

## EFFECT OF SOME PESTICIDES ON POLLEN FERTILITY IN SOME CROPS

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Effect of 500, 1000 and 1500 ppm Bavistin and Malathion on pollen fertility in some important crops (*Triticum aestivum*, *Hordeum vulgare*, *Pisum sativum*, *Lens culinaris*, *Eruca sativa*, *Gossypium hirsutum* and *Riccinus communis*) was studied. The plants treated with various concentrations of Bavistin exhibited marked reduction in their pollen fertility. However, the Malathion treatments enhanced the pollen fertility.

**Keywords :** Bavistin; Crops; Malathion; Pollen fertility.

Pollen fertility of a crop is of significant importance to plant breeders, because reduction in fertility serves as a limiting factor in hybridization programmes and it also affects the yield in various crops. The pollen fertility of a plant is influenced by a large number of factors e.g.environmental conditions including not only temperature, salts, draught, rainfall and light but also pests and pathogens. To control various diseases in important crops, various pesticides are used. The increasing use of pesticides is harmful to plants in vegetative phase as well as in reproductive phase reducing yield by causing pollen or ovular sterility<sup>1</sup>. Present paper deals with the effect of some pesticides on pollen fertility in some important crops.

Pollen fertility of control (untreated) and pesticide treated plants cultivated at R.B.S.College, Agricultural Research Station, Bichpuri, Agra (Table-1) was checked at regular intervals by 1% Tetrazolium Chloride in 0.15M Tris-HCl buffer at 7.8 pH<sup>2</sup>. Five flowers from each control and pesticide treated plants were

collected and their anthers were crushed in the stain on separate slides to count the number of viable and non-viable pollen grains. Data thus collected was statistically analysed.

Effect of various concentrations of different pesticides on pollen fertility in various crops is shown in Table 1. All the crops treated with various concentrations (500, 1000 and 1500 ppm) of Bavistin exhibited a marked reduction in their pollen fertility as compared to untreated plants. However, similar concentrations of Malathion enhanced pollen fertility in all these crops. The maximum increase in pollen fertility was recorded in *T.aestivum* Var.Raj. 3077 treated with 1500 ppm Malathion. On the other hand, maximum reduction in pollen fertility was exhibited by *G.hirsutum* Var.H-777 treated with the same concentration of Bavistin.

Nurzhanova *et al.*<sup>3</sup> have observed the effect of some insecticides on pollen fertility in *H.vulgare*. According to them, chlorophos, dimethoate and metaphos, when applied at the tillering stage,

Table 1. Effect of pesticides on pollen fertility in some important crops. \*

Crops	Control	Bavistin			Malathion		
		500	1000	1500	500	1000	1500
<i>Triticum aestivum</i>	93.5	90.1	88.5	72.0	94.6	95.1	96.0
Var. Raj. 3077	± 1.0	± 1.5	± 2.9	± 3.6	± 1.2	± 1.0	± 1.0
<i>Hordeum vulgare</i>	85.4	82.5	80.0	70.9	86.0	87.9	90.4
Var. DI-353	± 3.9	± 3.1	± 3.5	± 3.9	± 2.5	± 2.1	± 1.6
<i>Pisum sativum</i>	75.0	71.3	65.3	60.4	80.6	83.2	91.2
	± 3.9	± 4.0	± 4.9	± 5.1	± 3.2	± 3.0	± 1.3
<i>Lens Culinaris</i>	70.1	68.3	63.9	59.3	72.0	73.5	76.1
Var. Pusa 6	± 3.9	± 4.2	± 4.6	± 5.6	± 3.4	± 3.0	± 2.9
<i>Eruca sativa</i>	65.0	55.0	51.0	45.3	69.0	72.0	78.3
Var. T-27	± 4.0	± 5.0	± 4.9	± 6.2	± 3.9	± 3.1	± 2.6
<i>Gossypium hirsutum</i>	65.3	60.0	52.1	45.0	70.0	76.0	80.2
Var. H-777	± 4.3	± 3.6	± 4.3	± 6.0	± 3.6	± 4.0	± 2.3
<i>Riccinus communis</i>	75.0	70.3	65.0	52.3	80.0	83.4	90.1
Var. Aruna	± 3.3	± 3.9	± 4.3	± 4.8	± 3.2	± 2.7	± 1.6

\*Data from 10 plants, ± Standard deviation.

decreased pollen fertility. 1% solution of insecticides, quinolphos, B.H.C. and the fungicides, dithane M-45 and Bavistin reduced pollen fertility in bread wheat cv. K-68<sup>4</sup>. A marked reduction was observed in pollen fertility in *B.juncea* treated with Bavistin while, Malathion treatment enhanced pollen fertility<sup>5,6</sup>. Thus, it is concluded that the pesticide treatments reduce pollen fertility and thereby affect the yield in important crops.

## References

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