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Quantifying the pollen production of Okra plant in local area

A. A. Sangole
Department of Botany, Shri R.L.T. College of Science, Akola

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Correspondence Address:
A. A. Sangole, Department of Botany, Shri R.L.T. College of Science, Akola
Email:anjalisangole05@gmail.com

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Abstract

Flower production significantly influences the pollen production. Pollen production is to be determine primarily on a per flower basis. Therefore, increased pollen production might be in term of number of pollen grain per another although plant is generally known to produce a large amount of pollen there may be some variation in pollen production per flower. The okra flower is 4-8 cm in diameter with five white to yellow petals often with a red or purple spot at the bases of each petal and the flower withers within one day the flower structure combines hermaphroditism and self-compatibility flower bud appear in the axis of each leaf above 6th To 8th leaf depending upon the cultivar flower bud initiation. Flowering anthesis and stigma receptivity are influenced by genotype and climatic factor like temperature and humidity.

The present study investigates the pollen production potential of Abelmoschus esculentus (okra), an important vegetable crop widely cultivated in India. Flower samples were collected from healthy plants during early morning hours to ensure maximum pollen viability. Pollen productivity was estimated following the method of Nair and Rastogi (1963), using undehisced anthers suspended in glycerine and counted microscopically. Results revealed that okra flowers produced a high density of well-formed, viable pollen grains with an average pollen production of 55.2%. The uniformity and abundance of pollen grains indicate robust reproductive health and a strong potential for successful fertilization and fruit set. These findings are significant for crop improvement, hybrid seed production, and the selection of high-performing cultivars in breeding programs. Future research on pollen storage and pollination biology is essential to optimize okra yield and enhance breeding efficiency.

Keywords: *Pollen production, Okra plants, pollen grains, Glycerine, IKI*

Introduction

Flower production significantly influences the pollen production. Pollen production is to be determine primarily on a per flower basis. High pollen production may Favors increase in male reproductive success of the plant vonhof and harder 1995. Therefore, increased pollen production might be in term of no. of grain per another Although plant is generally known to produce a large amount of pollen there may be some variation in pollen production per flower. The available literature about the pollen production is known to vary within and amongst plant in a given population due to environmental condition willson and Buriey 1983. Stantion and preston 1986, young and Stanton 1990 and lau and Stephenson 1993. Such studies provide complete information about pollen production which is of vital importance to the plant breeder pollen pistil interaction play a crucial role in successful introgression for describe traits and are often restricted by presence of pre or post fertilization barriers in various crops importance of wild germplasm of abelmoschus (Malvaceae) as source of gene for biotic and abiotic stress resistance in crop improvement programmes have long been recognised by breeders. In the present study of pollen germination and pollen tube growth were evaluated with respect to the seed set among four species of Abelmoschus. Alien pollen tube slowed significantly high growth inhibition in okra CA. esculentus) pistils and seldom penetrate the stigma. It is popularly known as bindi in India and easy to cultivated and to varied ecological condition.

Flower production significantly influences the pollen production. Pollen production is to be determined primarily on a per flower basis. High pollen production may Favors increase in male reproductive success of the plant (Vonhof and Harder, 1995). Therefore, increased pollen production might be in terms of number of grains per anther. Although, plants are generally known to produce a large amount of pollen, there may be some variation in pollen production per flower.

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The available literature about the pollen production is known to vary within and amongst plant in a given population, due to environmental conditions (Willson and Burley, 1983; Stanton and Preston, 1986; Young and Stanton, 1990a, 1990b and Lau and Stephenson, 1993). Such studies provide complete information about pollen production, which is of vital importance to the plant breeder.

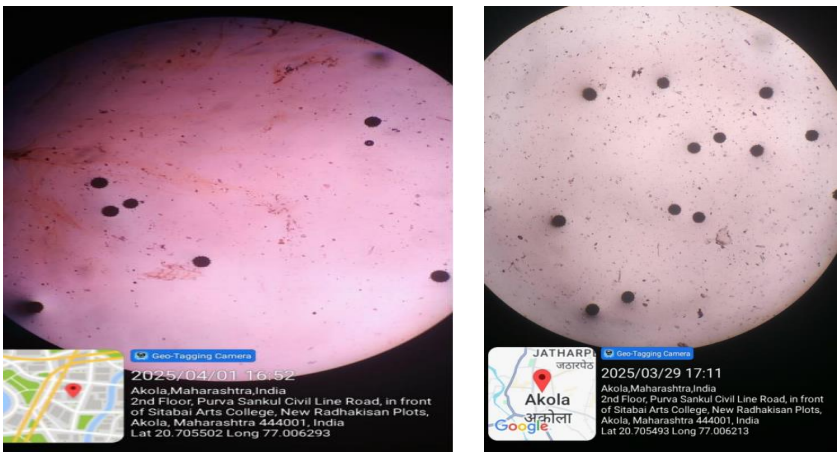
Material and Methods:

Fully open flowers were collected during early morning hours (6.00-9.00am) to ensure fresh pollen grain. Flower sample of Ablmoschous esculentres were collected form healthy mature plant located in field during the early morning between 6.00 am to 9.00 am to ensure maximum pollen viability. A total 20 flowering plant randomly selected and 10 flowers. Fully opened, fresh flower was collected form each plant using sterilized scissors and forceps the collection flowers were immediately placed in clean bottles. Before starting the pollen production assey the time of daily anthesis and anther dehiscence in different cotton varieties was noted. To determine pollen productivity undehisced anthers from the flower buds were collected and pollen productivity was done as per the method of Nair and Rastogi (1963). The undehisced anthers were crushed in 50% glycerine in a graduated test tube of 10 ml. The plastic dropper was standardized and the pollen per drop were counted by adding one drop of suspension on to a slide and covered by a cover glass. From this, the mean pollen production per flower was calculated.Number of pollen grains/anther/flower was determined from the 10 flowers distributed over different plants of the same variety.

Result and Discussion:

The microscopic observation of Abelmoschous esculentus pollen grains reveals a high density of well-formed circular pollen grains the uniform shaped and clear boundaries suggest active and healthy anther development in the selected plant specimen. Pollen grain is dispersed plant specimen, pollen grain are dispersed evenly across the field of view, with minimal clumping or abnormal structure, which is indicative of good reproductive health and viability, the number of visible pollen grain are suggesting. Prolific production, which is advantageous for increasing the likelihood of successful fertilization and fruit set. No major signs. Of sterility such as deformed grains or lack of pollen were observed in the sample, supporting the assumption of good pollen viability. Future research is needed to understand the pollination biology of okra, optimize pollen storage, pollen production and develop more efficient method. Hybrid seed production. As per the selected species of Pollen Production of Abelmoschus esculentous (okra) plant is 55.2%.

Plate:



Conclusion

From the present work it was clear that the selected Abelmoschus esculen plant exhibits robust pollen production. This indicates that the plant is reproductively healthy and likely to contribute positively to pollination and yield. Such finding is valuable for selecting high-performing cultivars for breeding agricultural practices.

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Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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