THE QUALITY OF FODDER FROM SOME ROMANIAN CULTIVARS OF *Festuca arundinacea* IN THE REPUBLIC OF MOLDOVA

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Abstract

The results of the evaluation of the biochemical composition and nutritive value of green mass, hay, silage from the Romanian cultivars of Festuca arundinacea: 'Juncu 5', 'Napoca 2'*, 'Valrom' and ' Vio Juncu' created at the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania, and cultivated in the experimental plot of the "Alexandru Ciubotaru" National Botanical Garden (Institute), Chisinau, Republic of Moldova, are presented in this article. It was established that the first cut green mass from the studied cultivars of Festuca arundinacea contained 171.7-230.4g/kg DM, and its biochemical composition was: 6.56-14.10% CP, 2.24-3.58 % EE, 31.66-38.60% CF, 36.35-43.05% NFE, 6.20-8.50 % soluble sugars, 1.54-2.2.24 % starch, 12.55-13.09% ash, 2.1-3.2 g/kg Ca, 2.1-2.8 g/kg P and 17.34-18.17MJ/kg GE, 8.55-8.96 MJ/kg ME, 4.71-5.01 MJ/kg NEl. The prepared hay contained 820.6-894.3g/kg DM, with 7.23-13.26% CP, 1.76-2.60 % EE, 33.38-37.54% CF, 36.16-42.03% NFE, 10.93-13.25% ash, 2.3-2.8 g/kg Ca, 2.0-2.6 g/kg P, 29.42-64.67mg/kg carotene with 17.07-17.52 MJ/kg GE, 7.85-8.85 MJ/kg ME, 4.27-4.93 MJ/kg NEl. The quality of the prepared silage was: pH= 3.96-4.60, 20.1-31.5 g/kg lactic acid, 0-6.3 g/kg butyric acid, 1.8-7.4 g/kg acetic acid, 208.7-287.4g/kg DM with 5.87-9.67 % CP, 2.44-3.64 % EE, 31.30-38.71% CF, 39.71-41.53% NFE, 0.11-0.74 % soluble sugars, 0.26-0.58 % starch, 12.51-14.51% ash, 2.3-2.9 g/kg Ca, 1.8-2.3 g/kg P, 48.33-70.0 mg/kg carotene and 17.20-17.42 MJ/kg GE, 8.55-9.53 MJ/kg ME, 4.76-5.34 MJ/kg NEl.*

Keywords: biochemical composition, cv.'Juncu 5', cv. 'Napoca 2', cv. 'Valrom', cv.'Vio Juncu', *Festuca arundinacea*, green mass, hay, nutritive value, silage.

INTRODUCTION

Grasslands play a major role in economy, they are considered as the primary and most economical source of nutrients for herbivores, as habitat for wild animals and birds, as food for honeybees and other useful insects and as a source of feedstock for biorefineries. They provide an important regulating ecosystem service such as pest control, carbon storage, protection of soil from erosion and nutrient leaching, contributing to recreational values and cultural heritage.

Currently, the interest in the efficient use and conservation of grasslands has been regained, and

the efforts to conserve the remaining permanent grasslands, to restore and plant grasslands on degraded and polluted agricultural land are underway in many states around the world.

The forage quality is important for animal health, meat and milk production, therefore the quality indices need to be studied (Coșman *et al*, 2018).

