Respiration rate of potatoes (Solanum tuberosum L.) as affected by soft rot (Erwinia carotovora) and determined at various storage temperatures

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Abstract

This work investigated the effects of soft rot (Erwinia carotovora) on respiration rate of potatoes stored at three storage temperatures (5, 10, and 15 ^{o}C) covering temperature ranges commonly encountered in storage. Five treatments were evaluated: healthy (H), healthy with holes (HW), inoculation with no incubation (I0), inoculation with 24 hr incubation (I1), and inoculated with 48 hr incubation (I2). Respiration rate was measured daily using a gas analysis system and disease progression analysis was periodically performed. At 5 and 10 ^{o}C disease did not develop in the I0 treatment and this showed no significant difference from the control treatments (H and HW), while the I1 and I2 treatments exhibited a significant increase in disease development with a similar increase in respiration rate. At 15 ^{o}C storage temperature, disease developed in the I0 treatment shortly after the start of the experiment and the trend in respiration rate was similar to those of the I1 and I2 treatments.

Keywords: Potatoes, soft rot, respiration, infestation, progression, respiration quotient