RESEARCH ARTICLE | International Journal of Plant Sciences, (July to December, 2009) Vol. 4 Issue 2 : 420-421

A study of pollen viability and longevity in Gokarn (*Clitoria ternatea*) a medicinal plant

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Accepted : March, 2009

SUMMARY

Clitoria ternatea L, a naturally grown medicinal plant, endophyte free, planted in Dhanvantari Udyan, College of Agriculture, Kolhapur was selected for present investigation. Locally it is called as Gokarn / Asian pigeonwing, used to study the viability of pollen grains and its longevity. Among different staining methods, tetrazolium test used to assess ponen viability. The fully fertile, five plants randomly selected for collection of pollens from 7 to 11.30 a.m. at every half an hour interval. These pollen grains were stained by using 0.3% TIC (2,3,5-trphenyl tetrazolium chloride) prepared in 0.5% and 1% sucrose solution to prevent bursting and swelling of pollen grains and incubated in dark at 30±2^{0}C for 30 and 60 min, respectively at 70 % relative humidity. At the end of incubation period, viable pollen grains turned red and central area was observed. The more viability is observed in 30 min incubation period in both 0.5 and 1% sucrose solution as compared with 60 min incubation period. In 0.5% sucrose solution, the more viability was observed between 8-10 a.m. and the viability was less before 8 and after 10 a.m. in 30 min incubation. Similar results were observed in 1 % sucrose solution in 30 min incubation. In 60 min incubation period, the pollens were more viable between 8-10.30 a.m. and less viable before 8 and after 10.30 a.m. in 0.5% sucrose solution. While in same incubation period (60 min) with 1 % sucrose solution showed more viability between 8-10 a.m. and less viability before 8 and after 10 a.m. From these observations, it has been concluded that the pollen viability and longevity of *Clitoria ternatea* L. was maximum at 8-10 a.m. during October 2007 at Kolhapur centre. These properties of pollen should be considered to increase efficiency of breeding programme and selection of suitable pollinizer in *Clitoria ternatea* L. a important medicinal plant.

Key words : Gokarn, Pollen, Medicinal plant

The study of pollen viability after dehiscence is crucial for successful pollination (Stone *et al.,* 1995). The pollen viability detennines the possibility of outcrossing between species. It also provides limited specific reproductive barriers. The important medicinal plant Gokarn (*Clitoria ternatea*) was used throughout the study. It is imperative to know the extent of viability of pollen sample to use for experiment and pollination. Its viability needs to monitor under different storage condition. The objective of study was to optimise the availability and viability of gokarn pollen. The viability, tube growth and morphological homogeneity is related to pollen quality is important factor in Gokarn. These properties are important for plant breeder, geneticist and growers for selection of suitable pollen and hybridization method. This study of pollen viability and longevity of Gokarn is important in evaluating outcrossing trequencies. Therefore, to determine the actual amount of viable pollen and to find out viability of pollen grains to optimize viability and inter relationship between them the present study was undertaken.

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MATERIALS AND METHODS

The important naturally grown cultivar of gokarn (*Clitoria ternatea*) plants was used in the present investigation. The plants for experiment were planted in Dhanvantari garden, College of Agriculture, Kolhapur. A number of staining methods were used for testing pollen viability. Among these methods tetrazolium test was used in this study. In many species tetrazolium test (TZ) has proved satisfactory in assessing pollen viability. The pollen grains showed a gradation in colour development, hence judging a cut off points for colour intensity to determine viability became subjective. The five fully fertile plants are randomly selected for collection of pollens. The pollen grains were collected from 7 a. m. to 11.30 a.m. at an interval of every half an hour. The collected pollens were stained by using 0.3% TTG (2, 3, 5-triphenyl tetrazolium chloride) solution. The TTC solution was prepared in 0.5% and 1 % sucrose solution to prevent bursting of pollen grains. A small amount of pollens suspended on microslide with TTC drop and coverslip was applied. Then the microslide was transferred to humidity chamber and incubated in the dark 302±2^{0}C for 30 min and 60 min,