THE depression in plant growth resulting from low potassium supplies has been attributed in part to accelerated respiration and in part to diminished rates of photosynthetic CO₂ fixation (17, 18, 21). The increase in respiration associated with K deficiency may originate through an uncoupling of oxidative phosphorylation from respiratory electron transport. Pressman and Lardy (19, 20) observed, with rat liver mitochondria, that K addition increased both O₂ uptake and phosphorylation. However, when O₂ uptake was stimulated maximally by 2, 4-dinitrophenol, the addition of K did not stimulate O₂ uptake. The inhibition of photosynthetic CO₂ uptake has also been attributed to an uncoupling of photophosphorylation from the associated electron transfer system (12, 14).

In previous work (16) O₂¹⁸ and C¹³O₂ were utilized to measure concurrently the rates of CO₂ uptake.