



**IHC**  
Lisboa 2010

**SCIENCE AND  
HORTICULTURE  
FOR PEOPLE**

# ABSTRACTS · Volume II (Symposia)

28th International Horticultural Congress  
Lisbon Congress Centre | August 22–27, 2010



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International Society for Horticultural Science

### A Defence Response against *P. cinnamomi* in *Castanea sativa*

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*P. cinnamomi* are considered as the causal agents of soil-borne plant pathogens invade and destroy the roots of the trees. Most *Phytophthora* species secrete conserved proteins that are able to enhance plant acquired resistance manner against infection by *P. cinnamomi* was identified in *P. cinnamomi* (Duclos *et al.*) of  $\alpha$ -cinnamomin determined (Rodrigues *et al.*) to restrict the invasion of root cortical tissues by colonization in cork and holm oak (Medeira, *et al.*) of chestnut plantlets grown *in vitro* were all (100  $\mu$ g/ml) for, two days before being inoculated. The effects of pathogen on root colonization. Microscopy observations showed that *P. cinnamomi* 10% of the roots pre-treated with  $\alpha$ -cinnamomin. The roots were free of pathogen. On the contrary, the pathogen penetrating the phloem and xylem vessels. The signs of pathogen degradation in the cortical cellular spaces, and the increase of epidermal and associated with phenol-like compounds strongly and in chestnut defence reactions against *P. cin-*

### Disorders of Pistachio Root Nematode (*Meloidogyne*) in Iran

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Disorders of horticultural products in Iran. Nematodes are the most important diseases in the world. Root-knot are endoparasitic nematodes that reduced physiological and biochemical disorders in plants. The species and intensity population nematode. In Mahvelat region (Razavi Khorasan province – Badami), were studied. *Meloidogyne javanica* populations. The experiments were setup with 50 plants in an imbalanced Completely Randomized design on the roots were measured. Amount of leaf necrosis, tree height, east-west spread, north-south diameter of annual branch and fruit yield were measured with increasing of gall index/egg mass, growth severely reduced according to Tukey test. There were significant differences about leaf necrosis and diameter of annual branch and fruit yield in Badami cultivar were decreased in cultivar.

### S06.277

#### Comparison of Different Methodologies for the Estimation of Chilling Requirements of Five Sweet Cherry (*Prunus avium*) Varieties

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Over the last 40 years, trends toward advances in dates of flowering stages, because of global warming at springtime, have been observed for different fruit tree species. Moreover, the analysis of temperature data has also highlighted clear changes toward warmer temperatures during the endodormancy phase (autumn and early winter) when the buds need chilling effects to break the dormancy phase (chilling requirements). This new situation has led to an increasing concern in many parts of Europe that cropping of perennial fruits may provoke slow of insufficient accumulation of chilling effects. Genetic adaptation of varietal ranges toward lower chilling requirements must become a major breeding objective. Preliminary studies in sweet cherry (*Prunus avium*) were conducted in order to establish an effective and precise protocol for the quantification of chilling and heat requirements for flowering. This methodology could later be used over large numbers of genotypes, in order to investigate the genetic determinism of chilling and heat requirements. Two different types of forcing tests were compared. The first is based on current growth tests by exposing shoots to controlled warm conditions and by recording data on phenological evolution. The second consists in early growth tests by comparing the weigh of floral primordia in orchard conditions at a given date to the weigh of floral primordia issued from a shoot sample taken at the same date but submitted to warm conditions (Tabuenca's test). Five varieties ('Earlise', 'Garner', 'Lapins', 'Regina', and 'Summit') were studied during two years at the experimental site of INRA-Toulence (Southwest France). Out of these, two varieties ('Earlise' and 'Summit') were also studied at a second site, Ctifl-Balandran (Southeast France), during three years. Different models for the estimation of chilling requirements (Weinberger, Bidabé, Utah, dynamic model) were compared. Between-tests, between-years, and between-sites differences were studied and discussed.

### S06.278

#### Different Physiological and Metabolic Responses of Pomegranate Genotypes to Freezing Stress

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Unexpected chilling and freezing is one of the most important problems for pomegranate growers in Iran. For example most pomegranate orchards were completely destroyed in the region because of severe winter freezing in 2008. Therefore a factorial experiment based on completely randomized design (CRD) was performed during 2008. Six genotypes included (Shirin e Poost Ghermez, Poost Sefid, Shahvar, Torsh e Malas, Shalghami and Shishe cap) and 9 temperatures in the range of -10 to -24 °C were compared. The results showed that the amount of browning, proline content, electrolyte leakage and antioxidant activity were increased by freezing incubation, whereas survival percentage was decreased. Not any re-growth was recorded in 3 genotypes (Shirin e Poost Ghermez, Poost Sefid, Shahvar) in -18 °C but Torsh e Malas, Shalghami and Shishe cap genotypes showed 30, 21.5 and 61.2 survival percentages respectively. The cultivar 'Shishe cap' could stabilize its membrane structure and electrolyte leakage to -20 °C. The proline content of 'Shishe cap' showed 12-fold increase at -24 °C in comparison with control. Therefore it seems that 'Shishe cap' cultivar was able to retain its osmotic potential effectively compare with the other cultivars.