
Phytolith Morphometrics: An Update on *Zea mays* Signatures and Comparisons from the American Southwest

Linda Scott Cummings*¹

¹PaleoResearch Institute (PRI) – 2675 Youngfield St., États-Unis

Résumé

ImageJ and plugins developed for phytolith morphometrics provide the backbone of our technology for morphometric studies. Image capture, one challenging and time consuming aspect of this analysis, is easier using drawing tablets or surfaces. Our methods, including improvements in the mechanics of drawing phytoliths, are discussed, followed by potentials for interpretations. Morphometric analysis of phytoliths obtained directly from archaeological cobs and reference cobs of ancient varieties including Chapalote, Reventador, and Teosinte, are compared to reference cobs from the Southwest (Tohono O’odham 60-day flour and Hopi Blue flour) and the Plains. Our expanding database of more than 50 cobs allows examination of relatedness of the reference cobs and the archaeological cobs to one another. Close relationships between some of the archaeological cobs, explored since 1999, and either or both Chapalote and Reventador indicates retention of primitive popcorn traits in many of the archaeological varieties. It also points to derivation of maize farmed in antiquity from Chapalote, Reventador, and Teosinte. Principal components analysis and cluster analysis provide two mechanisms for examining relatedness of archaeological cobs. Plotting closeness of fit of archaeological cob populations on the landscape allows for examination of potential trade and movement of people since ownership of seed is known to be closely controlled. This movement, whether it represents people moving on the landscape or trade, involves people who live in villages (Puebloan people from the Southwest, Fremont people from the Great Basin, and various Plains tribes) and people who appear to be more mobile, living in smaller habitations. The future direction of comparison with aDNA from archaeological cobs, as well as DNA from modern cobs is anticipated to hold the key to unraveling the past. Ultimately, morphometric analysis of phytoliths derived from archaeological cobs is designed to address questions of social relatedness and movement of peoples, and it might ultimately be able to assist in defining social lineages.

Mots-Clés: morphometrics, ImageJ, maize, *Zea mays*

*Intervenant