

Standardization of screening techniques for resistance to *Lipaphis erysimi* (Kalt.) in rapeseed-mustard under field conditions

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The population and damage by aphid, *Lipaphis erysimi* (Kalt.) in *Brassica* spp. is highly variable across seasons and regions, wherein screening of rapeseed-mustard genotypes under natural infestation conditions has not been rewarding for aphid resistance. Since no reliable screening technique is in place, we developed and evaluated various screening techniques to differentiate diverse mustard genotypes for resistance to *L. erysimi* under field conditions. Artificial infestation at bud formation stage with 20 mixed stage aphids pinned with bell pins on the top third branch near inflorescence was found most appropriate and effective for establishment of aphids at inoculation site. Evaluation of mustard genotypes under multi-choice natural infestation revealed maximum variability in *L. erysimi* resistance indices, but plot cage artificial screening technique was found appropriate over natural infestation for multi-choice assays. Genotypes Heera and PDZM 31 showed susceptible to highly susceptible reaction against *L. erysimi* under all the artificial infestation screening techniques. However, PM 30, PM 21, Pusa Bold and Pusa Vijay displayed variable resistance reactions under different screening techniques. Although no-choice twig cage and plant cage techniques showed significant differences in test mustard genotypes for various aphid resistance indices, the twig cage technique revealed maximum variability and could differentiate them at slightest variation in levels of tolerance/susceptibility to *L. erysimi*. The rate of *L. erysimi* multiplication on test mustard genotypes was highly variable under plant cage as compared to twig cage. The twig cage technique also successfully differentiated the double low erucic acid and total glucosinolate, single low erucic acid, and conventional varieties with high erucic acid and total glucosinolate groups of mustard genotypes for *L. erysimi* resistance. The multiplication rate and ease in scouting of aphids, easy handling and cost of the cage, and natural plant growth conditions are some of the most favorable factors, suggesting twig cage technique more précised, realistic, economical, and efficient for artificial screening of rapeseed-mustard for resistance to *L. erysimi*.

Keywords: Aphids resistance screening, *Brassica*, Mustard aphid, Twig cage technique