LIBRO DE RESÚMENES

9º

Congreso de Biología de la Conservación de Plantas

GRANADA

9 -12 JULIO 2019

9º Congreso de Biología de la Conservación de Plantas

LIBRO DE RESÚMENES

Facultad de Ciencias de la Universidad de Granada
9 a 12 de julio de 2019

Organizan:

Colaboran:

Patrocinan:

9º Congreso de Biología de la Conservación de Plantas

Organizan:
Sociedad Española de Biología de la Conservación de Plantas
Universidad de Granada
Consejería de Agricultura, Ganadería, Pesca y Desarrollo Sostenible. Junta de Andalucía

Colaboran:
Ayuntamiento de Granada
Diputación de Granada
Patronato de la Alhambra y Generalife. Consejería de Cultura y Patrimonio Histórico
Parque Nacional de Sierra Nevada
Colegio Oficial de Biólogos de Andalucía

Patrocinan:
Grupo Tragsa
Red Eléctrica de España
Sierra Nevada
Knauf
UVAT Bio
Emasagra

Secretaría Técnica:
Congresos Gestac

Editan: Julio Peñas de Giles y Jesús del Río Sánchez

Fotografías: Julio Peñas de Giles
Impresión: 3 Impresores Sur
ISBN: 978-84-09-12915-7
Depósito Legal: J-478-2019

O41. STRESSED-OUT SYMBIOSIS: MONITORING BIODIVERSITY THROUGH CHEMICAL FINGERPRINTS

Iris Alves Mota[1] (irisaemota@gmail.com)

Luis Gaspar Pedro[2], Maria João de Almeida Coelho de Sousa[3], José Sánchez Sánchez[1]

[1] Departamento de Botánica, CIALE (Centro HispanoLuso de Investigaciones Agrarias)

[2] Departamento de Biología Vegetal. Faculdade de Ciências da Universidad de Lisboa

[3] Centro de investigaçao de montanha (CIMO). Escuela Superior de Bragança

Monitoring through secondary metabolites as essential oils is informative on both plant states and their living conditions. Our research examined the effect of an abiotic factor (mild water stress) on a specific plant species (*Ocimum basilicum* L.). This drought condition was tested with plants inoculated with a symbiotic fungus (*Glomus intraradices*), to check if it ameliorated, in terms of biomass, the consequences of drought. Furthermore, and less frequently found in literature, this study had into account two different stages of development, with two harvests. The responses to these conditions were assessed through the analysis of the chemical profile of the essential oil.

A factorial randomized complete block design was carried out in a greenhouse. The plants were inoculated with the mycorrhizal fungi and were irrigated with water in each plot without creating any water stress until the plants reached an average height of 28-30cm. The water stress level stipulated (60% Field Capacity) and control was maintained by the gravimetric weight method, and functional traits (height, root and shoot fresh weight) were measured regularly. After one month of inoculation, root fragments were randomly taken from the plants to check for the rate of colonization with trypan blue technique. Plant material was distillated and essential oil was extracted and analyzed.

Inoculated plants subjected to mild water stress had a higher height and shoot biomass than non-inoculated water-stressed plants. Regarding chemical compounds, it was seen a typical signature, of a stress response by non-inoculated and inoculated water-stressed plants, a significantly high relative percentage of the phenylpropanoid content diverging from control condition plants. This *de novo* biosynthesis permits a well-balanced trade-off which permits growth without excluding defense responses, since lignin and phenylpropanoid synthesis share the same metabolic pathway. However, when water stress duration was kept and extended, the chemical compounds proportion (CCP) revealed an acclimatization or tolerance to the stress applied, as differences in content and chemical compounds proportion weren't significant between control and drought-stressed plants. Hence, independently of the water status, neither inoculated plants revealed significant changes in CCP in the flowering stage in comparison with control plants.

Stressed-out symbiosis might be useful to monitor peaks and stabilization of chemical compounds synthesis of plants in specific environments, thus giving a hint about how the plant is adapting to new environmental conditions. Nevertheless, to better dissect the plant metabolic regulatory networks multiple-omics analysis would be required.

Finally, the study's results might be useful to improve the productivity, cultivation monitoring of basil in the increasing warmer climates, with less input of agrochemicals and water in Mediterranean regions.

PALABRAS CLAVE: SECONDARY METABOLISM, ABIOTIC STRESS, GLOMUS INTRARADICES, PHENTYLPROPANOIDS, TERPENES