



# Colorado Flower Growers Association

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## Understocks for Greenhouse Roses

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The general all purpose understock for greenhouse roses has been Rosa manetti almost as long as roses have been grafted. European rose growers have found selections of R. canina more satisfactory for most varieties, especially when the plants were grown directly in the ground. Odorata, laxa, indica major, and several other species of understocks have been used in Europe during the past 20 years. It must be kept in mind that rose growing, especially in Northern Europe, is considerably different than it is in America. Almost all rose plants are grown without confining roots to benches. Winter production is at a minimum because of limited light. Roses are often cooled down and pruned during winter to reduce heating costs. A rose understock adapted to these conditions might well be undesirable in the American system of growing, where emphasis is placed on Christmas, Valentine's, Easter, and Mother's Day crops.

Stocks of R. canina Broggs and R. laxa were obtained from Holland in 1954. The following year R. pulmeriana, a hybrid between canina and multiflora, was also obtained. In May and June of 1957, softwood cuttings of these three understocks and manetti were rooted, 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 the varieties Red Delight and Golden Rap-

ture. The understocks for this experiment were all grown, dug and stored the same way.

One 35-foot bench was planted with 3 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 understocks. Golden Rapture was grafted on manetti, laxa, and pulmeriana. Red Delight was on manetti, pulmeriana, and R. canina Broggs. The plants were spaced 3 across a 42-inch bench and one foot apart. 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 with the first flowers being cut the first week in August of 1958. Flowers were cut continuously for the following three years with records divided into three 52-week periods. All saleable roses were graded by stem length and head size, with roses longer than 24 inches cut to the 24-inch grade. Color on Golden Rapture was graded according to an arbitrary scale as follows: 1) bright yellow, 2) passable yellow, and 3) green. Mean stem length and mean color (for Golden Rapture) were calculated. The tables give yield and grade data by years as affected by the understocks.

Table 1. Yield and grade of Red Delight roses on 3 understocks for 3 years.

Year	Grade						Total	Mean length inches	Fls/ ft <sup>2</sup>
	9"	12"	15"	18"	21"	24"			
<u>Pulmeriana</u>									
1	47	147	326	355	204	157	1236	17.4	39.2
2	56	160	333	284	183	97	1113	16.8	35.3
3	37	96	174	212	182	264	965	18.7	30.6
Total	140	403	833	851	569	518	3314	17.6	
<u>Canina Broggs</u>									
1	43	103	314	328	210	156	1154	17.7	36.6
2	59	150	323	291	186	110	1119	16.9	35.5
3	34	85	174	237	199	282	1011	18.9	32.1
Total	136	338	811	856	595	548	3284	17.8	
<u>Manetti</u>									
1	36	109	249	331	216	179	1120	18.0	35.5
2	63	133	261	323	165	127	1072	17.2	34.0
3	23	86	156	214	188	279	946	19.1	30.0
Total	122	328	666	868	569	585	3138	18.0	

Table 2. Yield, grade and mean flower color of Golden Rapture roses on 3 understocks for 3 years.

Year	Grade						Total	Color index	Mean length inches	Fls/ ft <sup>2</sup>	% green fls.
	9"	12"	15"	18"	21"	24"					
<u>Laxa</u>											
1	210	309	346	200	76	21	1162	1.65	14.2	36.9	18
2	184	427	494	259	90	25	1479	1.40	14.4	47.0	11
3	178	356	388	255	117	41	1335	1.54	14.8	42.4	14
Total	572	1092	1228	714	283	87	3976	1.52	14.5		14
<u>Pulmeriana</u>											
1	203	305	382	260	113	37	1300	1.78	14.7	41.3	25
2	194	420	452	323	147	32	1568	1.45	14.8	49.8	12
3	140	316	423	302	167	110	1438	1.67	15.9	45.6	19
Total	517	1041	1257	885	427	179	4306	1.62	15.1		18
<u>Manetti</u>											
1	241	437	412	252	116	33	1491	1.94	14.3	47.3	29
2	239	597	688	372	144	29	2069	1.63	14.5	65.7	19
3	197	379	470	359	159	65	1629	1.86	15.2	51.7	26
Total	677	1413	1570	983	419	127	5189	1.79	14.7		24

## Red Delight

The differences caused by these three understocks on Red Delight are quite small (Table 1). Pulmeriana and canina Broggs increased yield 5 per cent over manetti, with yield differences fairly consistent each year. In spite of a confined root system, plants on canina Broggs produced

well. This understock could be expected to perform even better where plants are growing in the ground. Mean stem length was nearly the same from all understocks with differences so small that they are insignificant.

## Golden Rapture

Somewhat larger differences were caused by the understocks on the variety Golden Rapture (Table 2). *R. manetti* produced more vigorous plants with a higher yield, and especially larger numbers of off colored flowers. There is no question that poor color in Golden Rapture is associated in a large part with vigor of the plants. When compared to *manetti*, *laxa* reduced yield by 23 per cent and *pulmeriana* reduced yield by 17 per cent. This reduction in yield is probably caused by slight incompatibility which also increased color of the flowers. Most of the increased yield from *manetti* was in the three shorter grades. The difference in stem length was small and favored *R. pulmeriana*. Although *laxa* reduced green flowers, it still produced 14 per cent flowers of this extreme off color.

## Discussion

Should disease become a problem in clonally propagated *manetti* stocks, *pulmeriana* or *canina* might well be used as understocks for many rose varieties. *Pulmeriana*, *canina*, *laxa*, and several other promising understocks have the advantage of easy propagation from seed. Storage of the ripe fruit in a small amount of peat moss at 38 to 40°F for three months usually cares for the afterripening requirements of rose seed. An occasional germination test near the end of the period indicates when the seed may be sown in the field.

While good performance can be obtained from Golden Rapture on *R. laxa* or *pulmeriana*, these two understocks do not appear to be replacements for *manetti* for this variety. They solve only part of the off-color problem with Golden Rapture. Even on these stocks the longer grades of roses tend to be the poorest color.