Bulletin 438
December, 1986
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Colorado State University

research bulletin

Published by the Colorado Greenhouse Growers' Assoc., Inc. in cooperation with Colorado State University

PRODUCTION OF CUT SNAPDRAGONS IN ROCKWOOL

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Plant growth and cut flower production of snapdragons established in hortiwool® (loose rockwool, product of rockwool industries) and gravel were compared. Both 'Butterfly Pink' and 'Butterfly White' snapdragons grown in rockwool produced taller plants, greater total leaf area, and higher fresh and dry weights as compared to those grown in the gravel medium. Both growing media produced desirable stem lengths and quality cut flowers. However, flowers obtained from rockwool-grown plants were superior to those from the gravel medium. Results of this study indicate that loose rockwool, without amendments, can be used as a growing medium for the production of cut snapdragons when a constant nutrient feeding system is used.

Introduction

Demand for high quality snapdragon cut flowers is increasing, especially for the winter months. Most greenhouse snapdragon growers use soil beds which often present problems of root disease and poor aeration. As in other cut flower production, snapdragon growers are seeking better and more reliable growing media for maximum yield and quality. Rockwool materials, especially the block forms, have been used in the production of cut flowers in Europe (1,3). The loose rockwool, which can be adapted to pot plant production (2,4), may well be utilized as a growing medium for cut flowers. Since rockwool has little buffering or nutrient holding capacity, cut flower production in the medium requires a balanced complete fertilizer at every irrigation. The objective of this experiment was to investigate the feasibility of using rockwool as a growing medium in the production of snapdragon cut flowers.

Materials and Methods

A raised wooden bench (42″ wide, 36′ long, 8″ deep) was divided into six individual plots (42″ × 60″), with a buffer (42″ × 36″) plot at each end of the bed. These plots were filled alternately with gravel and rockwool. Superphosphate and ground limestone were preplant additions at rates of 5 lb/100 ft^2 and 10 lb/100 ft^2, respectively. The bench was steam pasteurized. Six Chapin, twin wall, trickle irrigation lines were installed on top of the media, running the length of the bench.

Snapdragon seedlings, 'Butterfly Pink' and 'Butterfly White', were transplanted into "806" cell packs, containing peatlite medium, on Nov. 5, 1985, and then benched on Dec. 6, 1985, when they were at the 4 to 6 leaf stage. They were spaced 7 × 6 inches, with each cultivar planted in one-half of the individual plots. A total of 360 plants (30 plants/cultivar × 2 cultivars × 2 cultivars/plot × 3 plots) were used for the experiment. Thirty plants of each cultivar were planted in the buffer zone at both ends of the bench. The plants were watered with the standard Colorado State University carnation nutrient solution (Fig. 1). The irrigation frequency was 2 to 3 times daily. The greenhouse was covered with fiberglass (FRP) and was heated to a temperature of 52°-54°F night and 62°-64°F day and cooled at 70°F when ventilation was required during the daytime.

Results and Discussion

Preliminary growth responses were evaluated eight weeks after planting (Feb. 6, 1986), when 18 plants from each variety treatment were harvested randomly (Table 1). The measurements of both cultivars were greater in rockwool than in gravel. Plants of both cultivars and growing media started to bloom on February 18, and harvesting continued from February 21 through March 4. The results of measurements on all cut flowers harvested are presented in Table

[1]*Associate professor and professors, respectively.* *This study was supported by a grant from Rockwool Industries and by Colo. Agr. Expt. Sta. Authors thank Lynn Simeoni and Jennifer Wilkinson for their technical help. Appreciation is given to Chapin Watermatics and Goldsmith Seeds for materials.*

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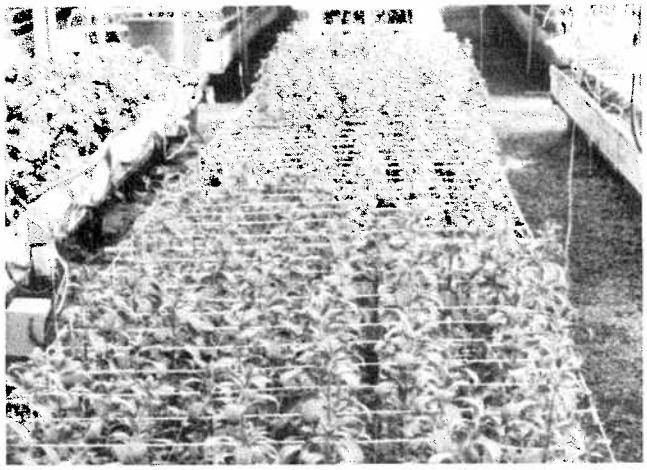

Figure 1: Bench layout for snapdragon experiment, showing plots, caging materials, and drip irrigation system.

