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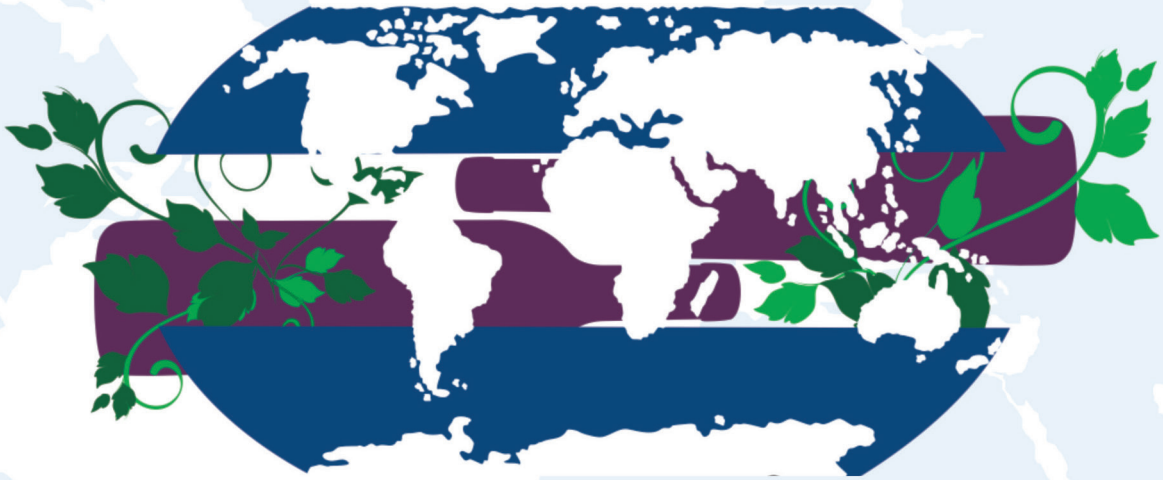
5th International Symposium



on Tropical Wines ®

19th-21st October 2016
Petrolina-PE, Brazil

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Documents 106

Book of Abstracts

5th International Symposium on Tropical Wines ®

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Technical Editors

Bento Gonçalves and Petrolina, Brazil
2017

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Homage to Maryvonne Perrot

1943-2016

Emeritus Professor at the University of Burgundy, France, Maryvonne Perrot contributed with her expertise to the Brazilian vitivinicultural in several missions carried out through the cooperation maintained by Brazil with the UNESCO Chair "Culture and Traditions of Wine".

PRESENTATION

The *5th International Symposium on Tropical Wines* - ISTW 2016 was held in the Senac's auditorium in Petrolina city, from October 19th to 21st 2016, in the main tropical wine producing region in Brazil located in the São Francisco Valley. In this region, the tropical semi-arid climate allows to obtain grapes and wines all over the year.

The period, just before the 39th OIV Congress in Brazil, was an opportunity to bring people to this region to known the development of this particular tropical wine producing region.

Embrapa would like to thank to our traditional international partners of ISTW 2016 – UNESCO Chair "Culture and Traditions of Wine", University of Burgundy and GiESCO – Group of International Experts of Vitivinicultural Systems for Cooperation. We would like also thanks to our Brazilian supporters – Universidade do Estado da Bahia – UNEB, Brazilian Ministry of Agriculture, Livestock, and Food Supply - MAPA, Senac, Facepe, IF Sertão Pernambucano, Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq, Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Capes, Valexport, Instituto do Vinho do Vale do Vale do São Francisco - VinhoVasf, ADDiper as well the Organization Committee and the Scientific Committee of the symposium. The effort of all our partners and organizers make it possible to concretize the ISTW 2016.

The ISTW 2016 had 130 participants from eight countries: Australia, Brazil, France, Indonesia, Portugal, Thailand, United States of America and Venezuela.

Many tropical vitivinicultural topics were presented in the ISTW 2016: Tropical and arid climates in wine producing regions; Geology and soil effects on vine, grapes and wines; Vine management in vegetative cycles in the course of the year; Irrigation; Pests and diseases; Geographical indications for tropical wines; Vitivinicultural zoning; Adaptation of varieties and rootstocks; Viticultural landscapes, environmental sustainability and biodiversity; Tropical winemaking technologies; Chemical composition of tropical wines; Sensory characteristics of tropical wines; Markets and strategies to promote tropical wines worldwide; and, Agroindustrial waste treatment.

These proceedings published the summary of all presentations of the ISTW 2016, including 19 keynote lectures, 9 oral presentation and 26 poster presentation.

Giuliano Elias Pereira
President

Jorge Tonietto
Vice-President

5th International Symposium on Tropical Wines

PREFACE

Global wine production is characterized by the history of traditional European wine industry in countries known as "Old World". Recently, the countries of the "New World" expanded the geography of wine production of quality wines, including, among others, Argentina, Australia, Brazil, Chile, New Zealand, South Africa and United States of America. The common characteristic between viticulture in the Old and New World is the single growth cycle of grapevines and the single grape harvest per year.

The *International Symposium on Tropical Wines* (ISTW) focuses on wines obtained from grapes grown in vineyards located in regions which temperatures during the year allow more than one vegetative cycle and one or more harvests per year. This viticulture is being developed in non-traditional regions, located in new low latitudes of the world, and is very particular and diverse in comparison with traditional production temperate regions. Several features of this new viticulture are current challenges compared to traditional viticulture.

This new geography of the tropical wine production is established in many countries: in South America – Brazil, Ecuador, Peru, and Venezuela; in Asia – Thailand, India, Indonesia, Myanmar, Bali, and Vietnam; in Africa – Ethiopia, Gabon, Kenya, Namibia, and Tanzania; and in Oceania – French Polynesia.

In light of this scenario and aiming to give the right importance of this particular agriculture, Brazilian Agricultural Research Corporation - Embrapa has been developed the *International Symposium on Tropical Wines*, with the follow objectives:

a) To promote RD&I for tropical wine production at an international level;

b) To integrate private and public institutions to develop tropical wine production and market in the world;

c) To foster interaction between tropical wine producers in different countries and international cooperation for the development of tropical wine production.

Since the first ISTW in Recife and Petrolina, Brazil – 2004, we had the 2nd ISTW in 2010 in Petrolina, Brazil, the 3rd ISTW in 2014 in Chiang Mai, Thailand, and the 4th ISTW in Brisbane, Australia.

All this efforts has been possible with the partnership of many official and private institutions of some countries, including international organizations.

Embrapa hopes to continue to develop this collaboration with partners around the world.

Pedro Carlos Gama da Silva
Head of Embrapa Semiarid Agriculture

Mauro Celso Zanus
Head of Embrapa Grape and Wine

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REALIZATION

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INSTITUTO FEDERAL DE EDUCAÇÃO, CIÊNCIA E TECNOLOGIA SERTÃO PERNAMBUCANO
CAPES
CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

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Coana

EBFT/Grupo ASA

Grand'Valle

Miolo Wine Group

Timbaúba Agrícola/Sucos OQ

Sucos Paluma

Adega Bianchetti Tedesco

Vinícola do Vale do São Francisco/Botticelli

Vitivinícola Santa Maria/Global Wines

PROGRAM

Wednesday, October 19th, 2016

07:00 - 08:30 - **Registration**

08:30 - 09:00 - **Symposium welcome**

KEYNOTE LECTURES

World heritage

09:00 - 09:30 - **Protection and promotion of the tropical wine territories' cultural heritage: reflection on the « Climats de Bourgogne »´ s listing in the UNESCO world heritage**
Jocelyne Pérard (Burgundy University/France)

Climate Change

09:30 - 10:00 - **Climate change, agriculture, global wine and table grape production**
Gregory V. Jones (Southern Oregon University/USA)

10:00 - 10:30 - **Coffee break and poster session**

Soil, vine, fertilization management and industry

10:30 - 11:00 - **Canopy management and plant quality as determinant factors affecting vine productivity – São Francisco Valley, Brazil**
Rogério de Castro (Lisbon University/Global Wines/Portugal)

ORAL PRESENTATIONS

11:00 - 11:15 - **Can nitrogen and potassium fertilization change the tartaric acid content in 'Syrah' grapes during maturation?**
Rita de Cássia Mirela Resende Nassur (Uneb/Brazil)

11:15 - 11:30 - **Influence of soil attributes on 'Petit Verdot' productivity in the São Francisco Valley, Brazil**
Marcos Martins Masutti (IF Sertão Pernambucano/Brazil)

11:30 - 11:45 - **Preliminary analysis of the competitiveness determinants in wine industry in the São Francisco Valley, Brazil**
Gunther J. Costa (Univasf/Brazil)

11:45 - 12:00 - **Enological potential of 'Chardonnay'** (Vitis vinifera L.) **in tropical climate in the Northeastern of Brazil**
Antônio Nascimento (Uneb/Embrapa/Brazil)

12:00 - 12:20 - **Discussions**

12:20 - 14:00 - **Lunch and poster session**

KEYNOTE LECTURES

Pests and microbiology in tropical vineyards

14:00 - 14:30 - **Vine pest in northeast Brazil: a challenge for the production?**
José Eudes de Morais Oliveira (Embrapa/Brazil)

14:30 - 15:00 - **Incidence of five viruses in grapevines for wine cultivated in the Brazilian Semi-arid region**
Natoniel Franklin de Melo (Embrapa/Brazil)

ORAL PRESENTATIONS

15:00 - 15:15 - **Effect of bioprotector with diazotrophic bacteria** Beijerinckia indica **and** Cunninghamella elegans **on nutritional status of grape** (Vitis labrusca)
Newton Pereira Stamford (UFRPE/Brazil)

15:15 - 15:35 - **Discussions**

Technical visit*

15:35 - 15:45 - **Logistics**

15:45 - 21:30 - **Visit to vineyards and winery**
Miolo Wine Group

21:30 - 22:00 - **Return to Petrolina**

Thursday, October 20th, 2016

08:00 - 08:15 - **Day overview and logistics**

KEYNOTE LECTURES

Tropical wine production worldwide

08:15 - 08:45 - **Challenges to evaluate climate opportunities for tropical viticulture: the case study of the Lao Cai region in Vietnam**
Benjamin Bois (Burgundy University/France)

08:45 - 09:15 - **The vineyards of India**
Jocelyne Pérard (Burgundy University/France)

09:15 - 09:45 - **Éco-design of the cellars in the context of the tropical vineyards**
Joel Rochard (IFV/France)

09:45 - 10:15 - **Coffee break and poster session**

Tropical wine production worldwide/enology

10:15 - 10:45 - **Tropical viticulture and winemaking in Thailand, India and Indonesia and a study of the effect of paclobutrazol on vegetative growth and yield in Thai vineyard**
Nikki Visootha Lohitnavy (GranMonte Estate/Thailand)

10:45 - 11:15 - **Characteristics of wine production in Venezuela**
Guillermo Vargas (Bodegas Pomar/Venezuela)

11:15 - 11:45 - **Phenolic profile and antioxidant activity of commercial grape juices from the São Francisco Valley, Northeastern of Brazil**
Marcos dos Santos Lima (IF Sertão Pernambucano/Brazil)

ORAL PRESENTATIONS

11:45 - 12:00 - **Thermal stability of Brazilian tropical red wines**
Yasodhara Nazareth Chaves Capella (UFRPE/Brazil)

12:00 - 12:20 - **Discussions**

12:20 - 13:30 - **Lunch and poster session**

KEYNOTE LECTURES

Water management/tropical enology

13:30 - 14:00 - **Influence of irrigation strategies on vine, grape and wine characteristics**
Luis H. Bassoi (Embrapa/Brazil)

14:00 - 14:30 - **Evaluation of polyphenolic compounds in 'Syrah' wine produced in the São Francisco Valley: impact of ripening stage and maceration time**
Aline C.T. Biasoto (Embrapa/Brazil)

14:30 - 15:00 - **Effect of different winemaking process on enological characteristics of tropical wines from Brazil**
Giuliano Elias Pereira (Embrapa/Brazil)

15:00 - 15:20 - **Discussions**

Technical visit*

15:20 - 15:30 - **Logistics**

15:30 - 21:00 - **Visit to vineyards and winery**
Global Wines/ViniBrasil

21:00 - 22:00 - **Return to Petrolina**

Friday, October 21st, 2016

08:00 - 08:15 - **Day overview and logistics**

KEYNOTE LECTURES

Terroir zoning

08:15 - 08:45 - **Soil zoning for wine certification of ride region of the sub-medium São Francisco river, Brazil**
Tony Jarbas F. Cunha (Embrapa/Brazil)

08:45 - 09:15 - **Geotechnology as support tool for structuring the geographical indication for wines in the São Francisco Valley**
Iêdo Bezerra Sá (Embrapa/Brazil)

09:15 - 09:45 - **Spectral separability of grape varieties in four regions of Rio Grande do Sul State, Brazil**
Jorge Ricardo Ducati (UFRGS/Brazil)

09:45 - 10:15 - **Coffee break and poster session**

Geographic indications for tropical wines/sensorial evaluation/residues

10:15 - 10:45 - **Landscapes of tropical vineyards in Brazil**
Ivanira Falcade (UCS/Brazil)

10:45 - 11:15 - **Structuring a geographical indication for tropical wines in the São Francisco Valley, Brazil**
Jorge Tonietto (Embrapa/Brazil)

ORAL PRESENTATIONS

11:15 - 11:30 - **Sensory evaluation of grape juices elaborated by different extraction methods in the São Francisco Valley, Brazil**
Gildeilza Gomes Silva (IF Sertão Pernambucano/Brazil)

11:30 - 11:45 - **Characteristics of 'Sauvignon Blanc' residue and residue flour from two tropical locations in Brazil**
Sabrina Moura Guimarães (Uneb/ Embrapa/Brazil)

11:45 - 12:00 - **Effect of pure and mixed cultures of wine yeast on the content of the total phenolics in tropical white wines variety Malvasía Istria**
María Berradre (Zulia University/Venezuela)

12:00 - 12:20 - **Discussions**

12:20 - 14:00 - **Lunch and poster session**

14:00 - 14:30 - **Discussions, meeting closure and the next ISTW announcement**

Technical visit*

14:30 - 17:00 - **Visit to industry, production of table grape and mango**
Special Fruit

17:00 - 17:30 - **Return to Petrolina**

***Limited spaces for participants.**

TECHNICAL VISITS

October
19th

Ouro Verde/Miolo Wine Group

Miolo is a Brazilian Winery belonging to the Miolo Wine Group, located between 8° and 9° latitude of South Hemisphere in Casa Nova, Bahia, Brazil. The winery has about 200 ha of vineyards that produce about 2 million liters a year, in two harvests. The harvest date and winemaking process is determined according to market demand. The wines produced are commercialized in national and international markets (Europe and Asia).

The winery production is about 90% sparkling wines, from which 60% are sweet muscats and 40% are white and rosé, brut or demi-secs sparkling wines.
The remaining 10% of the production are red wines, from which 95% are young and 5% are guard red wines, elaborated with grapes harvested between June and August that represents the period of lower temperatures and more interesting thermic amplitude.

Vineyards are planted in pergola (40% for white grapes) and espalier (60% for red grapes). All vineyards are grafted onto 'IAC-766' (106-8 x Vitis caribeae), a Brazilian high vigour rootstock, used for table grapes. Soils are normally podzols, slightly variations from sandy to little clay soils, and other with many rocks. All vineyards are irrigated by drip.

The main varieties cultivated are Italia Muscat, used for Muscat sparkling wines, Chenin Blanc, Sauvignon Blanc and Verdejo, used for white sparkling wines, brut and demi-sec, Grenache, used for rosé sparkling wine, Syrah, and few vineyards with Tempranilllo and Mourvedre, used for red wines (young), and Syrah used for red guard wines.

