Short Communication

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EFFECT OF APHID INFESTATION ON *IN VITRO* AND *IN VIVO* POLLEN GERMINATION IN *BRASSICA JUNCEA* VAR. PUSA BOLD

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In vitro and *in vivo* pollen germination studies were undertaken in aphid infested plants of *Brassica juncea* var. Pusa bold. There was a reduction in the extent of *in vitro* as well as *in vivo* pollen germination in aphid infested plants and this reduction was inversely proportional to the extent of infestation. In heavily infested plants, there was no germination *in vitro* and *in vivo*.

Key Words : *Brassica juncea, Lipaphis erysimi, in vitro, in vivo,* pollen germination.

The aphid *Lipaphis erysimi* is a most devasting pest of *Brassica* crop in our country and cause 54.2 percent loss in seed yield on the all India basis Bakhetia, 1983). Present work has been under taken to study the effect of aphid infestation on *in vitro* and *in vivo* pollen germination in *Brassica juncea* var. Pusa bold.

Fresh pollen samples were collected just after the dehiscence of anthers. For each experiment pollen were collected from single flower at the same time and approximately similar conditions every day. Pollen germination and tube elongation was observed by hanging drop technique using Brewbaker and Kwack's (1963) medium. For *in vivo* pollen germination pistils of freshly opened flowers and freshly abscised flowers were collected and pollen tubes were traced in them by the method after Lewis 1979).

It is evident from the Table 1 that in uninfested plants there was 75.5% pollen germination in Brewbaker and Kwack's medium and average tube length was 213 μm. The plants infested with 26-50 aphids/ plant showed 45.7% pollen germination and the average pollen tube length was 57.0 μm.

However, the plants infested with 51-100 aphids/plant exhibited 4.0% pollen germination and average pollen tube length was 49.2 μm. On the other hand, in heavily infested plants (more than 100 aphids/ plant) there was no pollen germination.

Thus, the results on the *in vitro* pollen germination in infested and uninfested plants clearly show that aphid infestation reduce pollen fertility and the reducation in pollen fertility increases with the increase in the intensity of infestation. These results confirm the earlier findings of the present author (Solanki and Chauhan, 1991). According to them pollen fertility as checked by stainability test is reduced by aphid infestation. Reduction in pollen fertility caused by aphid infestation has also been reported by Srivastava and Chauhan (1979) in *Raphanus sativus* and Chauhan *et al.* (1983) in *Solanum nigrum.*

Table 1: *In vitro* and *in vivo* pollen germination and tube length in *B. juncea* Var. Pusa bold.

	Aphid infestation/plant			
	UN	26-50 aphids/ plant	51-100 aphids/ plant	More than 100/ aphids/ plant
1. *in vitro*				
(a) germination (%)	75.5 ±1.05	45.7 ±0.07	40.0 ±0.35	-
(b) Tube length (μm)	213.0 ± 1.50	57.0 ±1.00	49.2 ±0.55	-
2. *in vivo*				
(a) Germination (%)	65.0 ±1.01	38.0 ±0.06	11.2 ±0.01	-
(b) Tube length* (μm)	201.0 ±1.40	24.0 ±0.05	18.0 ±0.03	-

± Standard deviation

* Average length of 10 pollen tubes

It is also clear from the Table 1 that there was 65% *in vivo* pollen germination on the stimatic surface and stylar tissue of uninfested plant and the average tube length was 20 μm. In plants infested with 26-50 aphids/plant, there was 35.5% pollen germination

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in vivo and average tubes length was 24 μm. In plants infested by 51-100 aphids/plant there was only 11.2% *in vivo* pollen germination and tube length was only 18.0 μm. In severely infested plants (more than 100 aphids/plants) their was no pollen germination on stigmatic surface.

Reduction in pollen germination *in vivo* on stigmatic surface is also closely associated with the increase in the intensity of aphid infestation. The heavily infested plants failed to show any germination on stigmatic surface and this is the cause of complete sterility in such plants. Aphid infestation causing severe reduction in yield in *Brassica* crop have also been recorded by Vir and Henery (1987).

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