(Hi38c1) and 5.8 (Ia453sh2). The F_1 hybrids averaged 3.8, while the F_2 averaged 3.6. Backcross families averaged 2.8 and 4.9, respectively. Coefficients of variability averaged as follows: P_1 37.1%, P_2 33.8%, F_1 50.4%, F_2 65.6%, BC_1 64.9%, BC_2 47.6%. Scores were generally lower in winter under low incident light (3.4) than under high incident light in summer (4.0). Generation mean analysis revealed significant departure (^{2} = 11.3) from a three-parameter model, but good fit (^{2} = 2.4) to the five-parameter model. Broad-sense heritability averaged 56.2% and narrow-sense heritability averaged 44.3%. The minimum number of effective gene loci, based on Castle and Wright formulas, was 1.10. It is concluded that a single major gene acting without dominance controls husk leaf extension in this material. The gene is provisionally designated *lhl*-453 (long husk leaves). In general, tillering accompanied long husk leaf extension.

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Comparison of Resistance Evaluation of Barley Genotypes to *Barley Mild Mosaic Virus* between Improved Mechanical Inoculation and Natural Transmission

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Barley mild mosaic virus(BaMMV) is one of the most economically important virus diseases in barley (*Hordeum vulgare* L.), in East Asian and European countries. BaMMV is a soilborne bymovirus vectored by root-infecting fungus, *Polymyxa graminis*. By this nature of virus transmission, mechanism of cultivar's resistance is difficult to assess. Whereas, available mechanical inoculation methods for BaMMV and other related viruses are labor intensive, give inconsistent results and generally result in low infection rates. Five Korean barley cultivars and 20 barley genotypes with known gene(s) for resistance were mechanically inoculated by the improved method. Infection rates obtained were compared with available field resistance evaluation data. In this study, inoculation method using gauze rolled on a stick was developed for BaMMV. The improved method proved to be simple, efficient, and reliable. The comparative experiments between mechanical inoculation and natural transmission differentiated the cultivars with resistances to the viruses, to their vector *P. graminis* or both. Results further reveal the true resistance mechanism of certain cultivar. Cultivar Naehanssalbori showed resistance to BaMMV in the field tests but was found susceptible by mechanical inoculation, indicating that the field resistance may be due to resistance to *P. graminis*. PCR result of *P. graminis* from BaMMV affected fields amplified only low level of DNA where as other tested cultivars did higher levels. This further indicates that Naehanssalbori carries gene(s) for resistance to *P. graminis*. The resistance to *P. graminis* identified in Naehanssalbori would provide an option to control BaMMV and other *P. graminis* borne viruses.

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