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Behaviour of *Miscanthus sinensis* varieties in pedo-climatic conditions from North-East of Romania

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Abstract

The current research aimed to highlight the reaction of four ornamental varieties of Miscanthus sinensis Anderss. („Gracillimus", „Silberfeder", „Variegatus" and „Zebrinus"), in pedoclimatic conditions from North-East of Romania and foliar fertilization. Studies were carried out in conditions of experimental field of UASVM from Iaşi, in the NW area of Iaşi City, Romania. Was studied the quality and fertility state of soil resources, determine the main quality features of hortic antrosol soil, fertility and quality diagnosis of soil resources, and also plants" reaction to foliar fertilization with Nutriplant Plus Universal. At all varieties was noticed a medium level of soil effective trophicity, higher values being at variants with a foliar fertilization of plants V2 (53 points) and to inferior limit at control variants V1 (48 points). Regarding plants" growing and development, all four varieties of Chinese silver grass had a positive reaction to foliar fertilization, exacerbating the decorative characteristics. The recorded results enlightened a good adaptability of the studied varieties at soil and climate conditions from the studied area and a favourable reaction for foliar fertilization.

Keywords: adaptation, Chinese silver grass, fertilization, Iaşi, ornamental grasses

1. Introduction

In world, ornamental grasses occupy an important place in the assortment of plants for landscape design. In the last years also in Romania, this group of plants started to be more frequently utilised in landscape designs. From this reason is mandatory to know their behaviour in the local pedoclimatic conditions, because the majority of ornamental grasses are from areas with a mild climate.

Genera *Miscanthus* belongs to Poaceae family and includes over 20 perennial species (GLOWACKA & JEYOWSKI [1], HODKINSON & al. [2], ROUNSAVILLE & al. [3]).

Miscanthus sinensis Anderss. (syn. *Eulalia japonica* Trin.) is a specie native from Asia (China and Japan) (STEWART & al. [4]) and it is known under the popular name of Chinese silver grass, eulalia grass, Japanese silver grass, maiden grass (ARDLE [5], DARKE [6], GRAHAM [7], SUN & al. [8]). This specie is cultivated, mainly, as ornamental plant (MEYER & MOWER [9]) and presents various varieties. Is multiplied both through seeds (MEYER & TCHIDA [10]), and also vegetative by fragmentation of rhizome (GRAHAM [7], MEYER & MOWER [9], CHELARIU & DRAGHIA [11], GILMAN [12]).

Also, *Miscanthus* is both known in European Union (HEATON & al. [13]), and also in USA (HEATON & al. [13], PYTER & al. [14]) as an energetic plant which could produce great quantities of biomass, so to be supplied the huge demands of biofuels on the market. Due to

high rate of biomass and polysaccharide content, *Miscanthus* drew attention on it and was quoted as an importantat candidate for multiple biotechnological utilisations (VISSER & al. [15]). It presents some characteristics regarding content in lignine, hemicellulose and their effect on quality of combustion (SHUMNY & al. [16], BROSSE & al. [17], QIN & al. [18], DALTON [19], HEATON & al. [20]). In comparison with other energetic crops, *Miscanthus x gianteus* (hybrid obtained from *Miscanthus sinensis* and *Miscanthus sacchariflorus*) could produce higher quantities of reducing sugars. *Miscanthus* could play an important role in biofuels industry, having in view that plant could be cultivated on arable lands with a low quality, unsuitable for other crops or in polluted areas (VINTILĂ & al. [21]), having the capacity to immobilize heavy metals (zinc, cadmium and lead) from polluted soils (PAVEL & al. [22]).

As an ornamental, maiden grass is used as a mass planter, yard border, privacy screen, container or above-ground planter, or as an accent. *Miscanthus sinensis* is appreciated for its winter appearance, including: persistent fruits, a showy trunk, and an overall golden brown colour (DARKE [6], GRAHAM [7], GILMAN [12]).

