## Two Oriental Squash Varieties Resistant to Powdery Mildew Bred through Interspecific Crosses

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Powdery mildew disease is frequently found in fields of cucurbit crops (2). The causal agents of this disease are reported as Ervsiphe cichoracearum DC ex. Merat and Sphaerotheca fuliginea (Schlecht ex. Fr) Poll. by Sitterly (5). In Korea, Sphaerotheca fuliginea is the most prevalent pathogen based on conidiaphore studies (3). Korean varieties of Cucurbita moschata have good quality fruit, but are susceptible to powdery mildew. Cucurbita lundelliana is resistant to powdery mildew (6). Resistance is governed by a single dominant gene that can be transferred to *C. moschata* (4). Contin (1) concluded that C. martinezii has a single dominant gene for powdery mildew resistance. On the other hand, C. lundelliana and C. martinezii posses additional modifier genes influencing the level of resistance. In 1989 several seeds of C. martinezii were obtained from Dr. R. W. Robinson, Cornell University. The present paper reports the development of novel types of C. moschata varieties through interspecific crosses with good quality, powdery mildew resistance, earliness, which produce slightly tapered cylindrical fruits.

Method: The lines were obtained through backcross and pedigree selection as shown in Fig. 1. The interspecific crosses were done between the cultivar Jecheonjaerae of C. moschata and C. martinezii in hybrids were backcrossed 1991. The to 'Jecheonjaerae' in 1992. Progenies selected for resistance to powdery mildew and good fruit quality from the  $BC_1F_1$  population were again backcrossed to 'Jecheonjaerae'. Lines selected for these characters from the  $BC_2F_1$  population were crossed with another variety of C. moschata, 'Seoulmadi' in 1995 which has good fruit quality when immature fruits are steamed. The hybrid plants were sibbed once and then selfed. Two progenies selected from the  $BC_3F_2$ population were backcrossed with 'Seoulmadi' and selfed four times from the year 1998 to 2001. For the selection of progenies highly resistant to powdery mildew, both the seedling and field tests were carried out in each generation.

**Result:** Selections were made based on the resistance to powdery mildew and on the quality of fruit in each generation. The two lines selected showed slightly lower levels of resistance to powdery mildew than *C*. *martinezii*, but the quality of the fruits were almost similar with the recurrent parent *C. moschata*. One of the selected lines was named 'Sigol' with the other named 'Sangol'.

## Literature Cited:

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Fig. 1. Pedigree of the powdery mildew resistant C. moschata breeding lines, 'Sigol' and 'Sangol'. (S = Sibbed)

Table 1. Major characteristics of the two lines derived from the interspecific crosses C. moschata  $\times$  C. martinezii backcrossed to C. moschata.

Lines or Variety	Degree of resistance <sup>z</sup>	Fruit weight (g)	Fruit diameter (cm)	Fruit length (cm)	Fruit shape	Fruit bitterness
'Sigol' (Breeding line)	2	373	7.2	13.1	Cylindrical	No
'Sangol' (Breeding line)	2	333	6.5	15.2	Oblong	No
'Seoulmadi' (C. moschata)	9	319	4.2	27.0	Cylindrical	No
C. martinezii	1	233	6.8	7.5	Spherical	Yes

<sup>z</sup> Resistance to powdery mildew : 1(resistant) - 9(susceptible)