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IHC Lisboa 2010



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Biochemical responses in leaves Sahani and Bidane-Sefid grape cultivars subjected to progressing drought

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Introduction

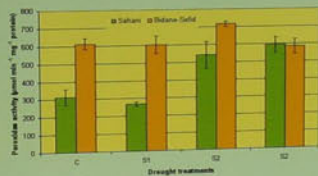
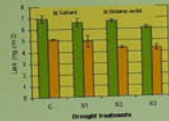
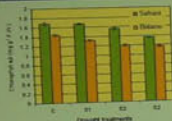
Drought is one of the leading environmental stresses causing decreases of grape product in Mediterranean area (Flexas et al., 2002; Gomez-del et al., 2000) and affect various physiological and metabolic activities in plants. The object of the present experiment was to study effect of water deficit in leaves of two grape cultivars namely Bidane-Sefid and Sahani.



Materials and Methods

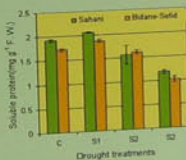
Two-year-old, own-rooted plants of three grape (*Vitis vinifera* L.) cultivars (Sahani and Bidane-Sefid) were grown in 18 L plastic pots (one plant per pot) filled with loamy soil. Water stress was imposed by withholding water from the plants until soil water potential reached to -0.2 (CT), -0.6 (S1), -1 (S2) and -1.5 (S3) MPa during June-July 2008. Leaf mass area (LMA) and Leaf gas exchange were calculated in four fully expanded young leaves from different plants of each species under different drought stress treatments. Chlorophyll was extracted according to the method of Lichtenthaler and Buschmann (2001). Soluble protein was estimated by Bradford method (Bradford 1979). Peroxidase activity was measured by hemeda and Kelin method (Hemeda and Kelin 1990).

Results and Discussion



Drought treatments reduced chlorophyll contents in two cultivars. Sahani had higher total chlorophyll and LMA compared to Bidane-Sefid. Sahani affected by S2 and S3 whereas Bidane-Sefid affected by S1, S2, and S3 treatments. Photosynthetic rate of Sahani was higher than Bidane-Sefid under S1 and S2 treatments too (data don't shown).

In both cultivars moderate (S2) and severe (S3) drought decrease soluble protein. Similar decreases were observed for soluble protein content in Sahani and Bidane-Sefid.



Drought enhanced the POD activity by 72.43% in leaves of Sahani at S2 compared to control. POD activity in Bidane-Sefid did not increase by drought treatments. The enhanced activities of POD as observed in Sahani indicate that this cultivar is capable of scavenging the oxygen species produced during drought stress. Higher Photosynthetic activity of Sahani at S2 coincided with increasing of POD activity.

Conclusion

From the behavior of cultivars in the present study, we consider Sahani is promising for cultivation in rain-fed areas at west of Iran compared Bidane-Sefid. Bidane-Sefid indicated the lowest capability for cultivation in these conditions. Further research is needed to support this statement specially under field conditions.

Literature cited

- Bertamini, M., Zulini, L., Muthuchelian, K. & Nedunchezian, N. 2006. Effect of water deficit on photosynthetic and other physiological responses in grapevine (*Vitis vinifera* L. cv. Riesling) plants. PHOTOSYNTHETICA, 44 (1), 151-154.
- Jain, M., Nandaval, A.S., Kumar, B., Sheoran, I.S., Kumar, N., Manin, A. & Kukreja, S. 2006. Water relations, activities of antioxidants, ethylene and membrane integrity of pigeonpea roots as affected by soil moisture. Biol. Planta, 50(2): 303-306.



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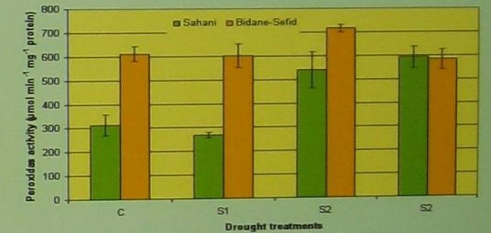
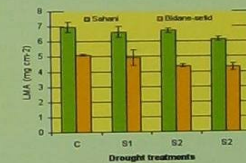
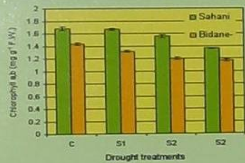
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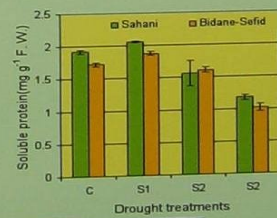
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Botanic Garden



FICUS MACROPHYLLA Desf
ex Pers. var. MACROPHYLLA



Ginkgo biloba



Myrtaceae
Myrtus communis L.
ssp. communis
Região Mediterrânea, C. Ásia
E Paquistão

Fagaceae

Quercus libani Olivier

Ásia Menor, Síria, NW Iraque,
W Irão.



