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Clones

In viticulture, a "clone" refers to a vine variety that is selected for specific qualities, which result from natural mutations. Cuttings are made from an original "mother vine" that exhibits key characteristics, such as resistance to certain diseases or desired cluster size, taste, smell, etc.

A clone is defined (Hartmann, et al., 1990)[1] as a genetically uniform group of individuals derived originally from a single individual by asexual propagation (cuttings, grafting, etc.). All grape varieties are propagated by asexual means to preserve the unique characteristics of the variety. But slight genetic variations commonly occur among the many billions of cells that make up a grapevine. If a new vine is propagated from a cane that grew out of such variant tissue, it may exhibit somewhat different characteristics than the original vine.

To be considered a distinct clone, the plant must possess a characteristic making it different from its parent plant, even if the difference is slight. See examples in the following table.

Comparison of Three Cabernet sauvignon clones [2]

Clone	Tons/acre	Berry Weight (gms)	Cluster Weight (gms)	Berry Diameter (mm)
4	3.9	0.93	153.18	11.33
6	2.7	0.76	101.22	10.32
8/(7)	4.6	1.07	220.86	11.80

Larger or smaller fruit, size/yield, disease resistance, fruit maturation rate, fruit color or aroma are all good examples of qualities that growers or winemakers may wish to isolate and develop further. (Keep in mind that differences between clones of the same variety are much smaller than differences between grape varieties, but sometimes the difference can be important.) If the difference is desirable, for example, the new vine ripens its fruit a week earlier; the vine could be further propagated to perpetuate the new characteristics. Thus, a new clone is born; it is assigned a number or given a name to distinguish it from other clones.

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[1] Hartmann, H.T., D.E. Kester, and F.T. Davies, Jr. 1990. Plant Propagation Principles and Practices. 5 Edition. Prentice Hall. Englewood Cliffs, New Jersey.

[2] Aiken, J; Bell, A; Hansen, G; Selfridge, T. Comparison of Fourteen Selections of Cabernet Sauvignon. International Symposium on Clonal Selections, 1995.

In practice this means that there is more that one Cabernet Sauvignon. One reference book lists 19 distinct clones of Cabernet Sauvignon (ENTAV-INRA, 1995) and describes their individual characteristics. A recent internet search yielded 18 commercially available selections –1A, 2, 4, 5, 6, 7, 8, 10, 11, 12, 14, 21, 23, 25, 29, 190, 191, and 337). In addition to the book by ENTAV-INRA, Caldwell (1998)[3] has produced a guide to wine grape clones.

It should be noted that the Foundation Plant Material Services (FPMS) in California assigns unique numbers to different selections of the same clone that have undergone various virus elimination treatments. For example, Clones 7 and 8 are the same selection – differing only in the length of time heat treatment was used to eliminate known virus diseases.

[3] Caldwell, J. 1998. A Concise Guide to Wine Grape Clones for Professionals. Second Edition. John Caldwell Viticultural Services. Napa, California