The current paper aimed to highlight the behaviour of four ornamental varieties of *Miscanthus sinensis* Anderss. („Gracillimus", „Silberfeder", „Variegatus" and „Zebrinus") in pedoclimatic conditions from North-East of Romania and at fertlization with Nutriplant Plus Universal in doses recommended by producer. Variety „Gracillimus" is presented as a compact bush, with a height of 120–180 cm, flowers being grouped in digital panicles, with a brownish purple colour. „Silberfeder" is a cultivar which grows in a shape of a compact bush, with floral strains high of 150–250 cm, green leave, with a mean length of 50–60 cm and a width of 2.5 cm. Variety „Variegatus" grows as a compact bush, 150-200 cm height. Leave are longitudinal variegate, coloured in green and white. Flowers are grouped in digital (finger) shape panicle and floral strains could reach the height of 175-300 cm. At „Zebrinus" variety plants could reach a height of 200 cm and bush diameter is 120 cm. Have a vertical position or slightly arched, leave are green with white-yellow coloured horizontal stripes. In spring at staring in vegetation leave are completely green and after some weeks appear the characteristic stripes. In autumn leave have a reddish colour. Floral strains could have a length of 180-200 cm. Inflorescence is a panicle which till the end of autumn receive a fan shape (ARDLE [5], CHELARIU & DRAGHIA [11], SUN & al. [8]).

Those varieties prefer sunny or semi-shadow lands, with fertile soils, well drained. It needs moderate moisture. Tolerate drought periods and polluted air. They are cultivated from 5th rusticity area till 9th area (ARDLE [5], CHELARIU & DRAGHIA [11], SUN & al. [8]).

2. Materials and Method

Research was carried out in the pedo-climatic conditions of Iaşi County, Romania, during May 2013 – April 2014. Experience was organized in the experimental field of Floriculture discipline (Didactic farm „Vasile Adamachi" Iaşi), from UASVM Iaşi. Didactic farm is located in the North-West area of Iaşi City. Biological material was represented by four varieties of ornamental grass specie *Miscanthus sinensis* Anderss. as follows: „Gracilimus", „Silberfeder", „Variegatus" and „Zebrinus". For establishing the experiences were utilised biological material with the age of one year, obtained in glasshouse conditions, in pots. The planting in field took place on 10th of May 2013. For a correct evaluation of adaptation possibilities of *Miscanthus sinensis* Anderss. specie in cropping conditions of Iaşi County were realised research regarding quality and fertility state of soil resources from experimental field, as well as the plants" response to foliar fertilization.

Experience was organised with two variants: V1 - control unfertilized and V2 - foliar fertilization. Were done three foliar fertilizations during June - July 2013, at an interval of 7-

10 days, with Nutriplant Plus Universal, in rate of 10 ml/litre of water at one foliar application. Observations on plants were realised before each fertilization, at one month after the last treatment and before rest period. The obtained results were statistically processed through variance analysis using limit differences.

Pedo-biological analysis on hortic antrosol soil were realised in according with ICPA methods (1986 and 1987) [23] [24]. The complex ecologic study on quality and fertility of soil resources is described by *matrix of area and local ecological specific* (table 2) and *matrix of eco-pedological diagnosis of effective trophicity of soil resources* (table 3). To characterise the ecological and area specific were analysed 20 important factors and ecological determinants, edaphic and climatic in ecologic context, from quantitative point of view (by 5 classes of ecological size), as well as from qualitative point of view (by 5 classes of ecological favourability).

For a right evaluation of effective trophicity of soil resources was realised an evaluation file of soil quality which contains the 10 most important pedo-ecological factors and determinants, such as: 3 physical-mechanical determinants: soil texture (Tx), aeration porosity (PA) and aestival consistency of soil (Con); 1 pedo-biological determinant: Synthetic Indicator of Biological Potential (ISB%); 3 eco-pedo-chemical determinants: soil reaction (pH_{H2O}), humus content (Hum%) and saturation degree in alkali (V%); 3 ecological factors for growing factors: content of total N (Nt), content of mobile P (P_{AL}) and content of assimilable K (K_{AL}).

