

Different Supports for Pollen Mounting and Scanning Observation

Cristina René Salgado^{1*}, María Cecilia Galíndez² and Cecilia De Asmundis³

¹⁻² Servicio de Microscopia Electrónica de Barrido. Universidad Nacional del Nordeste. Sgto. Cabral 2131. W3400CEI, W3400 CEI, Corrientes. Argentina

³ Facultad de Ciencias Exactas y Naturales y Agrimensura. Universidad Nacional del Nordeste. Av. Libertad 5470. W3400CEI, W3400 CEI, Corrientes. Argentina

* Corresponding author: E-mail: meb.unne@hotmail.com

Scanning is a very useful and versatile tool in Biology [1,2,3,4]. Palynology is the botanical branch that studies pollen grains, and by extension, spores. This science applies several analysis methods with the object of study using different optical microscopy techniques. In addition, electron scanning microscopy is used to observe nano-characters and other complimentary information for pollen grains' morphological description.

The aim of the present work is to evaluate different supports to study pollen grains y determine, under several work conditions, which are the most optimal for a better material observation and digital image capturing.

Prewashed with an alcohol battery, pollen grains were mounted on aluminium and copper sheets, dried to room temperature in order to bond to the support by surface tension. Also two-sided tape and carbon tape were used to place the pollen grains. Afterwards, every treatment was coated with a thin gold layer using a sputter coater Denton Vacuum Desk II. Observations were made with JEOL 5800LV SEM equipment.

The four tests were analysed with the sample chamber working at high vacuum and under several work conditions in order to establish the best combination for image saving (acceleration voltage: 10kV, 15kV and 20 kV, working distance 15 mm, 10 mm and 8 mm).

The most optimal supports were the metallic ones with respect to the tapes; however, different supports have advantages and disadvantages. Images with better contrast and depth of field were obtained using the copper support. Every work distance and acceleration voltage combination allowed capturing a good image. On the other hand, aluminium support showed images with low contrast and depth of focus, which significantly reduces the pollen grains' three-dimensional feeling. Regarding the tapes as a support, the best was the carbon tape, which allowed taking images with good detail definition. In contrast, the most deficient support was two-sided tape, as it absorbs liquid quickly and many pollen grains were collapsed [5].

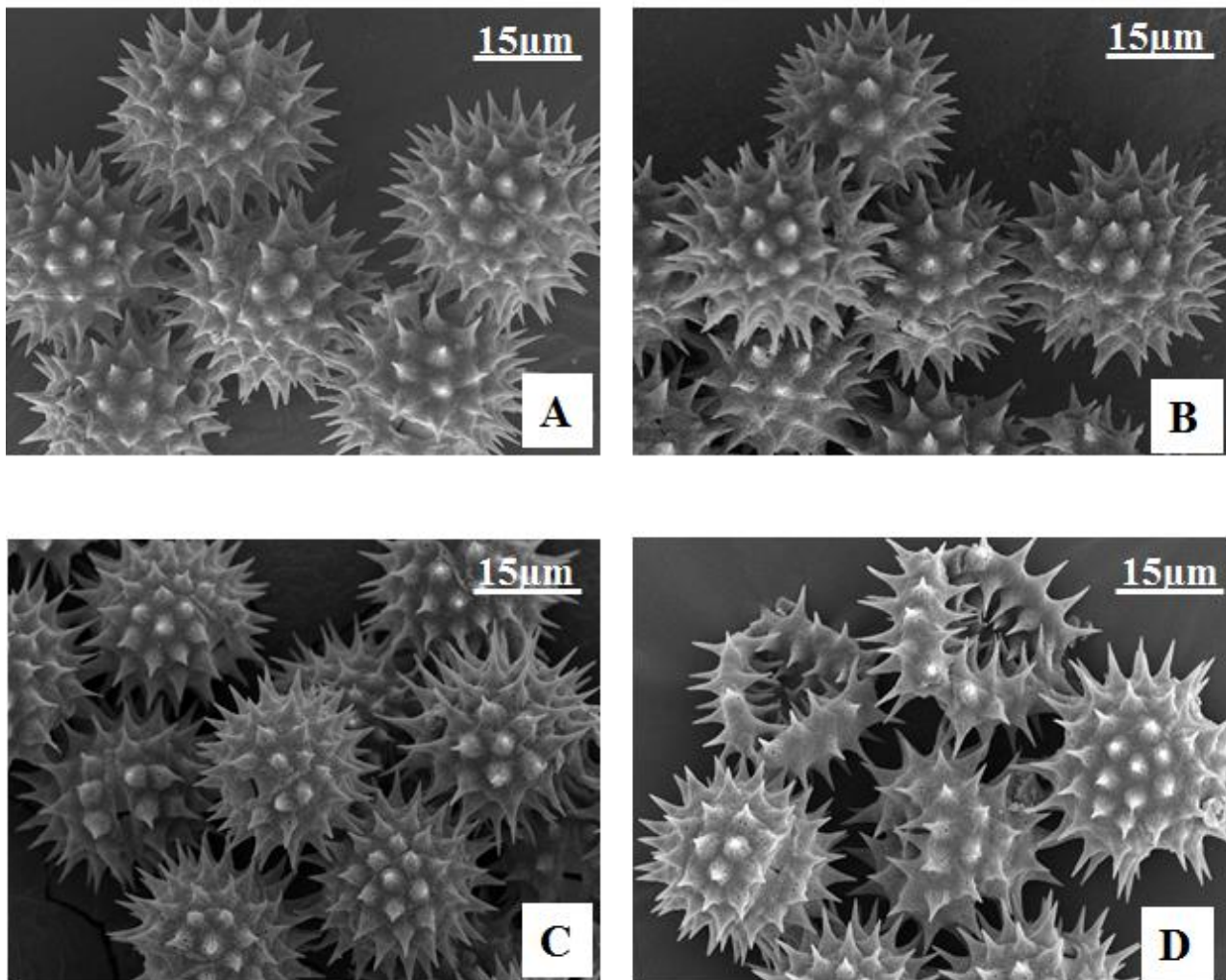


Figure 1. Pollen grains on different supports: A, Aluminium. B, Copper. C, Carbon tape. D, Two-sided tape. Magnification= x1500. Working Distance (WD)= 8 mm. Voltage= 10 kV.

References

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