Some examples of commercial wines are:

- **Brut Terranova: Chenin Blanc, Sauvignon Blanc, Verdejo (33% of each one);**
- **Brut Terranova Rosé: 100% Grenache;**
- **Moscatel Terranova: 100% Italia Muscat;**
- **Syrah Testardi: 100% Syrah;**
- **Late Harvest Terranova: 100% Italia Muscat;**
- **Brandy Miolo Imperial: Muscat grapes.**

October
20th | ViniBrasil/Global Wines

ViniBrasil is a Portuguese Winery belonging to the Global Wines, located between 8 and 9° latitude of South Hemisphere, in Lagoa Grande, Pernambuco, Brazil. The winery has about 200 ha of vineyards producing about 2 million liters per year, in two harvests. The harvest date and winemaking process is determined according to market demand. The wines produced are commercialized in national and international markets (Europe and Asia).

The winery production is about 60% sparkling wines, from which 40% are sweet muscats and 60% are white and rosé, brut or demi-secs sparkling wines. About 37% of production are red wines, from which 80% are young and 20% are guard red wines. The remaining 3% of the production are white wines.

Vineyards are planted in pergola (60% for white and few plots with red grapes) and espalier (40% for red grapes). All vineyards are grafted onto 'IAC 313' (Golia x Vitis caribeae) and 'IAC 572' ['Jales' (Vitis caribaea x 101-14 Mgt)], both Brazilian high vigour rootstocks, used also for table grapes. Soils are normally podzols, slightly variations from sandy to little clay soils, and other with rocks. All vineyards are irrigated by drip.

The main varieties cultivated are Italia and Canelli Muscats, used for Muscat sparkling wines, Syrah, used for white and rosé sparkling wines, Syrah, Aragonês, Touriga Nacional, Alicante Bouschet, Cabernet Sauvignon and Egiodola, used for red wines (young and guard wines), and Chenin Blanc and Viognier used for white wines.

ViniBrasil has a partnership with Lisbon University, since the begining to help developing research and technologies to determine the best agronomical conditions for the vineyards (rootstocks, cultivars, traning and trellis systems).

Some examples of commercial wines are:

- **Rio Sol Chenin Blanc/Viognier: 2016 vintage, 12% v/v, 60% CB and 40 % VI;**
- **Rio Sol Tempranillo: 2014, 13% v/v, 100% TE;**
- **Rio Sol Syrah: 2014, 13% v/v, 100% SY;**
- **Rio Sol Cabernet Sauvignon: 2014, 13% v/v, 100% CS;**
- **Rio Sol Reserva: a red blend of CS, SY and AB;**
- **Rio Sol Paralelo 8: a red blend of CS, SY, AB, TN and AR.**

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ABSTRACTS

Evaluation of polyphenolic compounds in 'Syrah' wine produced in the São Francisco Valley: impact of ripening stage and maceration time

Janaina A. Barbará[1], Aline Camarão Telles Biasoto[2], Érica S. Silva[1], Luiz Claudio Corrêa[2], Claudia A Zini[1]

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[2]*Empresa Brasileira de Pesquisa Agropecuária, Embrapa, Petrolina, PE, Brazil*
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The São Francisco Valley, located in the Northeast of Brazil, presents ideal environmental conditions to produce wines from grapes *Vitis vinifera*. Nonetheless, wine production in this region is quite recent given its peculiar environmental conditions classified as tropical semi-arid. For this reason, investigations regarding winery practices for this particular region are of utmost importance. Phenolics are of particular interest, since these compounds are responsible for important sensory properties of red wines, including color, astringency, bitterness, body and stability of wine. The harvest date and the maceration duration are critical parameters for producing red wines with a distinctive style. In this context, the aim of this study was to understand the relationship among phenolic compounds profile of the wines and i) the ripening stage of grapes and ii) the maceration duration. Experimental wines were prepared at Embrapa Semi-arid from grapes provided by local wineries. Grapes were harvested in June and July 2013, at three different stages of ripeness after pruning (DAP: days after pruning), namely: T1 (113 DAP 19.0º Brix), T2 (120 DAP – 21.0º Brix), and T3 (127 DAP 22.2º Brix). Three maceration times, 10, 20 and 30 days, were evaluated in this study. By means of high performance liquid chromatography (HPLC), simultaneously coupled to diode array (DAD) and fluorescence (FLD) detectors, 24 phenolic compounds were determined, including flavonols, anthocyanins, phenolic acids, flavanols and stilbene (Natividade et al. 2013). Principal Component Analysis (PCA) performed on the obtained results showed that the first two PC explaining 79.55% of the total variance. In the first PC (PC1-54.02%) ferrulic acid, p-cumaric acid, isoquercetin, quercetin, pelargonidin-3-O-glucoside, malvidin-3-O-glucoside and peonidin-3-O-glucoside had positive correlations and higher weightings. The second PC (PC2-25.53%) correlated positively withgallic acid, (+)-catechin, (-)-epicatechin, procyanidin B1 and procyanidin B2.Caffeic acid, (+)-catechin, procyanidin B1, isoquercetin and maldivin-3-O-glucoside were the main compounds determined. Moreover, the results showed that stage of ripeness T3 favored an increasing in the total phenolic concentration in Syrah wine of the São Francisco Valley. The sum of total phenolic varied from 156.15 (T1) to 295.61 (T3) $mg.L^{-1}$ with statistically significant difference among them. Although the duration of maceration did not affect the total phenolic content in wine produced from grapes at 113 DAP (T1) and 120 DAP (T2), when considering T3, the phenolic content were higher when longer maceration times were employed, presenting statistically significant difference among the three macerations time.

Acknowledgments: Facepe (APQ-0921-5-07/14) and Embrapa for financial support, Capes for the scholarship granted, and Ouro Verde Farm (Miolo Wine Group) for providing the grapes.

References:

NATIVIDADE et al. 2013. Simultaneous analysis of 25 phenolic compounds in grape juice for HPLC: Method validation and characterization of São Francisco Valley samples. Microchemical Journal, 110, 665-674.

Influence of irrigation strategies on vine, grape and wine characteristics

Luis H. Bassoi[1]

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The Lower Middle São Francisco Valley, Northeastern Brazil, is a region to crop grapes for wine production under tropical conditions. There is an increasing demand for high-quality wine by winemakers from that region. Since it is a semi-arid region, the water requirement of the vine is much higher than the usual low rainfall. Hence, irrigation is required throughout the growing season. As the water irrigation management may influence the physiological behavior and yield of wine vine, and plays an important role on grape and wine quality, evaluations of the influences of 3 irrigation strategies (full irrigation - FI, regulated deficit irrigation – RDI, and deficit irrigation - DI) on vine, grape and wine characteristics were performed over 6 growing seasons, from April 2010 to September 2014. The experiment was carried out at Embrapa Semi-arid, in Petrolina, State of Pernambuco, Brazil, in a vineyard of cv. Syrah grafted on Paulsen 1103, spaced 3.0 m between rows and 1.0 m within rows, trained on a bilateral Royat Cordon and spur-pruned. Drip irrigation system was used to apply water through 2 emitters per plant. Plants under RDI and DI strategies have presented moderate water stress and higher intrinsic efficient water use. Reduction of crop yield due to water application interruption since close cluster phase until harvesting, did not occur in all growing seasons, however, weight and volume of 100 berries were usually higher in the FI vines. Plant water deficit has favored a higher sugar concentration and lower acidity in the berries in most of the seasons. FI wine has presented higher total acidity and lower anthocyanin and color intensity. The phenolic compounds were higher and pH was lower in RDI wine, while ID strategy has promoted higher anthocyanin content and color intensity, but increased pH and decreased total acidity, alcoholic content, dry extract, phenolic compounds and antioxidant activity in wine. The deficit irrigation strategies allowed a water saving.

Acknowledgments: CNPq, FACEPE.

Challenges to evaluate climate opportunities for tropical viticulture: the case study of the Lao Cai region in Vietnam

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The progress in knowledge and techniques in viticulture, combined with climate change, make it possible to extend the geographical limits of grape and wine production. When developing wine grape production in a region where this activity is not established, the assessment of climate conditions is a crucial step. Grapevine development and grape ripening, as well as pests and diseases occurrences and cropping conditions rely strongly on climate conditions. Such conditions are assessed by means of models providing agroclimatic indices. As most of these models have been parametrized and validated in temperate conditions, their relevance for tropical viticulture is questioned, as constant heat and humidity might favor a faster grapevine development and, possibly, several reproductive cycles within the same year. Using as a case study the Lao Cai region (North Vietnam) where two experimental vineyards have been planted in 2004, we assess the use of several climate-based indicators to depict the potentialities of the region. In these altitude vineyards (900 m and 1400 m asl) the winter is cold enough to offer only one production cycle from March to July. The Multicriteria Climatic Classification System (MCCS, Tonietto and Carbonneau, 2004), adapted here to local climate conditions as proposed by Tonietto and Teixeira (2004), indicates wet and cool conditions with temperate nights. The MCCS, though successfully identifying the excess of humidity during the cycle ("wet climate"), requires supplementary monthly analysis to better depict the timing of the considerable precipitations from May to July that favors downy mildew development and forces an anticipated harvest of unripen grapes (at 11 to 18°Brix) to avoid excessive mildew and grey mold damages. The potential phenological timing of wine grapes cultivar is assessed by means of the Grapevine Flowering and Veraison model (GFV, Parker et al., 2011). When compared to observed data, GFV anticipates strongly (from 15 days to one month) flowering and veraison dates observed at both experimental vineyards. This case study underlines the needs for more plastic models/indices to depict accurately the potentialities of tropical viticulture. Possible relevant supplementary indices are discussed.

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Canopy management and plant quality as determinant factors affecting vine productivity - São Francisco Valley, Brazil

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The success of viticulture depends on multiple factors, integrating three major areas: *terroir* - climate and soil, quality of plants - variety x rootstock and human intervention - viticultural technology. The vine productivity and wine quality is the result of these factors, and especially their interactions. The energy potential of each site (radiant energy, temperature and hydric) conditioned by the variety habits and their adaptation to the *terroir* and the suitability of the training systems / canopy management determines the final result. The climatic conditions in the São Francisco Valley (tropical semi-arid) with a high energy potential, lead to the possibility of vine culture throughout the year, allowing two harvests annually. However, in this region the abundant radiant energy associated with lack of cold, which provoke deficiency of dormant period and dormancy break. In the vertical vine training (VSP) the exaggerated spacing between rows adopted, conduce to poor sunlight interception that associated with intense acrotony phenomenon, lead to low productivity. In this *terroir*, the sensitivity to trunk diseases fungi complex (*dépérissement*), especially in young plants of Syrah, require correct choices in what concerns to clone x rootstock relations, due to the serious consequences in vigour, productivity and sustainability of the vine. Some results of different clones of Syrah (% of dead plants after 10 years: cl.470 ≈ 4% *vs* cl.525 ≈ 80%) and training systems (horizontal trellis, VSP vs divided canopy systems) are presented.

Soil zoning for wine certification of ride region of the sub-medium São Francisco river, Brazil

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The Agricultural Zoning takes into account the combination of factors such as soil and the socio-economic environment, in order to organize the rational distribution of economically profitable tillage, the social and cultural characteristics of each region and the basis for territorial of land use. In addition, the edaphic zoning reinforces the potential of soils for economic development of a particular tillage. The physical, chemical and biological characteristics of soils represent, together with the climatic attributes, the main requirements for the establishment of any kind of cultivation. It should take into account the different classes of soil in the region. The edaphic zoning of vine for wine production in the Sub-medium of San Francisco River was developed in environment SIG, by overlaying and processing of soil information. The following towns in Pernambuco State were studied: Petrolina, Lagoa Grande and Santa Maria da Boa Vista. In addition, the towns in Bahia State were studied: Casa Nova, Sobradinho, Juazeiro and Curaçá. The SIG environment considers georeferenced information, allowing integrate various thematic data at different scales, including the smallest scale available. Systematized the soil requirements for the production of each variable of wine grapes were classified into four categories: preferred, recommended, little recommended and not recommended. The definitions for these categories were: preferred, land without significant limitations for sustained tillage production, observing the correct soil management. Recommended, land that have moderate limitations for sustained tillage production. Little recommended, land presenting severe limitations for sustained tillage production, and not recommended, land not suitable for sustained production, because there is at least one edaphic parameter in the "not recommended" class. These categories of soil requirement express the potential of the crop for development, due to the limitations affecting the land.

Spectral separability of grape varieties in four regions of Rio Grande do Sul state, Brazil

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New viticultural regions are being created in several regions across Brazil. For instance, in Rio Grande do Sul State many wineries are already established, are being installed or are in project phase. In the context of modern viticulture, an important factor for added value to products from the activity is its association to a regional identity, a tendency which is akin to the terroir concept. Being new regions, a comprehensive survey of the characteristics of each producing area is necessary, a step leading to the definition of parameters of differentiation, which will give to each region the required typicity, crucial to the terroir idea. Here we present a contribution to the characterization of some new viticultural regions of Rio Grande do Sul, trying to show that it is possible to bring to light physical factors which will differentiate each region. Three areas in the State's *Metade Sul* (southern half) were selected, being two in the Campanha Gaúcha region (Almadén in Santana do Livramento and Seival in Candiota), and another one at the Serra do Sudeste (Chandon in Encruzilhada do Sul); we also selected a winery at the Serra Gaúcha (Boscato in Nova Pádua). As tools for this study, we used techniques of spectroradiometry to collect field data in all four regions, acquiring spectra of leaf reflectance in visible, wavelengths, and at near and mean infrared as well. We selected vineyards of the grape varieties Cabernet Sauvignon, Merlot, Pinot Noir, Chardonnay and Riesling Itálico (Welschriesling). Satellite images (ASTER product) were also taken to study the Almadén and Seival wineries, using reflectance data in visible and infrared for some varieties of *Vitis vinifera*. All data were analyzed through several techniques intended for differentiation, as algorithms for supervised classification and, in Statistics, Discriminant Analysis. The results, from radiometry field data and from satellite data as well, showed that from the reflectance of leaves and canopy it is possible to separate each region, with accuracies as high as 80% and even more. This spectral separability is believed to be due to the influence of the physical environment on plants. It is concluded that the use of data and techniques from Remote Sensing, associated with techniques of statistical analysis, are relevant tools to support the characterization of viticultural regions. In this context, a preliminary assessment is presented concerning potential applications of these techniques to semi-arid regions, taking as an example the Vale do São Francisco grape producing region.

Landscapes of tropical vineyards in Brazil

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The viticulture in tropical Brazil semi-arid region was introduced by the Portuguese in the 16th century. The production in the state of Bahia, was described by Gabriel Soares de Souza, including one of its distinguishing features, which is the production of more than one crop per annum; having been represented in the shield of Itamaracá island, when governed by Dutch Maurício de Nassau, in the 1637 to 1644 period. Although there are several specific references, to colonial production hasn't formed and/or organized territories/regions. It was in the second half of the 20th century, that irrigation projects in sub-middle of the semi-arid valley of the San Francisco River, provided the deployment conditions and viticulture expansion on a commercial scale, first for in natura consumption and after for winemaking. In these projects, the irrigation is used for a diversified fruits and agriculture and high quality, aimed both at domestic market and for export. The viticulture occurs at the projects, whose water is administered by the Companhia de Desenvolvimento do Vale do São Francisco (CODEVASF), as well as the initiative of companies and smallholders that catch the water directly from the river. Thus, currently, in the administrative region Petrolia-Juazeiro, there is a wine sector whose development was an important Brazilian wine territory. The viticulture landscape for tropical wines on this region has features and elements of the semi-arid climate context (high insolation/temperatures and low/concentrated rainfall) and caatinga biome (biodiversity and heterogeneous), full of xerophytes species such as *cacti* and *mimosa*, on the sedimentary formation of the vast plain of the São Francisco tectonic depression, with inselbergs of the highest points, which witness the morphogenetic processes and surface whitish soil, vegetation cover the open caatinga; further, in the adjacent regions, the crystalline rocks of the uplifted blocks form the plateaus and highlands of the Brazilian n ortheast region. The landscape analysis to suggest that the Brazilian tropical wine landscape has elements that identify with originality in relation to tropical wine world, particularly by combining the natural elements (especially the plain and inselbergs, the São Francisco River and the caatinga) with winegrowing elements (driving systems / pruning, periodicity of production, vineyards at the same time at different growth stages, irrigation system equipment, the wineries) and regional cultural elements (the figureheads, parties, etc.). The Brazilian tropical viticultural landscape has thus, an identity, whose landscape image it has helped in its technical consolidation, as evidenced in qualified production and the awards that the wine this region has won, and commercial consolidation, as evidenced in the conquered markets and other activities, as wine tourism.

