

Khirbet Qeiyafa: Absolute Chronology

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Based on averaging four radiocarbon determinations, Garfinkel and Ganor (2009) have dated the Iron Age layer at Khirbet Qeiyafa to ca. 1025–975 BCE and declared the demise of the Low Chronology for the Iron Age strata in the Levant. We show that in the case of Khirbet Qeiyafa averaging is not a legitimate procedure. The five available measurements represent the life-span of the site rather than a single event. With the available data, all one can say is that activity at the site started ca. 1050 BCE and ended sometime during the 10th century, no later than 915 BCE. The Khirbet Qeiyafa ^{14}C determinations line up with the large number of measurements from late Iron I sites in both the north and south of Israel and support the Low Chronology.

KEYWORDS Khirbet Qeiyafa, Radiocarbon dating, Low Chronology, Iron Age, Late Iron I

Based on four ^{14}C determinations, Garfinkel and Ganor dated the Iron Age layer of Khirbet Qeiyafa to ca. 1025–975 BCE (2009: 4, 8) and declared “the end of Low Chronology” (*ibid.*: 15). In another place they announced that “the Low Chronology is now officially dead and buried” (as the title to a picture of a cemetery, shown at a lecture of the annual meeting of the American Schools of Oriental Research, 2008—http://qeiyafa.huji.ac.il/qdb/ASOR_2parts.pdf). Is this so?

Seven samples of burnt olive pits from four loci at Khirbet Qeiyafa were radiocarbon-dated (one of them was measured twice, hence there are eight determinations—Table 1). Five of the samples provided dates that correspond to the Iron Age (Garfinkel and Ganor 2009: 35–38). The excavators stated that one of these determinations (OxA 19127, 2910±26 BP, 1130–1046 BCE 59.6%) is “a bit high, even for the high chronology” (*ibid.*: 35). They then averaged the four remaining measurements, which are fairly consistent with each other, using the OxCal R_Combine option, and obtained an uncalibrated date of 2844±15 BP, which translates to a calibrated date of 1026–944 BCE, 68% (1051–931 BCE, 95%).

TABLE 1

RADIOCARBON DATED OLIVE PITS FROM KHIRBET QEYyAFA
(GARFINKEL AND GANOR 2009: 36)

Qeiyafa No.	OxA number	Locus	Basket	Uncalibrated date BP	Calibrated result corresponding to period
1b	19589	B214	B297	2883±29	Iron Age
2a	19125	B214	B297	3300±28	Middle Bronze
2b	19126	B214	B297	3302±28	Middle Bronze
3	19127	B214	B302	2910±26	Iron Age
4	19128	B214	B302	2182±26	Hellenistic
5	19425	B284	B493	2851±31	Iron Age
6	19426	B232	B376	2837±29	Iron Age
7	19588	B277	B466	2799±31	Iron Age

Yet, in the case of Khirbet Qeiyafa, averaging is not a legitimate procedure. Averaging is justifiable *only* if one knows that the samples come from a contemporary context, such as well-identified destruction by fire (see the OxCal website—http://c14.arch.ox.ac.uk/oxcalhelp/hlp_commands.html: “¹⁴C date combination: allows you to enter a series of dates for combination; the assumption is that they are all exactly the same age”). Samples from concentrations of olive pits, found in the same destruction layer under a thick collapse can be securely averaged (Finkelstein and Piasezky 2009). Though Khirbet Qeiyafa presents no evidence for architectural phases or for raising floors (Garfinkel and Ganor 2009: 86), there is no indication of the duration of activity there, and there is no archaeological reason to assume that the samples are contemporary, rather than representing different moments in the life of the settlement.

This is indicated by the arbitrary provenance of the samples (Table 1):

- (1) Locus 214 produced two determinations that correspond to the Iron Age together with olive pits that provided dates that correspond to the Middle Bronze Age and the Hellenistic period. The samples that provided dates in the Iron Age come from two different baskets.
- (2) Basket B297 produced two samples that indicate a Middle Bronze date and one sample that points to the Iron Age.
- (3) Basket 302 produced one sample that corresponds to the Iron Age and one that fits the Hellenistic period.
- (4) It seems that in Locus 214, a Hellenistic sample and an Iron Age sample (Basket 302) were found *under* the sample from the Middle Bronze (Basket 297).
- (5) The three other samples that correspond to the Iron Age originated from three different loci.

It is clear, then, that the five samples cannot be taken as securely representing a single event in the history of Khirbet Qeiyafa. Rather, they should be interpreted as reflecting the length of activity at the site. Plotting (rather than averaging) the five Khirbet Qeiyafa Iron Age results (Fig. 1) puts the (maximal) length of activity at the site between ca. 1130

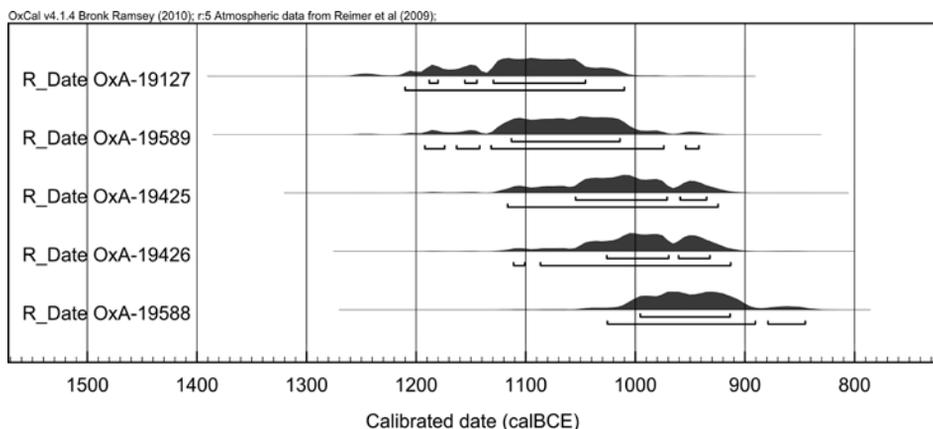


FIGURE 1 The five Iron Age radiocarbon determinations from Khirbet Qeiyafa. The 68% and 95% ranges are shown below the distributions.

