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과제 일련번호: 1

Development of soybean cultivars resistant to major soybean diseases

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The final goal of this project is to develop soybean resistant to soybean mosaic virus (SMV), bacterial leaf pustule (BLP) and black root rot, which are major soybean diseases in Korea. Two approaches have been made; one is the development of molecular markers closely linked to disease resistance genes and using those markers for pyramiding the resistance genes and the other is development of disease resistant transgenic soybean plants. More than 10 molecular markers closely linked to the genes (*Rsv*1, *Rsv*3, *Rsv*4) resistant to SMV have been developed. Some of those markers were converted to high throughput markers and are being used successfully for developing 12 isogenic lines resistant to SMV so far. Molecular frame map was made for the resistance gene(*rxp*) to BLP and molecular mapping population has been developed for analyzing specific disease resistance to BLP showing novel symptom. To develop single nucleotide polymorphism (SNP) markers to more closely linked to the *rxp* gene, 3 bacterial artificial chromosomes (BAC) clones containing SSR markers, Satt486, Satt372 and Satt002, which were reported to flank the *rxp* gene, were end-sequenced. Soybean germplasm has been screened for the resistance to black root rot and a molecular mapping population for elucidating chromosomal location of the black root rot resistance gene has been developed. Stable soybean gene transformation techniques has been developed and the genes related to disease resistance are now being transformed to soybean by *Agrobacterium*-mediated transformation.

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