THE INFLUENCE OF SUBSTRATUM OVER THE PRODUCTIVITY AND QUALITY OF DIANTHUS CARYOPHYLLUS CHABAUD

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Abstract

In Romania the flowers are popular and appreciated by buyers, that is why in the Greenhouse Complex of Sintandrei,Bihor, in 2012-2014 were made experiments wich can prove the positive effect of substratum over the productivity, quality and growth of plants.

The Dianthus Caryophyllus Chabaud species were used in the experiment with big red flowers, hartshaped, bright – green leaves (7-12 cm/ 0,5 – 1 cm), with long stems (Georget P. 1999).

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

Keywords: Dianthus Caryophyllus chabaud, peat, wood sail sphagnum moss, perlit, sheep manur.

INTRODUCTION

The genus includes about 270 annual , biennial and perennial species. Among the perennial species, the best known is D. caryophyllus, semperflorens variety, cultivated as an annual or biennial, including several types: greenhouse Carnation,summer Carnation(Chabaud), Vienna carnation. Summer Carnation is a plant that grows as a shrub with strongly scented flowers, small lanceolate leaves and it multiplies by seed.(Selaru E.,2004)

THE MATERIAL AND WORK METHOD

The experiment contains three version:

V1 – culture on substratum: 15% peat, 40% wood soil, 15% sphagnum moss, 15% perlit, 15% sheep manur

V2 – culture on substratum: 30% peat, 30% wood soil, 20% sphagnum moss, 10% perlit, 10% sheep manere.

V3 – cultura on substratum: 20% peat, 20% wood soil 20% sphagnum moss, 20% perlit,20% sheep manure

The thickness of culture substratum was 40 cm place don warmed barriers.

Every version had 2 barriers of 60 mp eachone, accordingly 120 mp.

The substratum was fertilized the same way for each version. During the experiment the pH was maintained between 4,5 – 5,6. The plants were planted in august assuring a density of 7 plants/mp on a barrier. (Lammene E. 2000).

During the experiment there were made 40 fertilizations with a complex fertilizer with a concentration of 0,1 – 0,3% (Zahana D. 1994).

RESULTS AND DISCUSSION

Acording to table 1 the results were: 100,2 flowers /mp at version 1 (substratum formed by 15% peat, 40% wood soil, 15% sphagnum moss, 15% perlit, 15% sheep manur) 110,2 flowers / mp at version 2 (substratum formed by 30% peat 30% wod soil, 20% sphagnum moss 10% perlit and 10% sheep manur), 115,3 flowers/mp at version 3 (substratum formed by 20% peat, 20% wood soil, 20% sphagnum moss and 20% perlit,20% sheep manure).

Table 1

The production of Dianthus caryophyllus Chabaud depending on the substratum`s influence

Versions	Flower productivity		Difference	The significance on the difference
	Absolut (flower/mp	Relativ (%)		
V1 –15% peat, 40% wood soil, 15% sphagnum moss 15% perlit, 15% sheep manur	100,2	100	-	-
V2-30% peat, 30% wood soil, 20% sphagnum moss, 20% perlit and 20%sheep manur	110,2	109,9	10	*
V3 – 20% peat, 20% wood soil, 20% sphagnum moss and 20% perlit	115,3	115	15,1	***

LSD 5% -8,5
LSD 1% - 12,8
LSD 0,1% - 19,3

That can be seen the rise in production, on relative aspect, with 10% on V_2 and with 15% on V3 as the V1 variant.

On the qualitative aspect, the production of Dianthus caryophyllus Chabaud is positively influenced by the growing substratum.

Table 2

The production quality of Dianthus caryophyllus Chabaud influenced by the growing substratum

Variants	Productivity of cut flowers		
	Total (flower/mp)	Excelent quality	
		Absolut (flower/mp)	Relativ %
V1 – 15% peat, 40% wood soil, 15% sphagnum moss, 15% perlit, 15% sheep manur	100,2	85	84
V2 – 30% peat, 30% wood soil, 20% sphagnum moss, 10% perlit and 10% sheep manur	110,2	94	93
V3 – 20% peat 20% wood soil, 20% sphagnum moss and 20% perlit,20% sheep manur	115,3	101	100

At version 1 (substratum formed by 15% peat, 40% wood soil, 15% sphagnum moss, 15% perlit, 15% sheep manure), 84% of flowers were of excellent quality, at version 2 (substratum formed by 30% peat, 30% wood soil, 20% Sphagnum moss, 10% perlit and 10% sheep manur), 93% of flowers were of excellent quality, at version 3,100 % of flowers were of excellent quality.

Making an economic analyzing of the 3 version the best substratum was formed by 20% peat, 20% wood soil, 20% Sphagnum moss and 20% perlit.,20% sheep manure. Because of the hight quality of flowers and high productivity, the value of the production was 2,1,26million lei/ha (version 2). The price of the flowers dipends of the cutting period.

The value of the flowers was 1,27 million lei/ha (version 3). The price of the flowers depended of the cutting period.

Analising the experiences, the cost of electric energy and indirectly expences are 20% of all expences level.

Table 3

Productivity, expense and profit

Variantes	Expense (thousand lei/ha)	Productivity (thousand flowers/ha)	The value of productivity (Thousand lei/ha)	Profit (thousand lei/ha)
V1	1056000	802000	716000	340000
V2	1267000	902000	738000	529000
V3	1279500	953000	663000	616500

The profit at version 3 was higher with 616500 lei/ha as at version 2 and with 529500 lei/ha as at version 1andwith 340000 lei/ha.

CONCLUSIONS

- Growing Dianthus caryophyllus Chabaud in greenhouse is a good source of money.
- Version 2 and 3 had a high productivity because of the higher percent of peat and the perlit 30% higher at version 2 (substratum formed by 30% peat, 30% wood soil, 20% sphagnum moss, 10% perlit and 10% sheep manur), and with 16% higher at version 3 (substratum formed by 20% peat 20% wood soil, 20% sphagnum moss and 20% perlit,20% sheep manure) as at version 1 (substratum formed by 15% peat, 40% wood soil, 15% sphagnum moss, 15% perlit.15% sheep manure.
- The substratum with peat and perlit kept the water and thermic energy inside
- The cost for obtaining the peat – perlit substratum were recovered by the profit

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