Poaceae is clearly the most abundant and important family, accounting for about 24% of the Earth's vegetation, containing 777 plant genera, which include 11461 accepted species names. Globally, the species of the genus *Festuca* L. are common in the floristic composition of permanent and temporary grasslands. The Plant List includes 1741 scientific plant names of species rank for the genus *Festuca*, of these 646 are accepted species names. In Romania, the genus *Festuca* includes 32 species, 22 subspecies, 52 varieties, 87 forms and 3 hybrids (Marușca, 1999). In the spontaneous flora of the Republic of Moldova, there are 8 species of genus *Festuca* (Negru, 2007). Tall fescue *Festuca arundinacea* Schreber. (syn. *Festuca phoenix* (Scop.) Vill., *Lolium arundinaceum* (Schreb.) Darbysh.; *Schedonorus arundinaceus* (Schreb.) Dumort.) is among the perennial species with the highest frequency in the floristic composition of grasslands, buffer strips and lawns in green spaces. Tall fescue is a long-lived perennial grass, native to Europe, C_3 photosynthetic group, with vigorous and erect culms, 60 to 200 cm tall. Leaves form basal tufts, blades are 20-70 cm long and 3-12 mm wide. A tuft produces 10 to 30 flower stalks. The inflorescence is an open to narrow branched panicle, 12 to 35 cm long. Spikelets are three to nine flowered. Lemmas are awnless to short-awned. The fruit is a caryopsis with adherent pericarp, brownish-yellow, glabrous, oblong to ellipsoid, 6-9 mm long, the weight of 1000 seeds is 1.8-2.6 g. Tall fescue develops an extensive and robust root system which reaches up to 150 cm deep, is characterized by secretions that contribute to the mobilization and use of nutrients from the soil, adapts well to conditions of excess moisture as well as drought, at the same time, it develops normally on soils with pH 5.5-8.0, on eroded hills and slightly salty soil. Tall fescue reproduces by seed and vegetatively, produces new tillers from the root crown. It is perennial and is favored by the development of short stolons, thus, in periods with excess humidity, they provide the whole root system with oxygen. Tall fescue is common in wet, alluvial grasslands and in various areas – from plains to mountains, it has medium feed value, is resistant to grazing, being an effective solution in preventing the problems related to rumen acidosis in cows (Walsh, 1995; Cotigă, 2010). These species are investigated in many scientific centers and implemented as crop in different regions of the Earth, not only as a source of fodder, but also as feedstock for

biorefineries and bioenergy production (McEniry & O'Kiely, 2014; Kupryś-Caruk & Kołodziejski, 2016; Țîței& Roșca, 2021, Țîței *et al* 2019). The selected forms and created cultivars have a productivity of 50-65 tons/ha of fresh mass or 15-17 tons of hay (MARUŞCA *et al* 2011; OLAR *et al* 2018). This species is almost always present in the mixtures of grassland species used in Europa, as well as in the scientific recommendations developed and implemented by the Research and Development Institute for Grasslands Braşov, Romania (Maruşca *et al* 2014).

In the Catalogue of Plant Varieties of the Republic of Moldova there are no registered cultivars of tall fescue *Festuca arundinacea.*

The aim of the current study was to evaluate the quality of fodder from Romanian cultivars of *Festuca arundinacea* grown under the conditions of the Republic of Moldova.

MATERIAL AND METHOD

The Romanian cultivars of tall fescue, *Festuca arundinacea*: *'Juncu 5', 'Napoca 2', 'Valrom'* and *'Vio Juncu'* created at the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, România and cultivated in the experimental plot of the National Botanical Garden (Institute) "Alexandru Ciubotaru", Chişinău, latitude 46°58′25.7″N and longitude N28°52′57.8″E, served as subjects of the research.

The samples were collected after cutting the tall fescue plants for the first time in the second growing season. The harvested green mass was chopped to 1.5-2.0 cm with a laboratory forage chopper, the dry matter content was detected by drying samples up to constant weight at 105°C. The prepared hay was dried directly in the field. The silage was prepared from chopped green mass, compressed in well-sealed glass containers, stored at ambient temperature (18-20°C). After 45 days, the containers were opened, and the sensorial and fermentation indices of the conserved forage were determined in accordance with standard laboratory procedures – the Moldavian standard SM 108. The fresh mass and fermented fodder samples were dehydrated in an oven with forced ventilation at a temperature of 60°C; at the end of the fixation, the biological material was finely ground in a laboratory ball mill. The evaluation of fodder quality: crude protein (CP), crude fat (EE), crude cellulose (CF), nitrogen-free extract (NFE), soluble sugars (SS), starch, ash, calcium (Ca), phosphorus (P), carotene, silage pH index, concentration of organic acids (lactic, acetic and butyric) in free and fixed state were carried out in the Laboratory of Nutrition and Forage Technology of the Scientific-Practical Institute of

Biotechnology in Animal Husbandry and Veterinary Medicine, in accordance with the methodological indications. The gross energy (GE), metabolizable energy (ME), net energy for lactation (NEl) were calculated according to standard procedures.