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Climate change, agriculture, global wine and table grape production

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Human interactions within Earth's environment have brought significant changes, producing a situation in which we now face some of the most complex collection of ecological problems in our history. Driven by population growth and often ecologically unsustainable processes these problems include an increasingly less predictable and stable climate and a wide range of interrelated social, environmental, and economic problems. Compounded by growing water scarcity, deforestation, species extinction, and ocean acidification, our ability to function as a species is challenged more than ever before (IPCC, 2013). Climate is at the forefront of these issues as it presents a very complex, highly variable, and pervasive factor in our natural Earth and human-based systems. From controlling vegetation patterns and geological weathering characteristics to influencing water resources and agricultural productivity, climate is at the heart of the delicate equilibrium that exists on Earth. While it is clear from historical evidence that changing climates are a part of the Earth's natural adjustments to both internal and external forces (e.g., volcanic eruptions and solar variability), more and more evidence is pointing to increasing human impacts on our climate (IPCC, 2013). Agriculture represents probably one of the most complex aspects of our human-environmental interactions whereby we need increasingly more productive systems to feed our growing population, yet aspects of doing so have, and will likely continue to, exacerbate the problems. As such agriculture has both a role in producing some of our challenges, but more importantly has been increasingly asked to develop sustainable practices that reduce our vulnerability and increase our adaptive capacity in the face of global change. Today, as in the past, climate is clearly one of the most important factors in the success of all agricultural systems, influencing whether a crop is suitable to a given region, largely controlling crop production and quality, and ultimately driving economic sustainability (Jones et al., 2012). From broadacre crops such as wheat, rice, corn, and soybeans to specialty crops such as fruits and vegetables, tree nuts, dried fruits, and coffee; they all have strong ties to global to regional climates. While broadacre crops are clearly more important as global food sources, specialty crops present unique sensitivities to climate that have made them especially interesting to researchers examining global change. This fact is never more evident than with wine and table grape production where climate is arguably the most critical environmental aspect in ripening fruit to its optimum quality to produce a marketable product (Jones et al., 2012). This presentation will examine the overall state of the climate today and discuss the role that historic and future climates have on agriculture in general. In addition, the work will detail how climate change and variability impact growing grapes for both wine and fresh fruit production, providing insights into the potential impacts of projected changes in growing conditions worldwide.

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Tropical viticulture and winemaking in Thailand, India and Indonesia and a study of the effect of paclobutrazol on vegetative growth and yield in Thai vineyard

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Grape-growing and winemaking in the tropical region of Asia has a history as long as one thousand years. Today's commercial vineyards were established in several countries such as Thailand, India and Indonesia since the 1980s and are continuously growing. The different countries are characterized by various climatic conditions, topography, soil, grape varieties and styles of wine made. Alliances are formed in Thailand (Thai Wine Association) and Asia (Asian Wine Producers Association) alike to provide technical support in the vineyards and wineries, as well as to promote wines made from grapes that are true to their origins. Paclobutrazol was applied at a single vineyard in Asia's tropical region for two consecutive years on Syrah, Cabernet Sauvignon, Grenache, Verdelho and Viognier (*Vitis* spp.) after first shoot trimming of the vegetative season (July-August) at 0ppm, 250ppm, 500ppm and 750ppm. At all rates, there was a significant delay of shoot growth in white grape varieties experimented. At the rate of 750ppm there is a significant increase in number of inflorescences in the production season (November).

Vine pest in Northeast of Brazil: a challenge for the production?

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The vines producing areas in the São Francisco Valley, located in northeastern Brazil, is the second national pole of the grape production of wines and juices and the main producer of table grapes for *in natura* consumption. With the increase of cultivated areas in the region, it is the expansion of the geographical distribution of insect pests by dispersing and/or involuntary transport of infested materials, serious problems of the phytosanitary order occur frequently. Thus, this factor is considered a major obstacle to the development of culture in this region affecting productivity and product quality. The insect pests can occur throughout the year attacking various parts of culture, especially in bunches. In Brazil, listed about 40 species of arthropods attacking the growing of vines. However, depending on the region, few species cause significant damage to production (Oliveira et al., 2010). Among the pests that attack the vine in the São Francisco Valley, stands the two mites species *Polyphagotarsonemus latus* (Banks, 1904) (Acari: Tarsonemidae) and *Tetranychus urticae* (Koch, 1836) (Acari : Tetranychidae); three thrips species *Retithrips syriacus* (Mayet, 1890), *Selenothrips rubrocinctus* (Giard, 1901) and *Frankliniella* sp. (Thysanoptera: Thripidae); any species of lepidopterous *Cryptoblabes gnidiella* (Millière, 1864) (Lepidoptera: Pyralidae), *Spodoptera frugiperda* (Smith, 1797), *Spodoptera eridania* (Stoll, 1782), *Spodoptera cosmioides* (Walker, 1858), (Lepidoptera: Noctuidae), *Helicoverpa armigera* (Hübner, 1805) (Lepidoptera: Noctuidae); cochineal *Eurhizococcus brasiliensis* (Hempel, 1922) (Hemiptera: Margarodidae) and mealybugs *Planococcus citri* (Risso, 1813), *Dysmicoccus brevipes* (Cockerell, 1893) e *Phenacoccus solenopsis* Tinsley, 1898 (Hemiptera: Pseudococcidae). Recently, it was found the presence of pink hibiscus mealybug, *Maconelicoccus hirsutus* (Green, 1908) (Hemiptera: Pseudococcidae), becoming a factor to be studied due to the damage that can lead to the growing of vines, as reported in other countries (Vitullo, 2009). Based on the above, is necessary knowledge of the dynamics, habits, damage and time of occurrence of each species, they are fundamental importance for effective control measures to used safely and rationally.

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Phenolic profile and antioxidant activity of commercial grape juices from the São Francisco Valley, Northeastern of Brazil

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In recent years, the Sub-middle region of the São Francisco Valley (SFV), located in the Northeast of Brazil, has invested in the production of grape juice from new Brazilian varieties developed for preparation of high quality juices, such as Isabel Precoce (*Vitis labrusca* L.) and hybrids (*Vitis labrusca* L. x *Vitis vinifera* L.) BRS Violeta, BRS Cora and BRS Magna (Lima et al., 2014). Grape juice in this region have been highlighted by the good bioactive content, high antioxidant activity associated with phenolic compounds and to promote anti-inflammatory activity in consumers (Toscano et al., 2015). The aim of this study was evaluate the phenolic compound profiles (flavones, anthocyanins and phenolic acids) and determine the antioxidant activity (AOX) by free radical scavenging (DPPH and ABTS methods) and of reactive oxygen species (ROS) (hydrogen peroxide scavenging - H_2O_2) in all commercial juices from SFV. The determination of phenolic compounds was performed by RP-HPLC/DAD using chromatograph Agilent 1260 Infinity LC System where the separation of compounds was done in Zorbax Eclipse Plus C18-RP (100 x 4.6mm, 3.5μm) using phosphoric acid 0.1M (pH 2.0) and methanol as phases A and B, respectively. For the phenolic compounds, the levels of (-)-epigallocatechin (232-368 mg L^{-1}) and *trans*-caftaric acid (233-365 mg L^{-1}) in the samples were higher than those reported for grape juices in different of the world regions, indicating that these compounds can be important chemical markers for grape juices from SFV. For AOX measured with DPPH and ABTS, the values obtained ranged of 10:03 to 18:13 millimoles per liter of Trolox equivalent (mM TEAC/L) and were within the ranges found in the literature for grape juices. The antioxidant capacity measured using the H_2O_2 method for all juices studied showed high values (from 66.81 to 88.52 mM TEAC/L), showing the high capacity of VSF juices in sequestering reactive oxygen species, which are associated with various pathological mechanisms that contribute to diseases like diabetes, cancer, cardiovascular and neurodegenerative diseases.

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Protection and promotion of the tropical wine territories' cultural heritage: reflection on the «Climats de Bourgogne»'s listing in the UNESCO world heritage

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On July 4th 2015, in Bonn, Germany, the «Climats de Bourgogne» were listed in the UNESCO world heritage, as well as the «Maisons, côtes et côteaux de Champagne». We were fortunate enough to take part, since the beginning in 2008, in the development of the burgundy scientific candidacy file, alongside many colleagues of various fields, most of them members of the UNESCO Chair's international network. The candidacy was put together by an eponym association presided over by Aubert de Villaine, owner of the famous Romanée-Conti estate. We won't dwell on the many and tedious steps which lead to the acknowledgment of the "Climats de Bourgogne" as cultural landscapes by the UNESCO. We want to provide a way to pinpoint, based on the latter example, the elements which can lead, in the future, to the world acknowledgement of tropical vineyards. Tropical wine making, which is building and spreading quickly in backgrounds naturally hostile to *Vitis vinifera* and where wine drinking is not natural, remains an exception. It deserves our attention and expertise in order to protect and promote its territories' cultural heritage. First, we will emphasize on the steps toward the UNESCO world heritage's listing. Then, we will come back to the example of the «Climats de Bourgogne». Finally, based on the latter example, we will consider which measures can help tropical vineyards´ development while preserving and promoting their cultural identity. However it's important to keep in mind that tropical wine making, everywhere but Peru, comes from an exogenous creation and is not part of local traditional culture.

The wineyards of India

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In 2012, India joigned the OIV, thus becoming a member of the wine producing countries's club. India´s gigantism is well known: surface area (3.28 millions of km^2), landscapes, population (over 1.2 billion of inhabitants), and economy. But India remains a tiny country as far as wine is concerned. The Indian wine sector starts only in the eighties : vineyards developed in 7 states, mostly tropical: Maharastra (80%) in Nasik and Pune, Karnataka (10%), Bangalore, Andra Pradesh in Hyderabad. The vineyards 'surface area remains modest with 120 000 ha in 2014, which represents only 1.7% of the world's. But it is spreading quickly, although grapes are mostly used as table grapes (Perlette variety), with only 3000 ha designed for wine making. It explains why India produces so little wine. But the production increases steadily: India past from 8 wineries in 2005 to 70 in 2014. Wine production went from 82 000 hl in 2008 to 175 000 hl in 2014 (80% in table wine and 20% in premium wine). Several reasons prevent India's wine sector from a significant growth. Climate is one of them since India is mostly tropical with monsoon rains bringing a lot of humidity, which is unsuitable for vine. Only a few northern states, like Kashmir, Punjab and Deccan provide temperate or subtropical conditions suitable for vine. The second reason is cultural: India is a very religious country and several religions, among which Hinduism, Sikhism, Islam prohibit alcoholic beverages. Poverty also prevents a majority of the population to have access to wine, especially as beer is much cheaper. It is the recent emergence of a well-off middle class which sustains wine consumption but which remains modest. Tax laws are the last reason: in 4 states (Gujarat, Mizoram, Nagaland, Manipur), alcoholic beverages are strictly prohibited and everywhere heavily taxed: 150 to 270% on importation wines, 50 to 100% on Indian wines. Lighter taxes could sustain local producers. Finally, although the first Indian wineries opened only 30 years ago, vine and wine have an ancient history in India: archeological remains and religious texts, like the Vedic texts, are an obvious testimony. After a short presentation of India, we will establish the place of vine and wine throughout the history of the subcontinent. Then, we will describe India's wine sector today, based on the examples of the top two wine producing states, Maharashtra and Karnataka. Finally we will outline the evolution of wine market and consumption in India. Although it has to meet with significant challenges, India's wine sector appears to be very promising.

Effects of different winemaking processes on enological characteristics of tropical wines in Brazil

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Tropical wines started being produced 30 years ago. The wine production in the São Francisco Valley-SFV, Northeast of Brazil, located in a tropical semi-arid climate, needs technologies to allow vines to be produced throughout the year. In this region, grapes are harvested according to the enologist demand and wines have been elaborated differently in many seasons, showing typical characteristics according to the month of the year. A specific characteristic of the grape bunches produced in the SFV have pointed to different visual presentation, as compared to bunches produced in other regions. Bunches stems have been harvested green, even in different seasons, as compared to other regions, where bunches have lignification and brown top. The problem observed for red winemaking in the SFV is that bunch stems have been broken as passed on destemmer, and wines have been produced with some quantities of stems, even during maceration. Some commercial wines have been made by using manual destemming, and result is very different as compared with other wines. In order to evaluate this characteristic, this study was carried out to evaluate the effects of a manual or machine grape destemming on grape and wine characteristics in the SFV. Syrah grapes were harvested in July 2016 from a partner winery in the region, targeted to elaborate red guard wines. Grapes were weighed, and 20 kg of grapes were used for winemaking, in triplicate. Three times of 20 kg were destemming by hands and stems and grapes were weighed, and the same was made for other 20 kg in triplicate that were destemmed by using a commercial destemmer. Wines were elaborated in glass thanks of 20 L and maceration time was seven days during alcoholic fermentation at 25 ± 1 °C. After this time, grapes were pressed and wines were placed in 10 liters glass thanks for malolactic fermentation, at 18 ± 1 °C for twenty days. Wines were cold stabilized at 5 ± 1 °C for 10 days than bottled and analyzed 20 days after bottling, to determine classical enologic parameters and phenolics by spectrometer. Results showed that wines presented no differences for alcohol degree, density, free and total SO_2, dry extract, total and volatile acidities, color intensity, total monomeric anthocyanins and antioxidant capacity. Differences were found for wines elaborated from grapes manually destemmed, presenting higher values of pH and lower values of total polyphenol index-TPI and total phenolics than wines elaborated from grapes destemmed by machine. Sensorial evaluation carried out by enologists described wines from manual destemming grapes as presenting better gustative characteristics than wines from machine destemming grapes. Tannin extraction from stems caused bitterness in wines from grapes destemmed with machine. For red wines, manual destemming could be a useful step in winemaking allowing improving quality of red wines from SFV in Brazil.

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Incidence of five viruses in grapevines for wine cultivated in the Brazilian Semi-arid region

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The objective of this study was to examine the incidence of five viruses in grapevines for wine in the sub-medium São Francisco river valley, the main tropical wine producing region in Brazil. A total of 94 samples were collected in municipalities of Bahia and Pernambuco states for cultivars Alicante Bouschet, Cabernet Sauvignon, Merlot, Moscato Canneli, Syrah and Seibel. The analysis was carried out using a double-antibody sandwich enzyme-linked immunosorbent assay (DAS-ELISA) with polyclonal antisera against *Grapevine leafroll-associated virus-3* (GLRaV-3), *Grapevine virus* A (GVA), *Grapevine fleck virus* (GFkV), *Grapevine leafroll-associated virus 1* (GLRaV-1), and *Grapevine fanleaf virus* (GFLV). GLRaV-3 detection was also carried out using reverse transcription polymerase chain reaction (RT-PCR). Viral infections were detected in 88.3% of the examined samples. It was found that 25% of the Alicante Bouschet grapevines, 96.2% of Cabernet Sauvignon, 84.4% of Syrah and 100% of Moscato Canneli, Merlot and Seibel were positive for one or more of the tested antisera. Among the samples examined, 56 showed infection with GLRaV-3, 27 samples were infected with GLRaV-3 and GLRaV-1 or GLRaV-3 and GFkV, and 11 samples were not infected with any of the tested virus. All the infected wine grapevines were infected with GLRaV-3, with a mixed infection with GLRaV-1 or GFkV for the cultivars Alicante Bouschet and Syrah, and Cabernet Sauvignon and Moscato Canneli, respectively. The high percentage of positive samples detected in these areas suggested that the dissemination of these pathogens probably occurred because of infected propagative material, which is a very efficient dissemination mechanism for grapevine viruses. Until now, there is no occurrence of vectors for virus dissemination in this region.

