Ampelographic, molecular and analytical characterization of Varieties derived from ‘Catawba’ and ‘Concord’

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Abstract

North American Vitis labrusca vines carry properties such as disease resistances, morphological cluster and berry traits or flavors which make the species interesting for grapevine breeding. Using it as a source for resistance breeding, undesired metabolic properties like off-flavors will also be inherited. On the other side, organoleptic analysis revealed also interesting flavor expressions. This study aimed at characterizing genetically and morphologically 21 V. labrusca hybrid accessions available in the germplasm collection at Geilweilerhof as well as defining their relations. Genetic fingerprinting was conducted by SSR marker analysis. For phenotypic characterization, mainly leaf and bunch morphology were considered. Furthermore total anthocyanin and phenol content of the berry skins were analyzed. The juices were examined concerning quality determining parameters. Amongst others, data of the sugars, acids and aroma compounds were obtained. Additionally, sensory evaluations were performed by an experienced test panel. Data for 18 of the accessions from Geilweilerhof are also available in the USDA database at Geneva, United States. Both sets of data were compared in terms of genetic fingerprint and morphology. This comparison elucidated some inconsistencies suggesting misnaming of some accessions in the germplasm collection of the Institute for Grapevine Breeding Geilweilerhof. But also formerly supposed ancestries were confirmed to be incorrect as the pedigree ‘Concord’ x ‘Catawba’ for the variety ‘Caco’. These findings enrich our knowledge about genetic resources of V. labrusca and put it closer to be used in grapevine resistance breeding.

Key words: V. labrusca, ampelography, Simple Sequence Repeats, wine analytics, organoleptics

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