RESULTS AND DISCUSSION

We found that the dry matter content in first cut harvested mass of the studied Romanian cultivars of *Festuca arundinacea* varied from 171.7 g/kg (cv. *'Valrom'*) to 230.4 g/kg (cv. *'Juncu 5'*). Analysing the results of the biochemical composition of dry matter, Table 1, we would like to mention that the concentration of nutrients was 6.56-14.10% CP, 2.24-3.58 % EE, 31.66-38.60% CF, 36.35-43.05% NFE, 6.20-8.50 % soluble sugars, 1.54-2.2.24 % starch, 12.55-13.09% ash, 2.1-3.2 g/kg Ca, 2.1-2.8 g/kg P with energy value 17.34-18.17 MJ/kg GE, 8.55-8.96 MJ/kg ME, 4.71-5.01 MJ/kg NEl. The green fodder from cv. *'Valrom'* was characterised by higher content of crude protein, crude fats, ash and reduced concentration of crude cellulose. The fodder from cv. *'Vio Juncu'* had higher concentration of crude fats, crude cellulose, calcium, phosphorus, optimal amounts of crude protein and soluble sugars. The fodder from cv. *'Juncu 5'* contained higher amounts of nitrogen free extract, crude cellulose, soluble sugars and starch, which had a positive impact on energy concentrations, but lower amount of crude protein, crude fats, ash, calcium and phosphorus.

Different results regarding the biochemical composition and the nutritive value of the green mass from *Festuca arundinacea* are given in the specialized literature. Volchenkova (1994) found that the biomass of tall fescue, depending on the amount and type of applied fertilizers contained 4.37-9.19% CP, 1.67-2.74% EE, 28.33-40.42% CF, 7.11-13.40 % ash. According to Spasov (1998), the second cut *Festuca arundinacea* herbage contained 8.87-10.06 % CP, 2.37-3.13% EE, 32.3-0-33.70 % CF, 38.0-45.0 % NFE, 9.53-12.39% ash, 129.0-164.3 mg/kg carotene, 46.3-55.7% DDM, 17.62-18.11MJ/kg GE, 6.72-8.57MJ/kg ME, 0.37-0.59 nutritive unit/kg DM. Thus, the research conducted in Australia by Hayes *et al* (2010), revealed that herbage quality of tall fescue cultivars harvested in November was 8.2-9.5 % CP, 35.0% ADF, 64.1-64.6 % NDF, 7.0-8.0% ash, 58.6-59.6% DMD, 8.6 MJ/kg ME. McEniry & O'Kiely (2014), mentioned that, in Ireland, the biomass of *Festuca arundinacea*, harvested on May 12, contained 15.2% CP, 8.6% ash, 52.9% NDF, 26.7% ADF, 16.1% soluble carbohydrates, and the biomass

