

**CGMMV resistant watermelon rootstock and environmental risk assessment**

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For last several years in Korea, Cucurbitaceous crops including watermelon, cucumber, squash and melon have been seriously infected by CGMMV (cucumber green mottle mosaic virus). In particular, the infection has caused a great loss in total yield of the watermelon nationwide. Since CGMMV is easily transmitted by foliage contact, through seed and especially from soil contamination, an effective way to control the outbreak should be developed. Unfortunately, the virus-resistant germplasm is not easily available by traditional breeding and if any, it requires a long-term breeding to obtain an elite resistant line. An alternative is to express a viral gene encoding coat protein ectopically to induce the RNA-mediated resistance against virus infection. Watermelon rootstock is popularly using for grafting the commercially important watermelon varieties due to stronger viability. Therefore, the idea is to develop the transgenic rootstock resistant to CGMMV and graft the watermelon seedling on it. The development of LM rootstock would soften the controversial issues of LMOs (Living Modified Organisms) because the harvesting watermelon is not transformed. We successfully transformed watermelon rootstocks using *CGMMV-CP* gene and select rootstocks that are resistant to CGMMV. The LM rootstocks have been cultivated up to T<sub>4</sub> generation and, for last two years, the environmental risk assessment of LM rootstock has been performed in the isolated plastic houses. Several criteria such as Natural cross rate, Secondary metabolites and Impact on non-target organism were analyzed. Preliminary data indicated that there was no significant difference in between LM rootstock and non-LM rootstock. Also, the possibility of gene transfer from rootstock to scion was tested and interestingly, DNA, transcript and protein of *CGMMV-CP* in the rootstock did not transferred to the scion.

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