

species, *Curcuma aeruginosa* populations in the study area and elsewhere are to be protected from threats caused by landscape changes, changes in the pattern of agriculture and utilization of the natural habitats of the populations for non-farming purposes.

### **HCI-O-09: Priming in Ginger (*Zingiber officinale* Rosc.) for Crop Improvement and Mitigating Transient Water Logging**

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Ginger is a rainfed crop and mainly cultivating for its underground rhizome. Transient waterlogging is the crucial environmental condition facing in Kerala since from 2018. In this study we imparted waterlogging stress on ginger rhizomes which were primed with various solutions (distilled water, 50 mM NaCl, 50 mM  $\text{KH}_2\text{PO}_4$ ) for 24 hours along with unprimed control rhizomes. These plants were exposed to 48 hours of waterlogging and 48 hours of post water logging stress. Then we analysed the Chlorophyll a fluorescence kinetics and physiological, biochemical parameters. The chlorophyll a fluorescence data showed that the waterlogging does not affect the OJIP curve of primed plants, although the curve was affected in the case of unprimed plants. In the stressed condition maximum quantum yield of PSII (Fv/Fm) was highest in hydroprimed plants where as in control plants it was with low Fv/Fm. The maximum efficiency of water splitting complex (Fv/Fm) was higher in hydroprimed plants than the control. The photosynthesis of control plants was drastically affected during stress than the primed ones. After exposure of stress, hydroprimed ginger plants showed high RWC when compared to control plants (94.16% and 85% respectively). Primed plants also showed increased chlorophyll content in the leaves and among the priming treatments, hydroprimed plants showed highest stress mitigating effect than others, and it retained 24.7% of chlorophyll content than control stressed plants. The proline content was found to be highest in the primed stressed plants. In the case of osmolarity, the control stressed plants showed highest value than the primed stressed plants. On the whole, the results itself portrays that the primed ginger plants effectively mitigated the effects of waterlogging stress.

### **HCI-O-10: Variations in the Activities of Defence-Related Enzymes in Ginger, Infected by *Globisporangium (Pythium) splendens* Inciting Soft Rot**

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The variations in the activities of three enzymes as Peroxidase (PO), Phenylalanine Ammonia Lyase (PAL) and  $\beta$ -1, 3-glucanase enzymes during the treatment of ginger (variety Varada) by *Globisporangium*