

A Review :

Alteration of resting period of pollen of apocynaceae by herbicide (sodium penta chloro phenate) and further evidence of a criticism of the hypothesis of saoji and chitaley (1972)

S.A.Salgare

Salgare Research Foundation Pvt. Ltd., Prathamesh Society, Shivaji Chowk, Karjat - 410 201 (MS), India

(Accepted : November, 2005)

Sodium penta chloro phenate altered the resting period of pollen of 5 series and failed in one series of Apocynaceae.

Key words : Palynology, Toxicology, Environmental Sciences.

INTRODUCTION

PALYNOLOGY, in recent years has attracted the attention of workers of different disciplines on account of its numerous applications to problems of plant taxonomy, genetics, geology, medical and agricultural sciences. Pollen physiology furnishes the information required for effecting hybridization of plants growing in different geographical and climatic regions with blooms in different seasons.

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 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 as well as in the optimum concentrations of sucrose supplemented with the optimum concentrations of sodium penta chloro phenate (Table 1). The rate of pollen germination of successive flowers was determined by fixing the cultures at one hour intervals. Such preparations were continued for 10 hours. Observations on the germination of pollen were recorded 24 hours after incubation.

RESULTS AND DISCUSSION

The delay in pollen germination was interpreted by Saoji and Chitaley (1972) as being due to the grains not being mature enough to effect pollination, immediately after being shed from the anther. Further they stated that 4-5 hours are required for the complete maturation of pollen grains. It was Salgare (1983) who pointed out of the first time that the pollen require resting period before germination and it was the failure of Saoji and Chitaley (1972) who misinterpreted the resting period for pollen maturity. Further he (1983) stated that this resting period differs

Table 1 : Effect of sodium penta chloro phenate on the rate of pollen germination of successive flowers of Apocynaceae.

Species	Series	S%	CH	C	T
N.odorum pink-flowered	F	50	10 ⁻¹⁷	Ng ₂	4
N.odorum red-flowered	F	20	Ng ₁	Ng ₂	Ng ₁
N.odorum white-flowered	F	50	10 ⁻¹⁷	Ng ₂	8
C.roseus pink-flowered	F	20	10 ⁻¹⁷	1	1
C.roseus white-flowered	F	20	10 ⁻¹⁷	2	1
N.odorum red-flowered	F-24	20	Ng ₁	Ng ₂	Ng ₁
C.roseus pink-flowered	F-24	50	10 ⁻¹⁷	Ng ₂	4
C.roseus white-flowered	F-24	50	10 ⁻¹⁷	10	4
C.roseus pink-flowered	F-48	50	Ng ₁	Ng ₂	Ng ₁
C.roseus pink-flowered	F-72	80	Ng ₁	Ng ₂	Ng ₁

C, time required for germination of pollen in optimum concentrations of sucrose (in control sets), CH, optimum concentrations of sodium penta chloro phenate in mg/ml; Conc., optimum concentrations of sucrose and sodium penta chloro phenate; S%, optimum concentrations of sucrose in %; Ng₁ and Ng₂, no germination of pollen even after 24 and 10 hours of sowing respectively; T, time required for germination of pollen in optimum concentrations of sucrose + sodium penta chloro phenate (in treated sets); TRFPG, time required for the germination of pollen in control sets and treated sets.

* Paper was presented at the Proc. of 4th Indian Paly. Conf., held on March 19-21, 1984 at Deptt. Environ. Sci., Andhra Univ., Waltair – 530 003.

* Paper was presented at the Proc. of 2nd Ann. Conf. Nat. Environ. Sci. Acad., held on May 25-27, 1985 at Awadh Univ., Faizabad.

* Paper was presented at the Proc. of 1st Nat. Symp. on Environmental Biology, held on December 30-31, 1986 at Deptt. Zoology and Microbiology, Sir Krishnadevaraya University, Anantpur – 515 003.

species to species which is also noted in the present investigation (Table 1). This resting period is altered by different herbicides.

Potentiality of pollen germinability was noted in F series of all the 5 cultivars of Apocynaceae studied. Pollen of F-24 series of red-flowered cultivar of *Nerium odorum* and both the cultivars of *Catharanthus roseus* were found germinated in the optimum concentrations of sucrose. However, the pollen of F-48 and F-72 series of pink-flowered cultivar of *C. roseus* showed their germination in the optimum concentrations of sucrose. Thus the

potentiality of pollen germinability was observed in 10 out of 20 series investigated (Table 1). Sodium penta chloro phenate altered the resting period of F series of pink-and white-flowered cultivars *N. odorum*, F series of white-flowered cultivar of *C. roseus* and F-24 series of both the cultivars of *C. roseus*. The herbicide reduced the resting period of pollen in all these series. However, sodium penta chloro phenate failed to alter the resting period of F series of pink-flowered cultivar of *C. roseus* (Table 1).

REFERENCES

- Salgare, S.A.** (1983). Pollen physiology of Angiosperms. Ph.D. Thesis, Univ. Bombay.
- Salgare, S.A.** (1984). A criticism on the paper of Saoji and Chitale (1972) entitled, 'Palynological studies in *Bauhinia variegata* Linn.'. Proc. 4th Indian Paly. Conf., held on March 19-21, 1984 at Deptt. Environ. Sci., Andhra Univ., Waltair – 530 003. Abstract No. S III-05.
- Salgare, S.A.** (1985). A criticism on the hypothesis of Saoji and Chitale (1972). Proc. 2nd Ann. Conf. Nat. Environ. Sci. Acad., held on May 25-27, 1985 at Awadh Univ., Faizabad. Abstract No. 72.
- Salgare, S.A.** (2001). Resting period of pollen – A Criticism on the Hypothesis of Saoji and Chitale (1972) – A Critical Review – V. Biojournal (13):45-48.
- Salgare, S.A.** (2004). Resting period of pollen (sucrose + 2,4-Dinitrophenol) – A Criticism of the Hypothesis of Saoji and Chitale (1972) – A Critical Review. Him. J. Env. Zool. (18):69-71.
- Salgare, S.A. and Sanchita Pathak** (2002). Effect of heavy metal (manganous sulphate) on the resting period of pollen of pink-flowered *Catharanthus roseus* and A Criticism on the Hypothesis of Saoji and Chitale (1972) – A Critical Review I. Biojournal (14):9-12.
- Salgare, S.A. and Shashi Yadav** (2002). Alteration of resting period of pollen of white-flowered *Catharanthus roseus* by mineral (calcium nitrate) and A Criticism on the Hypothesis of Saoji and Chitale (1972) – A Critical Review – I. Biojournal (14):17-20.
- Salgare, S.A. and Theresa Sebastian** (1986). Further evidence of a criticism on the findings of Saoji and Chitale (1972). Proc. 1st Nat. Symp. on Environmental Biology, held on December 30-31, 1986 at Deptt. Zoology and Microbiology, Sir Krishnadevaraya University, Anantpur – 515 003. Abstract No. 17.
- Saoji, A. A. and Chitale, S. D.** (1972). Palynological studies in *Bauhinia variegata* Linn. Botanique (3):7-12.