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Éco-design of the cellars in the context of the tropical vineyards

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The construction of a wine building or a cellar and the choice of the equipment associated with the design with the equipment with the work suppose a careful thought concerning in particular the economic aspects, qualitative, the security of the users. Beyond the functional aspect, the taking into account of sustainable development imposes a reflection relating to the impact of the design and operation of the cellars on the greenhouse effect. Formerly all the average natural ones which made it possible to profit from freshness or heat were used. In the system of classification of the climates defined by Köppen, a tropical climate is a non-arid climate where the monthly average temperature does not descend below 18 °C (18 °C) throughout the year. Compared to the optimal temperatures of conservation of the wines from 12 to 15 degrees Celsius in the cellars or the fermenting rooms, it is important to optimize architecture and the design to reduce energy consumption with in parallel a sustainable management of water and effluents. Design of the buildings, associating a good possibly supplemented insulation of original solutions (vegetalized roofs or walls, Canadian wells...) and alternative energies (solar, geothermics, biomass...) be integrated in this dynamics of ecological design of the cellars. These aspects, as well as landscape integration contributes to develop the environmental image of the cellar. Original approaches pionnières, can be integrated, beyond the architectural choices, in a approach of communication and valorization of the wines. In addition, the regulation, the standards will evolve during next years, which justifies to anticipate the environmental requirements, in order to avoid modifications of setting to the expensive standards. An European project of e-Learning coordinated by the French institute of the Vine and Wine ECOWINERY www.ecowinery.eu was developed on the éco-design of the cellars. It is articulated around 5 illustrated didactic modules of many diagrams and examples: Contexte lawful and energy, démarche architectural and éco-construction, energy resource associated with the building (geothermics, solar, heat pump, roof or vegetalized wall) in link with possible valorization of the by-products, tweaking of the use of water in a viticultural cellar, in particular via landscape installations around the cellar, such as planted beds of reeds for the liquid waste processing of the cellar, follow-up and rating of a project of éco-design of a viticultural cellar and its environmental impact.

Geotechnology as support tool for structuring the geographical indication for wines in the São Francisco Valley

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The concept of *terroir* in wine production comes every day has showed that environmental and socioeconomic variations where the grapes and the wines produced in one region are key to promote a unique identity, characteristic of a particular region. Another important factor is precisely the procedures and conditions where grapes and wines are produced. This geographical dimension gives the characteristics winegrowing reflecting in its typicality. The environmental conditions of soil, climate, water, relief, etc., and human resources and processes used are determinant to the quality obtained. Geotechnologies as remote sensing information are tools that assist in conduction studies and surveys of the land and the soil profile characteristics, including morphological description, physical and chemical characterization, taxonomic classification and soil distribution of occurrences. Similarly, other is employed for conditioning variables as landscape relief, climate, water resources, vegetation and land use, among others. This article has the purpose to inform about databases, that include soil, climate, topography, water, vegetation and land use that have been prepared and make up the framework for the geographical Indication structuration for the wines including the geographical area of the municipalities of Petrolina, Lagoa Grande, Santa Maria da Boa Vista and Orocó in the state of Pernambuco and the municipalities of Casa Nova, Sobradinho, Juazeiro and Curaçá in the state of Bahia, that corresponds to the Integrated Development Region - RIDE Valley of San Francisco.

Structuring a geographical indication for tropical wines in the São Francisco Valley, Brazil

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The Brazilian legislation on geographical indications (GI) are presented in the Law 9.279 and INPI Normative Instruction 25/2013, establishing the conditions for the registration of GI, whether in modality of "Indicação de Procedência" (IP) or "Denominação de Origem" (DO). Since 2002, a new strategy to organize and to promote regions, quality and identity of Brazilian wines began in the South of the country with the register of the first Brazilian GI - Vale dos Vinhedos. Later in that region, other GI jointed the strategy – Pinto Bandeira, Altos Montes, Monte Belo, Farroupilha and Vale da Uva Goethe already registered, and two others in structuring process – Campanha Gaúcha and Altos de Pinto Bandeira. The first GI in Northeast region of Brazil is in structuring process in the São Francisco Valley, a semi-arid region with the potential to produce grapes and tropical wines all over the year. Demanded by the vitivinicultural association *Instituto do Vinho do Vale do São Francisco* – VinhoVasf, this GI is in development by a RD&I project coordinated by Embrapa, with some partners. The studies in the GI project include many topics, among others: zoning soils and the viticultural climate with intra-annual variability, mapping the geographical area - relief (elevation, slope and aspect), land use, viticulture area mapping, viticulture production systems, cultivars for tropical wine production, oenological practices, physicochemical and organoleptic characterization of the wines. The specification document, with the requirements to qualify products in this GI is in development, including, among others: the delimited geographical area; varieties of *Vitis vinifera* authorized; grape production in the delimited area; training systems; maximum productivity; quality of grapes for wine making; authorized wine types; oenological practices; physicochemical characteristics for each type of wine; organoleptic analysis; elaboration, aging and bottling in the delimited area; labeling standards. Having a structure of control based on the "Conselho Regulador" of VinhoVasf, the GI will be submitted to a plan of control to assure that the products will correspond to the specification requirements to qualify the tropical wines of this GI.

Characteristics of wine production in Venezuela

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The surface of wine grape vineyards in Venezuela has undergone some changes in the past six years; new vineyards have been planted replacing the obsolete ones decimated by some diseases such as dieback. There are two well-defined production zones: the first one is located in Lara State and the second one is located in Zulia State; there are in total 450 hectares of vineyards of wine grapes, of which 150 are in Lara and 300 in Zulia. There are two types of wineries, the ones that use fresh grapes for wine production and sangria, such as Bodegas Pomar and the Viticulture Center in Zulia, and other wineries that use imported concentrated grape juice, completely or partly, for production of wine and sangria. The annual production of still and sparkling wines from fresh grapes is about 670.000 bottles, of which 600.000 are produced by Bodegas Pomar and 70.000 by the Viticulture Center; while the annual production of wine from concentrated grape juice, is about 4.9 million bottles. Moreover, the total production of sangria is around 26 million liters per year, of which 14 million are produced by Bodegas Pomar using fresh grapes juice and the rest by other companies using imported concentrated must. The varieties cultivated are 'Tempranillo', 'Syrah', 'Petit Verdot', 'Chenin Blanc', 'Macabeo', 'Malvoisie', 'Sauvignon', 'Muscat D' Petit Grain', 'Moscato Bianco' and 'Malvasía Istriana'. The rootstocks used are 'Criolla Negra' (*Vitis vinifera* x *V. caribaea* DC), '1103 Paulsen' and '110 Richter'. The vineyards are located between 9 º and 11 º North Latitude, and the altitude vary from 30 to 640 m over the sea level; and the average annual rainfall can vary between 500 and 800 mm; and daily temperatures range between 20 and 32 ºC in Lara and between 25 and 38 ºC in Zulia. In Lara the support system used is a four-wire espalier, with a length of production cycles from pruning to harvest between 110 and 135 days, performing two harvests per year; while in Zulia, the support system used is the trellised, and production cycles from pruning to harvest are between 95 and 100 days, with three harvests per year. The soils vary from deep sandy and clay, both of low fertility and calcareous origin, to the sandy low fertile and shallow depth. White and red wines are made, some young and some aged in barrels, as well as sparkling by the *Methode Traditionelle*. The production is distributed exclusively in the national market.

Effect of pure and mixed cultures of wine yeast on the content of the total phenolics in tropical white wines variety Malvasía Istria

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The development of alcoholic fermentations inoculated with mixed cultures of non-*Saccharomyces yeasts* and *Saccharomyces cerevisiae* is of great interest for the wine industry for sensory reasons and improved functional properties such as the increase the total phenols in tropical white wines. In this research the effect between pure and mixed cultures of yeast wine *S. cerevisiae* and non-*Saccharomyces* on the content of phenolic compounds in must fermentations of white grape variety Malvasía Istria was evaluated. Sterile must was fermented in triplicate and under the seven following conditions: three pure cultures of *Hansenia sporauvarum* U, *Hansenia sporaguillermondii* G and *Saccharomyces cerevisiae* S and mixtures of *H. uvarum*: *H. guillermondii* (50:50) UG, *H. uvarum*: *S. cerevisiae* (90:10) US, *H. guillermondii*: *S.cerevisiae* (90:10) GS, *H. uvarum*: *H. guillermondii*: *S. cerevisiae* (45:45:10) UGS. The evaluation of physico-chemical parameters soluble solids, density, pH and titratable acidity in both the must and wine were performed according to standards COVENIN. The content of total phenols was evaluated by the method of UV-visible spectrophotometry known as Folin Ciocalteu. The presence of non-*Saccharomyces* yeasts slowed down the fermentations while the *S. cerevisiae* accelerates the conversion of sugars to ethanol. There were significant differences in total phenolic content for different fermentations evaluated with a performance increase from must to wine. The total phenolic content is expressed in mg GAE.L-1 for all fermentations. The must has a content of phenolic compounds 180,33, which is evolving to reach the following values for the final day of fermentation (wine) for pure and mixed cultures of U 388,78; G 392,87; S 356,80; UG 509,27; US 472,15; GS 486,30 and 523,43 UGS. So the behavior of evolution in descending order for pure and mixed fermentations was the next UGS > UG > GS > US > G > U> S. The highest total phenol content was presented in fermentations with mixed cultures. The impact of non-*Saccharomyces* yeasts during evolution of phenolic compounds is pronounced, especially in fermentations where *Hansenia sporaguillermondii* is present as UG fermentation. There is a dramatic increase in phenolic content in UGS fermentations when *Hansenia sporauvarum*, *Hansenia sporaguillermondii* and *Saccharomyces cerevisiae* are present, there is a synergistic effect that increases the content of phenolic compounds. This may be because the relationship between the participation of non-*Saccharomyces/Saccharomyces* yeasts during wine fermentations, can help accentuate both chemical and sensory changes. The non-*Saccharomyces* yeasts secrete a number of enzymes (estereases, glycosidases, lipases, ß-glucosidase, proteases, cellulases, etc.) which may interact with the substrates present in the medium to improve some steps of the process such as maceration, filtration and clarification, increased performance and color extraction or characteristics of the wine, especially the aroma.

Thermal stability of Brazilian tropical red wines

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Adverse conditions of storage can affect the phenolic composition of wines, causing several noticeable changes in aroma, color, astringency and bitterness. The objective of this work is to evaluate the changes in phenolic compounds of tropical Brazilian wines submitted to storage temperature of 30°C for 30 days. Wine varieties Syrah and Cabernet Sauvignon, stored at 30°C for 30 days, in glasshouse, and the same wines stored at 16 ± 1°C at the same time were evaluated by spectrophotometric methods for the determination index of total polyphenols (Harbertson and Spayd, 2006), color intensity and tonality (Monagas et al., 2006 and Glories, 1984), total polyphenols (OIV, 1990) and anthocyanins (OIV, 1990). The software Statistica 7® was utilized to verify significant differences, variance analysis and averaged Tukey test, with $p < 0.01$. The Cabernet Sauvignon wines displayed satisfactory stability by not displaying significant difference when stored at average temperature of Metropolitan Region of Recife. A significant difference was observed in the Syrah wines regarding total polyphenols content. Expected decrease in the concentration of total anthocyanins was observed in all 'Syrah' wines, demonstrating that the temperature did not have direct relation with this attribute. Variations in the chromatic parameters were observed, demonstration the influence of the temperature. The commercial wines showed phenolic stability, however, the Syrah wines showed variations in the chromatic parameters due to the temperature of storage in the present study.

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Preliminary analysis of the competitiveness determinants in wine industry in the São Francisco Valley, Brazil

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In the current contemporary world scene, the science, technology and innovation are key elements for economic and social growth and democratization of opportunities of a nation. The Brazilian wine sector, especially the Sao Francisco Valley, has been increasing its role as agent in regional development and national agribusiness which, despite the challenges of typicality and uniqueness of the tropical viticulture practiced in the region, combined with increasing competition in their markets, also plays an important role by reducing social and economic inequality between the regions of Brazil. On the other hand, the pursuit of competitive advantage is already an imperative for survival or to reach new niche in the domestic market or export in the context of market globalization. And the tropical vitiviniculture practiced in the Sao Francisco Valley was not oblivious to this. This paper aims to identify and categorize the key factors or determinants for the competitiveness of wine industry, from the perspective of the four largest fine wine producers in the region of Sao Francisco Valley (second largest national wine cluster). In addition, it was identified the main roadblocks in achieving competitive advantage. As the methodological aspects: it is essentially an exploratory and explicative research. It was used the interview technique with open questions as data collection instrument. The interviews were made to senior management members of the four largest fine winemakers. For the treatment and analysis of answered nominal data it was used the software IRAMUTEQ that employ statistical algorithms to perform chi-square test and cluster analysis (for instance) to find standards more representative in the total set of answers. The results indicate that despite the shortcomings in basic industrial infrastructure such as instability in electricity supply and communications (Internet, for instance), the irrigated perimeters capacity constraints and quality of logistics infrastructure; asked about both market and competition issues, technological trends in the field and production processing, and university-industry relationship, in connection with barriers or even good points, what is observed is that: (i) the high taxation; (ii) the Brazilian consumer culture of fine wines compared to common wine (and the direct impact on consumption in situations of economic crises); and (iii) the high cost of logistics of production inputs and distribution of its products are seen as the main barriers or critical success factors in the competitiveness of the fine wine of the region of Sao Francisco River Valley in their markets (current and near future).

Characteristics of 'Sauvignon Blanc' residue flour from two tropical locations in Brazil

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The viticulture in the northeast of Brazil is an activity that figures as an alternative to the development of the region and the country, being intensified with the white wine production from grapes from different tropical regions, such as the Sauvignon blanc variety, which is able to produce light, refreshing and aromatic wines. As a consequence of wine production, researches should be concerned about the amount of residue produced. The development of residue flour is an alternative, and after characterization, it could be added in food to increase its nutritional value. The aim of this study was to identify the characteristics and differences of the residue flour from Sauvignon Blanc wines produced in different tropical regions in Brazil. The fresh residue from the production of Sauvignon blanc white wines were obtained from two different tropical locations (Casa Nova, BA, Brazil – Residue 1 and Morro do Chapéu, BA, Brazil – Residue 2) and each residue was separated in three repetitions and dried at 65°C (±3°C) until constant weight (after 48 hours), when the dry residue were weighted for moisture content and three repetitions of flour were obtained per treatment using a blender and a 20 mesh sieve. The residue flour was evaluated for color, pH, titratable acidity and soluble solids content. The productivity of flour for residue 1 was statistically higher (31.47%) when compared to the percentage of flour obtained from the residue 2 – 12.71%. It was observed, for lightness (L*), coordinates a*, b* and pH, higher values for the residue 1, and higher acidity and soluble solids contents (4.97%) for the residue 2. The color (more darkness or higher a* - yellowing values) is a technological indicative which can determine the application of the flour, and food category that the flour can be used. Flour with higher acidity (3.03%- residue 2) may not be interesting for the future addition in milk products, for example, resulting in differences on taste and sensory acceptance. It is possible to conclude that different local production and winemaking techniques can affect wine quality, and consequently their residue and flour characteristics. Regardless the production area, the residue flour from the wine processing is an alternative to solve the environmental discard and for the development of different nutritionally added foods.

