6th International Conference on Olive Tree and Olive Products

LIVE BIOTEQ'18

Seville / October 15th-19th

Olive Management, Biotechnology and Authenticity of Olive Products

BOOK OF ABSTRACTS

IRNAS Instituto de Recursos Naturales y Agrobiología de Sevilla

Consejo Superior de Investigaciones Científicas Instituto de la Grasas

CSIC

S07. Fertilization

T07-K

OLIVE NUTRITION AND TOLERANCE TO BIOTIC AND ABIOTIC STRESSES

RICARDO FERNÁNDEZ-ESCOBAR

UNIVERSIDAD DE CÓRDOBA AGRONOMÍA

The role of nutrients in plant growth are usually explained in terms of its functions in plant metabolism. However, there are evidences that tolerance or resistance to plant pathogens, which are genetically controlled, could be affected by the nutritional status of the plants. These relationships are not well studied. Hovewer, it is considered that an adequate nutritional status that ensures optimal plant growth is also optimal to plant resistance. In this sense, it has been found that an excess of nitrogen increases susceptibility to olive leaf spot and to verticillium wilt. Also, an excess of N may reduce K uptake by the roots. Potassium plays an important role in the regulation of water status of the olive. Silicon is not an essential element for plant growth, but it is considered a beneficial element. Its role on the control of pests and diseases is the formation of a physical barrier since Si is deposited in the epidermal cells of the leaves. But K deficiency or N excess may reduce this accumulation of Si. The presence of soluble Si also facilitate the deposition of phenolic compounds at the sites of infection, which is a general defense mechanism to pathogen attack. But it has been demonstrate that N excess reduce the content of phenolic compounds in olive oil. In this presentation it will review the current status of mineral nutrition in the olive and the interaction of silicon on mineral nutrition and on the tolerance to biotic and abiotic stresses.

T07-O1

OLIVE TREE RESPONSE TO PHOSPHORUS APPLICATION ASSESSED FROM FIELD AND POT EXPERIMENTS

MARGARIDA ARROBAS, ISABEL FERREIRA, JOSÉ MOUTINHO-PEREIRA, CARLOS CORREIA, M. ÂNGELO RODRIGUES

INSTITUTO POLITÉCNICO DE BRAGANÇA CIMO - MOUNTAIN RESEARCH CENTER

Phosphorus is a macronutrient regularly applied in olive groves even though no studies exist demonstrating the need for its application. In this work, results of two field trials and two pot experiments are presented where the response of olive tree to phosphorus application was studied from 2013 to 2017. One of the field trials was installed in a three-year-old olive grove where it was already possible to start evaluating olive yield. The second field trial started from just planted young cuttings to evaluate the biomass produced and phosphorus uptake. One of the pot experiments consisted on the use of four phosphorus rates and the other on the use of four different soils and two phosphorus rates. In the first trial, there was no significant response to phosphorus application in olive yield or biometric parameters of the fruit such as fruit size and pulp/pit ratio. In the other three trials, only in the second pot experiment an increase in biomass production by the application of phosphorus was observed. This experiment included acidic soils, which may have greatly influenced the availability of phosphorus to the plants. In three of the four experiments leaf phosphorus concentration increased in response to phosphorus application. The pot experiments showed that roots accumulate appreciable amounts of phosphorus and that the application of phosphorus increased proportionally more the concentration of phosphorus in roots than in leaves or stems. In one of the experiments the root/shoot ratio increased with the application of phosphorus. These results seem to indicate that roots are important tissues for phosphorus accumulation which can buffer phosphorus in the shoots in periods of lower phosphorus availability in the soils and may contribute to explain the difficulty to find a response of the olive tree to the phosphorus application under field conditions.

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CERTIFICATE OF ATTENDANCE

PROF. MANUEL RODRIGUES

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The President of the Organizing Committee
José Enrique Fernández Luque