5. Breeding for Pepper (*Capsicum annuum*) Resistant Lines to Anthracnose (*Colletotricum gloeosporioides*) through Interspecific Hybridization with *C. baccatum*

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This is to summarize a long-term breeding program to develop pepper varieties resistant to anthracnose conducted at the College of Agriculture and Life Sciences, Seoul National University since 1995. The chili pepper is the most important vegetable crop in Korea, contributing production value of over US$ 1.1 billion to Korean farmers annually. Even though anthracnose is one of the most seriously damaging diseases in chili pepper farming in Korea, causing about 10% economic loss (which costs about US$ 100 million annually), there has been no resistant line to this disease developed either in Korea or elsewhere in world.

After 3 years (95-98) of thorough searching for anthracnose resistant source from more than 300 pepper lines, we concluded that interspecific hybridization would be the only way in developing pepper anthracnose resistance lines because there was no reliable resistant source available within the cultivated pepper species (*C. annuum*). In the late 1998, we were fortunate to receive two *C. baccatum* lines (namely PBC80 and PBC81) highly resistant to anthracnose from AVRDC. After many unsuccessful attempts of the interspecific crosses with the *C. baccatum* lines, it was very interesting and useful to find out that there were distinct varietal differences in interspecific crossability among *C. annuum* lines. A Philippine pepper variety (named as Matikas) was the best interspecific *C. annuum* parent with *C. baccatum* with embryo rescue. Since the interspecific F1 plants turned out to be very highly sterile, some backcrossing to the Matikas was made. We now have more than 250 BC1F1 plants. The preliminary inheritance of the resistance to anthracnose appears to be controlled by one or more dominant allele(s), which indicates that the development of anthracnose resistant pepper will be realized within a 4-5 years.

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