Palynological Characterization of Four Varieties of *Vigna uniguiculata* (L. WALP) and its Taxonomic Significance

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Abstract:

This study examined the pollen morphology of four varieties of *Vigna unguiculata* (cowpea), an important staple legume for food security in Nigeria and Africa. Knowledge of pollen characteristics can inform efforts to conserve crop genetic variation, crucial for developing resilient food production systems. The main objective was to differentiate these *Vigna* varieties based on their pollen morphology. Pollen samples were collected from four cowpea varieties (BBT Brown, IFE BPC, BBT White, and IFE Brown) grown in a screen house. Pollen characters analyzed included size, shape, colpi, exine thickness and pattern, and apertural status. The results showed statistically significant differences in all quantitative pollen characters among the four varieties ($p \geq 0.5$). Key distinguishing features included reticulation pattern, pollen size, lumina size, presence of small columellate structures within lumina, and rounded features surrounding the pores. Although the pollen grains were similar in being three-porate and coarsely reticulate, they differed in specific dimensions. IFE BPC had the largest pollen size, while BBT Brown had the smallest. BBT Brown also had the second-greatest pore length. Reticulation patterns varied, with BBT Brown having thicker muri compared to the other varieties. In conclusion, the pollen morphology of the four *Vigna unguiculata* varieties examined was quite distinct, allowing for their separation and identification. This knowledge can contribute to conservation efforts targeting the genetic variation and taxonomic classification of this important food crop, supporting sustainable development and food security.

Keywords:

Cowpea, Palynology, Characterization, Varieties.