Improving the Level of Powdery Mildew Resistance in Cucumber

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In attempting to raise the level of powdery mildew resistance (PMR) in 'Poinsett' cucumber, we have made use of several parents with some unexpected results. Initially crosses were made with 'Spartan Salad' 77-717 whose F1's showed somewhat less mildew than their susceptible parents (3). We have subsequently found it possible but less easy than suggested in an earlier report to maintain resistance through successive backcrosses without selfing when the recurrent parent is susceptible (1). However, it is relatively easy to increase the level of resistance by such a backcross program if the recurrent parent has a low level of PMR, probably having the one recessive gene which seems to be present in all resistant varieties. This note is to report that two additional and unrelated sources of high resistance can be used in the same way.

'Poinsett' and improved lines derived from repeated backcrosses to it develop considerable powdery mildew in the greenhouse at Ithaca. Consequently, we crossed 'Poinsett 83' (resistant to CMW) with 'Spartan Salad' 77-717, and with the line we carry as 'Yomaki' (essentially PI 288238). The latter is listed as coming from Egypt but is originally from Japan with some selection for PMR by Dr. Warid A. Warid during a brief stay in Egypt. The intention was to compare continuous backcrossing from 'Spartan Salad' crosses with alternate backcrossing and selfing from the 'Yomaki' crosses. After about 3 backcrosses we tried selecting in the backcross F1's of both series and found resistance maintained equally well.

We have had a similar experience where 'Poinsett 83' was crossed originally with 'Wisconsin 2757' and selection made for target leafspot (*Corynespora casiicola*) resistance (2). After 2 backcrosses, we began selecting for PMR also and found that an intermediate level could be maintained in the F1's of backcrosses without selfing. Higher resistance, equivalent to the 'Wisconsin 2757' parent, reappeared in the F2 after the last backcross, and such segregates (when self-pollinated) have nearly always produced F3's with uniformly high resistance.

Literature Cited

1. El Jack, Ali and Henry M. Munger. 1983. Two sources conferring partial dominant resistance to powdery mildew (*Sphaerotheca fuliginea* Poll.) in cucumber. Cucurbit Genet. Coop. Rpt. 6: 7-8.

2. Munger, Henry M. and David P. Lane. 1987. Sources of combined resistance to powdery mildew and Corynespora leafspot in cucumber. Cucurbit Genet. Coop. Rpt. 10: 1.

3. Munger, H. M., Abad Morales, and Sadig Omara. 1979. Dominant genes for resistance to powdery mildew in cucumber. Cucurbit Genet. Coop. Rpt. 2: 10.