

# #167

## Antixenosis and antibiosis mechanisms of resistance to turnip aphid, *Lipaphis erysimi* in *Brassica juncea*-*fruticulosa* introgression lines

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PLENARY TALKS

Turnip aphid, *Lipaphis erysimi* (Kaltenbach) is a key pest of rapeseed-mustard in Indian subcontinent. Although chemical control is the basis of its management, but unsustainability of this approach has accelerated global research efforts to find alternate solutions. Host plant resistance is one such option that offers environment friendly option of pest management. A set of introgression lines were developed using wild *Brassica fruticulosa* previously found to be resistant to *L. erysimi* (Kumar et al., 2011). Rigorous screening over the years lead to identification of three introgression lines (I8, I79 and I82) to be resistant to this pest, however, the actual mechanism of resistance was not known. Thus, the present study was conducted to elucidate the mechanism of aphid resistance in the introgression lines. For this, the three introgression lines were evaluated under both field and laboratory conditions in choice and no-choice experiments along with *B. fruticulosa* (resistant parent), *B. juncea* var. PBR 210 (susceptible parent) and *B. rapa* var. BSH-1 (susceptible check). The antixenosis was studied both under field and laboratory conditions in a choice experiment, while antibiosis and tolerance were studied under laboratory (no choice) and field conditions, respectively. Significantly less number of aphids settled on circular leaf bits of *B. fruticulosa*, I8 and I82 as compared to that on BSH-1 and PBR 210 after 24 (F5,18 = 14.82, P = 0.00001) and 48 hours of release (F5,18 = 22.31, P = 0.0) (Based on pooled data of three experiments). Similar trend was observed in free choice field experiment with significantly less aphid colonization on *B. fruticulosa*, I8, I79 and I82 compared to BSH-1 and PBR 210 (F5,10 = 52.60, P = 0.000001) indicating lower aphid preference for these genotypes. Further, no choice experiments revealed significant negative effects of these genotypes on aphid demographic parameters (nymphal survival, development period, fecundity and longevity). Tolerance was not operative as a mechanism of resistance as these genotypes did not allow the aphid population to develop on them. Thus, resistance in the three introgression lines was a combination of both antixenosis and antibiosis mechanisms.

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