

# Variation Among Tropical Pumpkin (*Cucurbita moschata*) Cultivars in Susceptibility to Silverleaf

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Silverleaf is a distinctive disorder that has been observed on *Cucurbita pepo*, *C. moschata*, and *C. maxima* plants. Affected leaves are uniformly silver on the upper surface. Silverleaf is developmentally reversible so that silver and normal leaves may appear on the same plant.

The disorder was first noted in Israel in the 1960s and was first reported in the literature in the 1980s (Paris et al., 1987) and was associated with drought stress. Scattered reports of silverleaf from Miami-Dade County, Florida occurred prior to a major outbreak in 1987-88 season in several south Florida production areas (Maynard and Cantliffe, 1989). Symptoms are caused by feeding of silverleaf whitefly (*Bemisia argentifolii*) nymphs (Yokomi et al., 1990) and exacerbated by drought stress (Paris et al., 1993b).

Squash plant introductions from the U.S. National Germplasm System were evaluated for silverleaf

resistance in naturally silverleaf whitefly infested fields in Puerto Rico in 1992, 1995, and 1996 (Wessel-Beaver, 1997). Those showing a high level of resistance included 14 of 420 *C. moschata* accessions, 69 of 350 *C. pepo* accessions and 7 of 405 *C. maxima* accessions. These results suggest the possibility of breeding for resistance to silverleaf.

Differential susceptibility to silverleaf among summer squash (*C. pepo*) cultivars has been reported (Paris et al., 1993a, 1993c). Cocozelle types had less silverleaf than crookneck, scallop, straightneck or zucchini types and vegetable marrow types were intermediate in silverleaf susceptibility. The least susceptible cultivars were 'Striato d' Italia', 'Kokacella', 'Bar' Oz' and 'Sih'i Lavan' that all originated in the Old World whereas cultivars developed in the new World were most susceptible to silverleaf.

Table 1. Incidence and severity of silverleaf in tropical pumpkin cultivars.

Cultivar	Season		Season	
	1	2	1	2
	(%)		Severity <sup>1</sup>	
Borinquen	90	100	4.0	4.0
Linea C Pinta	90	100	3.0	4.0
Soler	85	100	3.0	4.0
La Primera	35	75	1.6	1.0
La Segunda	25	0	1.8	0.0
L18-4	53	0	1.3	0.0

<sup>1</sup> 0 none to 4 severe silverleaf

Variation among tropical pumpkin cultivars in respect to silverleaf susceptibility was noted in fields that were naturally infested with the silverleaf whitefly in two consecutive seasons at Bradenton, Florida (Table 1). 'Borinquen', 'Linea C. Pinta', and 'Soler' which were developed in Puerto Rico had a high incidence of severe silverleaf in both seasons. 'Soler' was also found to be highly susceptible to silverleaf in studies conducted in Puerto Rico (Wessel-Beaver, 1997). On the other hand, 'La Primera', 'La Segunda', and L18-4 (a compact plant inbred) all developed in Florida had a much lower silverleaf incidence and plants were less severely affected.

Thus, the cultivar and geographical origin relationships noted (Paris et al., 1993a, 1993c) in *C. pepo* occurs in *C. moschata* as well. Although the reasons for the relationships are unclear at this time, they do offer guidance for selection of parents in breeding programs.

#### Literature Cited

1. Maynard, D. N. and D. J. Cantliffe. 1989. Squash silverleaf and tomato irregular ripening: New vegetable disorders in Florida. Fla. Coop. Ext. Serv. VC-37.
2. Paris, H. S., H. Nerson, and Y. Burger. 1987. Leaf silvering of *Cucurbita*. Can. J. Plant Sci. 67: 593-598.
3. Paris, H. S., P. J. Stoffella, and C. A. Powell. 1993a. Susceptibility to leaf silvering in the cultivar groups of summer squash. Euphytica. 69: 69-73.
4. Paris, H. S., P. J. Stoffella, and C. A. Powell. 1993b. Sweetpotato whitefly, drought stress, and leaf silvering of squash. HortScience. 28: 157-158.
5. Paris, H. S., P. J. Stoffella, and C. A. Powell. 1993c. Differential susceptibility to leaf silvering in *Cucurbita pepo*. HortScience. 28: 657-658.
6. Wessel-Beaver, L. 1997. Screening for silverleaf resistance in *Cucurbita* accessions. Cucurbit Genet. Coop. Rpt. 20: 54-56.
7. Yokami, R. K., K. A. Hoelmer, and L. S. Osborne. 1990. Relationships between the sweetpotato whitefly and the squash silverleaf disorder. Phytopathology. 80: 895-900.