Introgression of Wild Solanum Germplasm into Potato. (C08-jiang173357-Oral)

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Abstract:

Introgression of germplasm from wild Solanum species is an important breeding strategy in potato. Solanum brevidens is a non-tuber-bearing diploid wild species that has excellent resistance to several important potato diseases, including tuber soft rot, potato-leaf-roll virus, and early blight. A fertile somatic hybrid between potato and S. brevidens was developed by protoplast fusion. BC3 progenies were produced from this somatic hybrid. Tests have shown that the S. brevidens-derived disease resistances are retained in the progeny lines. S. brevidens-specific DNA markers, which had been previously mapped to 12 S. brevidens chromosomes, were used to trace individual S. brevidens chromosomes in the backcross population. Potato plants containing single or few S. brevidens chromosomes were further characterized with fluorescence in situ hybridization techniques to verify the genetic identities of the S. brevidens chromosome(s). Using this combined analysis we have isolated five monosomic S. brevidens chromosome addition lines. Other S. brevidens chromosomes were also recovered in the BC3 progenies. Our results demonstrate the potential to isolate a complete set of potato-S. brevidens chromosome addition line in the future.

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