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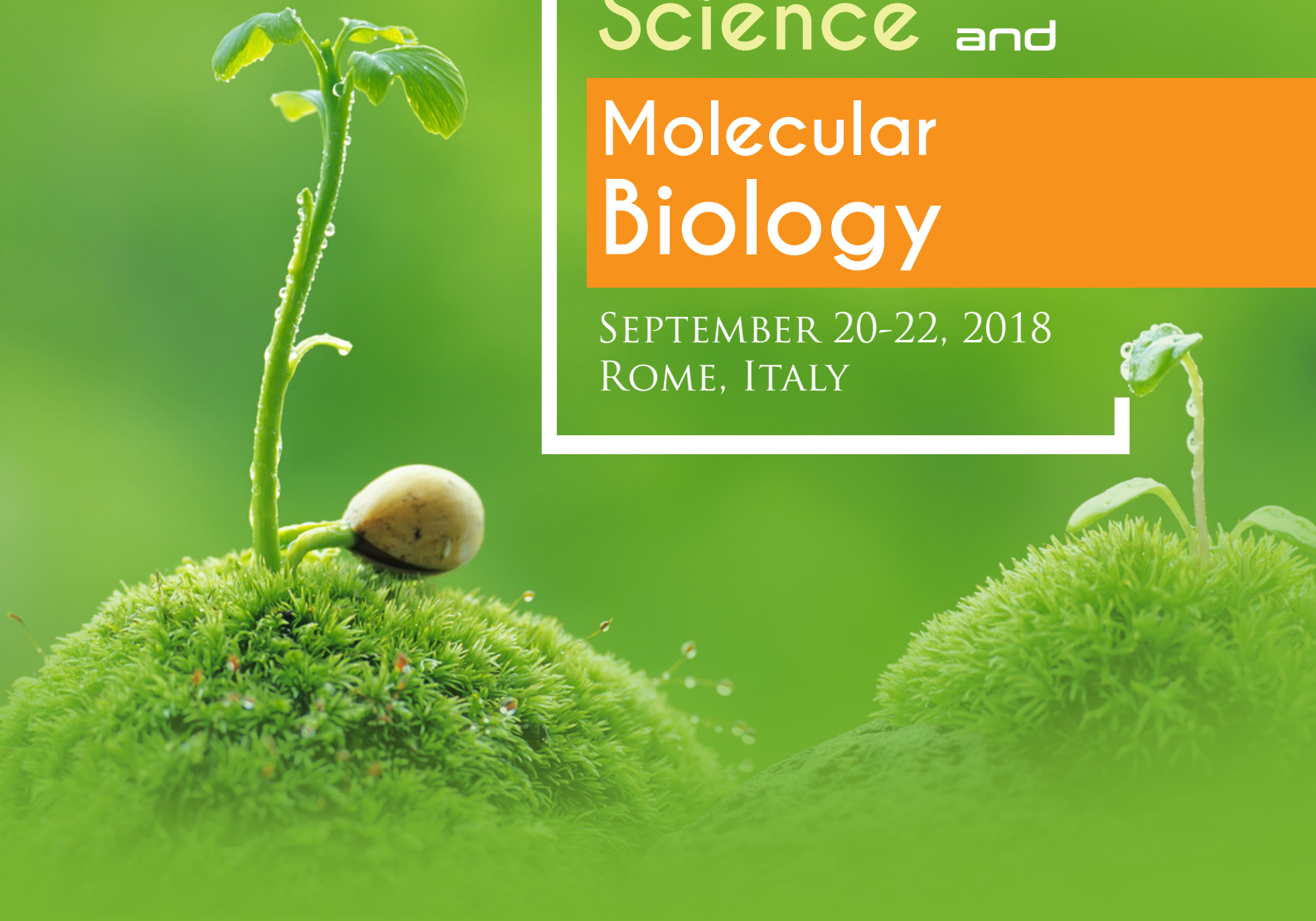
2nd Global Conference on Plant Science and Molecular Biology

