

# Mechanisms of Impairment of the Photosynthetic Apparatus in Intact Leaves by Ozone

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Tropospheric ozone has been recognised as a limiting factor for plant growth since late fifties of our century. The decrease in the rate of light saturated net photosynthesis ( $A_{\text{sat}}$ ) was shown to be the major effect of ozone in leaves with negative consequences for plant growth and the development of plant communities. The reasons for the ozone-induced decrease in  $A_{\text{sat}}$  are still under investigation. Possible mechanisms are an increasing stomatal limitation, an increase in mesophyll limitation including a reduction of the  $\text{CO}_2$  fixation in the Calvin cycle and an impairment of the photochemical reactions in the grana membranes of chloroplasts. We conclude from the reviewed literature and from our own experiments that a decrease in carboxylation efficiency (CE) seems to be an early event caused by ozone leading to a decrease in  $A_{\text{sat}}$ . The loss in current photochemical capacity ( $F_v/F_m$ ) appears with a lag phase of many days and therefore the loss is thought to be a secondary effect due to a decreased demand of ‘assimilatory power’.