The main mechanical, physical, chemical and biological analysed characteristics were placed in classes of ecological size, being rated with marks from 0 to 10 points. The value of the general and synthetic indicator of soil management quality: *Eco-Pedological Diagnosis of Effective Trophicity of Soil Resources* (DEPTERS - points), was obtained as a sum of the marks given for those 10 analysed analytical indicators of quality:

$$\text{DEPTERS} = \sum_{1}^{10}(Tx+PA+Con+Biol+pH+Hum+V+Nt+P+K)$$

For comparing the obtained values, was designed a quality creditworthiness scale, with 5 stages, based on which were given ranks: very good, good, average, satisfactory and poor (low): under 20 points – weak effective trophicity, oligotrof soil; rating: weak (poor soil); 21-40 points – effective trophicity less than mediocre, oligo-mesotrophic soil; rating: satisfactory, under medium; 41-60 points – mediocre effective trophicity, mesotrophic soil; rating: average; 61-80 points – superior effecticve trophicity, eutrophic soil; rating; good, high.

North-East area of Romania, where Iaşi County is localised, belongs to the 5th rusticity area, the minimal temperature corresponding to area Z5 being between -29 and -23^0C (HARDINES ZONE MAP OF EUROPE [25]). Climatic characterization of research period (May 2013 - April 2014) was made in according with the data recorded at AgroExpert Station, SDE "V. Adamachi", UASVM Iaşi [26].

In Iaşi area, the local climate is a continental temperate type, with excessive nuances. Here the annual average air temperature is 9.6^0C, and the amplitude of monthly means is $24\div25^0$C. The means of January are $3.5\div4.2^0$C, and the ones of July are $19.2\div21.3^0$C. At Iaşi, the first freeze is recorded around the date of 15th of October and the latest one could be around the date of 20th of May. Temperatures of over 10^0C are recorded between 11th of March and 20th of October, these one being in fact the optimal period for agricultural crops, period in which are realised $3000\text{-}3200^0$C, sum of the active temperatures. Length of bioactive vegetation period of air or the number of recorded active vegetation days is 175-180 days (DRAGHIA & al. [27]).

During research period (V.2013-IV.2014) average temperature in vegetation period was 17.8^{0}C (fig. 1). The recorded values are over the normal limit from vegetation period (17.3^{0}C). The lowest temperature recorded during research period was in January 2014(-20.1^{0}C), and the highest one was in August 2013 (+33.8^{0}C).

Due to the geographical position and reduced altitude of relief with a wide opening to East, in Iaşi area annual quantities of precipitation are, generally, moderate. In Iaşi horticultural eco-system the precipitation average is 586.3 mm face to 638 mm country average. Distribution of precipitations during year is non-uniform on seasons, repartition being as follows: in spring precipitations are in a rate of 24.3%, in summer the percent is 37.6%, in autumn could reach up to 19.7%, and in winter the rate of precipitations to be 18.4%. During November – March are recorded in average 31-41 days with snow (DRAGHIA & al. [27]).

During research period (V.2013-IV.2014) the quantity of precipitations was non-uniform distributed (fig. 2). So, in vegetation period (V-IX 2013) the sum of recorded precipitations was 459 mm, higher with 198.2 mm than the normal (297.2 mm). The highest monthly precipitation quantities were recorded in June, May and September 2013, and the lowest ones in October 2013 (fig. 2).

Air moisture in winter months is higher due to presence of snow layer at soil surface. During research period (V.2013-IV.2014) air moisture was, generally, higher than the normal value. So, air relative moisture as annual average was 73% face to 70% (normal) (fig. 3).

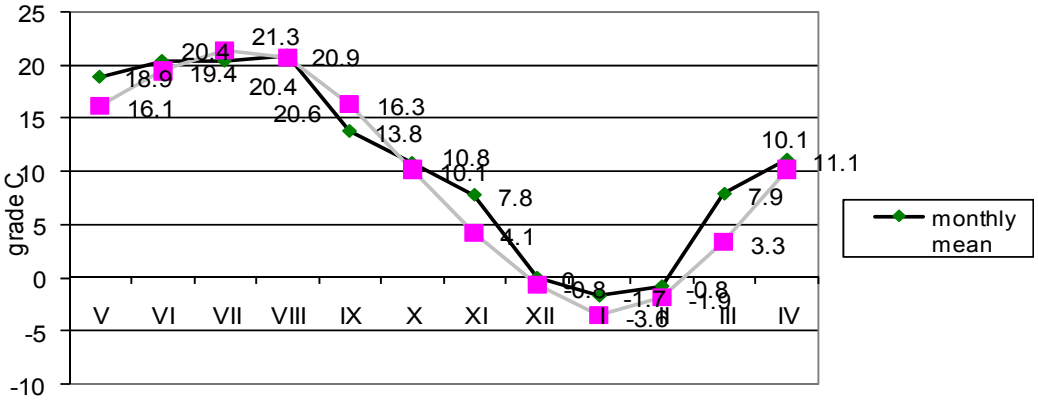

Figure 1. Average monthly temperatures during May 2013 – April 2014 (^{0}C)