SEPTEMBER 20-22, 2018
ROME, ITALY



Theme: Accentuate Innovations and Emerging Novel Research in Plant Sciences

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BOOK OF ABSTRACTS

2nd Global Conference on

PLANT SCIENCE AND MOLECULAR BIOLOGY

Theme:

Accentuate Innovations and Emerging Novel Research in Plant Sciences

September 20-22, 2018
Rome, Italy

Study of tolerance to natural chilling stress in triploid citrus and potential impact on fruit quality

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Mediterranean area allowed a Citrus production thanks to the pedoclimatic conditions. Climate change is a worldwide problem (global warming, significant temperature fluctuation, drought episode increasing…) that can affect negatively citrus production and reduce fruit quality. In Corsica, the agricultural activity is widely represented by the clementine production (25,000 t per year and 90% of Corsican production is exported). The main economic and environmental issues is the maintaining of citrus fruit production with nutritional and organoleptic quality despite climatic changes. Thus, the aim will be to segment market with production of innovative seedless fruits to answer to consumer expectations and diversify production when clementine isn't produced anymore.

Polyploidy is an important determinant in plant evolution, facilitating the capacity to successfully grow up in habitats characterized by strong fluctuating environmental conditions. Polyploid plants are for these reasons widely studied in vegetal production under environmental constrains.

Many studies demonstrated that tetraploid genotypes showed an enhance stress tolerance to abiotic stresses. However, few studies focused on the behaviour of triploid variety subjected to unfavourable environment. The use of triploid plants could improve tolerance to abiotic stress and allows the production of seedless fruits. In this study, we will compare the behavior of diploid and triploid citrus from the same crossing (Fortune x Tangor Ellendale). The response to natural chilling stress will be evaluated by measuring various physiological and biochemical parameters. Net photosynthesis, stomatal conductance, transpiration and chlorophyll rate will be monitored. Antioxidant defenses mechanisms will be characterized by monitoring the activities of superoxide dismutase, catalase, ascorbate peroxidase and the content in glutathione, ascorbic acid and proline. Cellular damages will also be recorded thanks to malondialdehyde, a marker of lipid peroxidation, and hydrogen peroxide. Genes sequences involved in stress management will also be identified thanks to nucleic and protein sequences basis and the complete clementine genome. These data will allow to identify oligonucleotide used as primers for PCR analysis. The impact of stress on citrus fruit quality will be evaluated through the determination of sugars and organic acids levels. Activities of the enzymes involved in primary metabolism (phosphofructokinase, phosphoenolpyruvate carboxylase, cytoplasmic isocitrate dehydrogenase) will also be monitored to clarify the biochemical pathways involved during abiotic stress.

Taken together, the excepted results will enable us to propose an alternative to improve stress tolerance, maintain and develop a sustainable and efficient citrus crops. The first results will be presented at the conference.

Take Away Notes:

- Studying of the behaviour of polyploid citrus in environmental and controlled conditions.
- Studying on the formation of triploid, characterization of genes involved in tolerance to abiotic stress and of biochemical pathways in fruits.
- Improving citrus crop productions under unfavourable environmental conditions and yielding the best organoleptic quality.
- Selecting innovative citrus varieties growing after the end of the clementine harvesting.

Biography

Radia LOURKISTI is a Ph.D. student in Plant Biochemistry and molecular Biology at the University of Corsica Pascal Paoli (France), with the collaboration of the French National Institute for Agricultural Research (INRA) and the French Agricultural Research Centre for International Development (CIRAD). She currently study the tolerance to natural chilling stress and deficit water of triploid citrus and consequences on fruit quality. The study focuses on the oxidative stress and antioxidant mechanisms from using a combined physiological, biochemical and molecular biological approaches. Her research is part of "InnovAgrumes" project, an unifying project, financed by European regional development funds. The main goal is to develop a sustainable and efficient citrus crop while proposing innovative citrus fruits with the best organoleptic quality, despite the climate change. She has published 2 articles in international peer reviewed journals such as Journal of Plant Physiology and Ecotoxicology.