

## 9. Breeding for Powdery Mildew Resistant Varieties in *Cucurbita moschata*

Myeong-Cheoul Cho, Young-Hyun Om, Yun-Chan Heo, Dae-Hyun Kim,  
Jeong-Su Kim<sup>1</sup>, Hyo-Guen Park<sup>\*</sup>

*Vegetable Research Division, National Horticultural Research Institute, Suwon 440-706*

<sup>1</sup>*Horticultural Environment Division, National Horticultural Research Institute,  
Suwon 440-706*

<sup>\*</sup>*College of Agriculture and Life Sciences, Seoul National University, Seoul 151-742*

To breed powdery mildew resistant varieties, 104 accessions of *Cucurbita* spp. germplasm were evaluated. Powdery mildew resistance and horticultural characteristics of the accessions were investigated in the field conditions. Powdery mildew resistance and ten horticultural characteristics including flowering time, fruit length, and weight of 100 seeds were evaluated in the field condition. *C. martinizii* was selected for high resistance to powdery mildew in the field. The growth of powdery mildew pathogen and response of leaf surface tissue to the pathogen were observed after artificial inoculation to resistant *C. martinizii* and susceptible *C. moschata* cv. 'Wonye No. 402'. Mycelium growth was very clearly different between resistant *C. martinizii* and susceptible *C. moschata* cv. 'Wonye No. 402' at 5 days after inoculation at the adult stage. Interspecific hybridization was attempted to transfer powdery mildew resistance gene(s) from *C. martinizii* to *C. moschata*. The fertilization was very successful after hand pollination. The generation was easily progressed. Fruit set and seed germination rate were improved as the generations advanced. A single dominant gene action was postulated as determining powdery mildew resistance at the seedling stage. But for the effective selection of powdery mildew resistant individuals, it was established that adult plant resistance should be confirmed in the field conditions after the seedling test. Through the seedling and field tests, *C. moschata* lines resistant to powdery mildew and superior to horticultural characteristics, were selected after 2 backcrossing and 3 selfing generations. The fruit characteristics of newly developed lines were similar to those of the recurrent parent, 'Jaechenjarae'.

E-mail: chomc@rda.go.kr