

THE INFLUENCE OF SUBSTRATUM OVER THE PRODUCTIVITY AND QUALITY OF SPATHIPHYLLUM FLORIBUNDUM

Vlad Ioan*, Vlad Mariana*, Vlad Ioana*

* University of Oradea, Faculty of Environmental Protection, 26 General Magheru St., 4100848, Oradea, Romania, e-mail: ioanvlad2006@yahoo.com

Abstract

In Romania the flowers are popular and appreciated by buyers, that is why in the Greenhouses Complex of Oradea, in 2008-2011 were made experiments which can prove the positive effect substratum over the productivity, quality and growth of plants.

The Columbia species were used in the experiment with big red flowers, heartshaped, bright - green leaves (24 - 26 cm/16 - 18 cm), with long stems (Georget P, 1999).

Key words: Spathiphyllum floribundum, peat, wood soil, sphognum mass, perlite, sheep manure.

INTRODUCTION

The beauty of flowers, the fact that they can hold a long time in water, the high productivity all make Spathiphyllum a very beloved greenhouse plant. Analyzing the opinion of European producers and buyers, the Spathiphyllum is on the 6th place, after carnations, roses, tulips, chrysanthemums and gerberas (Selaru E; 2004).

MATERIAL AND METHOD

The research was carried out in the Greenhouses Complex of Oradea, in 2008-2011. The experiment contained three versions:

V1 - culture on substratum: 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure;

V2 - culture on substratum: 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure;

V3 - culture on substratum: 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite.

The thickness of culture substratum was 40 cm, placed down warmed barriers.

Every version had 2 barriers of 60m² each and accordingly 120m².

The substratum was fertilized the same way for each version. During the experiment the pH was maintained between 4.5 and 5.6. The plants were planted in August assuring a density of 7 plants/m² on a barrier (Lammene E; 2000).

During the experiment 40 fertilizations were made using a complex fertilizer with a concentration of 0.1 – 0.3% (Zaharia D; 1994).

According to Table 1 the results were 40.1 flowers/m² at version 1 (substratum formed of 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure), 52.53 flowers/m² at version 2 (substratum formed of 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure), 56.94 flowers/m² at version 3 (substratum formed of 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite).

Table 1

The production of *Spathiphyllum floribundum*

Versions	Flower productivity		Difference	The significance of the difference
	Absolute (flower/m ²)	Relative %		
V1 - 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure	40.1	100	-	-
V2 - 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure	52.53	131	12	xx
V3 - 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite	56.94	142	17	xxx

LSD 5% - 2.62

LSD 1% -4.78

LSD 0.1% - 8.53

With regard to the relative aspect, a rise in production can be noticed, by 31% at V2 and by 42% at V3 in addition to the V1 variant.

With regard to the qualitative aspect, the production of *Spathiphyllum floribundum* is positively influenced by the growing substratum.

Table 2

The production quality of *Spathiphyllum floribundum* influenced by the growing substratum

Variants	Productivity of cut flowers		
	Total (flower/m ²)	Excellent quality	
		Absolute (flower/m ²)	Relative %
V1 - 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure	40.1	36	89
V2 - 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure	52.53	49	93
V3 - 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite	56.94	54	94

At version 1 (substratum formed of 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure), 89% of flowers were of excellent quality; at version 2 (substratum formed of 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure), 93% of flowers were of excellent quality; at version 3 (substratum formed of 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite), 94% of flowers were of excellent quality.

Making an economic analysis of the three versions, the best substratum was formed of 50% peat, 15% wood soil, 15% sphagnum moss, and 20% perlite.

Because of the high quality of flowers and high productivity, the value of the production was 675 million lei/ha (version 2). The price of the flowers depended of the cutting period.

The value of the flowers was 750 000 lei/ha (version 3). The price of the flowers depended of the cutting period.

Analyzing the expenses, the cost of electricity and indirect expenses were 20% of all expenses.

Table 3

Production of flowers, expenses and profit

Variants	Expenses (thousand lei/ha)	The flower production (thousand ha)	The value of the production (thousand lei/ha)	Profit (thousand lei/ha)
V1 - 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure	456 000	40 000	600 000	144 000
V2 - 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure	467 000	45 000	675 000	208 000
V3 - 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite	479 500	50 000	750 000	270 500

The profit at version 3 was higher with 62 million lei/ha than at version 2 and with 126 million lei/ha than at version 1.

CONCLUSIONS

- Growing *Spathiphyllum floribundum* in greenhouses is a good source of money;

- Version 2 and 3 had a high productivity because of the higher percentage of peat and the perlite, 24% higher at version 2 (substratum formed of 40% peat, 20% wood soil, 20% sphagnum moss, 15% perlite, 5% sheep manure), and 31% higher at version 3 (substratum formed by 50% peat, 15% wood soil, 15% sphagnum moss, 20% perlite) as at version 1 (substratum formed by 30% peat, 25% wood soil, 25% sphagnum moss, 10% perlite, 10% sheep manure).
- The substratum with peat and perlite kept the water and thermal energy inside.
- The cost for obtaining the peat-perlite substratum was recovered from the profit.

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