

A Review :

Monitoring of herbicide (atratof 50W) toxicity by using pollen as indicators - Pollen of five cultivars of *Petunia axillaris* BSP.: Further evidence of a criticism of Berg (1973), Brandt (1974), Rasmussen (1977), Navara, Horvath and Kaleta (1978), Mhatre (1980 - Ph.D. Thesis), Mhatre, Chaphekar, Ramani Rao, Patil, Haldar (1980), Shetye (1982 - Ph.D. Thesis) and Giridhar (1984 - Ph.D. Thesis) - A Critical Review

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Germinability of pollen of F series of white-flowered and F-24 series of light-violet-, pink-, violet-, white-flowered and F-48 series of white-flowered cultivars of *Petunia axillaris* was suppressed even by the lowest concentration (10^{-17} mg/ml) of atratof 50W tried

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Extensive use of herbicides leaves behind residues which contaminate our environment. It is primarily needed to work out some simple system for the evaluation of the toxicity of herbicides.

Pollen of successive flowers (*viz.* F, F-24, F-48, F-72 series *i.e.* open flowers and the flower buds which require 24, 48, 72 hours to open respectively) of 5 cultivars of *Petunia axillaris* BSP. *e.g.* light-violet-, pink-, violet-, white- and white-violet-flowered cultivars were collected at the stage of the dehiscence of anthers in the open flowers. Germination of pollen grains of successive flowers was studied by standing-drop technique in the optimum concentrations of sucrose (acts as control) as well as in the optimum concentrations of sucrose supplemented by the different concentrations (10^{-17} - 10^{-2} - 10^{-3} , 1, 5, 10, 20-20-100 mg/ml) of atratof 50W (Table 1). The cultures were then transferred to a moist filter chamber, stored at room temperature (21.9-32.2°C) having RH 58% and in diffuse laboratory light. Observations were recorded 24 hours after incubation. For each experiment a random count of 200 grains was made to determine the percentage of pollen germination. For measurement of length of pollen tubes, 50 tubes were selected randomly and measured at a magnification of

100x.

Potentiality of pollen germinability was noted in F and F-24 series of all the 5 cultivars of *Petunia axillaris* and in F-48 series of white-flowered cultivar of *P. axillaris*. Thus the potentiality of pollen germinability in *P. axillaris* was recorded in 11 out of 20 series investigated (Table 1). Potentiality of the germinability of pollen is noted only in F series of pink- and white-flowered cultivars of *Nerium odorum*. Both of them are single-flowered cultivars (Salgare, 1983-Ph.D.Thesis). Potentiality of the germinability of pollen was recorded in F and F-24 series of *Physalis minima* and *Solanum xanthocarpum* (Ram Indar, 1981-M.Sc.Thesis), in red-flowered (double-flowered) cultivar of *N. odorum* and in white-flowered cultivar of *Catharanthus roseus* (Salgare, 1983) and in all the cultivars (light-violet-, pink-, violet- and white-violet-flowered cultivars) of *Petunia axillaris* except for white-flowered cultivar (Salgare, 1986a-Ph.D.Thesis-Table 1). Pollen germination *in vitro* culture of sucrose was noted in F, F-24 and F-48 series of *Brunfelsia americana* and in violet-flowered form of *Datura fastuosa* (Ram Indar, 1981) and in white-flowered cultivar of *P. axillaris* (Salgare, 1986a). However, it was the pollen of white-flowered form of *D. fastuosa* (Ram Indar, 1981) and pink-flowered cultivar of *C. roseus* (Salgare, 1983)