



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Rachit Kataria	Project Number S1906
Project Title A Novel Approach to the Maximization of CO(2) Intake through I-3-AA, Kinetin Chemical Enhancement, and Mycorrhizal Fungi	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to maximize the amount of Carbon dioxide taken in during photosynthesis by Red Mangrove plants, which act as natural carbon sinks, in order to alleviate the detrimental effects of Global Warming.</p> <p>Methods/Materials I implemented a cytokinin called Kinetin, a plant hormone in the class of Auxins known as Indole-3-Acetic Acid, and a fungi known as Endomycorrhizae. These factors were applied singularly and in pairs to root tips and leaves of 15 plants per combination or single factor. The intake was recorded using several Vernier Labquest Carbon dioxide gas sensors within closed environments replicating tropical atmospheric conditions, with each group of plants regulated in temperature and light. The results were then statistically analyzed using Student's t - interval and compared to the intake of the control group of Mangroves.</p> <p>Results The combination of Mycorrhizae, Kinetin, and Indole-3-Acetic acid yielded an final Carbon dioxide atmospheric level of 28 ppm, or parts per million, as opposed to the 542 ppm remaining from the control's intake after the recording period of 10 hours. This is an inherent 19-fold increase in intake of Carbon dioxide and has multiple potential implications for the future of our prevention of Global Warming.</p> <p>Conclusions/Discussion With the prevalent detrimental impacts of excessive Carbon dioxide damaging the Earth's biosphere today, my project shows the ability to neutralize this excessive amount of gas by maximizing Carbon dioxide intake rather than adopting the mindset of wasting biomass and planting more plants. I estimate that by implementing this procedure on 20,000 Mangroves per each of the world's coastal countries, we can save 600,000,000 tonnes (1,000 kg per tonne) of Carbon dioxide annually.</p>	
Summary Statement My project is a novel approach to maximizing the intake of Carbon dioxide in plants acting as carbon sinks in order to effectively combat global warming, with a potential intake of 600,000,000 tonnes of Carbon dioxide annually.	
Help Received Consulted with Mangrove Action Project; Mother helped make board	