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SWATIDHAN PUBLICATIONS



## Pollen Histochemical Analysis of Gossypium Sp.

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### Abstract:

*Pollen histochemical analysis are carried out for , possible relation between the pollen content and the mode of pollination , study of pollinator foraging behavior, nutritional demands, pollination mode, pollen content and composition in relation to phylogeny. Lipids and starch are important constituents of the pollen grains to establish the relations with flower foragers. From the histochemical tests it was noted that the pollen grains of all cotton varieties contains starch and lipids. Thus the Pollen grains of all cotton varieties belong to the class of starchy pollen as in all varieties it showed positive test. From the histochemical tests it was noted that the pollen grains of all cotton varieties contains starch and lipids. Pollen histochemistry is possibly related to pollination mode, pollinator foraging behavior and phylogeny. The nutritive value of pollen also influences the behavior of flower visitors.*

**Keywords:** Gossypium, Pollen, Starch, lipid, IKI, Sudan IV

### Introduction:

The basic Palynology can also be referred investigations of pollen and spore dispersal, preferably by wind and water and of the pollen and spore content of peat and sediments under formations. Understanding the Palynology of commercially important crop plants like cotton is an important aspect of investigations. The genus Gossypium is known as cotton. Cotton is a valuable crop plant. It is used as a textile fiber because the mature dry hairs twist in such a way that, fine strong thread can be spun from them. Other byproducts, such as cottonseed oil, cake and cotton linter are very useful products. The variety of cotton comes under four cultivated species of Gossypium viz. G.hirsutam, G. barbadense, G. arborium and G. herbacium. India is only the third largest producer of cotton in the world. In fact, India is the first country in the world to deploy hybrids and at present some 90 varieties of cotton belonging to all four botanical species (Gossypium arboreum L., G. herbaceum L., G. hirsutum L. and G. barbadense L.). Of these, only 25 varieties account for 98 per cent of the total output. The other 65 varieties have poor fiber strength and are of short fiber length. Some of these varieties were once popular, but have now outlived their usefulness. There is a need to de-notify these varieties and develop their substitutes (Choudhary and Laroia, 2001).

Pollen histochemical analysis are carried out for the following reasons i) possible relation between the pollen content and the mode of pollination ii) study of pollinator foraging behavior, nutritional demands, pollination mode, pollen content and iii) composition in relation to phylogeny (Dafni, 1992). Lipids and starch are important constituents of the pollen grains to establish the relations with flower foragers.

### Material and Methods

For the histochemical tests fresh and mature pollen grains were collected from freshly dehisced anthers. For the test of starch method proposed by Baker and Baker (1979) was followed. Pollen samples were immersed in to IKI solution and examined under the microscope



for the change in colour. Dark bluish-black color indicates the presence of starch. For the estimation of lipids pollen sample were kept in freshly prepared stock solution of Sudan IV and treated pollen sample was observed under microscope within 2-3 minute to note the change in colour. A red color indicates the presence of lipid (Baker and Baker, 1983).

### Results and Discussion:

Dafni (1992) commented that pollen histochemistry is possibly related to pollination mode, pollinator foraging behavior and phylogeny. All Angiosperm pollen grains contain stored food reserves in the forms of starch and /or lipids and can be classified in two classes, 'starchy' and 'starch less' (Baker and Baker, 1979). Many studies have shown that all Angiosperm pollen contains some lipids, while starch are not always present (Wang et al. 2004). Possible ecological and taxonomic (including phylogenetic) correlation with their presence or absence has also been discussed by Baker and Baker (1979). Pollen grains of all the cotton studied showed the presence of both starch and lipids. Thus the Pollen grains of all cotton varieties belong to the class of starchy pollen as in all varieties it showed positive test From the histochemical tests it was noted that the pollen grains of all cotton varieties contains starch and lipids.

### Conclusion

From the histochemical tests it was noted that the pollen grains of all cotton varieties contains starch and lipids. Pollen histochemistry is possibly related to pollination mode, pollinator foraging behavior and phylogeny. The nutritive value of pollen also influences the behavior of flower visitors.

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### References

- Baker, H. G. and Baker, I. (1979). Starch in angiosperm pollen grains and its evolutionary significance. *Am. J. Bot.* **66**: 591 – 600
- Baker, H. G. and Baker, I. (1983). In *Pollen Biology and Implication for Plant breeding.* (ed. D.L. Mulcahy and E. Ottaviano). Elsevier, Amsterdam.
- Choudhary, B. and Laroia, G. (2001). Technological developments and cotton production in India and China. *Current Science***80** (8): 925 - 932.
- Dafni, A. (1992). *Pollination Ecology: A Practical Approach.* I.R.L./O.U.P., Oxford.
- Wang, Y. Q.; Zhang, D.X. and YI Chen, Y. (2004). Pollen histochemistry and pollen: Ovule Ratios in Zingiberaceae. *Annals of Botany***94**: 583 -591.