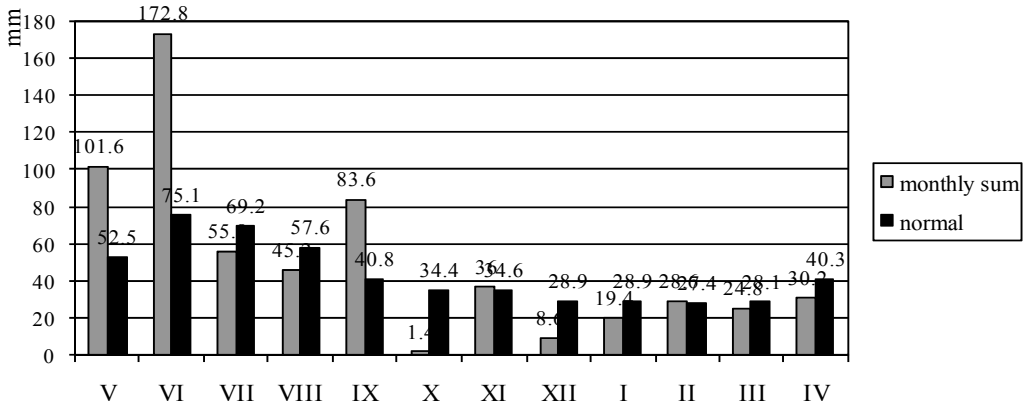

Figure 2. Sum of monthly precipitations during May 2013 – April 2014 (mm)

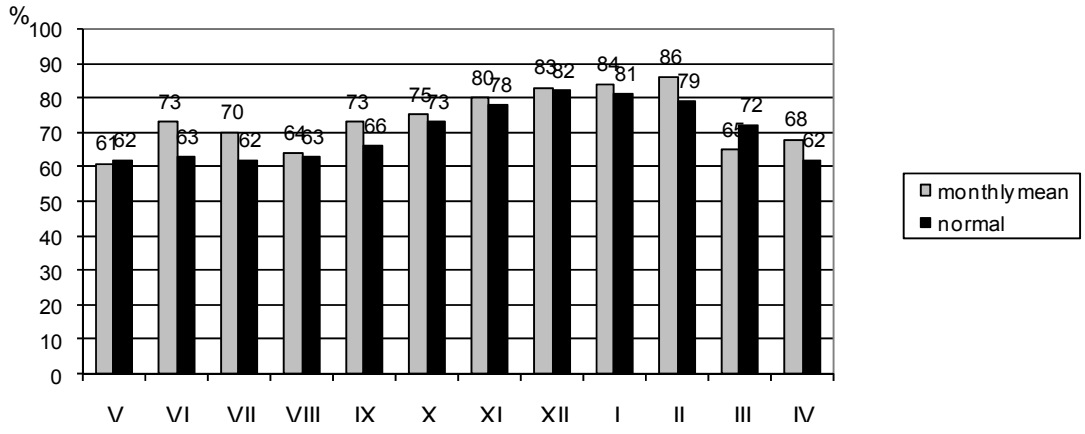

Figure 3. Air relative moisture during May 2013 – April 2014 (%)

3. Results and Discussions

Between soil, as sub-system of biotope, and biocenose, in the frame of eco-system are realised permanent and reversible exchanges of matter, energy and information. The fund of qualities, lacks and excesses of soil contributes to growing and developing of biocenose and at assuring the eco-systems productivity (BIREESCU [28], GRANT [29], KARLEN & al. [30]).

