STUDIES REGARDING THE BEHAVIOUR OF *CHASMANTHIUM LATIFOLIUM* (MICHX.) YATES ORNAMENTAL SPECIES IN CROPPING CONDITIONS FROM IAŞI COUNTY, ROMANIA

CERCETĂRI PRIVIND COMPORTAREA SPECIEI ORNAMENTALE *CHASMANTHIUM LATIFOLIUM* (MICHX.) YATES ÎN CONDIŢIILE DE CULTURĂ DIN IAŞI, ROMÂNIA

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Abstract. *Chasmanthium latifolium (Michx.) Yates belongs to Poaceae family and is classified in category of ornamental grasses. The aim of the current study was to identify a suitable substrate for producing Chasmanthium latifolium seedlings, as well as monitoring of its behaviour in the specific cropping conditions from Iaşi County, Romania. Experiment was carried out with four different substrates: V1 – garden soil; V2 – 1 part peat + 1 part garden soil; V3 – 2 parts peat + 1 part garden soil, V4 – 3 part garden soil + 1 part vermicompost. The obtained seedlings of Chasmanthium latifolia were grown in exactly the same field conditions. The best results for quality of seedlings were obtained at variant V4 and cropping plants showed a very good adaptation at the pedoclimatic conditions from Iaşi County, Romania.*
Key words: adaptation, *Chasmanthium latifolium*, ornamental grasses, substrate, vermicompost

Rezumat. *Chasmanthium latifolium (Michx.) Yates aparţine familiei Poaceae fiind clasificată în categoria ierburilor ornamentale. Scopul prezentului studiu a fost identificarea cel mai bun substrat pentru producerea răsadurilor de Chasmanthium latifolium, precum şi monitorizarea comportării acestora în condiţiile de cultură specifice judeţului Iaşi, România. Experimentele s-au efectuat pe patru substraturi diferite: V1 – pământ de grădină; V2 – 1 parte turbă + 1 parte pământ de grădină; V3 – 2 părţi turbă + 1 parte pământ de grădină, V4 – 3 părţi pământ de grădină + 1 parte vermicompost. Răsadurile obţinute de Chasmanthium latifolia au beneficiat de aceleaşi condiţii în câmp. Cele mai bune rezultate pentru calitatea răsadurilor au fost obţinute la varianta V4 iar în cultură plantele au arătat o foarte bună adaptare la condiţiile pedoclimatice din judeţul Iaşi, România.*
Cuvinte cheie: adaptare, *Chasmanthium latifolium*, ierburi ornamentale, substrat, vermicompost

INTRODUCTION

Chasmanthium latifolium (Michx.) Yates (syn. *Uniola latifolia* Michx.) is part of Poaceae botanical family and it is known, with common names, as Spangle Grass, River Oats, Sea Oats (Chelariu, 2013; Hockenberry Meyer and Mower, 1986). In world,

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various assortments of those species are cultivated for ornamental purposes and are known as ornamental grasses (Ardle, 2007; Graham Rice, 2006). Is a species native from North America, herbaceous, perennial (Chelariu, 2013). Prefers lands with sunny exposure, fertile soils with constant moisture and can support a light semi-shadow. It is cultivated from (4)5 rusticity zone up to zone (8)9. Species is multiplied by seeds and by vegetative way through partition of bush (Hockenberry Meyer and Mower, 1986).

Hockenberry Meyer and Mower (1986) affirm that *Chasmanthium latifolium* (Michx.) Yates seeds could have difficulties at germination. In this way, the utilised substrates for sowing could influence seeds' germination. The utilised vermicompost in the sowing substrate leads to an improvement of seeds' germination rate and seedlings' quality by initial development of roots (Atiyeh *et al*., 2000).

The current paper aimed to show the influence of substrate on seedlings' production at species *Chasmanthium latifolium* (Michx.) Yates and its' behaviour in the cropping condition from Iaşi, Romania.

MATERIAL AND METHOD

Research was carried out in 2017, in cropping conditions from didactical collection of Floriculture discipline belonging to UASVM Iaşi. Experiences were organized on 4 variants represented by cropping substrates (tab. 1).

Table 1

Experimental design

Species	Biological material	Variant	Substrate for sowing
Chasmanthium latifolium (Michx.) Yates	seeds	V1	garden soil (control)
		V2	1 part peat + 1 part garden soil
		V3	2 parts peat + 1 part garden soil
		V4	3 parts garden soil + 1 part vermicompost

Research aimed the behaviour of *Chasmanthium latifolium* (Michx.) Yates ornamental grass species (fig. 1) in cropping conditions from Iaşi and identification of a suitable substrate for production of seedlings.

