

yards had significantly different yield components such as flower number and inflorescence number resulting in different inflorescence sizes and yields.

Significance of the Study: Differentiation of morphological structures within latent compound buds has not been documented before in this Sauvignon Blanc. This study provided new insights into the fundamental developmental stages of Sauvignon Blanc, its response to environmental variables and the influence of these on yield.

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CRYSTALS OF CALCIUM OXALATE IN THE REPRODUCTIVE TISSUE OF VITIS VINIFERA L. CVS SHIRAZ AND SAUVIGNON BLANC

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Background and Aims: The existence of crystal phytolith inclusions in plants due to bio-mineralisation (biologically controlled mineral deposition) of elements has been documented for many decades. Phytolith crystals or 'plant rocks' as they are often described, produced by many plant taxa, have a characteristic morphology and this gives them taxonomic significance. During the examination of latent buds of Shiraz and Sauvignon Blanc for the stage of differentiation of their inflorescence primordia, scanning electron microscopy (SEM) revealed crystal idioblasts containing raphide bundles of calcium oxalate (CaOx) inside exposed primordial bract tissue. Raphides have been reported in tissues other than reproductive tissue for some *Vitis* species by various authors. We report here on the existence and morphometry of raphide bundles in the reproductive tissue of *Vitis vinifera* L. cvs Shiraz and Sauvignon Blanc not previously reported in the literature.

Methods and Results: SEM revealed the presence of raphide crystals of CaOx in latent bud samples of Shiraz (E-L stage 1) from south-eastern Australia and Sauvignon Blanc (E-L stage 18) from New Zealand. Raphides in primordial bracts were observed in bundles and are bi-dentate at one end, tapered at the other and are twinned along their length. Morphometric analysis determined raphides to be $35.92 \pm 2.47 \mu\text{m}$ in length and no more than $1 \mu\text{m}$ wide. Raphide length was determined by the length of the crystal idoblast housing the bundles. A higher proportion of raphide bundles were observed at apical node positions of both Shiraz and Sauvignon Blanc.

Conclusions: CaOx crystals make up a substantial fraction of the total calcium in plants, yet the physiological and functional basis of CaOx crystals in plant tissue is poorly understood. Further research is required to elucidate the function of raphides in grapevine

reproductive tissue and the possible effect of environmental conditions on their formation.

Significance of the Study: The observation of raphides of CaOx has not been previously reported in primordial reproductive tissue in *Vitis vinifera*. This observation provides new insights into the form and function of these crystal structures in the grapevine.

Fruit composition

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ESTIMATION OF PHENOLIC COMPOUNDS IN TROPICAL RED WINES FROM NORTHEAST BRAZIL

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Background and Aims: Since the 1980s, viticulture has been developed in an area between 8° and 9°S latitude of northeast Brazil. This area presents an intra-annual climate variability, with an annual average temperature of 26.4°C, located at 350 m above sea level. The rainy season occurs from December to March, with about 567 mm of rainfall. The heliothermal availability is about 3000 hours of luminosity/year and allows a continuous crop vegetative development. The total area cultivated for winemaking is about 700 ha and cultivars used for tropical red wines are Syrah and Cabernet Sauvignon. The objective of this study was to estimate total anthocyanins and tannins according to spectrophotometric methods in four red wines, made from cultivars recently introduced in the region.

Methods and Results: Tempranillo, Alfrocheiro, Petit Verdot and Barbera were introduced in December 2004 and grafted onto IAC-572 (*Vitis caribaea* × 101-14 Mgt), cultivated on a pergola trellis system and drip irrigated. The grapes were harvested according to total sugars and acidity estimation. Wines were made by traditional methods in 500 L stainless steel tanks. The results showed that the responses of each cultivar to the edaphoclimatic conditions were different. Total tannins varied between 2.7 (Barbera) and 4.8 g/L (Tempranillo), while total anthocyanins varied between 262.1 (Tempranillo) and 868.5 mg/L (Petit Verdot).

Conclusions: These results show that the cultivars have different enological potential and the winemaking process need to be specifically adapted according to each cultivar.