

Electronic Supplemental Material

Title: Reassessing the origin of lentil cultivation in the Pre-Pottery Neolithic of Southwest Asia: new evidence from carbon isotope analysis at Gusir Höyük

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Table S1. Detailed results of $\delta^{13}\text{C}$ values, $\delta^{13}\text{C}$ air values used in $\Delta^{13}\text{C}$ calculations, pre-treatment methodology, sample provenance and phasing for the Gusir Höyük lentil and almond specimens reported in Fig. 2 (*continued overleaf*)

Site	Taxon	Specimen ID	Sample type	$\delta^{13}\text{C}$ VPBD (‰)	$\delta^{13}\text{C}$ avg (‰)	$\delta^{13}\text{C}$ σ (‰)	$\delta^{13}\text{C}$ air (‰)	$\Delta^{13}\text{C}$ avg (‰)	% C	Pre-treatment	Phase	Trench	Context
Gusir	Amygdalus (nutshell)	GSR 001	Single	-25.53	-25.54	0.03	-6.72	19.32	63.37	A-only	Phase 3 (~10.5-10.3 kyr cal BP)	20I	44
Gusir		GSR 001	grain	-25.56						A-only			
Gusir	Amygdalus (nutshell)	GSR 002	Single	-24.99	-24.99	0.01	-6.72	18.73	64.02	A-only	Phase 3 (~10.5-10.3 kyr cal BP)	20I	28
Gusir		GSR 002	grain	-24.98						A-only			
Gusir	Amygdalus (nutshell)	GSR 003	Single	-25.44	-25.45	0.01	-6.77	19.16	60.12	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	22J	76
Gusir		GSR 003	grain	-25.45						A-only			
Gusir	Amygdalus (nutshell)	GSR 004	Single	-25.60	-25.57	0.06	-6.78	19.28	63.03	A-only	Phase 2 (~10.9 kyr cal BP)	20N	26
Gusir		GSR 004	grain	-25.54						A-only			
Gusir	Amygdalus (nutshell)	GSR 005	Single	-26.99	-26.98	0.06	-6.72	20.82	61.48	A-only	Phase 3 (~10.5-10.3 kyr cal BP)	20H	8
Gusir		GSR 005	grain	-26.97						A-only			
Gusir	Amygdalus (nutshell)	GSR 006	Single	-25.92	-25.91	0.01	-6.77	19.65	59.58	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	23L	103
Gusir		GSR 006	grain	-25.91						A-only			
Gusir	Amygdalus (nutshell)	GSR 007	Single	-26.68	-26.68	0.03	-6.77	20.46	61.34	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	23K	51
Gusir		GSR 007	grain	-26.69						A-only			
Gusir	Amygdalus (nutshell)	GSR 008	Single	-24.58	-24.59	0.03	-6.78	18.26	62.11	A-only	Phase 2 (~10.9 kyr cal BP)	21H	11
Gusir		GSR 008	grain	-24.61						A-only			
Gusir	Amygdalus (nutshell)	GSR 009	Single	-25.15	-25.14	0.03	-6.77	18.84	58.21	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	22J	77
Gusir		GSR 009	grain	-25.12						A-only			
Gusir	Lens spp.	GSR 010	Single	-24.68	-24.29	0.79	-6.78	17.94	57.1	A-only	Phase 2 (~10.9 kyr cal BP)	21 H	11
Gusir		GSR 010	grain	-23.89						A-only			
Gusir	Lens spp.	GSR 011	Single	-25.52	-25.53	0.02	-6.72	19.30	58.25	A-only	Phase 3 (~10.5-10.3 kyr cal BP)	23M	42
Gusir		GSR 011	grain	-25.54						A-only			
Gusir	Lens spp.	GSR 012	Single	-23.88	-23.89	0.02	-6.77	17.54	57.7	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	20J	31
Gusir		GSR 012	grain	-23.90						A-only			
Gusir	Lens spp.	GSR 013	Single	-24.98	-24.92	0.07	-6.77	18.62	48.87	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	23K	39
Gusir		GSR 013	grain	-24.87						A-only			
Gusir	Lens spp.	GSR 014	Single	-23.56	-23.58	0.04	-6.78	17.21	57.07	A-only	Phase 2 (~10.9 kyr cal BP)	21M	23
Gusir		GSR 014	grain	-23.61						A-only			
Gusir	Lens spp.	GSR 015	Single	-22.82	-22.81	0.02	-6.78	16.41	59.73	A-only	Phase 2 (~10.9 kyr cal BP)	20N	13
Gusir		GSR 015	grain	-22.80						A-only			