Table 1: Influence of growing media on growth of 'Butterfly White' and 'Butterfly Pink' snapdragons[1].

	Growing Medium	
	Gravel	Rockwool
Plant Height (cm)		
White	73.3 ± 8.5	79.1 ± 11.1
Pink	78.3 ± 13.4	85.4 ± 8.7
Avg.	*75.8*	*82.3*
Stem Diam (mm)		
White	9.5 ± 1.7	9.1 ± 0.5
Pink	8.2 ± 1.0	9.1 ± 1.0
Avg.	*8.9*	*9.1*
Leaf Area (cm^2)		
White	844.2 ± 413.6	1126.5 ± 270.8
Pink	1073.0 ± 322.0	1054.0 ± 278.0
Avg.	*958.6*	*1090.3*
Fresh Weight (g)		
White	87.9 ± 45.9	104.3 ± 24.0
Pink	97.9 ± 38.1	103.4 ± 29.7
Avg.	*92.9*	*103.9*
Dry Weight (g)		
White	26.2 ± 3.9	27.6 ± 3.2
Pink	25.7 ± 4.8	26.6 ± 4.0
Avg.	*26.0*	*27.1*

[1]Plants were benched on December 6, 1985; data were taken February 6, 1986.

2. Most cut flowers harvested from the rockwool plots, when compared to those from the gravel medium, were superior in quality as determined by stem length, fresh weight, number of florets per stem and flower spike diameter. The rockwool-grown cut flowers had excellent stem length and general quality (Fig. 2,3).

Results of this study indicated that the loose rockwool is a viable substrate for the production snapdragon cut flowers. Throughout the evaluation period, no disease or physiological disorders were evident. The yield potential for "pinched" snapdragon production in rockwool has not been determined. The longevity of both the gravel and rockwool-grown flowers was not directly examined in this study; however, based on the favorable response received from local retail florists, their keeping life appeared to be comparable to those grown by conventional means.

Table 2: Influence of growing media on cut flower quality of 'Butterfly White' and 'Butterfly Pink' snapdragons, planted on December 6, 1985, and harvested approximately 12 weeks later.

	Growing Medium	
	Gravel	Rockwool
Days to Harvest (No.)		
White	84.9	84.5
Pink	82.3	82.9
Fresh Weight (g)		
White	161.6	161.4
Pink	93.8	109.9**
Stem Diameter (mm)		
White	9.8	9.3
Pink	7.9	8.9**
Stem Length (cm)		
White	116.2	121.2
Pink	94.8	102.1**
Florets/Spike (No.)		
White	33.2	35.7
Pink	30.2	33.4

**Significant difference at the 0.5% level

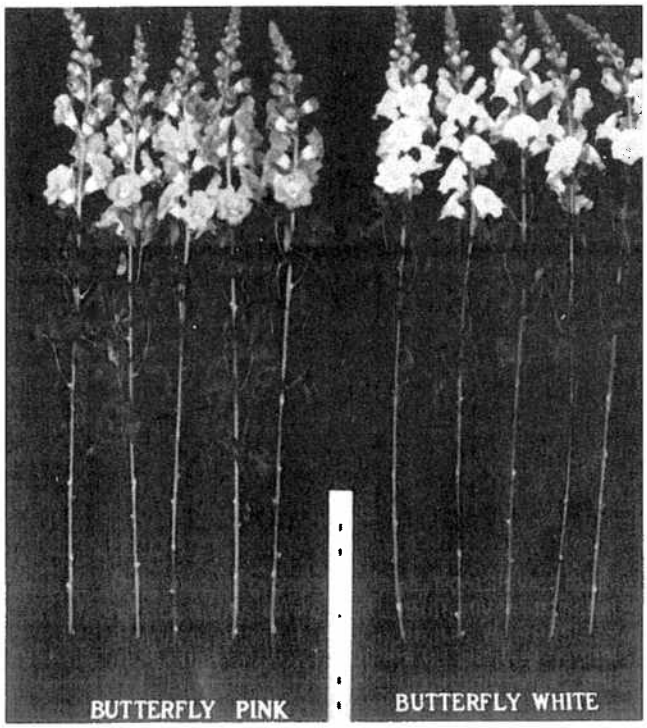

Figure 2: 'Butterfly Pink' and 'Butterfly White' snapdragon cut flowers grown in a rockwool medium.

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