

Title	EFFECTS OF TROPOSPHERIC OZONE ON LEAF MORPHOLOGY AND ANATOMY OF SOYBEAN (<u>GLYCINE MAX</u> (L.) MERRILL CV. CHIANG MAI 60)
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ABSTRACT

The impacts of Tropospheric ozone on leaf morphology and anatomy of soybean (*Glycine max* (L.) Merrill cv. Chiang Mai 60) was carried out at crop research fields of Agriculture Nature Resources and Environment Faculty, Naresuan University, Phitsanulok between January and April 2011. The experiment plants were covered with Open-Top Chamber (OTC) at growth stage periods since the second compound leaves originated (V2) until the harvested time (R8). Three treatments of different ozone levels were ambient level (NCF), lower level (CF) and higher level (CF^{+O3}). The results showed that the increasing of elevated ozone concentrations were significantly reduced plant height, sizes of leaf and leaf areas index. In addition, the elevated ozone also decreased their leaf pigments (compared with the control) both chlorophyll *a* and chlorophyll *b* by 32.3% and 34.1%, respectively. The leaf colors were changed from green to reddish yellow about 93.3%, and averaged 53.3% of their leaves were damaged up to the 6th level. The total thickness of leaves especially the palisade mesophyll were also affected by decreasing both sizes and wall thickness. Mostly guard cells were damaged and increased the numbers of stomatal closing, but decreased the densities. Moreover, the lengths of their trichomes were decreased controversy with the thickness of cuticle that increasing both upper and lower epidermis.