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Comment on "Early Domesticated Fig in the Jordan Valley"

Article Tools Simcha Lev-Yadun,^{1*} Gidi Ne'eman,¹ Shahal Abbo,² Moshe A. Flaishman³

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* To whom correspondence should be addressed. E-mail: levyadun@research.haifa.ac.il .

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- In Science Magazine
- Science Technical Comments by Kislev *et al.* Kislev *et al.* (1) described 11,200- to 11,400-year-old carbonized parthenocarpic figs from the early Neolithic village Gilgal I. All known types of parthenocarpic figs have a longer fruiting season than non-parthenocarpic ones, and as elegantly shown in (1), Neolithic people noticed this superior type. The authors proposed that because modern fig varieties with parthenocarpic second summer crop produce no seeds, and hence can only be propagated by cuttings,

Science Reports by Kislev et al.

the fossil figs represent the first domesticated species of the Neolithic Revolution. We suggest an alternative explanation, namely that the parthenocarpic figs described by Kislev *et al.* (1) may be parthenocarpic wild female figs. The common fig *Ficus carica* is dioecious, with male trees having three generations a year of inedible seedless figs that maintain the pollinating wasps (*Blastophaga psenes*) (2, 3). Only one male generation (Profichi), which ripens in June in Israel, produces substantial amounts of pollen (4). Domesticated female fig trees may have one to two fig crops: (i) parthenocarpic spring breba, which grow on branches from the previous season and are parallel to the male Profichi; and (ii) a second main summer crop on current-year branches that may continue into autumn. Female figs can be pollinated only by wasps emerging from the male Profichi crop in June. Breba figs are never pollinated, because they develop before the ripening of male Profichi (2, 3). The second main summer crop may be pollinated or not, depending on the presence of adjacent Profichi figs, which emit pollen-loaded *B. psenes* wasps upon ripening (4). There are three domesticated female fig tree types: Smyrna, which produces no breba and must be pollinated to have a summer crop with viable seeds; San Pedro, which produces breba and must be pollinated to have a main second summer crop with viable seeds; and common traditional fig varieties, which may produce parthenocarpic breba, a facultative parthenocarpic second main summer crop, and some parthenocarpic autumn figs. The facultative seedless parthenocarpic second main summer crop of common traditional fig varieties in Israel and elsewhere can be pollinated and produce seeds when male trees are present. Hence, fig parthenocarpy may occur in more than one way, and all known parthenocarpic *F. carica* types are able to produce seeds and may thus be independent of planting by farmers for propagation. The case described in (1) is, however, true for another cultivated species, *Ficus sycomorus*, in which a local parthenocarpic variety never sets seeds and all such trees are planted by farmers (5). Because all parthenocarpic fig types can produce seeds, the finds described in (1) cannot serve as an unambiguous sign of cultivation and lend no support to the notion that horticulture predated grain crops in the Near East.

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