harvested on 9 June contained 11.2% CP, 9.0% ash, 62.3% NDF, 37.2% ADF, 9.2% soluble carbohydrates. Kshnikatkina *et al* (2016) mentioned that the chemical composition and energy nutritional value of *Festuca arundinacea* first cut green mass was: 9.25% CP, 6.51% DP 1.15 % EE, 29.57% CF, 52.36% NFE, 8.19% ash, 9.62 MJ/kg ME, 0.75 nutritive unit/kg DM, 86.9 g DP/nutritive unit, but in second cut green mass – 8.40% CP, 5.90% DP 1.32 % EE, 27.80% CF, 53.91% NFE, 8.42% ash, 9.74 MJ/kg ME, 0.76 nutritive unit/kg DM, 76.8 g DP/ nutritive unit, respectively. Pocienė & Kadžiulienė (2016), found that the biomass of tall fescue, depending on the amount and type of applied fertilizers, contained 14-20% hemicellulose, 34-36% cellulose and 6-9% lignin. FLORES & al. (2017), mentioned that, in the USA, tall fescue contained 56.5-67.8% NDF, 27.7-34.9% ADF, 28.8-34.0% hemicellulose, 25.0-28.1% cellulose, 3.61-10.05% lignin. Dronova *et al* (2018), mentioned that, on irrigated lands of the Lower Volga region, Russia, depending on the sowing methods and seeding rates, tall fescue fodder contained 10.3-14.1% CP, 3.12-4.15 % EE, 23.8-27.2% CF, 38.2-39.9% NFE, 0.22-0.23% P, 8.49-9.38 MJ/kg ME, 0.47-0.51 nutritive unit/kg DM, 44.3-55.9 g /kg DP. Temel *et al* (2018), mentioned that, in the *Festuca arundinacea*, cultivated in nonsaline halomorphic soil, the dry matter yield was 5.94 t/ha with 11.86% CP, 58.63 % NDF, but in high saline soil – 4.59 t/ha with 10.86% CP, 55.38 % NDF, respectively. Coblentz *et al* (2020) found that the biochemical composition and nutritive value of tall fescue herbage were 75 g/kg CP, 82 g/kg ash, 107.3 g/kg WSC, 627 g/kg NDF, 356 g/kg ADF, 27.9 g/kg ADL, 1.40 Mcal/kg NEl, but meadow fescue herbage contained 71 g/kg CP, 90 g/kg ash, 98.3 g/kg WSC, 609 g/kg NDF, 364 g/kg ADF, 27.5 g/kg ADL, 1.40 Mcal/kg NEl, respectively. DONG *et al* (2021) revealed that *Festuca arundinacea* forage contained 306 g/kg DM, 7.29 % CP, 24.8 % ADF, 54.7% NDF, 14.4% WSC, 9.08% ash, 6.97% EE.

Hay is one of the main and the most common rough forage for the cattle, sheep, horses, rabbits and other animals, both in winter and throughout the year, a rich source of nutrients, vitamins and minerals, especially for the young animals, pregnant females and breeding males. It helps the motor functions of the stomach, or the muscular activity of the digestive system and promotes rumination, indispensable for proper digestion in ruminants.

The biochemical composition, nutritive and energy value of the prepared hay from *Festuca arundinacea* are presented in Table 2. The quality of the prepared tall fescue hays was characterized by 7.23-13.26% CP, 1.76-2.60 % EE, 33.38-37.54% CF, 36.16-42.03% NFE, 10.93-13.25% ash, 2.3-2.8 g/kg Ca, 2.0-2.6 g/kg P, 29.42-64.67mg/kg carotene with 17.07-17.52 MJ/kg GE, 7.85-8.85

MJ/kg ME, 4.27-4.93 MJ/kg NEl. The hay prepared from tall fescue cv. *'Vio Juncu'* had higher concentration of crude protein and phosphorus.

It has been determined that the hay prepared from cv. *'Napoca 2'* and cv. *'Valrom'* did not differ significantly in the nutrient content and energy concentration, but the hay prepared from cv. *'Juncu 5'* had a lower concentration of crude protein, crude fats, phosphorus and carotene.

