

Abstract:

Four experiments were carried out to determine the effect of ethylene and carbon dioxide on the abscission of the leaves of sweet orange. Explants were prepared from the leaves of seedlings, and each explant consisted of 10 mm petiole and 3 mm blade. They were mounted upright on 1.6% sterilized agar in 50 ml Erlenmeyer flasks or Warburg flasks. Ethylene was injected in the flasks, and carbon dioxide was prepared from dry ice by sublimation. Different concentrations of the two gases were applied. Moreover, carbon dioxide was removed by sodium hydroxide solution. Treatments with ethylene alone or in combination with carbon dioxide accelerated abscission. Removal of carbon dioxide also accelerated abscission, but addition of low concentrations retarded the process. This suggests that low concentrations of carbon dioxide are required to retard the abscission but high concentrations might be poisonous to the explants, and thus accelerating abscission.