

The Responses of Two Hybrid Varieties of Snapdragon To Various Times of Planting after Steam Sterilization of a Greenhouse Soil

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Materials and Methods

The varieties of Snapdragon used in these tests were Rockwood's Early Hybrid Pink and Rockwood's Hybrid White No. 5. The seeds were broadcast in flats in seed soil, the seedlings being transplanted to the benches when about two inches high.

Two cast iron benches were used and both were steam sterilized by the buried down-spout method. One bench

was leached with tap water at the rate of 3 gallons per minute and the second was left unleached. Each bench was divided into 16 plots allowing four replicates for each treatment. Plot location was selected by randomization. Group A, was planted as soon as the temperature had dropped to 100 degrees F. in the unleached bench and at once after leaching in the leached bench. Group B. was planted 24 hours after sterilizing. Group C. was planted 48 hours after sterilizing and Group D. was planted 72 hours after sterilizing. Seedlings were spaced 4" x 4" and grown by the single stem method. Sixty-four plants of each variety were grown in each plot.

Soluble salt readings were made on the original soil, after sterilizing and again after leaching. These tests were conducted again at two-week intervals for the duration of the experiment.

Discussion of Results

As may noted from Table I, the average stem length for all plots of the pink and white varieties in the leached bench was 40.43 inches and 44.04 inches respectively, while the average length of stem for the pink variety in the unleached bench was 36.80 inches and 40.05 inches for the white variety. These differences may or may not be due to leaching for two reasons: 1) It may be noted that there is an average difference in days to cutting of 7 days for the pink variety and 4 days for the white variety which may account for the increased stem length in the leached bench; 2) The steam main serving the greenhouses passes in a covered concrete trench under the unleached bench which may have caused a more rapid flowering in this case due to possible higher soil temperatures.

In comparison of treatments (Table II), treatment A gave the shortest stem with 35.87 inches for the pink variety and 41.20 inches for the white. Longest stems appeared in treatment C for the pink variety, with an average of 39.37 inches. Longest white stems came from treatment B with a stem length of 42.59 inches. While there are differences, it does not appear that they are large enough to be of any consequence.

With length of inflorescence, the same conclusion appears to hold true with a difference of only .53 inch in length for white and .37 inch for pink in the leached bench over the unleached. In the comparison of treatments, a range of .35 inch for the pink variety and .48 inch for the white variety is indicated between treatments A and C in Table II.

Regarding the number of days from planting to cutting, Table I shows a difference of only 1 day between pink and white in the leached bench and 4 days in the unleached bench. The 7 and 4 day differential between leached and unleached benches for pink and white varieties respectively is possibly due to the temperature differential previously mentioned. In treatment comparisons, the range of number of days from planting to cutting is from 115 days in treatment A to 117 days in treatment B

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for the pink variety and from 117 in treatments C and D to 122 in treatment A for the white variety. The difference in planting appears to have little effect in the case of the pink variety but the steady reduction in days to cutting with time of planting up to 48 hours with the white variety may indicate that the waiting period is beneficial with this variety.

Soluble salt readings showed a steady rise in the unleached bench from a reading of 85 in the original soil to 185 after a three-week period. The readings then showed a steady decline during the course of the tests. For the leached bench, there was only a slight change from 125 to 120 directly after steaming but the reading of 50 taken after leaching indicates the removal of much of the soluble material. The rise during the following month to 83 may be due to steaming as there was also a rise in the case of the unleached bench. The levels in the leached bench did not reach an excess, however, and they showed a steady decline toward the completion of the experiment.

Summary: Conclusions

1. There was a definite increase in soluble salt levels after steam sterilization but it was not an immediate change. The highest readings were obtained at the end of a three-week period.

2. There was an increase in stem length of about 4 inches with both varieties in the leached over the unleached bench. This may be due to increased temperature, increased growing time, or to leaching but it seems that this additional length of stem or the additional .37 to .53 inch in length of inflorescence is not sufficient to warrant the added expense entailed by leaching. A stem of 36 inches which is of good substance is quite sufficient for the average commercial purpose.

3. With regard to the waiting period after sterilization, the change in length of stem, length of inflorescence and number of days to flowering do not seem sufficient to warrant the 1, 2, or 3 day delay in planting.

In conclusion, it can be said that this experiment with varieties of Snapdragon indicates that leaching after sterilization is unnecessary if the soluble salt levels do not exceed those in these tests. Excellent spikes of good quality may be obtained whether the plants are benched as soon as the soil can be handled or benched after a delay of a few days.

DUES DUES DUES

OUR SECRETARY TELLS US THAT THERE ARE A FEW MEMBERS WHO HAVE NOT PAID THEIR 1954-55 DUES. SEND THAT CHECK TO HAROLD E. WHITE, SECRETARY, FRENCH HALL, UNIVERSITY OF MASS., AMHERST, MASS. BEFORE IT SLIPS YOUR MIND AGAIN.

Table I
FINAL ANALYSIS OF RESULTS

Treatment	Location					
	Leached Bench			Unleached Bench		
	S ¹	I ²	D ³	S ¹	I ²	D ³
A (Pink)	40.96	5.19	117	37.08	5.02	114
A (White)	43.83	6.39	123	38.70	5.62	121
B (Pink)	40.23	5.23	122	35.98	4.90	113
B (White)	45.11	6.67	122	40.07	6.20	117
C (Pink)	41.76	5.76	122	36.98	5.06	111
C (White)	43.84	6.77	120	41.01	6.20	115
D (Pink)	38.79	5.04	119	37.17	4.74	114
D (White)	43.44	6.53	119	40.57	6.23	115
Average (Pink)	40.53	5.30	120	36.80	4.93	113
Average (White)	44.04	6.59	121	40.05	6.06	117

¹Average length of spike in inches from soil line to the tip of the spike.

²Average length of the inflorescence in inches.

³Average number of days from planting to cutting.

Table II
COMPARISON BETWEEN TREATMENTS

Treatment	S	I	D
A (Pink)	35.87	5.10	115
A (White)	41.20	6.00	122
B (Pink)	38.10	5.06	117
B (White)	42.59	6.44	119
C (Pink)	39.37	5.41	116
C (White)	42.42	6.48	117
D (Pink)	37.98	4.89	116
D (White)	42.00	6.28	117

Average length of stem in inches from soil line to the tip of the spike.

Average length of the inflorescence in inches.

Average number of days from planting to cutting.

Treatment A – Plants were benched directly after leaching and when the temperature dropped to 100° F. in the unleached bench

Treatment B – Plants were benched 24 hours after sterilization of the soil

Treatment C – Plants were benched 48 hours after sterilization of the soil

Treatment D – Plants were benched 72 hours after sterilization of the soil