

A Review:

Whether optimum pollen germination and tube length attained in the same growth medium (sucrose + vitamin B₂) by five cultivars of Apocynaceae : Further evidence of a criticism of Brewbaker and Kwack (1963), Nair, Nambudiri and Thomas (1973)

S. A. SALGARE

Salgare Research Foundation Pvt. Ltd., Prathamesh Society, Shivaji Chowk, KARJAT (M. S.), INDIA

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All the concentrations (10⁻⁵-100 mg/ml) of vitamin B₂ stimulated the germination as well as tube growth of all the 5 cultivars of the Apocynaceae.

Key words : Physiology of Pollen, Palylnology, Environmental Sciences.

INTRODUCTION

Pollen physiology has attracted the attention of plant breeders and horticulturists ever since the discovery of pollen tube by Amici (1924).

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. Germination of pollen grains was studied by standing-drop technique in the optimum concentrations of sucrose which acts as control as well as in the optimum concentrations of sucrose supplemented with the wide range of concentrations (10⁻⁵-10⁻²-10⁻³, 1, 5, 10, 20-20-100 mg/ml) of vitamin B₁ (Hydrochloride). Pollen grains were incubated soon after the dehiscence of anthers. The cultures then transferred to a moist filter chamber, stored at room temperature (29.3-32.5°C) having RH 64% and in diffuse laboratory light. The experiments were run in triplicate and average results were recorded. Observations on the germination of pollen and tube growth 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.

As a rule the percentage of pollen germination is always less than the pollen viability. However, Banerji and Gangulee (1937) and Dharurkar (1971-Ph.D.Thesis) reported higher percentage of pollen germination than the pollen viability in *Eichhornia crassipes*. The claim of Banerji and Gangulee (1937) and Dharurkar (1971) is challenged by Salgare (1986b, 95, 2000, 06c, e-g, 07b, d-e, g-j) who stated that the observations of Banerji and Gangulee (1937) and Dharurkar (1971) are exaggerating.