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A Review:

Alteration of resting period of pollen of five species of the Solanaceae by herbicide (acrolein): 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, Haldar (1980), Shetye (1982-Ph.D. Thesis) and Giridhar (1984-Ph.D. Thesis)

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SUMMARY

Acrolein altered the resting period of pollen of 6 series and failed in 8 series of the Solanaceae. The herbicide extended the resting period in 4 series, while reduced in 2 series. Maximum extension in the resting period of pollen is noted in F series of *Physalis minima.* Pollen of the said series showed their first sign of their germination after one hour of sowing *in vitro* culture of sucrose, while they were found germinated after 9 hours of sowing *in vitro* culture of sucrose supplemented with acrolein. Maximum reduction in the resting period of pollen is noted in F-24 series of *Solarium xanthocarpum.* Pollen of the said series were found germinated after 6 hours of sowing *in vitro* culture of sucrose, while failed to germinate even 10 hours of sowing *in vitro* culture of sucrose supplemented with acrolein .

Key words : Palynology, Environmental sciences, Toxicology.

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 which 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 the Solanaceae *e.g. Brunfelsia americana* L., *Dalura fastuosa* L. (violet- and white-flowered), *Physalis minima* L. and *Solanum xanthocarpum* Schrad. and Wendi. 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 an optimum concentrations of sucrose supplemented by the optimum concentrations of acrolein (acryl-dehyde) or aqualin (Table 1). Pollen grains were incubated soon after the dehiscence of anthers. The cultures then transferred to a moist filter chamber, stored at room temperature (29-31°C) having RH 65% and in diffuse laboratory light. The experiments were run in triplicate and average results were recorded. 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. For each experiment a random count of 200 grains was made to determine the percentage of the germination of pollen.

RESULTS AND DISCUSSION

Potentiality of the germinability of pollen is noted in F and F-24 series of all the 5 species of the Solknaceae. Brunfelsia americana and both the forms of *Datura fastuosa* showed the potentiality of the germinability of pollen in F, F-24 and F-48 series. However, the potentiality of the germinability of pollen was noted even in F-72 series of white-flowered form of *D. fastuosa* (Table 1). Salgare (1983) observed the germination of pollen of F-72 series of pink-flowered cultivar of *Catharanthus roseus in vitro* culture of sucrose. However, Trisa Palathingal (1990-M.Phil. Thesis) failed to germinate the pollen of F-72 series of pink-flowered cultivar of *C. roseus* in Brewbaker and Kwack's (1963) culture medium. This proves that the culture medium is also having the bearing on the germination of pollen. This also confirms that

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