Potential trophicity of soil is the result of actions and inter-relations of physical-mechanical, chemical and biological features, considered at the same time, quality indicators for soil (BARRIOS & al. [31], BIREESCU & al. [32], CÂRSTEA [33], CARTER [34], DORAN [35])

In this way were elaborated different synthetic and global indicators of potential state of fertility and trophicity to be able to track and to apply the right methods for prevention, protection and amelioration of soil resources (DAVIDESCU & al. [36], BIREESCU [28], BIREESCU & al. [32]).

The main quality features of hortic antrosol soil. The research results on main quality and fertility indicators of hortic antrosol from experimental field with ornamental grasses belonging to UASVM Iaşi, are presented in table 1.

Was noticed that soil presents an under average biological activity, being compacted and rough in dry state even from the surface. This aspect stresses and reduces the optimal level of biological activity. Aestival consistency is rough, soil aeration is low, and texture is fine and represents the main restrictions for effective fertility of those soils which is less than medium.

Humus and total nitrogen content is less than medium, and the mobile phosphorous and mobile potassium content presents a high level. Could be remarked the higher values of saturation degree in alkali, as well as the reaction levels in weak alkaline domain.

At fertilized variants were obtained higher values face to control variants regarding the nutrients and humus content, and also for analysed biological indicators (soil respiration and activity of dehydrogenase enzyme), as effect of a stimulus given by the foliar fertilizer on plants" metabolism and stimulation of nutrients consumption on root path from soil reserves.

Table 1

The main quality features of hortic antrosol on 0-20 cm depth

Soil quality features	„Gracilimus"		„Silberfeder"		„Variegatus"		„Zebrinus"	
	V1	V2	V1	V2	V1	V2	V1	V2
Texture (% clay)	35.3	35.8	35.4	35.7	35.4	35.8	35.5	35.9
Aestival consistency	rough	rough	rough	rough	rough	rough	rough	rough
PA (%)	6	8	6	8	6	8	6	8
Humus (%)	3.15	3.25	3.16	3.28	3.16	3.27	3.15	3.27
pH (H_20)	7.49	7.25	7.49	7.26	7.49	7.26	7.49	7.27
Nt (%)	0.121	0.136	0.120	0.136	0.121	0.137	0.121	0.137
P_{AL} (ppm)	32	37	33	37	33	38	33	38
K_{AL} (ppm)	225	241	226	242	226	241	226	242
SB (me)	17	19	17	19	17	19	17	19
T (me)	19	21	19	22	19	22	19	21
V (%)	82	85	81	84	81	85	82	86
Soil respire.(mg $C0_2$)	8.3	13.6	8.1	13.5	8.2	13.5	8.1	13.4
Dehydrogenosis (mgTPF)	10.1	12.7	10.3	12.8	10.3	12.7	10.1	12.6
ISB (%)	9.2	13.1	9.1	13.0	9.2	13.0	9.2	13.1

Matrix diagram of area and local ecological specific. Soil ecological diagnosis, in connection with self characters, as synthetic indicator and quality integrator of soil is the resultant of correlation and inter-action of the main ecological factors and determinants, analysed by *matrix of area and local ecological specific* (table 2). Analysis of a number of 20 main edaphic and climatic ecological factors and determinants highlight the fund of qualities, lacks and excesses of the studied ecopedotope (UASVM Iaşi). Was noticed that the potential trophic fund is medium and the effective one is less than medium.

Table 2

Matrix of ecological specific of ecopedotope experimental field (UASVM Iaşi)

Ecological indicators	Classes of ecological size					Classes of ecological favourability				
	low	less than medium	medium	high	excess	very low	low	medium	high	very high
Growing factors										
Nt %		X					X			
Pppm			X					X		
Kppm				X					X	
Climatic ecological factors										
Tma ^0C				X						X
Pmm			X					X		
Wind			X					X		
Aestival precipitations			X					X		
Aestival air moisture			X					X		
Ecological factors, time and space condition										
Edaphic volume				X					X	
Length bio per				X					X	
Negative pedoecological factors										
Alk/acid	X									X
Aestival consistency					X	X				

Ecological determinants										
Moisture %		X						X		
Texture % clay					X	X				
PA %	X					X				
pH				X					X	
V %				X						X
Synthetic biological indicators										
Biol. Syn. Ind. (ISB)%		X					X			
Synthetic pedologic indicators										
Potential trophicity			X					X		
Effective trophicity		X					X			

