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RESUMEN:
The classification of species as iso- or anisohydric has been widely used to assess their behavior under drought conditions. This behavior depends on the water use strategy adopted in terms of their position along a continuum, where isohydryc and anisohydryc represent the two extremes. This study was conducted in an experimental vineyard during the summer months of 2021 and 2022. Pre-dawn (Ψpd) and stem (Ψst) water potentials, stomatal conductance (gs), and leaf-to-air vapor pressure deficit (VPDL) measurements were performed on 24 grapevine varieties according to successive soil hydration–drying cycles. The following three metrics were used to assess their behavior during drought: slope σ-Ψpd, hydroscape, and conductance surface (CS). The CS is a new metric that we developed and used in this study for the first time. The results revealed that the categorization of some varieties varied depending on the metric used. Considering the set of parameters of all metrics, the varieties were classified into three groups. Two of the groups included varieties whose behavior seemed to conform to the iso- and anisohydric patterns, respectively, while a third group consisted of varieties that exhibited a mixed iso–anisohydric behavior. This last group was the most interesting due to its high ability to optimize the water use. Our findings suggest that the iso/anisohydry concept alone is, in most cases, insufficient for explaining grapevine water use behavior. Furthermore, this is the first study reporting knowledge on the water use behavior of 17 varieties, for which there are no previous studies related to this subject matter.

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