Fig. 1 *Chasmanthium latifolium* (Michx.) Yates (original)

The utilized seeds were gathered from plants with an age of 3 years which are in the didactical collection. Vermicompost was provided SC SUPERPĂMÂNT SRL Iaşi. Sowing was realised in March 2017, and planting in field was done in May 2017, at a 40 cm distance. In field, planting was made function of the variants utilised for seedlings' obtaining.

There were made observations on germination rate, germination dynamics, germination duration, seedlings' quality at planting. After planting of seedlings in field were realised both phenological observation as well as biometrical ones (plants' height, leaf dimensions, number of inflorescences, dimension of inflorescences). The results which were obtained at the end of research were statistically processed by using the variance analysis method (LSD test) (Ardelean *et al*., 2007).

RESULTS AND DISCUSSIONS

Chasmanthium latifolium (Michx.) Yates is an ornamental grasses species which could multiply both on generative way as well as on vegetative way (Hockenberry Meyer and Mower, 1986; Chelariu, 2013).

At the end of research it could be observed that seeds' germination rate varied from 84% (V1 control) to 97% (V4) (fig. 2).

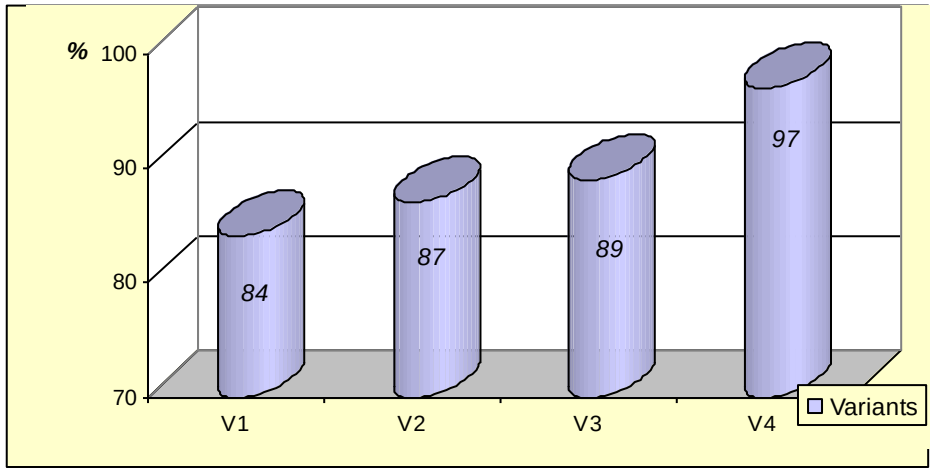

Fig. 2 Germination percentage (%)

Total duration of seeds germination was between 8 days at V4 and 12 days at V1. Vermicompost (V4) determined a light degreasing of germination period face to the others variants (fig. 3).

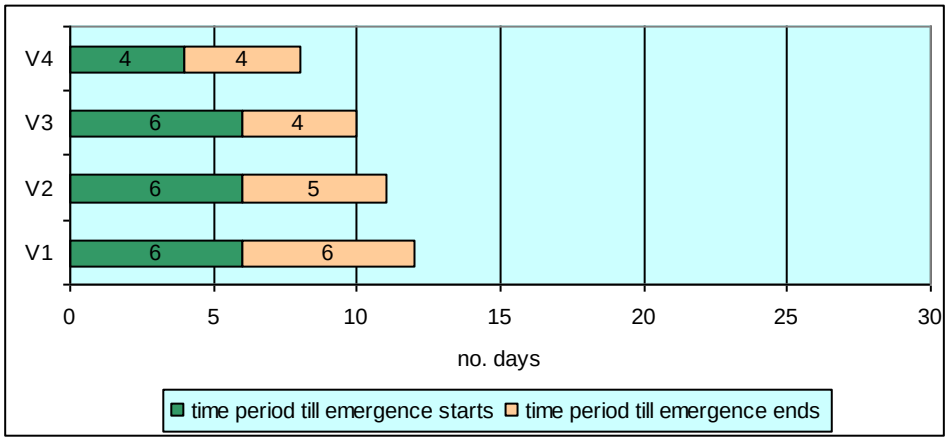

Fig. 3 Duration of germination (number of days from sowing)