Moraceae - Sag. Uruguaya

FICUS MONCKII Hassl.

Brasil (do Paraná ao Rio Grande do Sul),
Paraguai, Argentina & Uruguai. *prospéra*



Zamiaceae
Encephalartos lehmannii
Lehm.
África do Sul-E Província
do Cabo





BERNARDINO GOMES

1768-1823

A MEMORIA DO PORTUGUES ILUSTRE
QUE FOI BENEMERITO DA SCIENCIA
E BENEFICOR DA HUMANIDADE.

Um grupo de admiradores

Agavaceae - Yuccadendraceae ADAPTADO


YUCCA ELEPHANTIPES Regel
var. **GIGANTEA** (Lem.) Trelease
México & Guatemala.

Obs.: Yucca fornece um caso clássico de interdependência entre a planta e o seu polinizador, a traça *Tegeticula (Pronuba)*. Esta cobra pólen durante o qual forma uma bola que transporta para uma outra flor onde efetua alternadamente deposições de ovos (um de cada vez e por ocasião) e atos de polinização pelos quais comprime o pólen para dentro do canal de estilete tubular. Os óvulos, na vizinhança do ovo da traça, formam o tecido galhífero que irá nutrir a larva.



MORACEAE - FICUS ♂ ♀
ADOPTADA
FICUS HABROPHYLLA
G. Benn ex Seem
• DISTR. MELANÉSIA (ilhas de Nova Caledônia e Loyaltys) de Tanna (nas mont. Nepruk) (C. Th.)
• V. 1958
• HAE. arvoredo e subarbórea, frequent. em jardins de curato de água
• OBS. os frutos, felipatos, são comestíveis

ZELA



Cactaceae
Opuntia ficus-indica
(L.) Mill.
Origem desconhecida



Fagaceae

Fagus sylvatica L.

N. 1009, Paris

W & C da Europa, estendendo-se para norte
até 52° da Noruega, para este até ao Mar Negro
e para sul igualmente nos montes, até
até C da Grécia, Itália e C de Espanha.



City of Lisboa

In the days of Vasco de Gama and Christopher Columbus, Lisbon sat at the helm of world commerce. The Age of Discovery may have passed, but this city has been reinvigorated in the past few years. Tourists have taken notice of the renovations and innovative new restaurants and clubs, and many insist that a visit to Lisbon hasn't been this exciting a prospect in centuries.

City of Lisboa

The winding alleys and white-washed homes hugging the Atlantic coast are stunning. Walking tours are essential to understanding this city, so most tourists choose to book accommodation in Lisbon city center in order to remain as close to the action as possible. BelÈm district ruled in the ages of discovery and conquest, with exotic spices, silk, gems and timber flowing through the adjoining port. Monuments, Jesuit monasteries and the exceptional National Coach Museum are onsite.

City of Lisboa

There's more to see in the Bairro Alto (Upper City), which was spared by the 18th-century earthquake. This is definitely the place to be after hours, with 16-century homes housing restaurants and hip fado clubs.

City of Lisboa

Outside of the city's historic core, accommodation in Lisbon can also be found in resort communities like Cascais and Estoril, which are connected to the city center by electric trains. These resorts offer the ideal arrangement for visitors who value time on the beach but don't want to give up access to Lisbon's best cultural attractions.

City of Lisboa

It's easier than ever to get to Lisbon overland, with new-and-improved bridges and roads joining the new long-distance bus terminal. Many still prefer to fly into Portela Airport, with flights crossing Europe and Africa. The airport is close to the city center, close to hotels in the northeast district.







Parque
Restauración
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TAXI





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Lisboa
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SEDO
125
CANILLEROS

Belair
BELAIR
PENTEADOS

Snack Bar

Rute

68

64



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Moinho de Vento
1856

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DOUTOR

SALGADOS
BALDOS





← P estacion



ENTRADA
CARRIO





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COMBOIO TURÍSTICO
EXCEPTO VEÍCULOS
DE TRACÇÃO ANIMAL