Table S1. Detailed results of $\delta^{13}\text{C}$ values, $\delta^{13}\text{C}$ air values used in $\Delta^{13}\text{C}$ calculations, pre-treatment methodology, sample provenance and phasing for the Gusir Höyük lentil and almond specimens reported in Fig. 2

Site	Taxon	Specimen ID	Sample type	$\delta^{13}\text{C}$ VPBD (‰)	$\delta^{13}\text{C}$ avg (‰)	$\delta^{13}\text{C}$ σ (‰)	$\delta^{13}\text{C}$ air (‰)	$\Delta^{13}\text{C}$ avg (‰)	% C	Pre-treatment	Phase	Trench	Context
Gusir	Lens spp.	GSR 017	Single grain	-21.26	-21.37	0.15	-6.77	14.92	59.22	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	23L	108
Gusir		GSR 017		-21.47						A-only			
Gusir	Lens spp.	GSR 018	Single grain	-25.82	-25.82	0.01	-6.77	19.55	60.51	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	22K	337
Gusir		GSR 018		-25.81						A-only			
Gusir	Amygdalus (nutshell)	GSR 019	Single grain	-25.88	-25.86	0.03	-6.78	19.58	60.67	A-only	Phase 2 (~10.9 kyr cal BP)	21M	23
Gusir		GSR 019		-25.84						A-only			
Gusir	Lens spp.	GSR 022	Single grain	-22.15	-22.17	0.02	-6.77	15.75	58.02	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	22J	35
Gusir		GSR 022		-22.18						A-only			
Gusir	Lens spp.	GSR 023	Single grain	-24.31	-24.30	0.01	-6.77	17.97	53.22	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	20L	13
Gusir		GSR 023		-24.29						A-only			
Gusir	Lens spp.	GSR 024	Single grain	-26.55	-26.65	0.14	-6.72	20.48	58.08	A-only	Phase 3 (~10.5-10.3 kyr cal BP)	20 I	44
Gusir		GSR 024		-26.75						A-only			
Gusir	Lens spp.	GSR 027	Single grain	-25.33	-25.31	0.03	-6.78	19.02	60.08	A-only	Phase 2 (~10.9 kyr cal BP)	20N	26
Gusir		GSR 027		-25.30						A-only			
Gusir	Lens spp.	GSR 028	Single grain	-23.48	-23.38	0.14	-6.77	17.01	43.97	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	22J	24
Gusir		GSR 028		-23.28						A-only			
Gusir	Lens spp.	GSR 029	Single grain	-21.91	-21.90	0.01	-6.77	15.47	61.15	A-only	Phase 1 (~11.4-11.1 kyr cal BP)	23L	105
Gusir		GSR 029		-21.90						A-only			
Gusir	Lens spp.	GSR 030	Single grain	-24.45	-24.44	0.01	-6.72	18.17	55.95	A-only	Phase 3 (~10.5-10.3 kyr cal BP)	20H	8
Gusir		GSR 030		-24.44						A-only			

Table S2. Previously published lentil $\delta^{13}\text{C}$ values, $\delta^{13}\text{C}$ air values used in $\Delta^{13}\text{C}$ calculations, pre-treatment methodology, sample provenance, phasing and corresponding references for the sites included in this study and reported in Fig. 3