Diagnosis of fertility and quality of soil resources

Analysis of elements of ecological specific through the main characteristics (climatic, pedological and pedobiological) of the biotopes highlight the ecological context, area and local, which could alleviate, stress or amplify the level of potential trophic fund (BIREESCU & al. [32], [37], [38]). Majority of utilised indicators for evaluation of soil quality are extrinsic manifestations of soil as system being in fact indicators for testing fertility state, aiming mainly of intrinsic vital processes and features of soil (DRĂGAN-BULARDA & MIHĂIESCU [39], GIANFREDA & al.[40], KARLEN & al.[30]). The complex ecological study on quality and fertility of soil is presented also by the *matrix of ecopedological diagnosis of effective trophicity of soil resources* (table 3).

Table 3

Matrix of ecopedological diagnosis of effective trophicity of hortic antrosol

Quality indexes	**Specif ic.**	**„Gracilimus"**		**„Silberfeder"**		**„Variegatus"**		**„Zebrinus"**	
		V1	**V2**	**V1**	**V2**	**V1**	**V2**	**V1**	**V2**
Depth	cm	0-20	0-20	0-20	0-20	0-20	0-20	0-20	0-20
Texture % clay	val.	35.3	35.8	35.4	35.7	35.4	35.8	35.5	35.9
	Note	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Aestiv. consist	val.	rough	rough	rough	rough	rough	rough	rough	rough
	Note	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
PA %	val.	6	8	6	8	6	8	6	8
	Note	**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**
pH H_2O	val.	7.49	7.25	7.49	7.26	7.49	7.26	7.49	7.27
	Note	**7**	**8**	**7**	**8**	**7**	**8**	**7**	**8**
Humus %	val.	3.15	3.25	3.16	3.28	3.16	3.27	3.15	3.27
	Note	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Nt %	val.	0.121	0.136	0.120	0.136	0.121	0.137	0.121	0.137
	Note	**3**	**4**	**3**	**4**	**3**	**4**	**3**	**4**
P_{AL} ppm	val.	32	37	33	37	33	38	33	38
	Note	**6**	**7**	**6**	**7**	**6**	**7**	**6**	**7**
K_{AL} ppm	val.	225	241	226	242	226	241	226	242
	Note	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
V %	val.	82	85	81	84	81	85	82	86
	Note	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
ISB %	val.	9.2	13.1	9.1	13.0	9.2	13.0	9.2	13.1
	Note	**3**	**4**	**3**	**4**	**3**	**4**	**3**	**4**
Ecoped diagn.	**val.**	**48**	**53**	**48**	**53**	**48**	**53**	**48**	**53**
	apr.	Medium effective trophicity; Values of control variant are lower, till the less than medium limit							

Cumulated sum of the given marks for analytical values of those 10 main quality and fertility indicators varies function of research stationary being between 48 and 53 points. These values characterize a medium level of effective trophicity of soil from the experimental field, being higher at fertilized variants (53 points) and till inferior limit at control variants (48 points).

Fertilization of grasses determines an increase of vegetative mass, stimulates blossoming, and at some species determines also the plants" resistance in certain unsuitable climatic conditions (PRIVITELLO & al. [41]).

Fertilization with Nutriplant Plus Universal had a positive influence on plants" growing and development at all four studied species. The obtained results are presented in table 4–7 and figures 1-7. During those three treatments at variant V2 were recorded higher values in comparison with control variant V1, referring at mean dimensions of plants, mean number of strains and inflorescences per plant.

