

Open Top Chamber for Climate Change Research

Studies on the effect of ongoing climate change on crop production vis-à-vis different biotic stresses in agriculture have been initiated at ICAR-National Institute of Biotic Stress Management, Raipur. The aim of the facility is to study the effect of various climate change parameters like elevated CO₂, elevated temperature etc. on plant growth parameters, biology and yield parameters of biotic stress. In order to study the impact of climate change, open top chamber (OTC) facility was established recently. OTC is the most basic facility required to undertake the studies on real time effect of climate change parameters on various aspects of crop production and their influence on biotic stress. The increasing CO₂ concentration of atmosphere and associated predictions of global warming can be simulated to determine the likely effects of future elevated CO₂ and temperature levels on biotic stress. OTC is an innovative and cost effective approach to investigate effects of elevated CO₂, temperature and humidity on the growth dynamics and yield response of plants as well as the on the associated biotic stresses. In this approach, CO₂ gas is supplied to the chambers through CO₂ gas cylinders and maintained at set levels using manifold gas regulators, pressure pipelines, solenoid valves, sampler, pump, CO₂ analyzer and PC linked supervisory control and data acquisition (SCADA). The data generated by OTCs are more realistic for impact assessment analysis of rising climatic parameters on plants and associated biotic stresses for developing models to predict the responses for future climatic conditions.



OTC Chambers with climate control facility



Inauguration of open top chamber facility on February 18, 2023 by honourable Director General, ICAR, New Delhi at ICAR-NIBSM