OCCURRENCE OF SQUASH MOSAIC VIRUS IN MUSKMELON SEEDS AVAILABLE IN ONTARIO IN 1973

W. G. Kemp[1], J. Wiebe[2], and P. A. Troup[1]

Abstract

Squash mosaic virus was detected in seed of 3 of 29 muskmelon cultivars commercially available to Ontario growers in 1973. A count of infected plants from 53 seed samples indicated that seed transmission of the virus in infected cultivars reached a maximum of 6.3% in Early Delicious 51, 3.1% in Iroquois, and 1.9% in Saticoy.

Résumé

On a décelé le virus de la mosaïque de la courge dans les semences de 3 des 29 cultivars de melon brodé disponibles aux producteurs de l'Ontario en 1973. D'après une numération des plantes infestées provenant de 53 échantillons, la transmission du virus de la semence aux cultivars infestés atteignait un maximum de 6.3% chez Early delicious, 51.3% chez Iroquois, et 1.9% chez Saticoy.

Most muskmelon (Cucumis melo L.) seed distributed in Ontario is imported and originates from a limited number of seedsmen in the U. S. A. squash mosaic virus (SMV) sometimes persists in the seed of some cultivars (3). Infected seed imported into Ontario has served as a primary source of SMV inoculum for subsequent infection of muskmelon crops (2). In early 1973, samples of commercial seed of muskmelon cultivars offered for sale in the province were tested for seedborne SMV to uncover potential problem cultivars in advance of spring planting.

Methods and results

Two methods were used to detect SMV in or on the seed. The first used 72 seeds selected at random from each of 53 samples representing 29 cultivars and obtained from 7 seedhouses. Individual seeds were sown in steamed soil in 1-inch-square peat pots, placed in sterile plastic trays and isolated in a small greenhouse compartment. The number of infected seedlingss in each of the 53 samples was recorded after the first true leaves had fully expanded (3 to 4 weeks). The second method was a direct seed test on each of the samples. Five lots of 20 seeds were selected at random from each sample. Each seed lot was ground separately in 0.5 ml of 0.25% Na_2So_3 in a sterilized mortar. The paste from each lot was then applied to leaves of Vigna sinensis Savi (cowpea, cv. Black-eye), Nicotiana glutinosa L., Citrullis vulgaris Schrad. (watermelon, cv. Market Midget), Cucurbita pepo L. (pumpkin, cv. Small Sugar), and sometimes Cucumis sativus L. and Chenopodium quinoa Willd. These plants reportedly are useful in detecting and differentiating SMV from other cucurbit viruses (1). Final symptoms assessments were made 4 weeks after inoculation. The results of this seed assay test sugqests that no more than 5% of the seed lot was infected with SMV.

As results from the two detection methods were in complete agreement, the data from these tests are combined in Table 1. In this survey the number of muskmelon cultivars in which SMV was detected in the seed or the seedlings was low. Only 3 of the 29 cultivars - Early Delicious 51, Iroquois, and Saticoy - contained the virus. Moreover, only 3 of the 7 seedhouses were distributing infected seed. Two infected cultivars were identified from source C, whereas one infected cultivar was identified from each of sources B and F.

The number of infected seedlings did not exceed 7% of the total emergence of any of the 53 seed samples. From sources B and C, 2.0% and 6.3% respectively, of the Early Delicious seedlings showed visible mosaic symptoms. seedlings of Saticoy with typical SMV symptoms from source C represented 1.9% of the total stand. The virus was found in 3.1% of the Iroquois seedlings from source F.

[1]Plant Pathologist and Technician, respectively, Research Station, Agriculture Canada, Vineland Station, Ontario.

[2]Horticulturalist, Horticultural Research Institute of Ontario, Vineland Station, Ontario.

Table 1. Occurrence of seed-borne squashmosaic virus in 29 cultivars of muskmelon from seven seed distributors

Cultivar	Seed distributor A	B	C	D	E	F	G
Ananas							-*
Banana					-		
Burpee Hybrid						-	-
Chlarentais Hybrid					-		
Chlarentais Improved						-	
Canada Gem Hybrid						-	
Classic Hybrid		-					
Early Delicious 51		2.0%**	6.3%	-		-	-
Farnorth					-		
Gold Star			-				
Golden Crispy					-		
Honey Rock				-	-	-	-
Hales Best Jumbo				-			
Harper Hybrid			-		-	-	
Hearts of Gold		-					
Harvest Queen		-	-	-			
Iroquois			-	-		3.1%	-
Minnesota Midget					-		
Milwaukee Market				-			
Mainerock	-						
New Yorker							
Orange Ananas							-
Perfection						-	
Pride of Wisconsin				-			
Samson Hybrid						-	
Sugar Salmon						-	
Sungold Casaba				-			
Supermarket	-	-	-	-			
Saticoy Fl	-	-	1.9%	-		-	

* - = SMV not detected in cultivar.

** % = percentage of emerged seedlings with visible SMV symptoms in a sample

Only about 10% of the cultivars tested were infected with SMV. However, the three cultivars in which SMV was found are commercially important in Ontario. Hence, should high vector populations coincide with infected cultivars in the field, commercial losses might well occur.

Literature cited

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