

Flowering Phenology, Pollination Modes, and Morphological Diversity of Airborne Pollen in Meerut: An Aeropalynological Study

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Abstract: *Aeropalynological investigations provide important information on the diversity, seasonal occurrence, and morphological characteristics of airborne pollen. This study examines the relationships among flowering periods, pollen-capture periods, reported pollination modes, and pollen morphological characters of plant taxa recorded during an aeropalynological investigation in Meerut, Uttar Pradesh, India, in 2000–2001. The compiled dataset includes angiosperms and gymnosperms from several botanical families, with pollen types varying in aperture number and arrangement, shape, and exine ornamentation. Anemophilous, entomophilous, and amphiphilous taxa are represented. Several taxa show extended flowering and pollen-capture periods, whereas others exhibit more restricted seasonal occurrence. These observations provide a basis for examining the temporal relationship between flowering phenology and airborne pollen detection and for evaluating the usefulness of pollen morphology in identifying airborne pollen types. However, pollen capture may not exactly correspond to the flowering period because of atmospheric transport, pollen release, environmental conditions, and the persistence of airborne pollen. The study establishes a historical reference dataset for aeropalynological research in Meerut and provides a foundation for further quantitative analysis of pollen seasonality and its relationship with meteorological variables.*

Keywords: Aeropalynology; airborne pollen; flowering phenology; pollination mode; pollen morphology; pollen calendar; Meerut; seasonal distribution.