BIOLOGICAL PECULARITIES OF GROWING AND DEVELOPMENT OF *WEIGELA FLORIDA* 'STYRIACA' VARIETY IN CONTAINER CONDITIONS

PARTICULARITĂŢILE BIOLOGICE DE CREŞTERE ŞI DEZVOLTARE A CULTIVARULUI *WEIGELA FLORIDA* 'STYRIACA' ÎN CONDIŢII DE CONTAINER

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Abstract. *The biological peculiarities of growing and development of Weigela florida* 'Styriaca' *variety in container conditions experimented with more culture mediums, also the fertilizer's influence with slow realizing action used in two norms of administration too were described.*
Key words: culture medium, slow release fertilizer, *Weigela florida*

Rezumat. *Sunt descrise particularităţile biologice de creştere şi dezvoltare a cultivarului Weigela florida* 'Styriaca' *în condiţii de container, experimentându-se mai multe substraturi de cultură, precum şi influenţa fertilizantului cu acţiune lentă folosit în două norme de administrare.*
Cuvinte cheie: substrat de cultură, fertilizator cu acţiune lentă, *Weigela florida*

INTRODUCTION

From the agronomic point of view the culture substrate is a mixture of organic compounds alone or in combination with mineral components, specifically tested for growing plants, usually in containers, especially for woody plants.

For this reason, the species grown in pots and containers, such as woody plant, where gradually in the technology culture, the soil was replaced with substrates, mostly organic materials. Culture substrates can provide aeration to the root system and a balanced amount of water and nutrients (Florescu, 1999).

Plant culture in the container is a technology of a major need for both horticulture and, the economy as a whole Republic of Moldova. In this article we proposed the study comportment of *Weigela florida* 'Styriaca' containerized plant on different substrates, under the administration of slow-release fertilizer Osmocote Plus.

Weigela florida 'Styriaca' – small, perfect funnelform-campanulate, abruptly narowed belowt he middle, with rounded spreading lobes, carmine-rose flowers freelz born on arching branches, single or several in axillary cymes on short twings from last year branches, the flowers occur in great profusion during May and June and sporadically throughout the growing season, prune after flowering, cultivar often retain dead branches and require tidying, smaller shrub, foliage light green. None serious, viruses have been reported. Best used in the shrub border, for grouping or massing.

MATERIAL AND METHOD

The researches on the territory of the Botanical Garden (Institute) of ASM, Chisinau, during the growing seasons 2006-2007 were performed. In our study as a biological material the cultivar *Weigela florida* 'Styriaca' served.

Following the growing media were established: V_1 - mould, leaves compost, peat, sand, in proportions of 2:2:2:1, V_2 - peat, leaf soil, sod soil, sand in the proportion 1:1:1:0.5; V_3 - peat, leaves compost, sand 1:0,8:0,2 proportion. Components that are part of the substrate have been thoroughly mixed, the peat previously was moistened for not to leave on the substrate surface during watering.

Biological material aged 3 years were transplanted from containers of 2 liters in containers of 5 liters. Before transplanting, the plants, with the entire container they were kept for 20-30 minutes in a volume of weak solution of $KMnO_4$. The root system was shaped.

In mixture tested recipes, the variant of solid fertilization with slow-release fertilizer under the trade name of Osmocote Plus of 5-6 months longevity of action (the substrate temperature ≈ 21^o C) was applied.

The chemical composition of this fertilizer is as follows: NPK 15+9+9 (+3 Mg); 15% N - (7,1% NO_3; 7,9% NH_4); 9% P_2O_5 (4.0% P); 7,1% P_2O_5 (3,1% P); 9% K_2O (7,5% K); 3,0% MgO (1,8% Mg); 1,5% MgO (0,9% Mg); 0,02% B; 0,047% Cu; 0,40% Fe; 0,06 % Mn; 0,020% Mo; 0,015% Zn. For determining the effectiveness of applying the rate of administration of solid slow-release fertilizer was tested rates of 4 and 5 kg/m^3 per substrate for both periods of experimentation and research. Fertilization rates with control variant were compared.

The variants were placed by 20 units, according to the method of subdivided parcels. Registration containerized plants and the aerial parts of biometric measurements were made at the time for the moment of planting in containers and were concluded at the end of the second cycle of vegetation. To achieve the objectives proposed, measurements and determinations were made on average increase plant growth container on various substrates. The growth increase of the aerial part of plants in containers was determined through measurements, also the difference between plant height grown throughout the period of vegetation and their initial of the plant. Based on these measurements were calculated growth parameters of aerial part and the influence of fertilizer given to these rhythms (Ceapoiu, 1960, Dospehov, 1985).

