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PRODUCTION OF THE ROSE 'ROYALTY' ON FOUR UNDERSTOCK

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The number of flowers cut from 'Royalty' on the understock 'Goman' was higher than yield of the same scion when grown on *odorata*. Yields of 'Royalty' on 'Dr. Huey' or *manetti* were intermediate over the 26 week recording period. The large amount of space per plant resulted in very high yields during the 1982-83 winter season.

DeVor Nurseries provided 3X, field-grown bushes of the rose cultivar 'Royalty' on understock *odorata* 'Dr. Huey', 'goman' and *manetti.* These were planted in 5-gal, plastic buckets filled with pea gravel on January 21, 1982. The plants were randomized in 4 plots per understock, each plot consisting of 4 plants on a conventional greenhouse bench. The plants were pinched for Christmas timing in September, with records started on Nov. 11, 1982, and continuing through the week of May 15, 1983. Space was left between the plots for insertion of mini rose plants. As these were not available, the resultant space per plot of 4 plants remained at 18 sq.ft., or about 4.5 sq.ft. per plant during the recording period. Each plant was watered automatically one or more times daily, depending upon season, with a standard CSU fertilizer solution. The greenhouse was FRP covered with CO_2 injection, heating to 62 F at night and 72 F during the day. The ventilation temperature was allowed to rise to 86 F.

The average weekly yield per plot per week throughout the 26 week recording period for 'goman' was significantly higher than for *odorata,* but not for 'Dr. Huey' or *manetti.* The latter produced 0.5 fewer flowers per week than 'goman' (Table 1). 'Royalty' on 'goman' produced 22% more total cut flowers than 'Royalty' on *odorata,* 16% more than 'Royalty' on 'Dr. Huey', and 6% more than 'Royalty' on *manetti.* There were no discernible differences in cut flower quality (Table 2), all treatments producing 80% or more of total flowers cut in the 18-inch grade or higher.

The differences appeared due to the fact that the cultivar on understock *odorata* or 'Dr. Huey' did not cut as heavily during maximum production as the same cultivar on 'goman' or *manetti* (Fig. 1). Production in all treatments cycled at nearly the same rate, the second maximum yield period occurring about 42 days after the first, followed by the third peak in 35 days, and the fourth in 49 days.

Table 1. Production of 'Royalty' on understocks of *odorata,* 'Dr. Huey', 'goman' and *manetti* over a 26 week period from Nov. 11, 1982 through May 15, 1983.

Understock	Average yield per plot per week[x]	Total yield all plants	Yield per plant
odorata	8.3	860	53.8
'Dr. Huey'	8.7	900	56.3
'goman'	10.0	1047	65.4
manetti	9.5	987	61.7
HSD(5%)[y]	1.6		

[x]Each plot containing 4 plants
[y]Statistical value required for differences to be significantly different

Table 2. Percent of each stem length produced by 'Royalty' on understocks of *odorata,* 'Dr. Huey', 'goman' and *manetti* over a 26 week period from Nov. 11, 1982, through May 15, 1983.

Understock	Stem Length						
	9-in.	12-in.	15-in.	18-in.	21-in.	24-in.	27-in.
odorata	2	5	13	23	21	31	5
'Dr. Huey'	1	3	16	22	26	27	5
'goman'	2	4	14	19	21	31	9
manetti	2	5	13	21	22	32	6

The understock *R. odorata* is supposed to be the same as *R. indica* 'Major', utilized by many rose growers in Europe and Israel. *R. manetti* is the old stand-by in this country, and some people have suggested it might not be the un-

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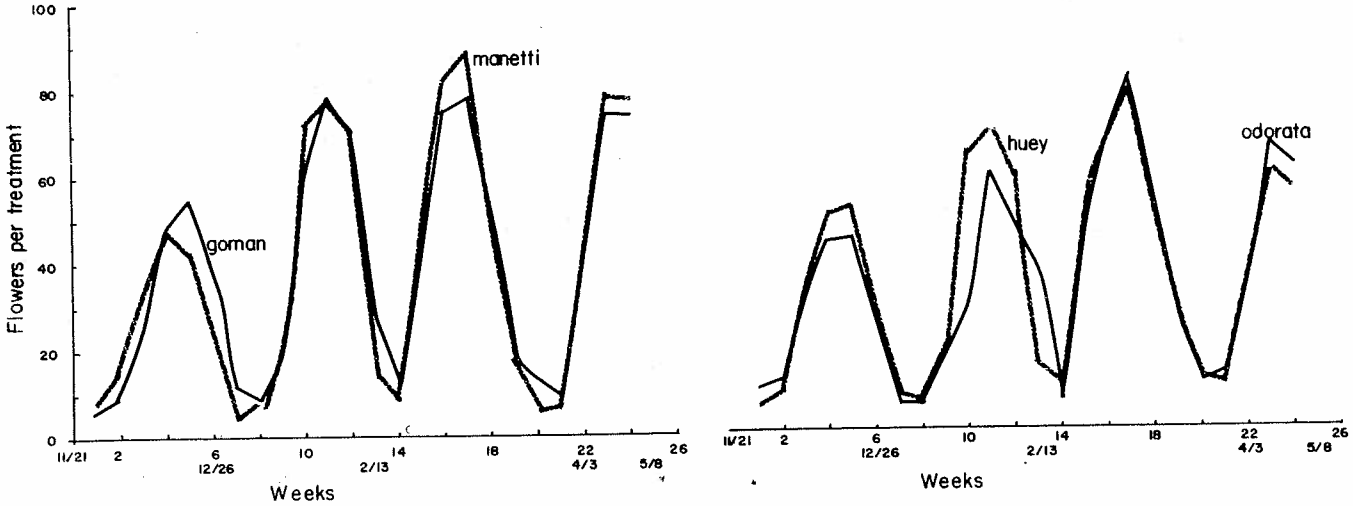

Fig. 1: Smoothed curves of weekly 'Royalty' production when grown on the understocks *odorata,* 'Dr. Huey', 'goman' and *manetti.*

derstock of choice where so many growers are now growing in the ground. 'Dr. Huey' is a common understock for cultivars that show incompatibility on *manetti,* whereas 'goman' is a recent seedling developed by Mielland in France and handled by Conard-Pyle in this country.

In the past two years, we have continued mini-plant work started by Grueber at CSU. Our observations indicate that small rose plants require a long period to reach the productive level of standard field-grown bushes. Work with mini-plants has been mainly oriented toward the mechanics of rooting and grafting, and we are still planning to make a comparison of mini-plants on the same understock. Although interest resurges periodically on use of own-root plants, we note that very few producers rely totally on non-grafted rose bushes. In fact, we have been around long enough now to have seen several cycles — like re-inventing the wheel. Testing of the effects of an understock is difficult other than the obvious cases of incompatibility. Tests results published in the available literature do not show great differences between understock.