EGU2020-1302
https://doi.org/10.5194/egusphere-egu2020-1302
EGU General Assembly 2020

A bibliometric analysis: How important is salicylic in response to the salinity from NaCl?

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Since plants are sessile due to their nature, they encounter- simultaneously or at different times numerous and various biotic and non-biotic stressors during their life span. Also, the severity and impacts of the stressors vary corresponding to the development stages and organs of the plant. Of the stress factors, salinity is considered as a major environmental constraint imposing limitations on growth, development, crop productivity, and quality of the plants in many regions of the world. Therefore, the studies concerned with salinity and its effects on plants are of the fundamental interests for agricultural issues. In order to alleviate the possible damages of salinity, exogenous applications of salicylic acid are of the common techniques used. Herewith the study, the profiles of original and review articles under the topic of salicylic acid and salinity were examined by bibliometric analysis using VOSviewer tool. Along with the present study, it was aimed to answer the following research questions (RQ) associated to the researches regarding salt stress and salicylic acid interaction.

RQ1: Which plant species have been more focused for the studies?

RQ2: What kind of biochemical, physiological and molecular parameters have been used for analysis?

RQ3: How important the concentration of salicylic acid is? How important the mode of application of salicylic acid is?

RQ4: What are the research trends regarding salinity stress and salicylic acid considering the number and year of the publications, number of authors, main theme of the studies, country of the publications, core journals, the most cited documents etc.?

RQ5: What is the spatial distribution of the researches? Do salinity stress faced countries mostly carry out the studies or not, considering the attributes influential on the performing the studies?

SCOPUS database was used for retrieving the related documents. For extracting documents, the following selection or limitation criteria were applied to profile the study concerned with salicylic acid and salinity interaction; (TITLE-ABS-KEY (salicylic AND acid)) AND (salt AND stress OR NaCl OR saline AND conditions OR salinity) AND (LIMIT-TO (SUBJAREA, "AGRI") OR LIMIT-TO (SUBJAREA, “BIOC")). Accordingly, 2,067 document results were retrieved. Then all documents were selected

and exported to the CSV Excel. The documents were analyzed and visualized using VOSviewer tool.

Accordingly, two main salicylic acid research clusters according to the most relevant terms were identified. First cluster was composed of abiotic stress terms and related antioxidant activity and enzymes. The first cluster can be considered as biochemistry and abiotic stress. The second cluster was related to the biotic stress factors and molecular biology approaches. For the keyword analysis, various clusters regarding hormonal cross-talks, antioxidant enzymes with oxidative stress, biotic stress factors, and osmoprotectants were composed. According to the country analysis, China, United States, Pakistan, South Korea, and Oman were grouped together in same cluster. India, Iran, Saudi Arabia, and Malaysia were in the same cluster. The results were discussed in comparison.

Keywords: Salicylic acid, salinity, bibliometric analysis, abiotic and biotic stress