

Plant Health 2019



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for human consumption”**



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Summary of the keynote speech

Altered primary and secondary metabolism of plants under future CO₂ rich atmosphere could impact the development of pathosystems

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Over geological time scales, atmospheric CO₂ concentrations accompanying climate change has had a profound influence on the evolution, diversification and productivity of plants. The main factor contributing to climate change is rising CO₂ concentration, which is the primary substrate for photosynthesis. The CO₂ concentration will increase from 400 (current) to 550 L CO₂ L⁻¹ by the middle of this century and will have a direct impact on the physiological processes in plants such as photosynthesis and transpiration. In addition, the plant's secondary metabolism, including carbon and nitrogen metabolism, cell cycle functions, hormonal regulation and plants defence could be altered. In the past, most studies have focused on the direct effects of CO₂ on plant processes, despite emerging evidence of the role elevated CO₂ plays in moderating secondary metabolism processes. Secondary metabolites have evolved to enhance plant fitness to interact with their environment. This group of plant metabolites also play an important role as a plant's defence system against range of diseases. Therefore, a better understanding of the defence response under high atmospheric CO₂ is essential to manage economically important plants effectively. Further, the changing climate can affect plant-pathogen interactions by altering the pathogen life cycle, expression of host resistance, disease epidemiology and severity of disease epidemics, development of new races and virulence. Therefore, disease management strategies should be reoriented in response to changing climatic conditions.

Keywords: disease epidemiology, host resistance, photosynthesis