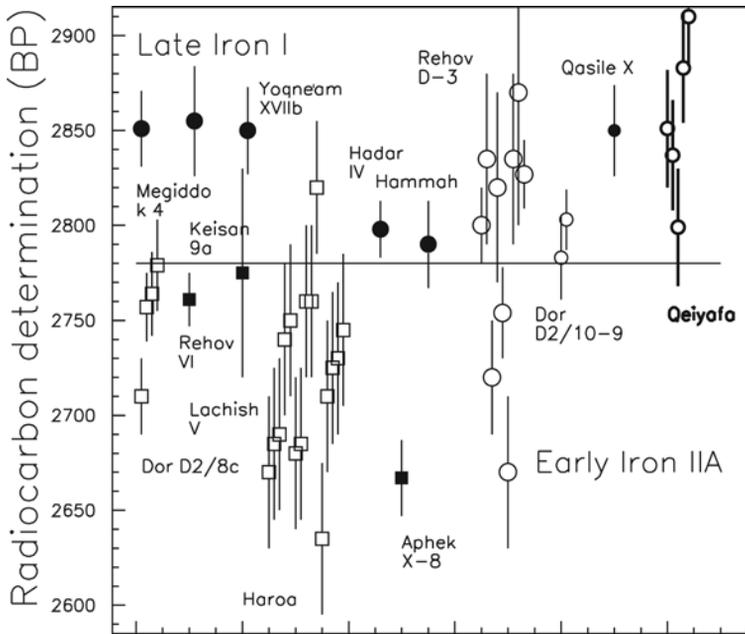
and 915 BCE, with OxA 19127 (1130–1046 BCE, 59.6%) probably representing an early phase in this sequence and OxA 19588 (996–914 BCE, 68%) a later one.

Singer-Avitz (2010) has now shown that the Khirbet Qeiyafa assemblage belongs to the ceramic phase of the late Iron I. Judging from what we know about the pottery assemblages and radiocarbon results from the early and middle Iron I (Finkelstein and Piasezky 2006, 2009; in press a; in press b), the maximal time-range of the Khirbet Qeiyafa sequence can be reduced to ca. 1050–915, a date that complies with all five ^{14}C determinations from the site.

The data-bank of short-lived ^{14}C results from Israel includes a large number of determinations that come from late Iron I and early Iron IIA strata (107 measurements of samples from eight late Iron I strata and 32 measurements from five early Iron IIA strata—Sharon *et al.* 2007; Finkelstein and Piasezky in press a; in press b). For the two periods these strata represent both the north and south of the country: for the late Iron I, they are Megiddo K-4, Yoqne‘am XVII, Keisan 9a, Tel Hadar IV, Tel Rehov D-3, Tell Hammah and Dor D2/10–9 in the north and Qasile X in the south; for the early Iron IIA the samples came from Tel Rehov VI and Dor D2/8c in the north and Lachish V, Aphek X-8 and Atar Haroa in the south (16 determinations from a single-period site for the latter—Boaretto *et al.* in press). Hence Garfinkel and Ganor (2009: 15) err and mislead in stating that: (1) past results were obtained only from the north; (2) the dating of the transition from the Iron I to the Iron II is based on determinations of late (rather than early) Iron IIA strata.

The uncalibrated results from these strata (Fig. 2) plot well in two groups representing the ceramic phases of the late Iron I and early Iron IIA. It is clear that the Khirbet Qeiyafa results fall in the late Iron I sequence,¹ in line with Singer-Avitz’s (2010) analysis of its pottery assemblage. In other words, Khirbet Qeiyafa complies with the broader picture from the Levant, which puts the late Iron I/early Iron IIA transition in the second half of

¹ It is sufficient to look at the uncalibrated results in order to see this, because with the exception of 2830–2775 BP the calibration curve in this time span is monotonic.



LEGEND:

CIRCLES — late Iron I sites

SQUARES — early Iron IIA sites

CIRCLES AND SQUARES in black — averages (destruction layers or single sample/context)

CIRCLES AND SQUARES in outline — readings from the duration of a layer

FIGURE 2 Late Iron I and early Iron IIA radiocarbon results from sites in northern and southern Israel. Qeiyafa clearly lines up with the late Iron I.

the 10th century BCE. This statement is based on *all* 12 Bayesian models (which use short-lived results) available today (Sharon *et al.* 2007; Finkelstein and Piasetzky in press a, in press b²).

To sum up, according to the ¹⁴C dates published thus far, the late Iron I layer at Khirbet Qeiyafa represents activity that started ca. 1050 BCE and ended sometime during the 10th century, no later than ca. 915 BCE. Khirbet Qeiyafa elegantly lines up with the Low Chronology for the Iron Age strata in Israel.

Acknowledgment

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² Contra Mazar and Bronk Ramsey 2008, who used long-lived results in their analysis, results that introduce the ‘old wood effect’ and evidently provide higher dates.

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