



## Influence of Nitrogen Ferti-Irrigation on Syrah Wine Composition from Northeast Brazil

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### Abstract

In Brazil, the tropical vitiviniculture is located in the Sub-Middle São Francisco River Valley, between the 8-9°S latitudes, in a tropical semi-arid climate region. The annual average temperature is 26 °C, with high levels of solar radiation and water availability for irrigation. Thus, nitrogen is generally applied by irrigation. However, nitrogen fertirrigation strategies still need to be studied, as well as, their influences in the tropical wine quality. In this way, the purpose of this study was to evaluate the physical-chemical characteristics of Syrah wines from vines irrigated with different strategies of nitrogen fertirrigation.

Grapes were harvested from Embrapa Tropical Semi-arid, Experimental Station in Petrolina (09° 09' South, 40° 22' West, 365.5 m), Pernambuco State, Brazil. The vines were planted in 2008 and are conducted in espalier, spaced of 3.0 x 1.0 m, grafted on 1103 Paulsen rootstock and irrigated by drippers. Three nitrogen doses were tested (T1:10; T2:20 and T3:80 kg N.ha-1) and the same nitrogen doses with addition of 30 dm<sup>3</sup>.planta-1 of organic matter (T4: 10 kg N.ha-1 + OM, T5: 20 kg N.ha-1 + OM and T6: 80 kg N.ha-1 + OM). These six treatments were conducted in five replications by treatment. The wines were elaborated by the traditional method, in glass tanks of 20L (microvinification). Analyses were performed in triplicate and the following parameters were determined: Density (20°C), alcohol content (% v/v), pH, free and total SO<sub>2</sub> (mg.L-1), volatile acidity (g.L-1), total titratable acidity (g.L-1), dry extract, total anthocyanins content, polyphenols index and color intensity. The data were performed by ANOVA and Tukey test (P\_0.05). The majority of the parameters evaluated showed significant difference among the fertirrigation treatments, with exception for the parameters pH and density. The alcohol and dry extract contents were higher for the wines elaborated with grapes from T2, T3 and T5. The total acidity was higher for T4. Thus, with this study it was possible to conclude that the grapevine fertirrigation influences directly the composition of Syrah tropical wines. However, more research needs to be conducted because vines are younger and the age can influence the results of the fertirrigation treatments.

**Keywords:** *Vitis vinifera* L.; tropical semi-arid climate; wine; irrigation strategy; chemical compounds.