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A Comparison of Understocks for Greenhouse Roses

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The general purpose understock for greenhouse rose production has been Rosa manetti almost as long as roses have been grafted or budded. While this stock has been satisfactory, the use of other understocks by European growers has led to claims of certain advantages in favor of specific stocks. Rosa laxa is reputed to produce better yellow color on the leading yellow varieties, such as Golden Rapture (Duisberg). Rosa canina var. Broggs has been superior to R. manetti as an all round understock in certain areas of Europe. R. pulmeriana, of hybrid origin, has recently come to our attention for its vigor and all purpose use for a greenhouse rose understock.

Following an article by Post (1), after his visit to Europe, understocks of R. canina Broggs and R. laxa were obtained from Holland, through the aid of Stuart Pollard, Pollard's Nurseries, Ltd. Manetti stocks of our own propagation were also used in this first experiment. During January and February of 1955, Red Delight and Golden Rapture were grafted on these three understocks in sufficient quantities to plant three 35-foot benches arranged in randomized blocks. Although records were kept on the performance of these

understocks for two years, manetti proved to be far superior. The manetti stocks used in this first experiment were about twice the size of the two imported stocks, so a second experiment was planned using all stock of our own propagation.

From the first experiment the following was indicated: 1) R. canina Broggs was of little value as an understock for Golden Rapture, 2) R. laxa decreased the vigor and yield of Red Delight excessively, and 3) Golden Rapture flowers were more intense yellow when grafted on R. laxa, but yield was reduced.

In May and June of 1957, softwood cuttings of the previously listed understocks and R. Pulmeriana were rooted. These were planted in the field and grown until November, when an iodine test showed high starch content. The stocks were dug and stored at 33° F until January, when they were grafted with Red Delight and Golden Rapture. The previously noted com-

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binations (Red Delight on R. laxa and Golden Rapture on R. canina Broggs) were not made. The understocks for this experiment were uniform in size and were all grown, dug and stored the same way.

One 35-foot bench was planted with three randomized blocks of Golden Rapture on April 19, and another bench was planted with 3 blocks of Red Delight on April 22, 1958. Each block contained 27 plants, 9 each on 3 different understocks. Golden Rapture was on manetti, laxa, and pulmeriana, while Red Delight was on manetti, pulmeriana, and R. canina Broggs. The plants were spaced 3 across a 42-inch bench and one foot apart linearly. Four rows on either end of the bench were of another variety and served as buffer plants.

All growths were soft-pinned until early July; the first flowers being cut the first week in August. Tables 1 and 2 give yield records by grade for the first 52 weeks of flowering, ending August 1, 1959.

Red Delight

R. pulmeriana produced 10 per cent more flowers than manetti, with slightly less average stem length. More flowers were produced in all grades except in the 21 and 24-inch lengths. R. canina Broggs performed almost the same as manetti. The differences shown in table 1 in yield and stem length are not quite significant when analyzed statistically, however the performance of pulmeriana is being watched closely a second year. It is hoped that variability within the experiment can be minimized a second year so that differences shown here will be significant.

Golden Rapture

Manetti produced 28 per cent more flowers than laxa and 15 per cent more than pulmeriana. Statistical analysis showed these differences to be significant. Differences in mean stem length were not significant.

Table 1. Yield and grade of Red Delight rose on three understocks

Understock	9"	12"	15"	18"	21"	24"	Total	Mean stem Fls.per	
								length-in.	sq. ft.
Pulmeriana	47	147	326	355	204	157	1236	17.4	39.2
Canina Broggs	43	103	314	328	210	156	1154	17.7	36.6
Manetti	36	109	249	331	216	179	1120	18.0	35.5

Table 2. Yield and grade of Golden Rapture rose on three understocks

Understock	9"	12"	15"	18"	21"	24"	Total	Mean stem Fls.per	
								length-in.	sq. ft.
Laxa	210	309	346	200	76	21	1162	14.2	36.9
Pulmeriana	203	305	382	260	113	37	1300	14.7	41.3
Manetti	241	437	412	252	116	33	1491	14.3	47.3

Table 3. Color of Golden Rapture flowers produced on three understocks.

Understock	No.			Total	Mean color ^b	Per cent green fls.
	1 ^a	2	3			
Laxa	615	345	209	1169	1.65	18
Pulmeriana	611	367	320	1298	1.78	25
Manetti	532	520	437	1489	1.94	29

a Color graded 1) bright yellow, 2) passable yellow, 3) green.

b Mean color obtained by averaging the above frequencies of numbers.

Color of all flowers was graded on an arbitrary scale, the results of which are shown in table 3. The average color of flowers was best for laxa, second for pulmeriana and poorest for manetti. This is exactly reverse to the order of yield and vigor. Color usually decreased with increase in stem length with most of the green flowers being in the longer grades.

and during the winter when carbohydrate production is low. Color improved sharply in January, remaining at the highest level in March and April and decreasing slightly thereafter. The chart also shows a distinct trend toward better color when production is light, although color remains good during heavy crops, if light is high.

The accompanying chart shows the relation between average color, yield, and time of the year. Color was poorest on young plants at the beginning of the period

Literature cited

1. Post, Kenneth. Back from sabbatical leave. New York State Flower Growers bulletin 111, November 1954.

