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A ROSE BREEDING PROGRAM: SCREENING FOR BLACK SPOT RESISTANT ROSE MATERIAL

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Background. The black spot fungus (*Diplocarpon rosae* Wolf) is the most damaging rose disease in the world. It is more widespread and causes more damage than mildew or rust, two other common rose diseases. The rose has been one of the most important commercial ornamental species for centuries, but the number of plants sold in the United States has decreased steadily over the last 20 years. One of the major reasons for decreasing sales is the generally high inputs of fungicides and pesticides needed to grow roses in the landscape. Unfortunately, the vast majority of the commercially available rose cultivars are susceptible to several important diseases.

Commercial rose cultivars are complex interspecific hybrids which are tetraploids. Although a few commercial cultivars have some resistance to black spot, the sources of resistance originally came from the diploid species which, due to the difference in chromosome numbers, do not cross readily with commercial tetraploid rose cultivars. The diploid species which are resistant or immune to black spot come from seven sections of the genus *Rosa*. These, when crossed, produce a diploid hybrid which is sterile, but fertility is restored upon doubling the chromosome number of the sterile interspecific hybrid. Preliminary results have demonstrated that these amphidiploids are cross fertile with the cultivated tetraploids.

The objectives of this long term research program are:

1. To assess the usefulness of amphidiploidy as the mechanism of incorporating diploid germplasm into the tetraploid breeding population.
2. Develop efficient screening techniques for black spot resistance of rose cultivars and species.

Current Information. To gain information on relative black spot resistance, 60 species, amphidiploids, private breeding lines, and old garden and modern hybrid roses have been planted in a replicated trial at the Overton Center and in plots in the Brazos River bottom near College Station (Table 1). These plantings will be monitored for disease development for at least 2 years to determine the suitability of each entry for use in a rose improvement breeding program.

Application. The development of black spot resistant rose cultivars will decrease the use of fungicides in rose culture and increase the demand of rose plants for garden and landscape use.

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Table 1. Rose entries planted in replicated trials at Overton and College Station.

1.	*Rosa laevigata*	21.	3022	41.	*R. roxburghii*
2.	*R. moschata*	22.	3042	42.	*R. brunonii*
3.	Queen Marie	23.	3166	43.	*R. setigera serena*
4.	90-69	24.	3416	44.	Lafter
5.	84-131	25.	3626	45.	*R. rugosa*
6.	86-3	26.	3703	46.	*R. rugosa rubra*
7.	*R. x fortuniana*	27.	Sheer Elegance	47.	Mary Manners
8.	74-193	28.	Intrigue	48.	John Cabot
9.	88-1	29.	All That Jazz	49.	Belinda's Dream
10.	Honor	30.	Carefree Beauty	50.	Safrano
11.	Ingrid Bergman	31.	Carefree Wonder	51.	Old Blush
12.	Sunbright	32.	Alba Meidiland	52.	America's Choice
13.	Tornament of Roses	33.	Bonica	53.	Sunsprite
14.	Impatient	34.	Pearl Meidiland	54.	Radiance
15.	Sexy Rexy	35.	Scarlet Meidiland	55.	Gold Badge
16.	Sunflare	36.	Tropicana	56.	Allgold
17.	Salsa	37.	Gartendirektor Otto Linne	57.	Red Meidiland
18.	905	38.	The Fairy	58.	White Meidiland
19.	3002	39.	*R. banksiae normalis*	59.	Pink Meidiland
20.	3016	40.	*R. banksiae banksiae*	60.	Peace