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Influence of soil attributes on 'Petit Verdot' productivity in the São Francisco Valley, Brazil

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The São Francisco Valley is a pioneer in the production of fine grapes for wine. The region has excelled on the national economy, being the only region in the world that produces two harvests a year. Studies aiming to characterize the potential grapevine growing regions indicate the potential of several cultivars adapted to local conditions and suitable to contribute for the typicality of the grapevine products of the region, as for example, the Petit Verdot cultivar (Ibravin, 2012). Some soil attributes, important to grape and wine quality, are related to water and nutrient availability (Leewen et al., 2004; Wang et al., 2015). The objective of this work is to relate the physical and chemical properties of soils to the productivity of the vine, Petit Verdot cultivar, in the São Francisco Valley. The study was conducted on a six acres vine planted with Petit Verdot, deployed to 12 years on Ducos Vinícola, located at the County of Lagoa Grande – Pernambuco. Three soil profiles were described and sampled, identifying the following soil types: Argissolo Amarelo (Ultisol), Cambissolo Háplico (Inceptisol) and Argissolo Vermelho-Amarelo (Ultisol). The productivity of the demarked areas was estimated, within each soil type. Fruits were sampled for wine elaboration. The Cambissolo Háplico presented more quantity of gravel and pebbles, in relation to other soils as well as average yield approximately 70% lower, in the two annual harvests, than other soils. However, this lower productivity can promote concentration levels of phenolic and aromatic compounds, which have great importance in enology, since they are related directly or indirectly to quality of wines, being responsible for its color, body and astringency.

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Enological potential of 'Chardonnay' (*Vitis vinifera* L.) in tropical climate in the Northeastern of Brazil

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The vine is a plant that adapts to the most different conditions of climate and soil, being the climate variability in the different wine regions of the world, one of the factors responsible for much of the diversity of grapes and wines. In the region of Chapada Diamantina, state Bahia, in Morro do Chapéu city, it was installed an observation unit to study the adaptation of different vines (*Vitis vinifera* L.) as alternative for the production of commercial fine wines. The region is situated at 11°33'11' 'S and 41°09'27'' W, altitude of 1,100 meters, with climate classified as tropical of altitude (Torres et al., 2013). Given this context, the objective of this study was to evaluate the enological potential of the Chardonnay varietal wine in 2013, 2014 and 2015 vintages. The area was installed in 2011, in a randomized block design with row spacing of 2.5 m and 1.0 m between plants, grafted onto 1103 Paulsen rootstock and drip irrigated. The conduction system of the vines is vertical shoot positioning and pruning system is a bilateral spur pruned cordon. The harvests were in September for the three years evaluated. The winemaking and the physicochemical characterization of the wines was in the Enology Laboratory of Embrapa Semi-Arid in Petrolina, state of Pernambuco. The parameters studied were density at 20°C, alcoholic content (v/v %) dry extract (g L^{-1}), pH, titratable acidity (g L^{-1} of tartaric acid), volatile acidity (g L^{-1} of acetic acid), free sulfur dioxide (mg L^{-1}) and total sulfur dioxide (mg L^{-1}). The results showed no significant differences for to the density parameter compared by Tukey test at 5%. According to the alcohol content, there was a variation between 14.8% v/v (harvest 2013) and 12.7% v/v (harvest 2014). For the pH and dry extract parameters, wines from 2015 vintage presented the highest values (3.65 and 27.25 g L^{-1}, respectively). According to the total acidity, expressed in tartaric acid, wines from 2014 vintage were significantly higher (7.65 g L^{-1}) than others. The volatile acidity of all wines from three vintages was very low, indicating good control of winemaking process. The results showed that vintage influenced differently wines elaborated from Chardonnay grapes, and the variety had good adaptation to the edaphoclimatic parameters of the Chapada Diamantina, being possible to use it to winemaking white wines in this new winegrowing region. Wines from 2013 harvest presented the best enological parameters, because grapes reached better ripening.

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Can nitrogen and potassium fertilization change the tartaric acid content in 'Syrah' grapes during maturation?

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The region of the São Francisco Valley in Brazil has unique features that enables the grape production throughout the year, with two or more harvests per year, event that increase the exportation of large amounts of nutrients to the fruit. Thus, the need of fertilization becomes important in order to obtain desirable characteristics of grapes for wine production and high yield. Tartaric acid is considered the predominant acid in grapes and consequently in wines, also providing specific organoleptic properties. Acidity is one of the most important parameters for the wine sensory profile and can interfere in color and flavor, which can be determined by the presence of organic acids, mainly malic and tartaric acids. At Embrapa Semi-arid experimental field, in Petrolina-PE, Brazil, Syrah vines, in four blocks and drafted on Paulsen 1103 rootstock, fertilized with 0 (control - Treatment 1) or with 120 kg ha^{-1} of nitrogen and 120 kg ha^{-1} of K_2O as potassium nitrate and urea (Treatment 2) were evaluated from 105 days after pruning and at five stages before harvest, according to the tartaric acid accumulation of the fruit, collecting 50 berries per each treatment and evaluation time. The tartaric acid quantification was realized by HPLC (WATERS, model Aliance e2695) with a DAD. The extracts were filtered in 0,45μm membranes and injected with three repetitions. During determination the DAD was maintained at 210 nm during 15 minutes, with a 0,6 mL min^{-1} flow and oven temperature at 26°C. The injection volume was 10 μL. The column used was Gemini-NX C18, 150 x 4.60 mm and Gemini-NX C18, 4.0 x 3.0 mm as pre-column, both from Phenomenex®. According to the observed amounts of tartaric acid in Syrah berries during ripening, there is a trend of reduction of tartaric acid levels for the two evaluated treatments, with contents varying from 4760.0 to 1589.4 mg $100g^{-1}$ and from 3352.6 to 1667.0 mg $100g^{-1}$, with a total reduction of 66% and 51% of the tartaric acid content, respectively, for the control and for the treatment with additional fertilization, with a progressive increase in time, mainly due to the dissolution of the acid content in the berries due to an increase in the berry size. The higher reduction of tartaric acid contents was observed earlier (from 105 days and 119 days after pruning, with contents from 4760.0 and 3282.8 mg.$100g^{-1}$) for the control treatment when compared to Treatment 2, when the highest decrease was observed between the stages 3 and 4 of the maturation curve, with means of 3371.8 and 1667.0 mg.$100g^{-1}$, respectively. During plant maturation process, the acids are used in respiration and energy production, and higher the plant temperature, more intense is the plant respiration and degradation of acids, which may explain the content decrease for both treatments. The application of fertilization in the conditions of the present study resulted in no significant difference of the tartaric acid content when compared with fruit content from vines that did not received fertilization (control), which may be explained by the fact that the soil of the vines already presented satisfactory soil nutrient content or by the fact that the plant nutrition did not affected the tartaric acid metabolism during berry maturation.

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Sensory evaluation of grape juices elaborated by different extraction methods in the São Francisco Valley, Brazil

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This study was conducted to evaluate the acceptance of grape juice elaborated by classical and artisanal extraction methods. The juices were obtained from a blend of varieties Isabel Precoce (80%) and BRS Violeta (20%). Four extraction techniques were performed: Hot Press (HP) - maceration hot and pectolytic enzyme; Cold Press (CP) - maceration at room temperature and the enzyme; Hot Break (HB) - heating to 80 º C, with temperature reduction, maceration at 60 º C and enzyme, and a Steam Extraction (EV) - extraction between 80º and 85º C without enzyme. The juices were evaluated by 120 tasters, not trained. The sensory attributes were evaluated; appearance, color, taste, flavor and overall impression. Utilizing hedonic seven-point scale ranging from extremely disliked (1) the extremely liked (7). It was applied the preference test between samples and the intention to purchase of grape juice. For the attributes appearance and coloration best results were obtained for the HP and HB methods, with no significant differences. Already for the aroma, flavor and impression Best results were obtained for HP, followed by EV and HB. The purchase intention test confirmed the results in the preference test between samples by indicating that HP and EV treatments showed a greater acceptance, where 56 and 41 tasters have shown that certainly buy and possibly buy, respectively. Already for EV 59 and 33 panelists have shown that certainly buy and possibly buy, respectively. The third method with better acceptance is represented by HB.

Effect of bioprotector with diazotrophic bacteria *Beijerinckia indica* and *Cunninghamella elegans* on nutritional status of grape (*Vitis labrusca*)

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The nutritional status of grape is essential and important on growth and productivity during the complete cycle, and this factor is directly influenced by the nutrients supplied in fertilization, especially NPK. An alternative for conventional fertilizers, the biopolymer may act providing nutrients and protecting the plants against phythopatogenic microorganisms. This study aims to evaluate the effectiveness of the bioprotector compared with the mineral soluble fertilizer on nutritional status of American grape, *Vitis labrusca* cv. Isabel, in a field experiment carried out at the Botticelli fine winery industry located in Santa Maria da Boa Vista, Pernambuco, Brazil. The bioprotector was produced from phosphate and potassic rocks mixed with organic matter (earthworm compost), and this mixture was inoculated with the diazotrophic bacteria *Beijerinckia indica* and the fungi *Cunninghamella elegans* that have chitosan in their cell walls. The experiment was conducted in a factorial (2x3) +1, in randomized block design, using two fertilization treatments (bioprotector and soluble fertilizers) applied in three rates (100, 150 and 200% of recommendation) with four replicates. A control treatment was added for comparative purpose. The rates were calculated based on the recommendation for grapevine in the state of Pernambuco (IPA, 2008). The nutritional status was evaluated at harvest, through analysis of macronutrients in leaves. The leaves were dried at 65 °C and ground in a mill type Wiley (20 meshes). The leaves were analyzed (protocol described by EMBRAPA, 2009) for nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg). The results showed the effects of the bioprotector compared with the soluble fertilizer in the nutrient status, especially in reference to nitrogen, phosphorus and potassium content on grape leaves. The best results were observed when applied the bioprotector in higher rates. Both fertilization treatments were superior to the control treatment. The bioprotector seems to have potential to be applied as alternative for replacement of conventional soluble fertilizer.

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Characterization of red wines aged with oak chip in the São Francisco Valley, Brazil

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The São Francisco Valley is the Brazilian region characterized by tropical semi-arid climate. Nowadays it is an emergent region regarding the vitiviniculture and the second largest producer in Brazil where Syrah vines stand out. Besides, new methods of aging have been used for red wine production like oak chips in replacement of oak barrels commonly used in wine maturation. Oak chips may improve sensory quality and chemical stability of the beverage. This research aimed to characterize the physicochemical composition of Syrah tropical wines aged with oak chip addition. Syrah grapes were harvested (22ºBrix) in Petrolina, Pernambuco, (EMBRAPA experimental area (09º 09' S, 40º 22' W, 365,5 m), located in the Northwest region of Brazil. Six different wines were produced: control (T1); American oak chip addition in alcoholic and malolactic fermentation (T2); American oak chip addition in malolactic fermentation (T3); French oak chip addition in alcoholic and malolactic fermentation (T4); French oak chip addition in malolactic fermentation (T5); American and French oak chip addition in alcoholic and malolactic fermentation (T6). Winemaking process involved the following steps: alcoholic fermentation (25 ± 1ºC) for 20 days; malolactic fermentation (18 ± 1ºC) for 34 days; cold stabilization (4ºC ± 1ºC) for 10 days and with Stabigum (0.4g.L^{-1}); and maceration time of 30 days. Wines were bottled and stored in wine cellar (18ºC e 60% of humidity) for one month. Afterwards, the following physicochemical analyses were carried out: total and volatile acidity, pH, total dry extract, density, polyphenols index, alcoholic content (ºGL), free and total sulfur dioxide, and color index using spectrophotometer absorbance at 420, 520 and 620 nm (AOAC, 2007). One-way analysis of variance and Tukey's multiple comparison means test were performed on data to check for significant differences ($P<0.05$). The chip addition, either American or French, did not affect the physicochemical composition of the beverages as no significant differences ($P>0.05$) in pH, total acidity, density, total polyphenols and dry extract. The wines produced with French oak chip (T4 and T5), control (T1) and American add with French oak (T6) showed higher alcoholic content between 12.90 and 13.43% v/v, and the control wine (T1) presented higher color index ($P<0.05$) compared to the samples added with oak chips. Generally, the physicochemical properties were not influenced by addition of oak chips. In conclusion, chip addition is a promising technology in winemaking due to its relatively cheaper cost - compared to the traditional wooden barrels – and process time reduction, since the chips are added simultaneously to the fermentation.

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Growth and yield performance of 'Cabernet Sauvignon' submitted to variations of concentration and application techniques of hydrogen cyanamide in the tropical region of Brazil

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Wine grape cultivars (*Vitis vinifera* L.) used in the tropics require special management techniques to regulate the production and to obtain grapes with adequate quality level. The use of chemicals to help in overcoming dormancy and to promote uniform budburst is a wide-spread practice in warm climates regions. In temperate countries grow fruit crops require exposure to chilling to overcome the dormant period of the buds (Erez et al., 2008), that does not happen in tropical conditions. The aim of this work was to evaluate the effects of the application, painted or sprayed, and the concentration of hydrogen cyanamide on the vegetative and yield performances of Cabernet Sauvignon grapevines in the conditions of soil and climate of the San Francisco Valley, Brazil. The experiment was carried out in Lagoa Grande county, Pernambuco, Brazil (9°2'S, 40°11'W), during the 2007 harvest season, when 10, 5 and 2% of hydrogen cyanamide were applied by foam paint roller or by sprayer (this system involved an employee wearing backpack sprayer (model JACTO-PJH20) with wands 50 cm in length using a type JA2 nozzle), compared with a control modality (without application). The Tukey test was used to compare means of the treatments. Significant differences ($p < 0.05$) in yield, cluster number per vine, budburst percentage, and potential and practice fertility were registered. The average yields per vine showed less efficient when 10% painted and 2% sprayed of hydrogen cyanamide were applied, which were similar to the control plants. For application by spraying, the best performance results were obtained with higher doses of 5 and 10%, while for painted application the best yields have been obtained from 5% and 2% doses. Compared to the control, these best treatments resulted in an increase in the cluster numbers, but except the 5% spraying that presented clusters per vine similar to the control. All the treatments increased significantly the percentage of budburst, and potential and practice fertility, compared to the control. It is concluded that it's indispensable the application of hydrogen cyanamide for the Cabernet Sauvignon variety in this tropical region. Furthermore, the results showed that the foam paint roller application with 2 % of hydrogen cyanamide could be the best choice, with reduction of product concentration, risk in drift and environmental impact of this treatment. This form of manual application can also increase the demand for operator, but the cost of operation is lower than the others treatments, when we analyze the price of product and the amount required.

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Physical and chemical characterization of grape fruits for processing from the Embrapa Semi-arid active germplasm bank

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The characteristics of the tropical viticulture in the Lower Basin of São Francisco Valley require appropriate management techniques and responsive cultivars to the regional conditions. Then, it is important do consider opportunities for inclusion of new cultivars, making the characterization and evaluation of germplasm in specific conditions an important strategy for selection of adapted genotypes and with other desirable traits in breeding programs (Borges et al., 2012). Thus, the objective of this study was to characterize physical and physicochemical attributes of quality in grapes for processing, maintained in the Active Germplasm Bank of Embrapa Semi-arid. The experiment was carried out in the Mandacaru Experimental Field, in the Lower Basin of São Francisco Valley, Brazil. The vines were grown in espalier, in bilateral cord, in 3 m x 2 m spacing, on the IAC-572 rootstock and adopting the drip irrigation. In the production cycle of the second semester of 2015, the cultivars Ancellota, BRS Carmem, Campanário, Cabernet Sauvignon, Carmenére, Cinsaut, Ferral, Gamay Beaujolais, Grand Noir, Malbec, Máximo, Merlot, Olivetti Noir, Periquita, Portuguesa Blanes, Royalty, Sangiovese, Sauvignon, Tempranillo and Tinta Roriz were evaluated. Bunches were picked when the berries were ripe. After harvesting, they were transported to the Postharvest Physiology Laboratory of Embrapa Semi-arid, where they were evaluated for the following characteristics: skin color (measuring luminosity – L – and a* and b* attributes), resistance to a compression force, soluble solids (SS) content, titratable acidity (TA) and SS/TA ratio. Grape fruits cultivar Royalty were highlighted by the highest soluble solids content and a moderate titratable acidity, being an important aspect for the wine quality.