Table 1

The biochemical composition and nutritional value of green mass from *Festuca arundinacea* cultivars

Indices	cultivars			
	Juncu 5	*Napoca 2*	*Valrom*	*Vio Juncu*
Dry matter content (DM), g/kg	23.04	19.66	17.17	18.04
Crude protein (CP), % DM	6.56	10.81	14.10	12.37
Crude fats (EE), % DM	2.24	2.67	3.58	3.24
Crude cellulose (CF), % DM	35.60	32.79	31.66	35.02
Nitrogen free extract (NFE), % DM	43.05	40.64	36.35	36.78
Soluble sugars (SS), % DM	8.50	6.30	6.20	7.25
Starch, % DM	2.24	1.97	1.54	1.71
Ash, % DM	12.55	13.09	14.31	12.59
Gross energy (GE), MJ/kg	18.17	17.34	17.51	17.73
Metabolizable energy (ME), MJ/kg	8.93	8.96	8.93	8.55
Net energy for lactation (NEl), MJ/kg	4.96	5.01	4.97	4.71
Calcium (Ca), % DM	0.21	0.30	0.29	0.32
Phosphorus (P), % DM	0.21	0.25	0.25	0.28

Table 2

The biochemical composition and nutritional value of hay from *Festuca arundinacea* cultivars

Indices	cultivars			
	Juncu 5	*Napoca 2*	*Valrom*	*Vio Juncu*
Dry matter content (DM), g/kg	88.91	88.02	89.43	82.06
Crude protein (CP), % DM	7.23	10.06	10.84	13.26
Crude fats (EE), % DM	1.76	2.79	2.65	2.20
Crude cellulose (CF), % DM	36.25	33.79	33.38	37.45
Nitrogen free extract (NFE), % DM	42.03	40.15	40.54	36.16
Ash, % DM	12.51	13.25	12.59	10.93
Gross energy (GE), MJ/kg DM	17.07	17.33	17.44	17.52
Metabolizable energy (ME), MJ/kg DM	8.65	8.59	8.85	7.85
Net energy for lactation (NEl), MJ/kg	4.79	4.96	4.93	4.27
DM	0.23	0.23	0.26	0.25
Calcium (Ca), % DM	0.20	0.22	0.23	0.26
Phosphorus (P), % DM	29.42	58.17	64.67	42.60
Carotene, mg/kg				

Some authors mentioned various findings about the yield and quality of the hay prepared from *Festuca arundinacea*. In Turkey, the hay yield in pure *Festuca arundinacea* stands varied from 3.7 to 11.6 t/ha and the concentration of crude protein – from 10.0 to 10.9%,

depending on the dose of nitrogen fertilizer applied (KOC & al. 2004). In the USA, thee hay prepared from tall fescue cv. Kentucky 31 contained 6.37- 7.85% crude protein with RFV 96-98 (ANGIMA & KALLENBACH, 2008). BENDER *et al* (2016) mentioned that tall fescue hay contained 143 g/kg CP, 107 g/kg ash, 30 g/kg fats, 644 g/kg NDF, 81g/kg ADL and 16 g/kg starch. AKDENIZ *et al* (2019) reported that the dry biomass yield and nutritional quality of tall fescue hay, in the second year, were: 10.23 t/ha, 9.54 % ash, 9.86% CP, 1.15 % EE, 44.85% CF, 64.05% NDF, 47.64 % ADF, RFV=75.22 and – of creeping red fescue hay: 4.34 t/ha, 8.94 % ash, 8.85 % CP, 1.44 % EE, 43.61 % CF, 69.25% NDF, 44.26 % ADF, RFV=71.11

Table 3

The biochemical composition and nutritional value of silage from *Festuca arundinacea* cultivars