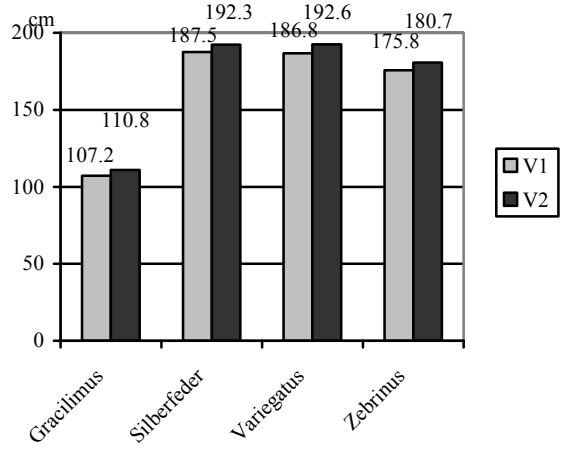

Figure 4. Influence of fertilization on plants" height

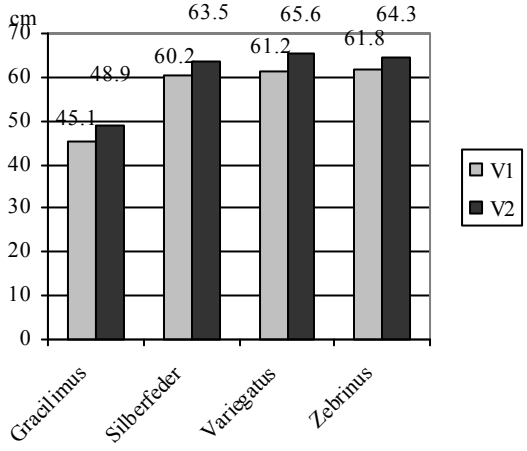

Figure 5. Influence of fertilization on bushes" diameter

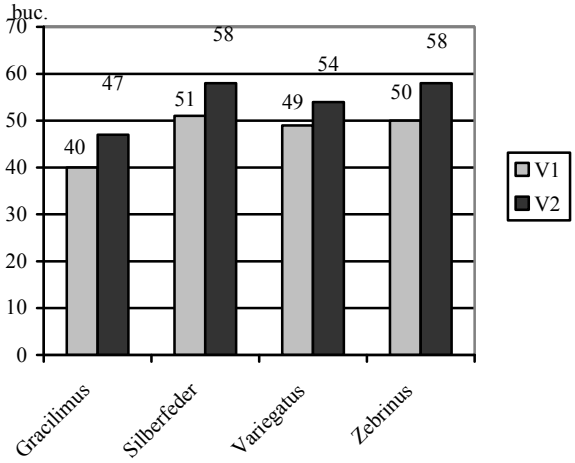

Figure 6. Influence of fertilization on mean number of strains/plant

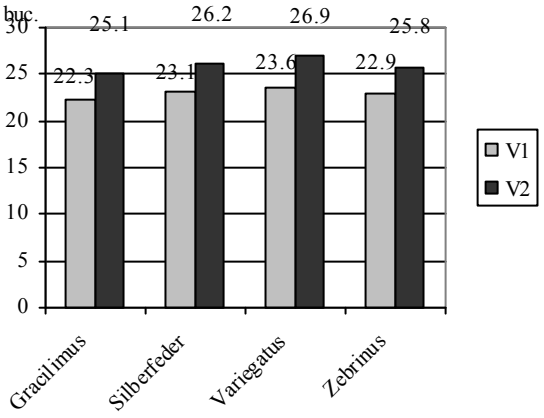

Figure 7. Influence of fertilization on mean number of inflorescences/plant

Analysing the influence of fertilization on plants" growing could be remarked that at „Gracillimus" and „Variegatus", differences face to control were very significant positive and at „Silberfeder" and „Zebrinus" were distinct significant positive (Table 4). Regarding the bushes

diameter, foliar fertilization determine very significant positive differences at „Variegatus" and distinct significant at „Gracillimus", „Silberfeder" and „Zebrinus" (Table 5).

Table 4

Results regarding plants growing (cm)

Variety name	Variant	Mean height of plant (cm)	Rate face to control	Differences	Signification
„Gracillimus" LSD 5%= 0.4 cm LSD 1%= 1.0 cm LSD 0.1%= 3.2 cm	V1	107.2	100.00	0.0	control
	V2	110.8	103.36	3.6	***
„Silberfeder" LSD 5%= 1.4 cm LSD 1%= 3.1 cm LSD 0.1%= 9.9 cm	V1	187.5	100.00	0.0	control
	V2	192.3	102.56	4.8	**
„Variegatus" LSD 5%= 0.7 cm LSD 1%= 1.6 cm LSD 0.1%= 5.1 cm	V1	186.8	100.00	0.0	control
	V2	192.6	103.10	5.8	***
„Zebrinus" LSD 5%= 1.9 cm LSD 1%= 4.4 cm LSD 0.1%= 14.1cm	V1	175.8	100.00	0.0	control
	V2	180.7	102.79	4.9	**

