acre to remove an existing orchard from 1977 through 1980, and to establish a planting with 200 trees per acre and manage it for four years (4). Frequently, New England growers simply don't have sufficient capital, nor can they anticipate any major increase in profit levels, to afford changing-over without financial assistance. Can these high establishment and maintenance costs be justified? It is the feeling New England growers will have an increasing local market advantage, due to rising labor and transportation costs incurred by other apple regions shipping to eastern markets.

As New England's apple industry welcomes participation in the search for "ideal" rootstocks and their proper management, we are optimistic about the future. If during the next century we can realize and capitalize on advancements in dwarf rootstocks, planting systems, culture, storage, and marketing practices, New England's apple industry will remain competitive and successful. However, failure to cope with our problems, essentially the development of "ideal" apple rootstocks, will drive many individuals and businesses out of the industry.

References

[1]Peterson, B. S., C. R. Lies. 1976. *New England Fruit Tree Survey* 1976. pgs. 1 & 4.

[2]*Op. cit.*, pgs. 2 & 3.

[3]*Op. cit.*, pg. 5.

[4]Lord, W. J. and W. J. Bramlage. 1976. Fruit Notes. Vol. 41 (No. 6) pg. 1-8.

Segregation for Resistance to Black Rot in Selfed Grape Seedlings[1]

J. A. MORTENSEN[2]

Susceptibility to black rot (*Guignardia bidwellii* (Ell.) Viala and Ravaz) has been reported in *Vitis* species at levels varying from highly susceptible *V. vinifera* L. cultivars to highly resistant clones of *V. cinerea* Engelm., *V. rupestris* Scheele, and *V. rotundifolia* Michx. (2, 3, 4, 5). Immunity to black rot has been found in selections of *V. cinerea* and *V. rupestris*, and is being incorporated into horticulturally desirable cultivars (6). Artificially inoculated (1) young seedlings from crosses between resistant and susceptible cultivars demonstrated a quantitative inheritance pattern, with some seedlings exceeding either parent in susceptibility or resistance (3). The purpose of this paper is to report a clearcut segregation that occurred for black rot resistance on the fruit of mature S_1 seedlings of 'Blue Lake' grape.

Materials and Methods

Flower clusters of 'Blue Lake' bunch grape (7) were bagged with Kraft paper bags prior to opening in order to obtain selfed seeds in 1961. Seeds were vernalized, planted, and grown in the nursery in 1962, and transplanted to 2.5 x 7 ft (0.8 x 2.1 m) vineyard spacing in 1963. There were 58 plants in each of three replications. On the vines that fruited (1965 to 1967), individual vine records on black rot of the fruit were made. The segregation was subjected to Chi-square analysis for goodness-of-fit to genetic ratios.

Results and Discussion

A distinct segregation occurred between plants with little or no black rot on the fruit and those with numerous black rot lesions and mummied berries. There were no intermediate levels of resistance observed in the progenies.

'Blue Lake' is a resistant selection from the F_1 generation of a cross between Fla 43-47 (resistant) and 'Caco'

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Table 1. Segregation for resistance to black rot in the F_2 generation of a cross between Fla. 43-47 (resistant) and Caco (susceptible) bunch grape.

Replication	Resistant:susceptible Observed	Expected (15:1)	Chi square	Probability
A	28:2	28.1:1.9	0.006	.90-.95
B	28:5	30.9:2.1	4.277	.02-.05*
C	18:2	18.7:1.3	0.403	.50-.70
Total	74:9	77.8:5.2	2.985	.05-.10

*Chi-square value greater than that observed would be expected by chance in 5% or less of cases.

(susceptible). S_1 seedlings from 'Blue Lake' are actually F_2 seedlings from the cross between resistant and susceptible parents (Fla. 43-47 x 'Caco'). The F_2 segregation observed was reasonably close to a 15:1 ratio of resistant to susceptible progeny (Table 1).

One possible explanation of the observed segregation is that two resistance genes were heterozygous in 'Blue Lake' and that these genes segregated as in Table 2 in the S_1 progeny.

The distinct segregation reported here differs from the continuous variation reported by Barrett (3) on resistance to black rot of the foliage. However, this segregation was based on resistance in the fruit clusters and not on the foliage, and Barrett noted that foliar resistance may not necessarily correspond to fruit resistance in species such as *V. bicolor* LeConte (2).

While resistance in the fruit appears to be digenic dominant in the case of

Table 2. A possible explanation of the segregation of S_1 seedlings of 'Blue Lake' grape for black rot resistance in the fruit.

Genetic segregation	Genotype	Phenotype	Observed segregation
9	Br^1— Br^2—	resistant	
3	Br^1— br^2br^2	resistant	15
3	br^1br^1 Br^2—	resistant	
1	br^1br^1 br^2br^2	susceptible	1

'Blue Lake,' it is likely that additional genes would be segregating in crosses between resistant and highly susceptible cultivars. More research is needed to determine the overall pattern of inheritance.

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Attempts at Cherry Breeding in Florida[1,2]

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There are no palatable cherries in the deep South of the U.S. Sweet (*Prunus avium*), sour (*P. cerasus*) and duke (hybrids) cherries are grown in more northern U.S. climates because they have high winter chilling requirements. Many cherry cultivars and their seedlings have been planted in