

EXTENDED ABSTRACT

Vegetative propagation during domestication – rooting ability of wild grapevines

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Keywords: rhizogenesis, *Vitis vinifera sylvestris*, *Vitis vinifera sativa*, asexual reproduction, adventitious roots, cuttings

ABSTRACT

The origins of plant propagation trace back to the moment of early humans' transition from a nomadic existence to settled agricultural societies, cultivating their food. Vegetative propagation significantly shortens the time for trees to start their sexual cycle, necessary to produce fruits, avoiding the long-lasting juvenility phase. Rhizogenesis refers to the process of root formation in plants, both under natural conditions and in agricultural practices. Vegetative propagation through cuttings is one of the earliest known agricultural practices, with historical literature indicating its widespread use for grapevines. Nevertheless, little is known concerning the role of vegetative propagation in grapevine domestication.

In this experiment, a total of 1061 cuttings were studied over 200 days in two different experimental fields in Georgia, the birthplace of viticulture. In detail, 485 *Vitis vinifera sylvestris* (belonging to 5 different genotypes) and 576 *Vitis vinifera sativa* (belonging to 4 different genotypes) cuttings were considered. Both wild and cultivated accessions came from the same

ampelographic collection. Results indicate a good ability of wild grapevine to bud break and shoot growth in the beginning of vegetative propagation, however, the survival of these plants decreases with a stronger intensity compared to *sativa* cultivars, indicating a worse rhizogenesis ability. Thus, the greater rooting ability of *sativa* cuttings suggests that this is a trait selected (more or less consciously) during the domestication process.

These data concretely support the hypothesis that grapevine propagation during grapevine domestication was mainly done through asexual reproduction. Little is known about the techniques of grapevine cultivation in prehistoric times because, unlike food processing techniques, it is not possible to discover specific archaeological finds, such as wine-making amphorae, related to plant cultivation techniques. However, the comparison between *Vitis vinifera sylvestris* and *Vitis vinifera sativa* characteristics allows us to figure out some viticultural techniques during the domestication era.