E-P-13

Effects of Sonication, Osmotic Priming and Modified Drum Priming on the Germination of Tomato Seeds

Min Geun Kim, Won Sik Kang and Du Hyun Kim*

Dept. of Life Resources Industry, Dong-A University, Pusan 49315, Republic of Korea

In order to increase the germination speed and uniformity of tomato seeds, sonication and modified drum priming treatments were investigated to produce high quality seeds for export. Sonication treatment was performed for 5, 10 and 20minutes at an intensity of 5.2, 10.4 and 15.7kHz in water at 15℃. After sonication treatment, seeds were primed with water or 100mM KNO_3 for 4days. 40, 50 and 60% seed moisture content (SMC) of hydrated seeds were incubated for 60, 72 and 84h in a container with a relative humidity of 99% at 26rpm for a modified drum priming treatments. Germination speed were highly improved by sonication with osmotic priming. The seed treatment of osmotic priming or hydro priming after sonication or sonication without priming enhanced germination percentage (GP) on the 2rdday after sowing to 46%, 43% and 28%, respectively, while untreated seeds resulted in only 1% GP. These treatments also highly improved mean germination time (MGT) to 1.4, 1.8 and 2.6days, respectively, when compared to 3.5days MGT of untreated seeds. The modified drum priming treatment (72h incubation after 60% SMC hydration) significantly improved results of 74% GP(on the 3rdday after sowing), 2.6days MGT and 39%·day^{-1} germination rate (GR), however, untreated seeds showed 19% GP, 4.1 MGT, and 25%·day^{-1} GR. Although osmotic priming after sonication, hydro priming showed similar improved germination characteristics, however, modified drum priming is considered as an industrially promising treatment methods considering the shortening of the treatment period and environment-friendly aspects.

Key words: *Solanum lycopersicum*, Sonication, Hydration, Incubation,

[This work was supported by Korea Institute of Planning and Evaluation for Technology in Food, Agriculture and Forestry(IPET) through Export Promotion Technology Development Program(or Project), funded by Ministry of Agriculture, Food and Rural Affairs(MAFRA)(Grant No. 316011-05)]