Development of Tropical Gynoecious Lines in Cucumber

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Gynoecious sex expression has been responsible for phenomenal development and quicker exploitation of hybrid vigor in cucumber which has attained a high degree of perfection in U. S. A., Canada, Japan, and Europe. Maintenance of the gynoecious lines has been possible through exogenously applied GA3 (Peterson and Anhder, 1960) and silver nitrate (Beyer, 1976; Kalloo and Franken, 1978; More and Munger, 1986). Munger (1979) reported that the gynoecious lines Gy 14, SR551F, Gy 3, Gy 57 and Tablegreen 68 are the most suitable to produce F1 hybrids in slicing and pickling cucumbers in temperate regions. Unfortunately, those lines have been found to be unstable for gynoecy under high temperature and long photoperiodic conditions prevailing in tropical production areas. Hence, there is a need for development of gynoecious lines suited to tropical production conditions.

Crosses were made between temperate gynoecious lines (Gy 14, SR551F, Gy 3, Tablegreen 68 x Gy 3 F2, Wisconsin 2757) and tropical monoecious lines (Poona Khira, RKS296, RKS300). Selection was applied in the segregating generations for recombinants having true-breeding gynoecious sex, good horticultural characters, and vigor germination and emergence under tropical conditions. Gynoecious segregates were maintained by application of silver-nitrate (250 ppm, twice). Several tropical gynoecious lines have thus been isolated and are now in F4 or F5 generation. Four of these are described here.

Four lines: 87-304-6, 87-316, 87-319-12 and 87-338-15 (Table 1) were found to be true-breeding gynoecious lines during both the summer and rainy seasons of 1987. The first line produced cylindrical, light-green fruits of medium size having sparse black spines, while the latter three produced cylindrical, short to medium fruits of pale yellow color having brownish sparse spines. The node number of first pistillate flower of all lines ranged from 3.00 to 6.75. They did not produce a single staminate flower in the absence of AgNO3 spray. When they were sprayed with AgNO3 (300 ppm, twice) the average node number of first staminate and pistillate flowers ranged from 1.09 to 2.89 and 4.29 to 9.29 respectively. These observations indicate that the lines have strong gynoecious sex expression, and they could be easily maintained by AgNO3, under tropical field conditions.

Before these are released for use in hybrid production, performance *per se* and combining ability will be evaluated.

Literature Cited

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Table 1. Node number of first flower in four tropical gynoecious lines with or without two silver nitrate applications[z].

Gynoecious line and pedigree	Rainy season	Summer season, 1987 300 ppm $AgNO_3$ twice	
	First pistillate node[y]	First staminate node	First pistillate node
87-304-6 WI 2757 x RKS 300 F_5	3.00	1.09	4.64
87-316 ((Tablegreen 68 x Gy 3 F_2) x Poona Khira) x Poona Khira BC_2S_3	5.15	2.25	6.14
87-319-12 ((Tablegreen 68 x Gy 3 F_2) x Poona Khira) F_4	6.75	2.89	8.67
87-338-15 SR551F x Poona Khira F_5	5.25	2.64	9.29

[z]Seeds of Tablegreen 68 x Gy 3 and SR551F were obtained from Dr. H. M. Munger, Cornell University, U. S. A. Seeds of WI 2757 were obtained from Dr. C. E. Peterson, University of Wisconsin, U. S. A.

[y]No staminate flower was produced in absence of $AgNO_3$ spray.