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***A Review***

# Effect of herbicide (simazine) on pollen germination and tube growth of twelve hours stored pollen of five cultivars of Apocynaceae: Further evidence of a criticism of Banerji and Gangulee (1937), Sudhakaran (1967-Ph.D.Thesis), Dharurkar (1971 - Ph.D. Thesis), Berg (1973), Brandt (1974), Vick and Bevan (1976), Rasmussan (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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**ABSTRACT**

The lowest concentration ($10^{-17}$ mg/ml) of simazie stimulated the germination of pollen as well as the tube growth of successive flower of all the five cultivars of the Apocynaaceae. However, it failed the do so with the stored pollen for twelve hours at the room temperature. Sudhakaran (1967) failed to report the polysiphonous condition in an untreated pollen of *Catharanthus roseus* with radiation.

**Key words:** Monitors of Pollution, Toxicology, Environmental Sciences, Palynology.

## INTRODUCTION

Herbicides 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. Pollen viability was tested by using 2,3,5-triphenyl tetrazolium chloride (Hauser and Morrison, 1964). Successive flowers were 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 with 2 hours intervals for the first 12 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 simazine or hexazine (2-chloro-4, 6-bis ethylamino-1,3,5-Triazine) (50%) (Table 1). However, the present investigation is restricted only with the pollen stored 12 hours at the room temperature (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 viability and 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 shows the variations in the percentage of 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.