

## Grape breeding and genetic studies in Brazil

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The development of new grape cultivars in Brazil has been carried out by the Grape Breeding Program and the Grapevine Germplasm Bank (GGB), established by Embrapa in 1977. The main results of this effort include the phenotypic characterization of 1,000 accessions maintained in the collection, the development of a group of 400 advanced selections and the release of 14 new grape cultivars in the last two decades ([www.cnpuv.embrapa.br](http://www.cnpuv.embrapa.br)). The majority of the breeding activities are based on trait analysis in the field, including phenological, agronomical and disease resistance evaluations. The quality and nutraceutical potential of grape accessions are also being assessed, including traits such as sugar content, pH, total acidity, antioxidant capacity, polyphenol content and anthocyanin concentration. Embryo rescue is used on routine to obtain novel seedless cultivars. Biotechnological tools such as molecular markers have been used to genotype GGB accessions using multiplex panels of SSR markers. Hundreds of GGB accessions have been genotyped, allowing estimates of the grape genetic diversity stored in the bank, assessment of the genetic structure of the collection and tests of genetic identity between accessions. Genomic regions associated with the control of traits of interest, such as mildew resistance and seedlessness, are currently being mapped in a segregating population. Population diversity of important grape pathogens, such as *Plasmopara viticola*, has also been evaluated by DNA analysis of isolates collected in different regions of the country. It is expected that the incorporation of biotechnological tools in routine tasks of germplasm conservation and breeding in the coming years will contribute to improve the efficiency of activities associated to the development of new grape cultivars in Brazil.

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