

SPRAY FERTILIZATION OF BORON AND ZINC ON LEAF NUTRITION, FRUIT SET AND QUALITY INDICES OF PEAR

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ABSTRACT

The pear belongs to the *Rosaceae* family and *Pomoideae* subfamily and it is the most important pome fruit tree in world after apple. According to recent statistics the area of pear culture in Iran consists of 14,502 hectares with production of about 145,123 tonnes (Faostat, 2011). This average production is low. Plenty of researchers have attempted to increase the productivity and quality of pear fruit crops. The use of mineral elements in this respects were cited on pear fruit using boron, Gobara, 1998 and Taher and Hassan, 2005; boron and calcium, AbdEl-Megeed *et al.* 2007; boron and Zinc, Canesin *et al.* 2010; gibberellins, Deckers and Schoofs, 2002; bioregulator, combined applications auxin, cytokinin and gibberlin, Lafer, 2008; amino acids and polyamines, Franco-Mcra *et al.* 2005; growth regulators, nutrients and amino acids, stina *et al.* 2011 were also tried. From the point of leaf nutrient status, a number of methods are available for diagnostic interpretation of foliar data e.g. i). Concentrations and ratios such as Evolutive Nutrient Balance (ENB), Diagnosis and Recommendation Integrated System (DRIS), Deviation from Optimum Percentage (DOP and Σ DOP index) and others (Montañés *et al.* 1991., Sanz 1999, Zarrouk *et al.* 2005). The aim of this study was to verify the effects of B and Zn applied on flowers at full bloom stage on leaf nutrition, fruit set and quality indices of three pear cultivars (Spadona and Duchesse and a pear cultivar from Iranian national collection named as Daregazi) which were grown in a private orchard (Kosar) in district of Shahriar of Alborz province(Iran) during 2012-2013. The studied cultivars, grafted on *Pyrus communis* seedlings, planted at a spacing of 4 ×2m on a silt loam soil The climate was semi-arid. The studied pear cultivars were sprayed with Borax (1%, 2%, 3%), Zinc sulfate (1%, 2%, 3%) and Borax+Zinc sulfate(1%B+1%Zn, 1%B+2%Zn, 1%B+3%Zn, 2%B+1%Zn, 2%B+2%Zn, 2%B+3%Zn, 3%B+1%Zn, 3%B+2%Zn, 3%B+3%Zn) at full bloom stage. A randomized blocks design was used and to compare the averages the Duncan test was applied. Statistical analysis of data indicated significant differences between years for all of the studied parameters among rootstocks (except for fruit protein in "Duchese" and £DOP index in "Daregazi" cultivars), different treatments and the interactive effects of year×treatment. Studied parameters of sprayed trees were compared to the control (without any application of Boron and Zinc) trees. All the applied treatments significantly increased initial fruit set and yield compared with the control trees. Furthermore, leaf macro and micronutrient contents at 90 days after full bloom (DAFB) and deviation from optimum percentage (DOP and £DOP) index were stimated for the diagnosis of the leaf mineral status of the trees. According to £DOP index (for 2012+2013), treatments of 2%Zn*1% B for "Spadona", 1%B for "Daregazi" and 3%Zn for "Dushes" showed better balanced nutritional values.

Key Words: pear cultivars, fruit set, fruit quality, yield, boron, zinc

FAO, 2007. (Available on Line) <http://www.fao.org>.

Gobara, A.A., 1998. Response of 'Leconte' pear trees to foliar application of some nutrients. Egypt. J. Hort., 25:55-70.

Montanes, L., L. Heras and M. Sanz, 1991. Deviation from optimum percentage (DOP): new index for the interpretation of plant analysis. *Annales Aula Dei*, 20: 93-107.