

Abstract Submitted  
for the GEC15 Meeting of  
The American Physical Society

**Inactivation of Pathogenic Bacteria on Seeds by Active Oxygen Species Generated in Low-Pressure Plasma** REOTO ONO, SHOHEI UCHIDA, NOBUYA HAYASHI, Kyushu University, RINA KOSAKA, YASUTAKA SOEDA, Sumika Agrotech Co., Ltd. — The inactivation of bacteria on seeds by active oxygen species generated by a low-pressure oxygen plasma is investigated. Species of active oxygen contributing to the inactivation of bacteria are attempted to be identified. Cylindrical stainless chamber with the internal volume of 17 L is used and RF antenna is set inside the chamber. The oxygen gas pressure is 20–100 Pa. RF power of 13.56 MHz is supplied to RF antenna and CCP is generated. After irradiation, bacteria are extracted from seeds and cultivated on nutrient agars. The number of colonies on these agars is counted after 48 h incubation. The number of bacteria on seeds decreases to less than  $10^{-3}$  after plasma irradiation for 45 min comparing with that of control. The tendency of the reduction rate of bacteria on seeds has positive correlation with that of the light emission intensity of the singlet excited oxygen molecule as the oxygen gas pressure is varied. It is supposed that the singlet excited oxygen molecule would be one of the major factors for the inactivation of bacteria on seeds.

Reoto Ono  
Kyushu University

Date submitted: 17 Jun 2015

Electronic form version 1.4