	27.11	40.06	51.09	9.44
20	90.08	24.02	11.21	7.47	2.55	10.35	25.58	31.84	51.86	50.31	9.67
21	89.40	14.11	13.04	8.69	2.46	12.68	22.42	29.57	38.10	49.4	9.60
22	89.28	17.85	12.69	8.46	2.41	11.76	19.08	28.89	40.01	54.06	9.82
23	89.64	23.89	11.12	7.41	2.13	9.23	26.32	35.32	55.11	51.20	9.71
24	89.80	22.45	12.35	8.23	2.43	8.13	27.84	32.07	57.23	49.25	9.86

Data are in 100% dry matter.
DE_H - diggestible energy for horse

The data from the stands in 2006 year has the some differences as in the year 2005. Low representation of clover was noticed when surveying the quality of grazing lands almost at all grazing land grazed by colts in 2005 and 2006**.** Only localities from number 5 to 8 showed to have optimal ratio of clover, grass and herbs representation.

Basic statistical evaluation, F-test a t-test of growth characteristic in comparison with growinght standard in different altitudes

Table n.4

Altitude	n	average	s_x	Var. coeff.	Min	Max	F-test	t-test
to 250	44	3,93	1,25	31,80	2	6	9,559 $^{+++}$	1:2^{+++}
250-300	36	5,58	1,32	23,65	1	7		1:5^{+++}
300-400	85	4,15	1,45	34,94	2	7		2:3^{+++}
400-500	47	4,19	1,59	38,01	1	6		2:4^{+++}
500-700	44	5,02	1,62	32,18	2	7		3:5^{+}
								4:5^{+}

Breeding stations located 500 m altitude above the sea level had higher content of dry matter in pasture. More significant differences among the grazing lands in different altitudes were not revealed. The tendency of healthier foal in high altitude was observed.

Conclusions

The EU-Regulation provides a framework ensuring that the living conditions for organic livestock are better than the minimum conditions in conventional systems, but this does not necessarily ensure a higher level of animal health and food safety. The most important source of variation is the farm management. The implementation of a high animal health status often requires additional skills and the use of additional resources (labour, time, investments etc.). Limited availability of these resources and structural problems impede efforts to improve the status of animal health at the farm level. When faced with conflicting aims and resource limitations farmers do not always gived the highest priority to animal health. This can have a negative impact on food quality and safety. Hence, there is a need for preventive strategies that are closely related to the specific farm systems to improve animal health and food safety in organic systems throughout EU. In Czech republic the area of permanent grasslands rapidly increased. It is in opposite with the decreased number of animals. The other field of pasture utilisation could be find. The multifunctional utilisation for wild animals, agroturism and sports, specially for the horses utulisation for agrotuiristic is not rather evalued.

Low representation of clover was noticed when surveying the quality of grazing lands almost at all grazing land grazed by colts in 2005**.** Only localities from groups number 3 to 5 showed to have optimal ratio of clover, grass and herbs representation. Breeding stations located above 600 m above the sea level had higher content of dry matter. More significant differences among the grazing lands in different altitudes were not revealed. The tendency of healthier foal in high altitude was observed.

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