

Wichuda Wongprasert 2008: Effects of Ozone on Leaf Gas Exchange of Mungbean, Soybean and Groundnut. Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Poonpipope Kasemsap, Ph.D. 95 pages.

The experiment aimed to investigate the effect of 200 ppb ozone at 2, 4 or 6 hours on photosynthetic gas exchange rates of mungbean, soybean and groundnut leaves. Single leaf photosynthetic rates were measured using portable photosynthesis system model Li 6400. The result showed that O<sub>3</sub> influenced the response of single leaf net photosynthesis rates to light in all three species studied. The effects of O<sub>3</sub> depended on species and duration of O<sub>3</sub> exposure. In general, O<sub>3</sub> reduced single leaf net photosynthesis rates and increased leaf respiration rates. Ozone did not influenced the initial slope of photosynthetic light response at low light level or convexity of the light response curve while it caused changes in light compensation points only in soybean and groundnut. In addition, it was found that O<sub>3</sub> influenced the response of single leaf net photosynthesis rates to ambient carbondioxide concentration in all three species studied. The effects of O<sub>3</sub> also depended on species and duration of O<sub>3</sub> exposure. In general, O<sub>3</sub> caused single leaf net photosynthesis rates at 400 and 1,400 ppm CO<sub>2</sub> to decrease. Ozone caused changes in CO<sub>2</sub> compensation points only in mungbean and groundnut. Finally, O<sub>3</sub> caused damages to leaf blade in all three species studied. Necrosis on leaf surface was more severe when ozone exposure increased with the most severe symptom found in leaves that received 6 hours exposure.

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Thesis Advisor's signature