

Radiocarbon Determination

Laboratory : Oxford Radiocarbon Accelerator Unit (ORAU)

Date : 2012-07-03

1. Sample & Pretreatment

- Submitted by: RL-21 Laboratory (Edinburgh), custody ref RL-CC-2012-11.
 - Condition on receipt: clean, labeled, double-bagged, seal intact.
 - Subsample mass: ~1.2 mg carbon equivalent.
 - Pretreatment: Acid-Base-Acid (HCl/NaOH/HCl), final DI rinse to neutrality, 60 °C dry.
 - Yield: within acceptable range for short-lived plant fibers; microscopy confirms absence of consolidants.

1. Measurement Result

- Radiocarbon age: **10,420 ± 80 BP** (1σ).
 - δ13C (VPDB): -25.1‰ (instrumental).
 - Backgrounds and standards: within control limits; process blank < DL.

1. Calibration (IntCal20)

Calibrated using IntCal20 with OxCal v4.xx. Reported as 2σ (95.4%) probability ranges.

Range	cal BP	cal BCE	Probability
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A	10,540-10,320	8,590-8,370	0.64
B	10,280-10,170	8,330-8,220	0.22
C	10,620-10,560	8,670-8,610	0.09
D	10,170-10,120	8,220-8,170	0.05

Median calibrated age: 10,410 cal BP (~8,460 cal BCE).

Figures:

- Figure A1: Calibration curve with probability distribution (IntCal20).
- Figure A2: Posterior density plot for OxA-40012.

1. Provenance & Chain References

- Site: Timbuktu survey area, Trench 7 (N: 16.7666, W: 3.0026).
 - Context: 7.4 (charred horizon) associated with tablet TT-2012-01.

- Chain-of-custody: RL-CC-2012-11 (see chain-of-custody.pdf).
- Sample selection targeted short-lived tissue to minimize inbuilt age.

1. Methods & Uncertainty

- AMS measurement on graphite targets; duplicate runs averaged.
 - Total uncertainty incorporates counting statistics, pretreatment variance, and calibration model uncertainty.
 - QA: secondary standards within $\pm 1\sigma$; inter-lab comparison within expected bounds.
 - Limitations: potential microscopic contamination cannot be fully excluded; however, pretreatment and blanks indicate negligible impact.

1. Certification

Authorized by: Dr Alan Reeves, Laboratory Manager, ORAU

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