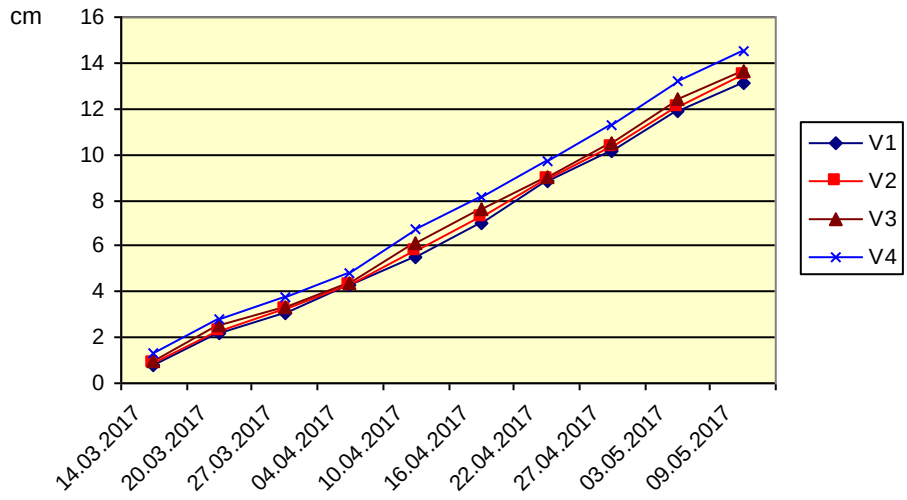

Fig. 4 Dynamics of seedlings' growing

At planting in field seedlings of *Chasmanthium latifolium* (Michx.) Yates had a height between 13.1 cm at variant V1 and 14.5 cm at variant V4 (fig. 4), and a mean number of leaves per plant between 11.3 and 13.4. Number of formed roots is important for a suitable development of seedlings. So, at planting in field seedlings had a mean number of main roots/plant between 5.4 (V1) and 6.8 (V4) (tab. 2).

Statiscally speaking, at all seedlings' characteristics, differences face to control are positive very significant at variant V4. At others variants differences face to control are positive distinct significant regarding number of leaves and

positive significant for average number of roots per plant (tab. 2).

Vermicompost played an important role at formation and development of plants' roots with effect on plants' quality (Atiyeh *et al.*, 2000).

Table 2

Seedlings' characterization at planting in field (May 2017)

Variant	Mean height (cm)	Mean number of leaves per plant (pieces)	Mean number of roots per plant (pieces)
V1 (control)	13.1	11.3	5.4
V2	13.5**	11.6**	5.6*
V3	13.6**	11.7**	5.7*
V4	14.5***	13.4***	6.8***
	LSD 5% = 0.2 cm LSD 1% = 0.4 cm LSD 0.1%= 0.6 cm	LSD 5% = 0.2 pieces LSD 1% = 0.3 pieces LSD 0.1%= 0.4 pieces	LSD 5% = 0.3 pieces LSD 1% = 0.4 pieces LSD 0.1%= 0.7 pieces

During research period, in cropping conditions from Iaşi area, Romania, plants of *Chasmanthium latifolium* (Michx.) Yates had stems with a mean height of 103.7-110.3 cm. Leaves with a light green colour, had a mean width of 0.8-1.2 cm and an average length between 12.9 cm and 14.2 cm. Flowers are grouped in lace and pendulum panicles. The little spikes which are flattened, reached a mean length between 1.8 cm and 2.4 cm and a width of 1.3-1.6 cm (tab. 3).

The best results were recorded at plants obtained from seedlings which were produced on a substrate with a vermicompost input.

Table 3

Characterization of plants in field (September 2017)

Variant	Mean height (cm)	Mean dimensions of leaves (cm)		Mean dimensions of spikes (cm)		Mean number of flowering stems per plant (pieces)
		Length	Width	Length	Width	
V1	103.7	12.9	0.8	1.8	1.3	10.2
V2	104.9	13.2	0.9	2.0	1.4	10.9
V3	105.2	13.5	1.1	2.1	1.4	11.1
V4	110.3	14.2	1.2	2.4	1.6	12.3

Table 4

Décor period

Species	Month											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Chasmanthium latifolium (Michx.) Yates												

décor by leaves

décor by leaves and inflorescences

décor by dried inflorescences

Chasmanthium latifolium (Michx.) Yates blooms from June till October and decorates all year round through the elegance of bush and softness of inflorescences (tab. 4). It could be used in landscape designs such as strips, groups and massifs, decorative pots and in floral art are capitalized the flowering rods both in fresh state and as well as in dried state.

Chasmanthium latifolium (Michx.) Yates had a good adaptation capacity at environmental conditions (Cunliffe and Hockenberry Meyer, 2002; Gao *et al.,* 2008). The current research confirms the previous studies (Chelariu, 2013), that this species had a very good adaptability (100%) in cropping conditions from Iaşi County, Romania.

CONCLUSIONS

Chasmanthium latifolium (Michx.) Yates is an ornamental grass species which in cropping conditions from Iaşi area, Romania, had a very good adaptation as perennial species.

The utilised substrates for seedlings' production determined a seeds' germination rate of over 84%, the best results being obtained at variant with vermicompost (97%).

Both at seedlings and at plants in field, the best results were obtained at variant with input of vermicompost.

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