Table 5

Influence of fertilization on bush diameter (cm)

Variety name	Variant	Ø of bush (cm)	Rate face to control	Differences	Signification
„Gracillimus" LSD 5%= 0.7 cm LSD 1%= 1.5 cm LSD 0.1%= 4.8 cm	V1	45.1	100.00	0.0	control
	V2	48.9	108.43	3.8	**
„Silberfeder" LSD 5%= 0.5 cm LSD 1%= 1.2 cm LSD 0.1%= 3.8 cm	V1	60.2	100.00	0.0	control
	V2	63.5	105.48	3.3	**
„Variegatus" LSD 5%= 0.5 cm LSD 1%= 1.2 cm LSD 0.1%= 3.8 cm	V1	61.2	100.00	0.0	control
	V2	65.6	107.19	4.4	***
„Zebrinus" LSD 5%= 0.7 cm LSD 1%= 1.7 cm LSD 0.1%= 5.4 cm	V1	61.8	100.00	0.0	control
	V2	64.3	104.05	2.5	**

At studied varieties foliar fertilization determine an increase of mean number of trains/plant and of mean number of inflorescences/plant. So, analysing the mean number of strains per plant, differences face to control were distinct significant positive at „Gracillimus" and „Zebrinus", and significant positive at „Silberfeder" and „Variegatus" (Table 6). Influence of fertilization on mean number of inflorescences per plant, manifested, at all four studied varieties, through distinct significant positive differences (Table 7).

Table 6

Influence of fertilization on strains number (pieces)

Variety name	Variant	Mean number of strains/plant (pieces)	Rate face to control	Differences	Signification
„Gracillimus" LSD 5%= 2.5 LSD 1%= 5.7 LSD 0.1%= 18.2	V1	40	100.00	0.0	control
	V2	47	117.50	7.0	**
„Silberfeder" LSD 5%= 5.0 LSD 1%= 11.5 LSD 0.1%= 36.5	V1	51	100.00	0.0	control
	V2	58	113.73	7.0	*
„Variegatus" LSD 5%= 2.5 LSD 1%= 5.7 LSD 0.1%= 18.2	V1	49	100.00	0.0	control
	V2	54	110.20	5.0	*
„Zebrinus" LSD 5%= 2.5 LSD 1%= 5.7 LSD 0.1%= 18.2	V1	50	100.00	0.0	control
	V2	58	116.00	8.0	**

Table 7

Influence of fertilization on inflorescences number (pieces)

Variety name	Variant	Mean number of inflor./plant (pieces)	Rate face to control	Differences	Signification
„Gracillimus" LSD 5%= 0.5 LSD 1%= 1.1 LSD 0.1%= 3.6	V1	22.3	100.00	0.0	control
	V2	25.1	112.56	2.8	**
„Silberfeder" LSD 5%= 0.9 LSD 1%= 2.1 LSD 0.1%= 6.6	V1	23.1	100.00	0.0	control
	V2	26.2	113.42	3.1	**
„Variegatus" LSD 5%= 0.5 LSD 1%= 1.2 LSD 0.1%= 3.7	V1	23.6	100.00	0.0	control
	V2	26.9	113.98	3.3	**
„Zebrinus" LSD 5%= 0.5 LSD 1%= 1.2 LSD 0.1%= 3.7	V1	22.9	100.00	0.0	control
	V2	25.8	112.66	2.9	**

Adaptability degree was very good, plants starting in vegetation in the third decade of March 2014, in a rate of 100%. Plants from variant fertilized in previous year started in vegetation with 4-5 days earlier than the ones from control variant.

4. Conclusions

Analysis of hortic antrosol quality from experimental field with ornamental grasses from UASVM Iaşi, function of area and local ecological context, highlight a fund of qualities, lacks and excesses which influence the plants growing and development. In this way all four

ornamental varieties of *Miscanthus sinensis* Anderss. („Gracillimus", „Silberfeder", „Variegatus" and „Zebrinus") could capitalize in a suitable mode alkaline and moderate fertile lands, having a positive reaction to foliar fertilization, in cropping conditions from North-East area of Romania.

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