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Development of Clubroot Resistant Doubled-Haploid Inbred Lines in Kimchi Cabbage (Chinese Cabbage) (*Brassica rapa* L.)

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Kimchi cabbage (Chinese cabbage), radish and Cabbage are major Brassicaceae vegetables in Korea. Especially, we can easily develop whole plant from one microspore in Kimchi cabbage. To develop clubroot resistant doubled-haploid (DH) inbred lines, we pollinated a clubroot resistant turnip of 'IT 033820' with a Kimchi cabbage (Chinese cabbage) inbred of 'BP 079'. More than 85 DH inbred lines were developed from this combination. We screened about 400 materials including these DH inbred lines, commercial cultivars and breeding materials during 3 years using hydroponic system after inoculating single spore isolation race 4(SSI-04) inoculate.

One inbred line derived from this combination selected as clubroot resistant and registered as ‘Wonkyo20036ho’. We inoculated 26 DH inbred lines derived from 'Zoong-baek 2ho' using SSI-4, the percent of resistant plants varied from 0 to 83%. However the horticultural traits of highly resistant DH inbred line was poor. Thus we selected one DH line showing 77% resistant with yellow inner leaf and maid good head, was registered as 'Wonkyo20034ho'. Another DH inbred line derived from Korean variety of 'Wol-dong' showing 86% resistant was registered as 'Wonkyo20037ho'. Other DH inbred lines were derived from Chinese cultivar of 'Choon-hi-go-hang-wang' and 'Hwang-shim-zo48' showed 80 and 71% resistant, respectively, was also selected for registration. Even though DH inbred lines derived from turnip showed highly resistant to SSI-04 and provincial inoculate, they showed poor characteristics in horticultural traits. However, commercial seed companies showed interesting for adapting these DH inbred lines in commercial breeding.