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Residue and residue flour from 'Chardonnay' wine processing

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The wine industry in tropical regions is favored by the different climate and soil conditions, with faster development of vineyards, resulting in grapes and wines with quality and unique flavors. Some countries stand out in this production, including Brazil, India, Thailand and Venezuela, among others. Brazil is a pioneer in the implementation of the wine production in tropical regions, mainly in the Sao Francisco River Valley region. The Chardonnay variety is used for the preparation of white wine in different locations around the world and this process can generate a large amount of residue, which is normally discarded, causing environmental damage. The aim of this study was to evaluate the viability of the production of the flour from the residue of production of Chardonnay white wines and characterize the change of the quality attributes during the transformation of the residue in residue flour. Residue of the winemaking process of Chardonnay variety was separated into portions without drying for the residue analysis and three repetitions were dried in an oven at 65°C (±3°C), until constant weight (48 hours), when the moisture values were obtained. For each repetition, the dried residues were separated and the flour was obtained using an industrial blender and 20 mesh sieves. The analyses realized with the fresh residue were: moisture content, color, pH, acidity and total soluble solids. For the residue flour, the productivity, pH, acidity, soluble solids and color were evaluated. The obtained results for flour and residue were compared according to Tukey´s test at 5% of probability. The values for acidity and total soluble solids were statistically higher in flour when compared with the data obtained from the residue and the inverse was observed for pH. For color analysis, the lightness (L*), and the coordinates a* and b* were higher for the flour. The residue presented 64.91% of moisture and flour productivity was 65.71%, based on the dry residue mass. Higher amounts of acidity and soluble solids in the flour can be explained by the concentration of compounds during the drying process, when an increase from 0.56 to 1.69% and 2.45 to 6.95% was observed, respectively. These variables provide an important data to determine quality levels during the flour processing. Soluble solids comprise compounds responsible for flavor, such as organic acids and carbohydrates. The higher acidity of the flour can also infer the conservation capacity of a food product and limit the use of residue flour in foods where this factor is limited to consumer acceptance. The opposite may occur in relation to the possible contribution of soluble solids content in a flour added product, increasing these values and the fiber amounts, being an important alternative for obtaining new products fortified nutritionally. The color of the residue and flour is important because, when added in other food products, it can determine changes that could interfere in consumer acceptance, since the global appearance is one of the first evaluated variables. For the pH values, an acid characteristic of the products were confirmed. The effect of temperature during the flour processing may have been responsible for the observed quality differences between the residue and flour. It is practicable to obtain the flour from the residue of the Chardonnay white wine production, since a production of 65.71% of flour from the dry residue is possible, being an alternative to reduce the residue generation and for the addition and development of food products with higher nutritional and functional factors.

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Fruit quality of 'Chenin Blanc' grape influenced by different rootstocks during a production cycle in the second half

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Physical and chemical characteristics of the berries are essential for determining the wine quality. Those components of quality, which are directly related to cultivar, management adopted in the vineyard and the wine-growing ecosystem, guarantee the distinctive character of the product (Silva et al., 2015). Regarding to management, the use of rootstocks provides improvement in plant vigor, yield and on some characteristics of the fruit, such as pH, acidity and soluble solids. This study aimed to evaluate the influence of different rootstocks on physico-chemical characteristics of the fruits of 'Chenin Blanc' grapes produced in the second half of the year. The study was accomplished in the Experimental Field of Embrapa Semi-arid (09°09'S, 40°22'W, and altitude: 365.5 m). Vines were trained on a vertical shoot position and spur pruned in a bilateral cordon, in 3.0 x 1.0 m spacing and using a drip irrigation system. The vines were grafted on rootstocks IAC 313, IAC 572, IAC 766, SO4 and Paulsen 1103. In the production cycle of the second half of 2015, whose harvest was held in October, the following variables were evaluated: bunch weight, berry mass, resistance to compression force, skin color (measuring luminosity, chroma and Hue angle), soluble solids content, titratable acidity, soluble sugars content and yellow flavonoids in the peel. The experimental design was a randomized blocks with four replicates. Data were submitted to analysis of variance and means were compared by Tukey's test ($p < 0.05$). Treatments did not influence cluster weight, berry weight, skin color and yellow flavonoids. Grapes harvested from vines on the rootstock IAC 572 showed greater resistance to compression force. The highest soluble solids and soluble sugars content were observed in grapes harvested from plants grafted on Paulsen 1103 and SO4, respectively. Vines growing on IAC 313 produced berries with lower soluble solids and soluble sugars content. That response can be justified by the high vigor conferred by this rootstock to 'Chenin Blanc' grape. In the production cycle studied, rootstocks influenced some physical and chemical components of fruit quality, and the most vigorous rootstocks reduced soluble solids and soluble sugars content in berries of 'Chenin Blanc' grapes. This response may determine the quality of the wines.

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Enological potential of 'Pinot Noir' grape and wine from a tropical climate, in the Chapada Diamantina - BA, Brazil

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Tropical viticulture, although relatively new, has achieved significant technological developments in Brazil, making possible cultivation of vines in areas beyond standard traditional winegrowing areas worldwide. Techniques such as irrigation, the use of growth hormones in vines and production control at different times during the year, are being applied in other regions of Northeast Brazil for the production of wines. Some varieties express the best of their viticultural and enological potential in a given ecosystem, and Pinot Noir variety is very difficult to produce because presents a high susceptibility to fungal diseases (Reynier, 2007). This study aimed to evaluate the enological potential of red wines obtained from 'Pinot Noir' grapes produced in a new tropical winegrowing region located in the Chapada Diamantina, Bahia, Brazil. Wines were elaborated traditionally according to standard red winemaking process (Peynaud, 1997). Physical-chemical analysis of grapes and wines were made to determine the potential enological and adaptation to the region (OIV, 1990). The grapes were harvested in July 2015, whose parameters determined were total soluble sugars (ºBrix), pH and total acidity, with values of 20.00 º Brix, 3.5 of pH and 8.6 g L^{-1} of total acidity as tartaric acid. The analytical results of the wines showed an alcoholic degree of 10.23%, pH of 3.77, whereas total acidity was 6.97 g L^{-1} as tartaric acid. Volatile acidity was 0.30 g L^{-1} of acetic acid, confirming a good enological process, without any problem. Although the results indicated a satisfactory enological potential of the Pinot Noir variety for red wines in this new winegrowing region with tropical climate, further studies are still necessary.

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Evaluation of physicochemical characteristics of 'Chenin Blanc' wines in two vintages produced in the São Francisco Valley, Brazil

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The predominant grapes in the São Francisco Valley (SFV) are from European origin (*Vitis vinifera* L.). According to Pereira (2011) the tropical viticulture developed in this region differs from the traditional areas due to the capacity of a vine to produce more than one crop per year. Chenin Blanc is one of the main cultivar used to elaborate white wines, presenting a good adaptation to the soils and climatic conditions of the SFV area, and typical characteristics in the region. Climate changes according to the years and can influence wine characteristics (PEYNAUD, 1997). In this way, to evaluate effects of different vintages on physical-chemical characteristics of Chenin Blanc white tropical wines from SFV, this study was carried out. Wines used in this study were elaborated by traditional process to obtain dry white wines (PEYNAUD, 1997), at Embrapa Semi-arid, evaluating two seasons, the first one in July 2014 and the second one in September 2015. Vines were planted in a partner winery, cultivated in pergola, grafted onto IAC 572, and drip irrigated, in Santa Maria da Boa Vista, Pernambuco state, Brazil. There were performed classical physical-chemical analysis to determine density, alcohol content, dry extract, pH, total acidity, volatile acidity, free SO_2 and Total SO_2 in triplicate, thirty days after bottling, according to the official methods (OIV, 1990). The results showed that data were similar in both harvests 2014 and 2015 for density, pH, dry extract, free SO_2 and total SO_2. For both vintages, volatile acidity was low, indicating good control for winemaking process. Significant differences according in relation to the alcohol content and total acidity of the two harvests (10.9 °GL and 11.2 g L^{-1} of tartaric acid in 2014, and 11.4 °GL and 8.2 g L^{-1} of tartaric acid in 2015, respectively). Differences can be justified by the grape ripeness, expressed in total acidity, which Chenin Blanc grapes were less ripen in 2014 than in 2015 (11.3 g L^{-1} in 2014 and 8.2 g L^{-1} in 2015, respectively). Wines showed different sensorial profiles (data not shown), more fruity and floral for 2015 vintage, as compared to 2014 vintage. Climate factor, even in tropical conditions, can play an important role on wine typicality in the Northeast of Brazil.

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Effect of bud load on table grape cultivar Sugrathirteen (Midnight Beauty®) fruit quality

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The present research was conducted during two years, in an experimental area to introduce new cultivars at the Prodomo farm in Petrolina, PE, Brazil. The main objective of this study was to measure the influence of different loads of buds and on the canopy management aiming the commercial and economic viability of cultivar Sugrathirteen (Midnight Beauty®) production at the sub middle region of the São Francisco Valley, Brazil. The experimental consisted of table grape plants of cv. Sugrathirteen with eight years old grafted on 'Paulsen 1103' rootstock, spaced 3.5 m x 2.0 m, in a pergola trellis system. A randomized blocks design was used with a 2 x 5 factorial scheme, being two periods and five treatments distributed in four blocks, considering five plants for each repetition. The vines were submitted to different charge of buds with the following treatments: pruning with 6 buds (17 buds/m^2); 8 buds (23 buds/m^2); 10 buds (29 buds/m^2); 12 buds (34 buds/m^2); 14 buds (40 buds/m^2). The following variables were determined: soluble solids content, titratable acidity, number of clusters per plant and yield (ton./ha). For the chemical characteristics to the fruit, it was found for the first year of evaluation that in short pruning and for the treatment with six buds, a higher content of soluble solids was observed, differing statistically from the treatments with 10 and 12 buds. Therefore, for the second year of the experiment, no difference was observed between the treatments. It is important highlight that occurred a superiority on the soluble solids content for all treatments when the first and the second year of evaluation were compared, presenting values above to (17 ºBrix). However, for the two year of evaluation, each treatment reached contents above (15 ºBrix), which is considered appropriated for the crop. For titratable acidity on the first year of evaluation, a lower acidity was observed for the treatment with six buds, when compared to acidity levels of the treatments with 10, 12 and 14 buds. However, the acidity was higher for the first year of evaluation for all treatments, when compared to the second year of evaluations, in which no statistical differences was observed between the treatments. It was observed that in relation to the number of cluster per plants, no significant differences between the treatments during the two evaluated years was observed, due to the established standard right after the fruit set, to not affect directly the yield. The results shows that the pruning with 8, 10 and 12 buds during the two evaluated periods resulted in a higher significant effect on the yield, when compared to the treatment 6, without affecting fruit quality.

Pruning effect on phytotechnical characteristics of Sugrathirteen (Midnight Beauty®) table grapes

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With the increasing expansion of the Brazilian viticulture, new alternatives to increase vines yield without affecting fruit quality are being studied. The objective of this study was to measure the influence of different intensities of buds load on the crop management aiming the commercial and economic production of table grapes cultivar Sugrathirteen (Midnight Beauty®) in the sub middle region of the São Francisco River Valley, Brazil. The experiment was conducted during two years at the Prodomo farm in an experimental area for new cultivars introduction in Petrolina, PE, Brazil. The experimental area consisted with "Sugrathirteen" vines with eight years old, grafted on the 'Paulsen 1103' rootstock, spaced 3,5 m x 2,0 m and in a pergola trellis system. A randomized blocks design was used in a 2 x 5 factorial scheme, being two periods and five treatments distributed in four blocks, considering five plants per repetition. The vines were submitted to pruning with the following treatments: pruning with 6 buds (17 buds/m^2); 8 buds (23 buds/m^2); 10 buds (29 buds/m^2); 12 buds (34 buds/m^2); 14 buds (40 buds/m^2). The following variables were determined: percentage of bud break, bud fertility, number of clusters per plant and yield (ton./ha). It was observed an increase on buds expression fertility for potential fertility on the treatments with 8, 10, 12 and 14 buds, being higher for treatment with six buds. For the percentage of sprouting, no differences between treatments was observed during the first year of evaluation, but during the second year, the treatment with eight buds presented lower values, compared to others. The highest sprouting percentage was obtained on the first evaluation year for treatments with 8, 10 and 12 buds. There was no difference between years for treatments with 6 and 14 buds. It was observed for the number of clusters per plant, that no significant difference between the treatments for the two evaluated years was observed, due to the established standard right after the fruit set to not affect directly the yield. The results shows that 8, 10 and 12 buds improved yield, compared to 6 buds, without affecting final fruit quality.

Aspergillus species in *Vitis vinifera* of organic and conventional farming in the São Francisco Valley, Brazil

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The biodiversity of filamentous fungi is one of the most important contributions to the occurrence of mycotoxins in agricultural products. The fungi species belonging to the genus *Aspergillus* has been blamed for the presence of mycotoxins in wine. The incidence of fungi of these genera in grapes will depend on climatic conditions, grape variety, form of cultivation and agricultural practices. This study aimed to identify *Aspergillus* species isolated from wine grapes from organic and conventional cultivation Sub-medium region of the São Francisco Valley. Varieties evaluated were Touriga Nacional and Ruby Cabernet in conventional farming and Tempranillo in organic farming. A direct plating method was carried out in DRBC agar, a selective culture medium, at 25°C/7 days (Samson et al., 2000). The isolates were identified using CYA and MEA, standard culture media (Klich, 2002; Pitt, 2000). The determination of toxigenic potential was performed by Thin Layer Chromatography (Filtenborg and Frisvad, 1980). The Touriga Nacional and Ruby Cabernet varieties had 100% berries contaminated by filamentous fungi, while the Tempranillo variety, had only 6% of infected berries. Nineteen fungi of the Touriga National variety were isolated and identified: *A. aculeatus* (1) *A. niger* (3) and A. *carbonarius* (15) and 10 fungi of the Ruby Cabernet variety: *A. aculeatus* (7), *A. foetidus* (1) and *A. tubingensis* (2). There was no presence of *Aspergillus* in the Tempranillo. All *A. carbonarius* (15) were producers of ochratoxin A. All identified species of fungi was naturally present in wine areas and can spoil the grapes, but the presence of these toxigenic species does not necessarily indicate the presence of ochratoxin A in wine. The use of good agricultural practices is important to minimize the presence of filamentous fungi and the production of toxins. These results demonstrate that the practice of organic farming adopted in the region has a positive influence on health of wine grapes studied.

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Chemical composition of wines produced in the São Francisco Valley, Brazil

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The region of the São Francisco Valley is the second in the production of fine wines in Brazil. In this Region differentiated edaphoclimatic conditions promote typicality wines. This study aimed to evaluate the phenolic composition and chromatic parameters of wines produced in the São Francisco Valley with different rootstock. Wines of Syrah, Petit Verdot and Tempranillo, cultivated with rootstock IAC-313 and 1101-Paulsen. Spectrophotometric methods were used to determine total polyphenols, total anthocyanins, total tannins, color intensity and hue. The analyzes were performed at the Experimental Laboratory and Food Analysis of the Federal University of Pernambuco. Wines presented different phenolic concentrations as color on the types of grape and rootstock used. The Syrah wines were showed the lost stability with rootstock variation. Although these wines showed the highest concentration of total anthocyanins for both rootstock and higher than those found by Araújo et. al (2009). Petit Verdot wines presented great uniformity with respect to rootstock for all parameters and corresponded to those found Santiago et. al (2010). Different rootstocks resulted in significative ($p<0,05$) variations on color parameters for all wines. Tempranillo wines showed the lost color parameters stability. Syrah wines showed the less color intensity, the opposite occurred with Petit Verdot ones. The São Francisco Valley wines showed great total polyphenol, total tannins and total anthocyanins concentration. There is influence of the rootstock in the phenolic composition and color parameters. The Petit Verdot grapes produced the highest stability wines in relation the phenolic concentrations and color parameters for all rootstock.

