

## Pollen Morphology of some Cultivated Fruits

by

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**Synopsis:** The paper presents the results of an investigation on the pollen morphology of six fruit crops belonging to six stenopalynous families viz., *Caricaceae*, *Moraceae*, *Myrtaceae*, *Sapotaceae*, *Punicaceae* and *Vitaceae*.

Very little work has been done in this country on the pollen morphology of cultivated plants and especially in fruit crops Nair and Mehra (1961) have described the pollen grains of *Citrus* spp. The present paper relates to investigations on the pollen morphology of six fruit plants viz., papaya, jack, guava, sapota, pomegranate and grape. Erdtman (1952) has given brief outlines of papaya and pomegranate pollen.

**Materials and Methods:** Pollen grains of the fruit plants mentioned above were collected from fresh flowers and processed as per the modified method suggested by Nair (1960). Each sample of pollen was divided into three parts. One part was stained with saffranin followed by treatment with 2% hydrochloric acid. The second and third parts were acetolysed with acetic anhydride and concentrated sulphuric acid. The acetolysed third part was then chlorinated and stained with methyl green.

The descriptions are based on observations of all the three types of pollen. The size of the pollen was recorded with unacetolysed grains only. The terminology is after Erdtman (1952). The illustrations are palynograms, the main figure and the exine stratification drawn to the scale of  $\times 1000$  and  $\times 2000$  respectively. The LO - diagrams are given on the right side of the main figure and the polar or equatorial view ( $\times 250$ ) on the left side.

**Results:** PAPAAYA: *Carica papaya* L. (*Caricaceae*): Fig. I and Plate I.

Pollen grains 3-colporate, subprolate ( $35 \times 29 \mu$ ), stratification reticulate, ora  $\pm$  circular, apocolpium diameter  $10 \mu$ , colpi ending pointed. Sexine is as thick as nexine.

JACK: *Artocarpus heterophyllus* Lam. (*Moraceae*): Fig. II.

Pollen grains 3 - porate, oblate spheroidal ( $14 \times 15 \mu$ ), LO - pattern areolate, subaspidote, aspides get detached in acetolysed grains, sexine slightly thicker than nexine.

GUAVA: *Psidium guajava* L. (*Myrtaceae*): Fig. III.

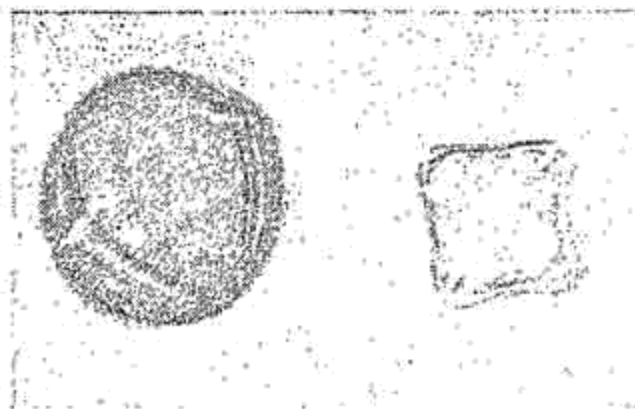
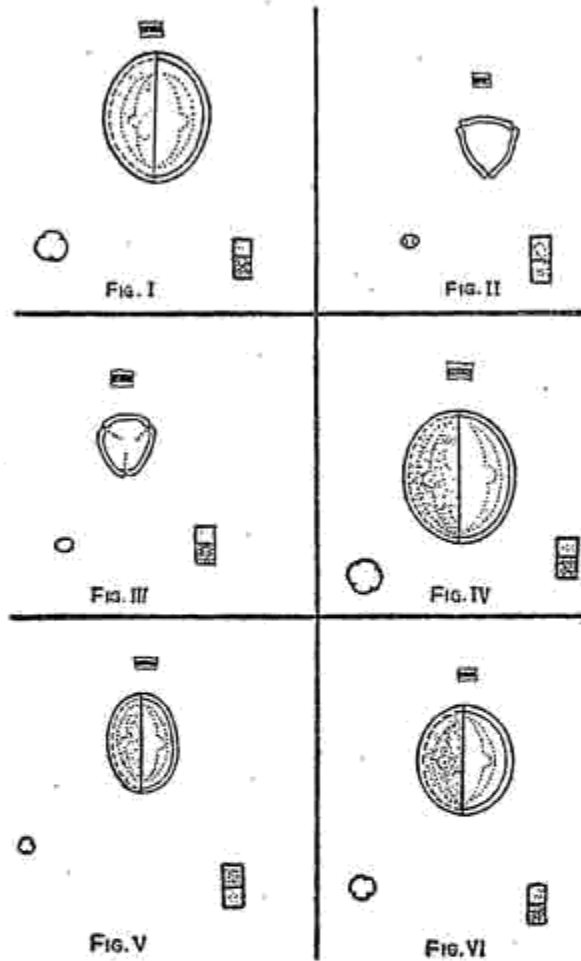
Pollen grain sub isopolar, 3 (4) colporate, angulaaperturate, oblate ( $12 \times 16 \mu$ ), faintly reticulate, sexine thickened at apertures. Grains with 4 colpi (7 to 10%) occur in seedless varieties only (Plate II).

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SAPOTA: *Achras zapota* L. (*Sapotaceae*): Fig. IV.

Pollen grains 4 colporate, prolate spheroidal ( $36 \times 32 \mu$ ), stratification reticulate, ora  $\pm$  circular, apocolpium diameter  $6 \mu$ , colpi ending blunt. Sexine is slightly thicker than nexine.



Left to Right: Acetolysed pollen of papaya and 4-colpate pollen of guava.

POMEGRANATE: *Punica granatum* L. (*Punicaceae*): Fig. V.

Pollen grains 3-colporate, prolate ( $27.5 \times 19 \mu$ ), stratification reticulate, ora circular, apocolpium diameter  $6.2 \mu$ , colpi pointed, sexine as thick as nexine.

GRAPE: *Vitis vinifera* L. (*Vitaceae*): Fig. VI.

Pollen grains 3-colporate, prolate spheroidal ( $28 \times 26 \mu$ ), reticulate, ora  $\pm$  circular, apocolpium diameter  $4.2 \mu$ , colpi thin and slender, sexine as thick as the nexine.

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#### REFERENCES

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| Erdtman, G.       | 1952 <i>Pollen morphology and plant taxonomy</i> . The Chronica Botanica Co., Waltham.           |
| Nair, P. K. K.    | 1960 A modification in the method of pollen preparation. <i>J. Sci. indus. Res.</i> 19 c: 26—27. |
| — and R. C. Mehra | 1961 Studies in the pollen grains of citrus. <i>Hort. Adv.</i> , 5: 71—76.                       |

### OBITUARY

Shri V. G. Dhanakoti Raja, Retired Agricultural Officer, died on 19—2—1964 at the age of 83, after a short illness. He passed the Agricultural Course from the Saidapet Agricultural School during 1906—1907. He was first appointed as Farm Manager, Agricultural Research Station, Kovilpatti on April, 1908 and worked subsequently in various capacities as Agricultural Demonstrator, Superintendent, Central Farm and lastly Assistant Director of Agriculture. He retired from service on November, 1939.

The M. A. S. U. mourns the loss sharing the grief with the members of the bereaved family.