Site	Taxon	$\delta^{13}\text{C}$ (‰)	$\delta^{13}\text{C}$ σ (‰)	$\delta^{13}\text{C}$ air (‰)	$\Delta^{13}\text{C}$ (‰)	Pre-treatment	Phase	Reported date ranges	Specimen ID	Sample type	Reference
M'lefaat	Lens	-23.2	N/A	-6.78	16.81	ABA	PPNA	11250-10840 cal BP	OxA 3747	Single grain	Hedges et al. 1996
M'lefaat	Lens	-25.1	N/A	-6.78	18.79	ABA	PPNA	11250-10840 cal BP	OxA 3748	Single grain	
M'lefaat	Lens	-23.1	N/A	-6.78	16.71	ABA	PPNA	11250-10840 cal BP	OxA 3749	Single grain	
M'lefaat	Lens	-23.4	N/A	-6.78	17.02	ABA	PPNA	11250-10840 cal BP	OxA 3810	Single grain	
Qermez dere	Lens	-23.3	N/A	-6.78	16.91	ABA	PPNA	12050-11650 cal BP	OxA 3757	Single grain	
Qermez dere	Lens	-22.2	N/A	-6.78	15.77	ABA	PPNA	12050-11650 cal BP	OxA 3754	Single grain	
Qermez dere	Lens	-25.4	N/A	-6.78	19.11	ABA	PPNA	12050-11650 cal BP	OxA 3755	Single grain	
Qermez dere	Lens	-23.6	N/A	-6.69	17.32	ABA	PPNA	11260- 10840 cal BP	OxA 3752	Single grain	
Ain Ghazal	Lens culinaris	-22.16	N/A	-6.55	15.96	ABA	LPPNB	~9500 cal BP	AGH163L	Bulk	Wallace et al. 2015
Ain Ghazal	Lens culinaris	-21.91	N/A	-6.55	15.71	ABA	LPPNB	~9500 cal BP	AGH162L	Bulk	
Tell Halula	Lens	-23.27	N/A	-6.72	16.94	A-only	MPPNB	9750-9500 cal BP	N/A	Bulk	Araus et al. 1999
Tell Halula	Lens	-22.45	N/A	-6.72	16.09	A-only	MPPNB	9750-9500 cal BP	N/A	Bulk	
Tell Halula	Lens	-23.7	N/A	-6.72	17.39	A-only	MPPNB	9750-9500 cal BP	N/A	Bulk	
Tell Halula	Lens	-24.24	N/A	-6.72	17.95	A-only	MPPNB	9750-9500 cal BP	N/A	Bulk	
Tell Halula	Lens	-23.85	N/A	-6.77	17.50	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-24.17	N/A	-6.77	17.83	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-23.04	N/A	-6.77	16.66	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-23.12	N/A	-6.77	16.74	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-22.9	N/A	-6.77	16.51	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-21.62	N/A	-6.77	15.18	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-25.09	N/A	-6.77	18.79	A-only	LPPNB	9500-9300 cal BP	N/A	Bulk	
Tell Halula	Lens	-22.79	N/A	-6.75	16.41	A-only	PN	9300-8400 cal BP	N/A	Bulk	
Tell Halula	Lens	-22.89	N/A	-6.75	16.52	A-only	PN	9300-8400 cal BP	N/A	Bulk	
Tell Halula	Lens	-24.39	N/A	-6.75	18.08	A-only	PN	9300-8400 cal BP	N/A	Bulk	
Çatalhöyük	Lens culinaris	-23.48	N/A	-6.60	17.28	ABA	PN	9100-8000 cal BP	CAT179	Bulk	Wallace et al. 2015
Çatalhöyük	Lens culinaris	-23.01	N/A	-6.60	16.8	ABA	PN	9100-8000 cal BP	CAT186	Bulk	
Çatalhöyük	Lens culinaris	-22.3	0.2 *	-6.6	16.2	A only	PN	9100-8000 cal BP	CTH69	Bulk	Vaiglova 2016
Çatalhöyük	Lens culinaris	-21.6	0.2 *	-6.6	15.4	A only	PN	9100-8000 cal BP	CTH76	Bulk	
Çatalhöyük	Lens culinaris	-24.6	0.5 *	-6.60	18.6	A only	PN	9100-8000 cal BP	CTH27	Bulk	
Çatalhöyük	Lens culinaris	-23.2	0.1 *	-6.6	17.1	A only	PN	9100-8000 cal BP	PRT3B	Bulk	

* Standard deviation reported by Vaiglova 2016 on the Catalhoyuk East specimens denote uncertainty on single bulk samples, calculated using the Kragten two-point calibration method. See Vaiglova 2016, pp. 94.