

A Review:

**Effect of herbicide (simazine) on pollen germination and tube length of stored pollen of Apocynaceae: Further Evidence of a Criticism of Banerji and Gangulee (1937), Brewbaker and Kwack (1963), Sudhakaran (1967-Ph.D.Thesis), Dharurkar (1971 - Ph.D. Thesis), Nair, Nambudiri and Thomas (1973), Berg (1973), Brandt (1974), Vick and Bevan (1976), Rasmussen (1977), Navara, Horvath and Kaleta (1978), Mhatre (1980-Ph.D. Thesis), Mhatre, Chaphekar, Ramani Rao, Patil and Haldar (1980), Shetye (1982-Ph.D. Thesis) and Giridhar (1984-Ph.D. Thesis)**

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**ABSTRACT**

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Even the lowest concentration ( $10^{-17}$ mg/ml) of simazine tried suppressed the germination of pollen of F and F-24 series of red-flowered cultivar of *Nerium odorum* and F-48 and F-72 series of pink-flowered cultivar of *Catharanthus roseus*. Simazine stimulated the germination of pollen as well as tube length of successive flowers of 5 out of 6 series the cultivars of the Apocynaceae throughout the experiment. The herbicide stimulated the germination of stored pollen in all the six series. However, the longest pollen tubes were noted in 3 out of 6 series in the sets set soon after the dehiscence of anther.

**Key words :** Palynology, Toxicology, Environmental sciences, Herbicides.

**H**erbicides drastically reduced pollen germination as well as tube growth. It was, therefore, important to study the effect of such chemicals on germination as well as tube growth since inhibitory effects of these chemicals eventually reduce fruit and seed-set.

**MATERIALS AND METHODS**

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 Apocynaceae *e.g.* red-, pink- and white-flowered cultivars of *Nerium odorum* Soland. and pink- and white-flowered cultivars of *Catharanthus roseus* (L.) G. Don. were collected soon after the dehiscence of anthers in the open flowers and stored at room temperature (22-31.8°C) having RH 57% and in diffuse laboratory light at the Department of Botany, Govt. Institute of Science, Mumbai. Germination of stored pollen grains of successive flowers was made soon after the dehiscence of anthers and with 2 hours intervals for the first 10 hours in the optimum concentrations of sucrose (acts as control) as well as in the optimum concentrations of sucrose supplemented with the optimum concentrations of (2-chloro-4, 6-bis ethylemino-1, 3, 5-Triazine) simazine

or hexazine (50%) (Table 1). 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.

**RESULTS AND DISCUSSION**

Pollen viability is a subject that has a great deal of practical as well as theoretical interest. In the present investigation even the different cultivars of the same species showed the variations in the percentage of their pollen viability (Table 1). Reduced pollen viability has been interpreted as an indication of suspected hybridity in wild populations. Nevertheless, variations in pollen viability may affect the breeding systems of the species concerned, and if the pollen viability can be altered by the environment, then the breeding system itself may be under some degree of environmental control.

Potentiality of pollen germinability was recorded in F series of all the 5 cultivars of the Apocynaceae studied. It was the pollen of F-24 series of red-flowered cultivar of *Nerium odorum* and both the cultivars of *Catharanthus roseus* found germinated in the optimum