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# Response to Comment on “Early Domesticated Fig in the Jordan Valley”

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We suggest that parthenocarpic or fertile fig branches were planted along with staples like wild barley in the early Neolithic villages of Gilgal and Netiv Hagdud. In contrast to the repeated sowing of wild barley, we argue that planting branches of selected fig trees constitutes a form of domestication. The simplicity of fig tree propagation likely contributed to its domestication before cereal crops.

Lev-Yadun *et al.* (1) question our view that figs from Gilgal I dated to 11,400 years ago were domesticated (2) and suggest that they also could be a parthenocarpic crop gathered from wild female fig trees. Indeed, single drupelets from contemporaneous nearby Netiv Hagdud seem to be fertile and may represent the summer crop of a common wild variety. However, no such fertile drupelets were found at Gilgal. Hence, because the Gilgal figs were all parthenocarpic, they were most probably obtained from intentionally planted, preferred parthenocarpic wild figs. Because early farmers had already achieved the sowing of wild cereals, they could have selected and planted fig branches for obtaining its sweet fruit (3). Therefore, we consider that in both sites there was continued human planting of branch cuttings of desired wild plants, thus shifting from

sexual reproduction (in the wild) to vegetative propagation (under cultivation) (4), which can be considered as a form of domestication (5).

Our contention that intentional propagation of figs was practiced in the early Neolithic period in the Levant is indirectly supported by additional archaeological observations. Because the inhabitants of the region apparently sowed wild cereals, it would be reasonable that they also could have planted fig cuttings. Planting cuttings to obtain many years of sweet fig would appear to be a highly profitable, low-effort task compared with the annual planting of cereals, which clearly took place in these sites. Fig shoots and leaves are also poisonous, inedible, and avoided by grazing animals; grain fields, on the other hand, must be protected against grazers such as gazelles and aurochs. Moreover, figs are easily picked and consumed fresh or dry without any preparation. Wild cereals, however, need special tools for processing, such as threshing devices and grinding stones. Finally, planting fig branches does not risk diminishing food reserves as does sowing cereals.

In contrast to daily hunting and gathering, raising figs and cereals requires waiting a con-

siderable time between planting and harvesting. Fig branches require 2 to 4 years to produce edible fruits, and cereals need several months to produce grains. This implies that the Neolithic communities were fully sedentary or at least semisedentary, with inhabitants living in a village for at least several months every year. Indeed, it has been shown that many of the Natufian [(14,500 to 11,500 calendar years before the present (cal. B.P.)) and Pre-pottery Neolithic A (11,500 to 10,500 cal. B.P.) sites in the Levant were sedentary (6, 7).

The two important markers of shifting from hunting and gathering to farming are increasing degrees of sedentism, as well as the practice of intentional cultivation, which would include fig domestication. Figs are sweet, ready to eat when ripe, and easily planted, and their desired qualities can be maintained by vegetative propagation. We maintain that these features encouraged early Neolithic humans to domesticate the fig even though it is not a major staple of the human diet and that only later did primitive man take on the domestication of cereals (3).

## References and Notes

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