

CLIMATIC POTENTIAL TO PRODUCE GRAPES FOR WINE-MAKING IN THE TROPICAL NORTH REGION OF MINAS GERAIS STATE, BRAZIL

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The tropical north region of Minas Gerais State is one of the least developed of Brazil and viticulture could be an alternative to develop its agriculture zone. The objective of this work was to evaluate the wine grape production climatic potential of that region. The evaluations were carried out employing the Multicriteria Climatic Classification System (Geoviticulture MCC System), that utilizes three reference climatic indexes (Dryness Index – DI, Heliothermal Index - HI and Cool Night Index - CNI). This study integrates the concept of viticultural climate with intra-annual variability, that corresponds to the regions that, under natural climate conditions, change viticultural climate class as a result of the time of the year at which grapes can be produced - a definition to be used for regions with a hot climate where it is possible to have more than one grape harvest per year. Three locations – Pirapora (17° 21'S, 44°56'W, 489m), Montes Claros (16°43'S, 43°52'W, 647m) and Diamantina (18°15'S, 43°36'W, 1297m) - and two potential production cycles along the year - October-March (summer period) and April-September (winter period) - were evaluated. The results showed that in the summer period Pirapora and Montes Claros presented monthly average maximum temperature values (Tmax) varying from 29,4 °C to 31,7 °C, average minimum temperatures (Tmin) between 17,7 °C and 20,4 °C, and precipitation (P) varying from 76,8 mm to 223,8 mm, representing a 'humid, very warm and with warm nights' class of viticultural climate, according to MCC System. This climatic condition is similar to the summer period condition of the Brazilian San Francisco Valley (9°23'S, 40°29'W, 371,7m) grape-growing region, although with a higher DI. For the winter period, those two regions presented Tmax between 27,1°C and 31,7°C, Tmin between 12,1°C and 18,2°C, and P between 1,8 mm to 51,4 mm representing a 'moderately dry, warm and with temperate nights' according MCC System. Otherwise, the Diamantina summer period presented Tmax values between 24,4°C and 25,3°C, Tmin varying from 15,6°C to 17,3°C and P values between 99,2mm and 261,2mm, representing a 'humid, temperate warm and with temperate nights' viticultural climate. In the winter period, Diamantina Tmax values varied from 20,9°C to 24,0°C, Tmin varied between 11,8°C and 15,9°C and P varied between 7,8mm and 58,1mm. These values represent a 'subhumid, temperate and with cool nights' viticultural climate. Based on those results it can be concluded that the north region of Minas Gerais State has a great climatic potential to become a grape-growing for wine-making region, specially on the winter period, when the region viticultural climate presents conditions where vine will potentially face a certain level of dryness, an heliothermal global regime between temperate warm and warm, and with cool to temperate nights. The viticultural climate with intra-annual variability of the region, that offers a potential to produce grapes in the tropical winter period, represents a particular condition in relation to the world classic geoviticulture. The climatic groups of the regions with possibility to produce in the non classic periods of the year must be considered in the context of the tropical viticulture climate, presenting a distinct seasonal thermic evolution dynamic.