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Phenolic compounds and organic acids evaluation on red grapes used for winemaking in the Northeast of Brazil

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Monitoring maturation to determine harvest time is very important to determine the enological potential and the quality characteristics and typicality of the wines (Borghezan et al., 2011). Considering that there is no cold weather in the São Francisco Valley, it is possible to scale and production of two harvests per year. This study aimed to determine the chemical composition of the 'Syrah' and 'Tempranillo' grapes, during maturation. Sixty plants were used for each cultivar, divided into three blocks. The vineyards were implemented in 2006, with upward vertical conducting system, rootstock IAC-766 and drip irrigation. Four hundred berries of each variety were evaluated from veraison until harvest, between May and July, 2008. Spectrophotometric and chromatographic analyses of grapes were carried out weekly to determine the follow analytical parameters: total polyphenol index; organic acids; total anthocyanins; color intensity and tonality (Lima *et al.*, 2011; Giovanelli and Buratti, 2009; Harbertson and Spayd, 2006). The results showed different responses of the two varieties throughout maturation. Significant values were observed for malic and citric acids, total anthocyanins, total polyphenol index, color intensity and tonality for the two varieties evaluated. At harvest, 'Syrah' grapes had high malic acid content, indicative of incomplete maturation. A significant correlation was observed between total polyphenols index and anthocyanins for both cultivars. This correlation can be used as a tool to differentiate cultivars (Giovanelli and Buratti, 2009). Chromatic parameters were determined due to the quality of the visual attributes of wines. Different adaptation was observed for both cultivars in the edaphoclimatic conditions of this region. It is necessary to adopt specific winemaking protocols to enhance the quality of wines.

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Enological characteristics of 'Chardonnay' grapes produced in tropical climate in the Northeastern of Brazil

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The climate has very strong influence on the vine performance, being the main factor to determine the potentiality of wine from a new region. There is also interactions among wine quality and other factors, such as soil, variety and the management adopted in the vineyard. In tropical climates, as in the São Francisco Valley (VSF), located at 350 m of elevation and 9º S of latitude, vines grown continuously, and with the use of specific technologies, it is possible to have two harvests per year in the same vineyard. Furthermore, the harvest date can be chosen by enologists, according to the market, or chosen according to the best season to have grapes presenting high enological potential. In Chapada Diamantina at Bahia state, in Morro do Chapéu city, another new winegrowing region is starting to produce fine wines five years ago. Until today there is not commercial wines from this place, but were done many tests to select the most fit varieties. The main difference between Chapada and VSF is the climate, specially related to contrasts in the altitude. Morro do Chapéu is located at 1,100 m above sea level, at 11º S of latitude, and this increase the daily temperature range and reduces the heat sum and the phenological evolution, being possible to have only one harvest per year. In this context, the aim of this work was to evaluate Chardonnay grapes at harvest, analyzing some physical and chemical parameters, to determine the enological potential of grapes in this new winegrowing region. Grapes were harvested in August 2016 and 100 berries were randomly sampled from 200 Kg in triplicate, to determine pH, total acidity, total soluble sugars, must volume and average fresh mass of berry, skin, pulp and seeds. Analyzes were carried out at Enology Laboratory of Embrapa in Petrolina-Pernambuco State, Brazil. The must showed 21.5ºBrix, which was enough for fermentation; pH of 3.1 that was important to wine stabilization; and total titratable acidity of 9.6 (g L^{-1} of tartaric acid). As compared to others grapes harvested in tropical climate, such as São Francisco Valley, these results are very interesting because grapes presented high acidity and low pH, and these features can improve the shelf life of this wine. The physical results showed 100 berries with 144.3 g and 70.4 ml of volume, while skins, pulps and seeds represented, respectively, 15.3%, 78.3% and 6.4% of total berry. These results presented contrasts to other winegrowing regions and emphasize the climate and soil influences on the variety adaptation in a new terroir (Peynaud, 1997). As conclusion, Chardonnay variety could be used to elaborate fine white wines in the Chapada Diamantina, with interesting values of sugar, acidity and pH, but the research must go on in this new and promising wine region.

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Total phenolic contents of commercial red wines produced in the São Francisco Valley, Brazil

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The content of phenolic compounds in wines (about 8000 compounds) is dependent on the grape variety used. In addition to their important role in the wine quality, the phenolic compounds have antioxidant properties that can reduce the risk of cardiovascular, inflammatory, carcinogenic, bacterial and viral diseases (Radovanovi'c et al, 2012). In this context, the aim of this study was to evaluate total phenolic composition in different tropical red wines produced in the São Francisco Valley, located in the Northeast of Brazil. Fifteen commercial red wines from different grape varieties and vintages were analyzed in triplicate. The varietal samples were provided by four wineries (coded as I, II, III and IV) were prepared from the varieties Cabernet Sauvignon, Petite Syrah, Ruby Cabernet, Syrah, Tannat, Tempranillo and a blend of Cabernet Sauvignon and Syrah. All bottles of wine were stored at -80°C until time of the analysis. The total phenolics content was determined with the aid of a spectrophotometer UV / Vis (Varian®) at 725nm followed by a dilution at 0.1% with distilled water, and a reaction with the Folin-Ciocalteu reagent stabilized with sodium carbonate. The contents were calculated with a calibration curve using gallic acid as standard (0.40 to 8.0 mg.L^{-1}) and the data expressed as mg of gallic acid equivalents per liter (EAG).L^{-1} (Giovanelli and Burattti, 2009) .The average total phenolic compounds of all wines analyzed ranged from 1045.43 to 6758.93 ± 0.10 ± 1.10 mg EAG.L^{-1}. The lowest and highest values were observed in wines from Cabernet Sauvignon and Syrah, respectively, both from the same winery (IV) and harvest (2012). The highest average content of total phenolics between varieties, was presented by Petit and Syrah (5021.47 ± 1031.01 EAG.L^{-1} mg) and between the wineries, the IV (4764.92 ± 2605.71 mg EAG.L^{-1}). The presented results demonstrated the high quality of tropical Brazilian wines, as the composition of total phenolics in relation to the wines produced in several countries.

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Sugar content during maturation of 'Syrah' grapes according to vine fertilization

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The viticulture in the semi-arid region, especially at the São Francisco Valley, Brazil, stands out on the national scene with high yields and high quality of the produced grapes, mainly regarding the sugar content. This fact is due to soil and climatic conditions of the region and the availability of water resources that favors the vine production all over the year. The accumulation of sugar in the grapes is essential for winemaking process, since it is necessary for alcohol production by yeasts, which contributes to wine aroma and taste. The aim of this study was to evaluate the fructose content on Syrah grapes during maturation, according to potassium and nitrogen fertilization on vines. At Embrapa Semi-arid experimental field, in Petrolina, PE, Brazil, Syrah vines, in four blocks and drafted on Paulsen 1103 rootstock, fertilized with 0 (control - Treatment 1) or with 120 kg ha^{-1} of nitrogen, 120 kg ha^{-1} of K_2O, as potassium nitrate and urea (Treatment 2) were evaluated from 105 days after pruning and at five stages (points) before harvest, according to the fructose accumulation of the fruit, collecting 50 berries per each treatment and evaluation time. The fructose content determination was realized by HPLC (WATERS, Aliance e2695, with refractive index detector) and the samples were extracted and filtered with a membrane 0,45μm and injected in three repetitions. For the separation, the column Rezex RHM-monosaccharide H + 300 x 7.8 mm was used with a Carbo H, 4.0x3.0mm pre-column. For the mobile phase, ultrapure water was used with an isocratic flow of 0.6 ml min-1 and oven temperature of 40°C. Ten μL of standard and samples were injected and calculations were performed according to the conditions used. According to the results, it is possible to observe a progressive increase in fructose content in berries from both treatments until the point 3 of the maturation curve, with a small decrease on point 4 and followed by a new increase at the end of the maturation curve – point 5. The progressive increase in the fructose concentration of the berries is a function of their growth and metabolism of carbohydrates in the fruit with the advance of maturity, which favors the accumulation of sugars used in cellular respiration, plant growth and then the amount that is not consumed, can be concentrated in the berry. With the progress of the maturation process, the sugars from the photosynthetic process can accumulate in higher amounts and an increase in production by the plant is due to mature leaves and further increase on leaf surface. The slight decrease in the fructose content of the berries can be attributed to changes in weather conditions or the phenological phase controlling plant photosynthesis, influencing the sugar production and transport. However, there was no significant difference between treatments. The means for the fructose content varied from 26.932 to 73.818 mg 100 g^{-1} for treatment 1 (control) and from 13.382 to 99.906 mg 100 g^{-1} during the maturation curve. The highest difference between treatments was observed in point 5 of the maturation curve with 26088 mg fructose.100g^{-1} and the lower at point 4, with the amount of 5452 mg fructose.100g^{-1} of difference. This data suggest that the available amounts of nutrients in the soil were sufficient to achieve the crop demands, regardless the additional supply of K and/or N. Based on the results, it is possible to conclude that the potassium and nitrogen fertilization in the amount and conditions of this study did not exert influence on the accumulation of fructose during Syrah grapes ripening at the São Francisco Valley, Brazil.

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Quality of tropical red wines from different varieties in the São Francisco Valley, Brazil

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The vitiviniculture at the São Francisco Valley, Brazil, is a recent and under development activity. It is located in the semi-arid of the northeast of Brazil, with socio-economic importance for the region, since the grape chain generates more than 80,000 direct and indirect jobs. The particular soil and climate conditions of the region, associated with the high incidence of radiation, winter absence and availability of water for irrigation, enable the production of grapes and wines of *Vitis vinifera* L. throughout the year, with two to three harvests per year, depending on the cycle of each variety. The aim of this study was to evaluate the physic-chemical quality of red wines from different varieties, some of them already adapted in the region. 'Petit Verdot', 'Tempranillo', 'Syrah', 'Malbec', 'Cabernet Sauvignon' and 'Merlot' grape varieties were harvested in November, 2014 and June and November, 2015 (2nd, 3th and 4th cycles of production) and the experiment was carried out at Embrapa Semi-arid experimental field in Petrolina, Pernambuco, Brazil (09° 09'S, 40° 22'W, 365.5 m). In this experiment the plants were conducted in espalier system, grafted onto Paulsen 1103 rootstock and drip irrigated. The winemaking process involved the following steps: alcoholic fermentation (25 ± 1 °C) for 20 days with eight days of maceration time; malolactic fermentation (18 ± 1°C) for 30 days and cold stabilization (0°C) for 30 days. Wines were bottled and stored in wine cellar (18°C and 60% of humidity) for one month. Afterwards, the following physic-chemical analyses were carried out: total and volatile acidity, pH, total dry extract, density, total polyphenol index, alcoholic content, free and total sulfur dioxide, total anthocyanins and color intensity. All wines presented high pH (≥4.0), low total acidity and total polyphenol index, probably because young plants at the beginning of their first production cycles were used. In general, the results highlighted 'Petit Verdot' variety potential. Wines of this cultivar presented higher alcoholic content (> 13% v/v), total polyphenol index (ranging from 50 to 65), dry extract (ranging from 33 to 38 g L^{-1}), color intensity and anthocyanins (ranging from 224 to 495 mg L^{-1}) than other wines evaluated.

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Influence of organic fertilization and fertigation on quality of 'Syrah' tropical wine produced in the São Francisco Valley, Brazil

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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 physic-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^3 ha^{-1}) and five doses of potassium - K_2O (0, 20, 40, 80 and 160 kg ha^{-1}), arranged in a randomized block design with five repetitions in a split plot. The organic fertilizer constituted the plots and the doses of K_2O 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 physic-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^{-1}) presented higher polyphenol index (74.7), total acidity (9.30 g L^{-1}) and dry extract (42.95 g L^{-1}). The higher anthocyanin content (406.62 mg L^{-1}) was observed for the treatment with higher dose of potassium trough fertigation (160 kg ha^{-1}) 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.

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Sensory profile of tropical 'Syrah' wines from different clones and rootstocks

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In oenology, sensory evaluation is an important tool that enologists have to assess the quality of the wines. Consists in evaluate wines aiming to identify its defects and describe the qualitative attributes, regarding visual, olfactive and gustative characteristics (Rizzon, 2010). There are many factors affecting composition and quality of wines. Among them, soil, climate, vine management and winemaking process (Sánchez and Dokoozlian, 2005). Through chemical and sensory analyses, wines can be characterized by explaining their qualities and typicality. In this way, this study aimed to evaluate the effects of rootstocks, clones and harvest date on sensory characteristics of 'Syrah' wines, from grapes cultivated in a partner winery, in Lagoa Grande, Pernambuco state, Brazil, from 2009 and 2010 vintages. Vines were planted in 2003 and grafted onto two rootstocks (Paulsen 1103 and IAC 313), with five Syrah clones (100, 174, 300, 470 and 525). Grapes were harvested at optimal maturity for red wines and elaborated at Embrapa by traditional red winemaking (Peynaud, 1997). Twenty wines were tasted by a trained panel of enologists to describe sensory characteristics, as visual, aromatic and gustative parameters. Data assessment from a non-parametric scale with 17 sensory parameters allowed discriminating different wines by variance test (factorial and F test) and principal component analysis (PCA). The most of the parameters, the interaction between clone, rootstock and harvest factors were significant. Graphic obtained from PCA (principal component-PC 1 x PC 2) explained 71.8% of total variability and it was possible to discriminate as the most important factor harvest date, followed by rootstock and the last one and less important was the clone of the cultivar. As conclusion, the hierarchy of the factors influencing wine sensory characteristics in the São Francisco Valley was climate, rootstock and clone of Syrah grapes.

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Phenolic compounds and antioxidant activity of commercial tropical red wines (*Vitis vinifera*) from the São Francisco Valley, Brazil

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The sub-middle region of the São Francisco Valley (SFV), located in northeastern Brazil, is different from other Brazilian wine producing regions and major world wine producing areas, because this region has specific climatic conditions, since the SFV is situated between the southern hemisphere parallel of 8-9° and at 350 m altitude in a semi-arid tropical climate zone, with average temperatures of 26°C, high intensity sunlight (3,000 h/year) and low annual rainfall (about 500 mm) (Teixeira et al., 2013). These different weather conditions, coupled with the absence of a winter and application of water by irrigation, make it possible to obtain 2 crops in the SFV in the same year. In order to learn about tropical wines better, such as those produced in SFV, there is a need to characterize these products in order to show the specificities of the qualities related to their region of origin. Among the chemicals that are worth mentioning in assessing the potential of a region to produce wines of good quality, there is the phenolic composition. Objective of this work was to study the phenolic composition and antioxidant activity of commercial red wines made from grapes *Vitis vinifera* L. grown in a tropical climate region. Seven samples of commercial red wines were analyzed. The samples were provided by the five wineries installed in SFV area. All wines showed phenolic compound values according to other traditional regions and high antioxidant activities. In total, 20 phenolic compounds were quantified by HPLC-DAD-FLD, especially malvidin-3-*O*-glucoside, catechin, and procyanidin B2, which were the main ones, followed by gallic acid, syringic acid, kaempferol, and rutin. The antioxidand activity was positively correlated with the content of syringic acid > peonidin 3-*O*-glucoside > ρ-coumaric acid > (+) – catechin > epigallocatechin gallate > cyanidin 3-*O*-glucoside > procyanidin A2 > (-) – epicatechin highlighting the contribution of these bioactive compounds with the potential of tropical wines. This study shows that it is possible to obtain wines with good bioactive component content and high antioxidant activity in such tropical climates as in SFV, the data contribute the knowledge of the wine producing potential of new regions worldwide.