Indices	cultivars			
	Juncu 5	*Napoca 2*	*Valrom*	*Vio Juncu*
Dry matter content (DM), g/kg	27.84	25.38	20.87	25.44
pH index	4.60	4.38	4.06	3.96
Content of organic acids, g/kg DM	45.4	26.6	30.4	34.4
Free acetic acid, g/kg DM	1.5	2.1	2.6	3.4
Free butyric acid, g/kg DM	1.4	0	0	0
Free lactic acid, g/kg DM	3.9	3.4	7.3	6.4
Fixed acetic acid, g/kg DM	0.3	1.1	5.5	4.0
Fixed butyric acid, g/kg DM	4.9	0	0	0
Fixed lactic acid, g/kg DM	27.6	16.7	15.0	20.6
Total acetic acid, g/kg DM	1.8	5.5	6.1	7.4
Total butyric acid, g/kg DM	6.3	0	0	0
Total lactic acid, g/kg DM	31.5	20.1	22.3	27.0
Acetic acid, % of organic acids	3.96	20.68	24.64	21.51
Butyric acid, % of organic acids	13.88	0	0	0
Lactic acid, % of organic acids	82.16	79.32	73.36	78.49
Crude protein (CP), % DM	5.87	6.65	9.67	8.01
Crude fats (EE), % DM	3.07	2.44	3.64	3.08
Crude cellulose (CF), % DM	38.71	36.87	31.30	35.33
Nitrogen free extract (NFE), % DM	39.71	41.53	40.88	41.00
Soluble sugars (SS), % DM	0.74	0.46	0.33	0.11
Starch, % DM	0.42	0.58	0.55	0.26
Ash, % DM	12.64	12.51	14.51	12.58
Gross energy (GE), MJ/kg DM	17.35	17.23	17.20	17.42
Metabolizable energy (ME), MJ/kg DM	8.55	8.78	9.53	8.99
Net energy for lactation (NEl), MJ/kg DM	4.76	4.85	5.34	4.97
Calcium (Ca), % DM		0.24	0.29	0.23
Phosphorus (P), % DM	0.25	0.18	0.23	0.21
Carotene, mg/kg	0.19	57.17	56.53	70.00
	48.33			

Silage and haylage are the main conserved green succulent roughage fodder for domestic herbivores, their preparation being an excellent strategy in animal production, reducing winter feed

costs and increasing profitability during the housing period. When opening the glass vessels with ensiled fodder, prepared from studied tall fescue cultivars, there was no gas or juice leakage from the preserved mass. The silages have agreeable colour and aroma, the consistency was retained in comparison with the initial green mass, without mould and mucus. During the sensorial assessment, it was found that, in terms of colour, the silage from tall fescue had homogeneous olive colour with pleasant smell, specific to pickled vegetables. The fermentation quality and nutrient content of prepared tall fescue silages are shown in Table 3. It has been determined that the pH index was 3.96-4.60, the concentrations of organic acids varied from 26.6 g/kg (cv. *'Napoca 2'*) to 45.4 g/kg (cv. *'Juncu 5'*) and most amounts of organic acids were in fixed form. The lactic acid constituted 73.36-82.16 % of total organic acids. The butyric acid was detected in tall fescue silage from cv. *'Juncu 5'* (13.9% of total organic acids), which caused an increase in the pH index to 4.60. It was found that during the process of ensiling, the concentrations of crude protein, soluble sugars and starch decreased. The optimal concentration of crude protein, crude fats, nitrogen free extract and carotene was detected in the silage from cv. *'Valrom'* and *'Vio Juncu'*. The silage from tall fescue cv. *'Juncu 5'* had low concentration of crude protein and energy concentrations. Some authors mentioned various findings about the quality of grass silages. FISHER *et al* (1991), reported that the dry matter content and the chemical composition of ensiled material from *Festuca arundinacea* harvested in boot stage of maturity was: 449 g/kg DM, 154 g/kg CP, 337 g/kg ADF, 550g/kg NDF, 6.3 g/kg Ca, 3.4 g/kg P, but from *Dactylis glomerata*: 229 g/kg DM, 125g/kg CP, 370 g/kg ADF, 595 g/kg NDF, 3.9 g/kg Ca, 3.3 g/kg P. POZDÍŠEK *et al* (2003) mentioned that chemical composition and energy value of silage from *Festuca arundinacea* were 118.5 g/kg CP, 33.8 g/kg EE, 261.9 g/kg CF, 477.4 g/kg NFE, 528.9g/kg NDF, 308.6 g/kg ADF, 108.4 g/kg ash, 9.54 MJ/kg ME, 5.65 MJ/kg NEl. According to JANCIK *et al* (2011), the chemical composition of silage dry matter prepared in May, in Czech Republic, from *Festuca arundinacea* was: 17.80% CP 2.76% EE, 8.59% ash, 51.20% NDF, 31.10% ADF and 2.66% ADL, but from *Dactylis glomerata* – 14.90 CP%, 3.08% EE, 7.66% ash, 54.10% NDF, 33.30% ADF, 3.12% ADL and from the hybrid *Lolium multiflorum* × *Festuca arundinacea* – 11.90 CP%, 2.92% EE, 8.78% ash, 59.5% NDF, 34.90% ADF and 2.51% ADL, respectively. KUPRYŚ-CARUK & KOŁODZIEJSKI (2016) reported that the dry matter content and chemical composition of silages from *Festuca arundinacea* were 214 g/kg DM, pH=5.2, 89.7 g/kg lactic acid, 2.3 g/kg acetic acid, 10.8% CP, 11.7% ash, 2.3 % fats, 5.0 % mono sugars, 3.0% ADL, 30.4%

