A REVIEW | International Journal of Plant Sciences, Vol. 4 Issue 1 : 313-320 (January to June, 2009)

Alteration of resting period of pollen of five species of Solanaceae by herbicide (MH) : Further evidence of a criticism of Saoji and Chitaley (1972), 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 and Haldar (1980), Shetye (1982-Ph.D. Thesis) and Giridhar (1984-Ph.D. Thesis)

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Accepted : November, 2008

SUMMARY

Maleic hydrazide (1,2-dihydropyridazine, 3-6-dione) altered the resting period of pollen of 5 series and failed in 9 series of Solanaceae. MH extended the resting period of pollen of 4 series, while reduced in one series. MH caused maximum extension in the resting period of the pollen of F series of *Brunfelsia americana*.

Key words : Palynology, Physiology of pollen, Herbicides.

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 species of Solanaceae *e.g. Brunfelsia americana, Datura fastuosa* (violet- and white-flowered), *Physalis minima* and *Solanum xanthocarpum* were collected at the stage of the dehiscence of anthers in the open flowers. Germination of pollen grains 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 maleic hydrazide (1,2-dihydropyridazine, 3-6-dione) (Table 1). The rate of pollen germination 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.

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RESULTS AND DISCUSSION

Potentiality of pollen germinability was recorded in F as well as F-24 series of all the 5 species of Solanaceae studied. It was the pollen of *Brunfelsia americana* and both the forms of *Datura fastuosa* showed their germination in F-48 series. Pollen of white-flowered *D. fastuosa* showed their germination even in F-72 series. Potentiality of pollen germinability in Solanaceae was observed in 14 out of 20 series investigated (Table 1).

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-Ph.D. Thesis) who pointed out for 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 species to species which is also noted in the present investigation (Table 1). This resting period is altered by different chemicals. Maleic hydrazide altered the resting period of pollen of 5 series and failed in 9 series of Solanaceae (Table 1). MH extended the resting period of pollen of 4 series, while reduced only in one series. MH caused maximum extension in the resting period of the pollen of F series of *Brunfelsia americana*. Alteration of resting period of pollen of successive flowers by the minerals was noted by Salgare and Shashi Yadav (2002, 05). Alteration of the resting period of pollen by the herbicides was noted by the author (1984a, 85b, 86c,