

Evaluation of MH as male gametocide on gawar and a new method (Salgare's method) of plant breeding: Further evidence of a criticism of Banerji and Gangulee (1937), Dharurkar (1971 - Ph.D. Thesis), Nair, Nambudiri, Thomas (1973), Berg (1973), Brandt (1974), Vick and Bevan (1976), Rasmussen (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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Potentiality of the germinability of pollen of *Cyamopsis tetragonoloba* Taub. (var. Pusa navbahar, gawar) was noted in all the 4 series *i.e.* F, F-24, F-48, F-72 series investigated. Pollen of F-24 and F-48 series produced higher percentage of the germination with the longer tubes than those of F series. Foliar applications of all the concentrations (5, 10, 25, 50, 100, 200-200-1000, 1000-1000-5000 mg/ml) of maleic hydrazide (1, 2-dihydropyridazine, 3-6-dione) failed to suppress the cent per cent pollen fertility. However, all the concentrations of MH above 2000 mg/ml prevented the germination of pollen of F series, 1000 mg/ml prevented the germination of pollen of F-24 and F-48 series and 800 mg/ml prevented the germination of pollen of F-72 series. When there is no germination of pollen the question of the transfer of the male gametes to the female gametophyte does not arise and when there is no transfer of male gametes to the female gametophyte the question of the fertilization and seed settings does not arise. Hence, instead of suppressing the pollen fertility which is not possible even with such a high concentrations of MH we should suppress the germinability of pollen with such a low concentrations which gives the birth to the new method of plant breeding - 'Salgare's Method of Plant Breeding'.

Recently considerable interest has centered around a new synthetic chemical, maleic hydrazide (1, 2-dihydropyridazine, 3-6-dione). It was Schoene and Hoffmann (1949) who, for the first time, reported that MH causes a pronounced but temporary inhibition in plant growth. Since then, extensive literature pertaining to the action of MH has accumulated and some of it has been

abstracted by Zukel from 1949-63. MH does not cause any formative effects and stands a good substitute as a promising herbicide. It has been extensively used and found to be relatively non-toxic to the mammalian tissues (Tate, 1955; Barnes *et al.*, 1957; Mannell and Grice, 1957), Carroll (1957), Levi and Crafts (1952), Molero and Blackhurst (1956) have reported that it does not show any residual effect on soil.

Seeds of *Cyamopsis tetragonoloba* Taub. (var. Pusa navbahar, gawar) were obtained from the authorized dealers and were sown in the garden soil at the Govt. Institute of Science, Mumbai. Foliar applications of 5, 10, 25, 50, 100, 200-200-1000, 1000-1000-5000 mg/ml maleic hydrazide (1, 2-dihydropyridazine, 3-6-dione) were given to 4 weeks old crop (at post-flowering stage) of *C. tetragonoloba* by an air compressor. After 3 weeks of treatment 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) were plucked at the same time after dehiscence of anthers (in open flowers). Pollen viability was tested by using 2,3,5-Triphenyl tetrazolium chloride (Hauser and Morrison, 1964). An optimum concentrations (20% sucrose for F-24 and F-48 series and 30% sucrose for F and F-72 series) of sucrose was used for the germination of pollen of successive flowers. Pollen grains were incubated soon after the dehiscence of anthers. The cultures were then transferred to a moist filtered chamber, stored at room temperature (25-31°C) having RH of 53% and in diffuse laboratory light. The experiments were run in triplicate and average results were recorded. Observation were made by 24 hours after incubation. For each experiment a random count of 100 grains was made (from different fields of the slide) to determine the pollen viability and germination. For measurement of length of pollen tubes, 50 tubes were selected randomly and measured at a

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