cellulose, 5.7% hemicellulose. COBLENTZ *et al* (2020) compared the feed quality and energy value of grass silage remarked than tall fescue silage contained 85 g/kg CP, 91 g/kg ash, 74.7 g/kg WSC, 649 g/kg NDF, 366 g/kg ADF, 26.9 g/kg ADL, 1.37 Mcal/kg NEl, pH=5.63, 16 g/kg lactic acid, 8.2 g/kg acetic acid, 2.4 g/kg butyric acid; meadow fescue silage 77 g/kg CP, 97 g/kg ash, 51.4 g/kg WSC, 644 g/kg NDF, 391g/kg ADF, 30.1 g/kg ADL, 1.34 Mcal/ kg NEl, pH=5.60, 21.7 g/kg lactic acid, 7.6 g/kg acetic acid, 3.0 g/kg butyric acid, but orchard grass silage: 104 g/kg CP, 115 g/kg ash, 34.3 g/kg WSC, 611 g/kg NDF, 357 g/kg ADF, 26.2 g/kg ADL, 1.34 Mcal/kg NEl, pH=5.50, 17.8 g/kg lactic acid, 7.8 g/kg acetic acid, 3.2 g/kg butyric acid. RICHARD *et al* (2020) compared the feed quality and energy value of silage and haylage from tall fescue found that silage contained 341 g/kg DM, 903 g/kg OM, 136 g/kg CP, 543 g/kg NDF, 353 g/kg ADF, 21.2 g/kg EE, 86.13% IVTD, 1.26 Mcal/kg NEl, bur haylage – 506 g/kg DM, 903 g/kg OM, 141 g/kg CP, 582 g/kg aNDF, 370 g/kg ADF, 19.1 g/kg EE, 87.1% IVTD, 1.14 Mcal/kg NEl.

CONCLUSIONS

1. The green mass, hay and silage prepared from tall fescue cultivars created at the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania, contain a lot of nutrients, which make them suitable to be used as a part of diverse livestock diets.

2. The fodder from the cultivars 'Val Rom' and 'Vio Juncu' are characterized by a higher content of crude protein and crude fats.

The studied tall fescue cultivars can be used in the Republic of Moldova to recultivate permanent grasslands and to establish temporary grasslands in order to prevent soil erosion, in association with other perennial forage legume and grasses, and the harvested mass can be used as green mass, hay and silage for domestic herbivores.

Acknowledgments

The study has been carried out in the framework of the projects: 20.80009.5107.02 *"Mobilization of plant genetic resources, plant breeding and use as forage, melliferous and energy crops in bioeconomy"* and 20.80009.5107.12 *"Strengthening the "food-animal-production" chain by using new feed resources, innovative sanitation methods and schemes"*

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