



## **Influence of organic fertilization and fertigation on quality of ‘Syrah’ tropical wine produced in the São Francisco Valley, Brazil**

Grace da Silva Nunes<sup>1</sup>, Filipe Araújo de Carvalho<sup>1</sup>, Danielle Pereira do Nascimento<sup>1</sup>, Yngrid Mendes<sup>1</sup>, Erika Samantha Santos de Carvalho<sup>2</sup>, Rita de Cássia Mirela Resende Nassur<sup>3</sup>; Davi José Silva<sup>1</sup>; Giuliano Elias Pereira<sup>3</sup>; Aline Telles Biasoto Marques<sup>1\*</sup>.

<sup>1</sup>*Brazilian Agricultural Research Corporation, Embrapa Semi-arid, Petrolina, PE, Brazil*

<sup>2</sup>*Bahia Federal University, Salvador, BA, Brazil*

<sup>3</sup>*Bahia State University, Juazeiro, BA, Brazil*

<sup>4</sup>*Brazilian Agricultural Research Corporation, Embrapa Grape and Wine/ Semi-arid, Petrolina, PE, Brazil*

*Email: aline.biasoto@embrapa.br*

The vitiviniculture in the São Francisco Valley is a recent activity, but with great social and economic importance to the region. The region is located in a tropical semi-arid zone and it is important the study of management practices for its unique soil and climate conditions. Therefore, this study aimed to evaluate the influence of the addition of organic matter and potassium fertigation on physico-chemical quality of Syrah (*Vitis vinifera* L.) tropical wines produced in the São Francisco Valley. The experiment was conducted in the Embrapa Semi-arid experimental field in Petrolina, Pernambuco, Brazil (latitude 09°8' 8.9"S, longitude 40°18' 33.6" W, 373 m). The vine (cv. Syrah) was conducted in an espalier system, grafted on Paulsen 1103 rootstock with drip irrigation and emitters spaced at 0.5m of the planting line. The treatments consisted of two doses of organic fertilizer (0 and 15 m<sup>3</sup> ha<sup>-1</sup>) and five doses of potassium - K<sub>2</sub>O (0, 20, 40, 80 and 160 kg ha<sup>-1</sup>), arranged in a randomized block design with five repetitions in a split plot. The organic fertilizer constituted the plots and the doses of K<sub>2</sub>O the subplots. The potassium sources were potassium nitrate, potassium chloride and potassium sulfate. The harvest was held in July 2015 (121 days after the pruning of production) and the experimental wines were produced at the Enology Laboratory of Embrapa Semi-arid using the traditional method for young red wines. One month after bottling the following physico-chemical analyses were carried out: total and volatile acidity, pH, total dry extract, density, alcoholic content, free and total sulfur dioxide, total polyphenol index, color intensity and total anthocyanins. According to the results, the wines from grapes Syrah grown with the addition of organic matter and without potassium fertigation presented the lowest pH value (3.88). The wine from the vines with organic matter and lower dose of potassium (20 kg ha<sup>-1</sup>) presented higher polyphenol index (74.7), total acidity (9.30 g L<sup>-1</sup>) and dry extract (42.95 g L<sup>-1</sup>). The higher anthocyanin content (406.62 mg L<sup>-1</sup>) was observed for the treatment with higher dose of potassium through fertigation (160 kg ha<sup>-1</sup>) and with organic matter. The treatment with higher addition of potassium and without organic matter stood out for the alcohol content (13.7%). The organic fertilizer and potassium fertigation can influence wines from ‘Syrah’, however, for a recommendation of fertilization it is important to evaluate different harvests and the wine stability.

**Acknowledgment:** The authors would like to thank Embrapa for the financial support and Fabesb and CNPq for the scholarships