RESULTS AND DISCUSSIONS

The results obtained in plant growth and development of *Weigela florida* 'Styriaca' were statistically processed and are presented in table 1. Statistical analysis of results showed that the cultivar studied ornamental plants differed at all levels of statistical assurance. In the years of study the higher efficiencies of growth containerized plants under the administration of fertilizer experimented, compared with control, unfertilized were established.

In the case of plants grown on the culture substrate V_1 was revealed that the final height of the highest value was found in the standard administration of 4kg/m^3, recording the final value of the average height of 72,4 cm in first year culture and 92,8 cm in the second year of cultivation (table 1).

Table 1

Tags *Weigela florida* 'Styriaca' cultivar growth in terms of container

Variant substrate	Control			4 kg/m^3			5 kg/m^3		
	Year of vegetation 2006								
	Variants of fertilizer management								
	Initial height, cm	**Annual growth, cm**	**Final height, cm**	**Initial height, cm**	**Annual growth, cm**	**Final height, cm**	**Initial height, cm**	**Annual growth, cm**	**Final height, cm**
V_1	54,1 ± 0,87	11,4 ± 0,57	65,5 ± 0,65	54,9 ± 0,75	17,5 ± 0,57	72,4 ± 0,88	55,3 ± 0,68	16,2 ± 0,61	71,5 ± 0,75
V_2	54,4 ± 0,57	10,2 ± 0,68	64,6 ± 0,86	55,0 ± 0,53	14,6 ± 0,52	69,6 ± 0,83	55,1 ± 0,60	13,8 ± 0,36	68,9 ± 0,38
V_3	54,4 ± 0,67	8,7 ± 0,48	63,1 ± 0,80	54,3 ± 0,70	12,2 ± 0,35	66,5 ± 0,56	54,7 ± 0,60	12,9 ± 0,53	67,6 ± 0,52
Year of vegetation 2007									
V_1	65,5 ± 0,65	13,1 ± 0,60	78,6 ± 0,80	72,4 ± 0,88	20,4 ± 1,05	92,8 ± 1,70	71,5 ± 0,75	18,8 ± 0,74	90,3 ±1,39
V_2	64,6 ± 0,86	12,5 ± 0,52	77,1 ± 1,27	69,6 ± 0,83	17,8 ± 0,70	87,4 ± 0,53	68,9 ± 0,38	16,4 ± 0,70	85,3 ± 0,73
V_3	63,1 ± 0,80	11,4 ± 0,67	74,5 ± 0,86	66,5 ± 0,56	15,6 ± 0,67	82,1 ± 0,89	67,6 ± 0,52	15,9 ± 0,66	83,5 ± 0,95

the same phenomenon was noted for plants grown in substrate culture V_2, recorded an average final height of 69,6 cm in the first year of cultivation and 87,4 cm in the second (table 1). In the case of plants grown on the culture substrate V_3 best outcome for growth at the end of two growing seasons were recorded in containerized plants under fertilization administration of 5 kg/m^3, recorded values of 67,6 cm in 2006 and 83,5 cm in 2007 (table 1).

Table 1 gives an overview of annual growth, depending on the substrate of culture, rates application of fertilizer with slow-release action in two seasons of vegetation, winning that plants grown in substrate of culture V_1 fertilized with Osmocote Plus in the rate of 4kg/m^3 recorded the largest increases. At *Weigela florida* 'Styriaca' the differentiation of annual growth in the experiments was determined by the used substrate and, the rate of fertilization thus, the plants grown on the substrate of culture V_1 showed a higher annual average growth (13,1 cm unfertilized version, 20,4 cm with 4 kg/m^3 and 18,8 cm by 5 kg/m^3 in 2007), than in V_2, V_3 in 2006 - 2007 seasons of vegetation.

CONCLUSIONS

At the cultivar *Weigela florida* 'Styriaca' the maximum annual increase occurred in plants grown on the substrate of culture V_1 mould, leaves compost, peat, sand, in proportions of 2:2:2:1 proportions, on the base of administration the rate of 4 kg/m^3 of Osmocote slow-release fertilizer. After the administration of Osmocote fertilizer, the value of annual growth of containerized plants is much higher, compared with the plants that received no fertilizer, resulting in a significant difference in annual growth indices between fertilized and unfertilized plants.

Annual growth of *Weigela florida* 'Styriaca' cultivar showed higher values in the second year of culture, this phenomenon being explained by the fact that in the first year of cultivation, the plants were transplanted to the container, therefore, had a period of the so-called physiological stress because of injuring the root system during its transplanting.

Plant growth and development in container conditions depends on rate of fertilizer administration and biological temperament (rhythm) of plant growth, found out to be an inverse correlation between plant growth and the rate of fertilizer administration.

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