

**AGRICULTURAL PRODUCTION AND OZONE AIR POLLUTION UNDER
ENRICHED CARBON DIOXIDE ATMOSPHERE: EFFECTS ON CANOPY
REFLECTANCE AND PLANT CHARACTERISTICS**

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ABSTRACT

Estimates of future changes in agricultural production in response to changes in concentration of atmospheric trace gases are often based on the beneficial physiological effect of carbon dioxide (CO₂) enrichment on plant growth. However, these estimates fail to consider the negative impact of ozone (O₃) air pollution on crop production. Several field studies with wheat (*Triticum aestivum* L.) and corn (*Zea mays* L.) were conducted using open-top chambers to mimic atmospheric concentrations of CO₂ and O₃ that are predicted to occur during the first half of the 21st century. Canopy reflectance measurements are of limited use in air pollution studies, especially for corn. Both, CO₂ and O₃ were found to have a major impact on physiological processes that affect photosynthate partitioning, especially in wheat, which cannot be detected through spectral reflectance measurements. From the experiments carried out in this study it is concluded that the CO₂ enriched environment counteracts the stress caused by O₃ air pollution under the current climate scenario.