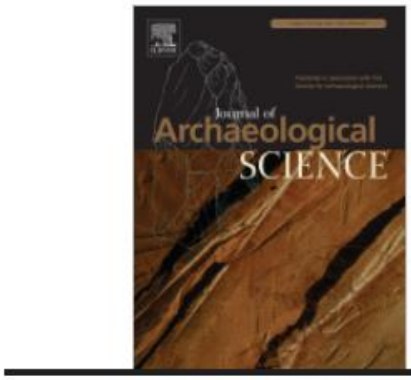

Journal of Archaeological Science

Date: Available online 12 June 2026

Article: 106605

Grapevine cultivation at Cetamura del Chianti: multiproxy evidence for centuries of continuity from the Etruscans to the Romans

Oya Inanli [a b], Laurent Bouby [c], Vincent Bonhomme [c], Nancy de Grummond [d], Lara González Carretero [a], Roberto Bacilieri [e], Hannes Schroeder [b], Jazmín Ramos-Madrigal [b], Nathan Wales [a] Show more

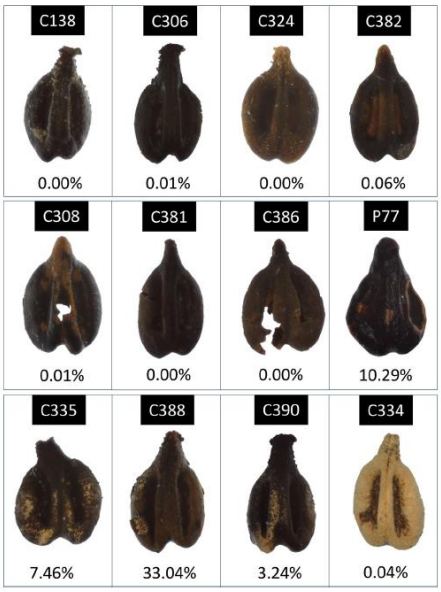

Fig. 3. **Representative images of Cetamura pips and corresponding endogenous content.** Each row corresponds to seeds categorised as intact, broken or damaged. The background has been removed from the images, and the seeds have been scaled to the same size for visual consistency, which does not reflect the differences in their actual size. A manual comparison of the seed images showed no consistent patterns between the proportion of endogenous DNA and whether a seed is intact, broken, or damaged. See Supplementary Fig. S3a and S3b for all photographed seeds from Well #1 and Well #2.

Abstract

Roman writers provide detailed accounts of viticulture practices in ancient Mediterranean civilisations. While records describe varieties, methods of vine management, and consumption traditions, major questions remain about how varieties were spread and whether viticulture traditions were impacted during Roman expansion. At the site of Cetamura del Chianti (Siena, Tuscany), waterlogged grape seeds from two wells dated between ca. 300 BCE and ca. 1200 CE provided an opportunity to integrate multiple methodologies to investigate Etruscan and Roman viticulture. Genetic testing of 80 grape seeds revealed that the deepest parts of the wells were associated with higher endogenous DNA content, and complementary near-infrared spectroscopy found patterns with well-preserved pips. Both genome-wide DNA data and geometric morphometric analysis indicated that most seeds originated from domesticated vines associated with winemaking, however, the latter suggested that some seeds with little DNA may derive from wild vines. Following enrichment of genetic markers, relatedness analyses demonstrated links to the past and present: one Cetamura seed was closely related to a Roman seed from Mont Ferrier in France while another pip had affinity to the modern Hungarian variety 'Baratcsuha szurke'. Within the wells, genetic data and radiocarbon dating revealed continuity from Etruscan to Roman periods, with over a quarter of the seeds belonging to one clonal variety maintained for centuries. Furthermore, genetic markers associated with anthocyanin content indicated the dominant clonal variety likely produced white berries; however, red wine was presumably not unknown at Cetamura, as two other pips were consistent with a dark berry phenotype.