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Selection and evaluation of Saccharomyces cerevisiae wild strains isolated from fermented must of grapes produced in the São Francisco Valley, Brazil

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The use of *Saccharomyces cerevisiae* indigenous strains in the winemaking as starter yeast alcoholic fermentation is increasingly exploited by wine producers seeking to typicality to their beverages (Sun et al., 2014). These indigenous strains show a greater adaptation to the environment and the particular fermentation conditions, resisting the stresses present. The aim of this study was to select S. cerevisiae indigenous strains isolated in the must fermented of grapes (*Vitis vinifera* L.) harvested in the São Francisco Valley, and evaluating its performance during fermentation process of winemaking. One hundred eighty four *S. cerevisiae* indigenous strains were tested for the production of H_2S and 46 did not produce H_2S. Eighty *S. cerevisiae* indigenous strains and six commercial strains were used for micro fermentation experiments with synthetic must (Bely et al., 1990; Rossignol et al., 2003). At the end of the alcoholic fermentation process, ethanol, secondary compounds and the sugar consumption were determined. Based on the micro fermentation results, nine *S. cerevisiae* indigenous strains were selected. These strains and two *S. cerevisiae* commercial strains were used for wine production in small scale. Furthermore, fermentation parameters of yeasts were similar during the winemaking. From thirty three volatile organic compounds identified, sample of wine 8 showed the best concentrations of fruity aromatic compounds. The volatile compound 2-phenylethanol (floral aroma) was obtained in an elevated concentration in the wines 7, 8, and 9 with higher levels than the other ones. After further studies, these strains may be used to produce wines in the São Francisco Valley Region, contributing for the typicality of the wines produced in that area.

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Saccharomyces cerevisiae and non-*Saccharomyces* isolated from fermented must of grapes produced in the São Francisco Valley, Brazil

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Yeast are unicellular fungi responsible for the alcoholic fermentation of wine and *Saccharomyces cerevisiae* is the mainly species used. São Francisco Valley wines are produced by imported yeast but have been seeking through various forms an identity, among them the possibility of producing their own wines with indigenous yeast. In this case, the aim of this work was to select *S. cerevisiae* indigenous strains and non-*Saccharomyces* yeasts isolated in the must fermented of five varieties of grapes (*Vitis vinifera* L.) farmed in the São Francisco Valley (VSF). The yeasts were grouped preliminarily according to various characteristics, including their colony morphology, standard tests for growth on different carbon and nitrogen sources, subjected to osmotolerance tests, resistance to antifungal, thermotolerance and fermentation of sugars (Kurtzman et al., 2011). All isolates previously identified as *S. cerevisiae* were compared using mitochondrial DNA restriction analysis (mtDNA-RFLP) for to distinguish between different *S. cerevisiae* strains (Querol et al., 1994). The mitochondrial DNA was digested with *Hinf*I restriction endonuclease (Invitrogen, Carlsbad, CA, USA). Non-*Saccharomyces* were characterized molecularly using the Intron Splice Site primer EI-1 and performed the sequencing of the ITS-5.8S region and D1/D2 domain of the largest subunit rDNA for identification of the species (Kurtzman et al., 2011; Rosa et al., 2007). A total of 368 yeast isolates were obtained. Among them, 259 *S. cerevisiae* and 109 non-*Saccharomyces* strains were identified. By mtDNA-RFLP technique it was possible the identification of 184 *S. cerevisiae* indigenous strains and 75 *S. cerevisiae* representing commercial strains. Twenty-two different profiles of mtDNA-RFLP were found in *S. cerevisiae* indigenous strains in comparison with the six most used *S. cerevisiae* commercial strains in the VSF. Therefore, the musts fermented grapes harvested in the São Francisco Valley region were substrates suitable for the isolation of *S. cerevisiae* indigenous strains and non-*Saccharomyces* yeasts.

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Analysis of the physicochemical characteristics of juices produced from grapes harvested at different maturity stages

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Currently the cultivation of grapes for grape juice production has gained ground in new regions of Brazil, as the example in the São Francisco Valley (SFV) located in the Northeastern of Brazil between the parallels 8:09° Southern Hemisphere and 40W longitude in a tropical semi-arid climate. Companies have invested in the production of grape juice on a commercial scale in this region is estimated in 2015 a volume of 1.5 million liters of whole juice. However, viticulture practiced in VSF (Tropical Viticulture) is different from other traditional regions of the world, for the same vine produces two crops per year, with this, the wineries are planning the time when they intended to harvest the grapes and perform production pruning vines at different times, by adopting a scaling system to be distributed crops throughout the month, and several months of the year. The aim of this study was to evaluate how physical and chemical characteristics of the elaborate hp grape juices with. cv. Isabel precocious and BRS Violeta, harvested at different maturity stages in the São Francisco Valley. The juices were prepared in triplicate by the "Hot Press". Three maturation Stadiums were evaluated (T1 = 113, T2 = 120 and T3 = 127 days after pruning). The analyzed parameters were total soluble solids (°Brix), titratable acidity (Expressed in g L^{-1} of tartaric acid), volatile acidity (expressed in L^{-1} acetic acid g), hue, color intensity (420, 520, and 620 nm), pH and anthocyanins Total (mg L^{-1}). The treatment T1 presented the following results: T1 = 20.7 °Brix, pH 3.2 and 0.95 g L^{-1} of total acidity; Treatment T2 showed 21.9 °Brix, pH 3.4 and 0.88 g L^{-1} total acidity; and T3, with 22.1°Brix and pH 3.5, total acidity of 0.82 g of L-Tartaric acid 1, showing that evolves the phase of maturation improves Brix, and the pH decreases and the total acidity juices. The volatile acidity of the three juices was below 0.07 g L^{-1} acetic acid. The juices also showed 0.59, 0.57, 0.71 tone respectively. For color intensity, 16.00, 15.38 and 13.56 and 397.68; 369.77 and 319.14 mg L^{-1} are the total anthocyanins, respectively for T1, T2 and T3. With the increase of the cycle increased the tint and reduces the concentration of total anthocyanins. In conclusion, the juices produced in different stages of maturation showed different physicochemical parameters, which may be adopted simultaneously crops with different maturation stages, scaling up the date of pruning, depending on the desired analytical feature the company if more juice or less sweet or acid, with greater or lesser intensity of color.

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'Syrah' tropical red wine and residue health benefits according to *'in vitro'* and *'in vivo'* analysis using Wistar rats

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According to literature, in red wines and its residue, a considerable amount of phenolic compounds that can act as antioxidants in human body is found, being responsible to initiate cardioprotective and chemopreventive mechanisms. The objective of this study was to determine the antioxidant activity of 'Syrah' red wines produced at the São Francisco Valley region and its residue, using '*in vitro*' approaches and evaluate the potential beneficial effects of their consumption on biochemical and hematological parameters in Wistar rats. Grapes from 'Syrah' variety were harvested in November, 2015 at the experimental field of Embrapa Semi-arid (Petrolina, PE, Brazil) and were submitted to microvinification in triplicate using the traditional method for red wines winemaking. The residue was collected at the end of the maceration stage (7 days) after the wine pressing, consisting of grape skin and seeds. The total phenolic content and the monomeric anthocyanins were determined spectrophotometrically. The '*in vitro*' antioxidant activity was evaluated according to the DPPH method using Trolox and gallic acid as standards. For the *'in vivo'* experiment, Wistar rats received during 60 days the treatments through oral gavage with water (control group), alcohol-free and lyophilized red wine (wine group) and with lyophilized residue (residue group) at a concentration of 100 mg.kg^{-1}, both dissolved in water. The rats received free demand of food and water throughout the treatment. At the end of the experiment, the animals were submitted to 8 hours of fasting for the blood collection, which were submitted to biochemical parameters analyses (glucose, triglyceride, total cholesterol and the fraction LDL, HDL and VLDL) and hemogram. The total phenolic contents of the wine and in the residue were 2.84 and 85.42 g kg^{-1}, respectively. The anthocyanins were expressed as cyanidin-3-*O*-glucoside, and values of 193.28 and 548.97 mg kg^{-1}for the wine and its residue were observed, respectively. The antioxidant activity of wine and residue were respectively 5.54 and 25.25 μmol EAG g^{-1}, when expressed as gallic acid equivalent and 30.97 and 70.39 μmol TEAC g^{-1}, when expressed as Trolox equivalent. The results of the *'in vivo'* tests with rats showed that wine and residue increased significantly ($p<0.05$) the hematocrit and HDL-cholesterol values in the control group. Whereas, LDL cholesterol levels decreased in the residue, when compared to wine and control and VLDL-cholesterol and triglyceride levels decreased in the wine compared to residue and control. For female rats, significant differences were observed ($p<0.05$) in the number of red blood cells, which increased in wine and residue groups. Moreover, VLDL-cholesterol and triglyceride concentrations in reduced waste in relation to wine and control. Thus, the results of this study indicated that both red wine and the residue of 'Syrah' grapes produced at the São Francisco Valley region can present a good antioxidant activity and promote health benefits.

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Quality of tropical white wines from different varieties produced in the São Francisco Valley, Brazil

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The vitiviniculture in the São Francisco Valley is recent and in full development activity. The production of grapes for fresh consumption was introduced in São Francisco Valley region in the 50s and the production of grapes for wines is a more recent activity with the first activities in the middle 80s with a great increase only in 2000. Nowadays the São Francisco Valley is the second largest producing region of fine wines using *Vitis vinifera* varieties in Brazil. The wine industry in the São Francisco Valley has unique soil and climate characteristics, differing from other traditional areas. It is located in semi-arid tropical climate zone, with an annual average temperature of 26ºC, high levels of solar radiation and maximum annual rainfall of approximately 500 mm. These factors, combined with the lack of winter and the availability of water for irrigation, allow the vines to have a continuous cycle, with production of grapes and wines throughout the year and up to three harvests per year. The aim of this study was to evaluate the physicochemical characteristics of tropical white wines produced at the São Francisco Valley with three different grape varieties. Grape varieties 'Sauvignon Blanc', 'Chenin Blanc' and 'Chardonnay' were harvested in November, 2014 and November and June, 2015 (2nd, 3th and 4th cycle of production) in an experiment conducted at Embrapa Semi-arid experimental field in Petrolina, Pernambuco, Brazil (09°09' S, 40°22' W, 365.5 m). In this experiment the plants were conducted in an vertical trellis system, grafted on rootstock Paulsen 1103 and drip irrigated. Winemaking process involved the following steps: *debourbage* (clarified before fermentation) with bentonite (0.5 g L^{-1}), alcoholic fermentation (18 ± 1°C), new *debourbage* with bentonite (0.5 g L^{-1}) during 20 days at 6ºC and cold stabilization (0°C) for 10 days. Wines were bottled and stored in wine cellar (18°C e 60% of humidity) for one months. Afterwards, the following physicochemical analyses were carried out: total and volatile acidity, pH, total dry extract, density, alcoholic content and free and total sulfur dioxide. According to the results, the alcohol content of the wines varied between 10.55 and 14.54% v/v, the pH from 3.30 to 4.02 and the total acidity between 3.45 and 10.50 g L^{-1}. Regarding the results of volatile acidity and total sulfur dioxide of the wines, they are in accordance to the limits of the Brazilian legislation and can be consumed. In general, the variety 'Chenin Blanc' resulted in white wines with a lower pH value (ranging between 3.3 and 3.6). While 'Sauvignon Blanc' wines presented higher total acidity (up to 10.50 g L^{-1}), alcohol content (ranging between 12.51 and 14.54%) and dry matter content (21.30- 45.80 g L^{-1}). Chardonnay wines showed lower alcohol content and higher pH value.

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Phenolic composition and antioxidant activity of red wines produced in the São Francisco Valley, Brazil

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Phenolic compounds are produced by several plants in amounts that varies according to climate, soils, temperature, varieties and others. The grapes have higher concentrations of them and therefore its wines, emphasizing the red. The worldwide wine production traditionally takes place in temperate regions with only one harvest a year, but Brazil, more specifically the region of the São Francisco Valley, runs away of this "standard" cultivation yielding harvest staggered throughout the year. Changes in the conditions of cultivation and wine making protocols lead to variation in the phenolic composition. These compounds provide benefits to human health due to the antioxidant action which reduces the formation of free radicals, which in turn are harmful to the human biological system. In this context, this paper aims to obtain data to determine the phenolic content of wines of the São Francisco Valley, as well as to evaluate the antioxidant activity. Wine varieties Syrah (vintages 2013 and 2014), Cabernet Sauvingnon (vintages 2013 and 2014), Ruby Cabernet (vintages 2012 and 2013), Tempranillo (vintage 2013) and Tannat (harvest 2014) were evaluated by spectrophotometric methods for the determination index of total polyphenols (Harbertson e Spayd, 2006), color intensity and color hue (Monagas, et al 2006), total polyphenols e anthocyanins (OIV, 1990) and antioxidant capacity (Nixdorf e Gutierrez, 2010). From the wines analyzed the variety Ruby Cabernet (harvest 2012) showed higher polyphenol concentrations with values 3.353,53mg.L^{-1} of equivalent of gallic acid (EAG), followed by Cabernet Sauvignon (harvest 2014) with values of 3.298,5mg.L^{-1} of equivalent of gallic acid (EAG). In relation to the antioxidant activity, carried out by DPPH*, the variety Syrah harvest 2014 showed the highest antioxidant capacity. This statement reinforces that red wine should be consumed regularly and moderately, it is an excellent source of antioxidants and thus can bring health benefits. These results can be used as a tool for broader dissemination of the wines of this region. Moreover, corroborate to establish typicality traits for Brazilian tropical wines.

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Antioxidant capacity, color and total polyphenols in Nazareno and Giallo Muscat white wines produced in the São Francisco Valley, Brazil

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One of the most produced and consumed wine from the São Francisco Valley (SFV) is the Muscat sparkling wines. The main varieties used are Italia and Canelli Muscats. Nazareno and Giallo muscat varieties are used in many regions to produce sparkling wines, presenting typical characteristics. In order to evaluate the adaptation potential of these two varieties to the VSF in the Northeast of Brazil, this work aimed to elaborate fine white dry wines by using both cultivars, and the effect of light and temperature on wine stability. Vines were planted in a partner winery in 2014 in Casa Nova city, Bahia state, Brazil. After harvested in March 2016, grapes were sent to Enology Laboratory of Embrapa in Petrolina, and wines were elaborated by traditional method of white grape vinification (Giovannini and Manfroi, 2009). After alcoholic fermentation at 18ºC ± 2, wines were corrected for 40 mg L^{-1} of free SO_2 and then bottled. Bottles were placed in a box with controlled environment (35ºC temperature and light with length wave at 280nm), and wines were evaluated 6 days after (Garcia-Falcon et al., 2007). The physical-chemical analyzes performed were total acidity (in tartaric acid g L^{-1}), dry extract (g L^{-1}) and spectrophotometric parameters, as color index (I420nm); total polyphenol index (TPI). Wines were analyzed before and after 6 days after light and temperature exposition. The results obtained presented significant differences according to the variety, by using Tukey at 5%, and stabilization vary strongly. Wine tasting presented typical characteristics of muscat wines (data not shown). Color index varied from 0.0517 and 0.4707 in Nazareno muscat wine, while for Giallo muscat wine varied between 0.0387 and 0.4880, before and after light and temperature exposition. According to TPI, values varied in Nazareno from 0.0630 to 0.4600, and in Giallo wine from 0.0687 and 0.2500. These variation could be explained by total acidity and dry extract determined, in Nazareno and Giallo wines total acidity was 4.87 and 6.0 g L^{-1} of tartaric acid, and 17,95 and 17,45 g L^{-1} of dry extract, respectively. Higher acidity in Giallo than Nazareno wine influenced on best stability when wines were exposed to high light and temperature. As conclusion, wines presented interesting muscat characteristics, and high acidity found in Giallo muscat wine helped to have less oxidation as compared to Mazareno muscat wines. Further studies need to be made to evaluate the cultivar adaptation to the region and wine stabilization according to harvest date.

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