

## Modified Drum Priming and Exogenous Application of 24-Epibrassinolide (24-EBL) for Enhancing Germination under High Temperature Condition in Lettuce Seeds

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

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

This study was conducted to investigate the effects of modified drum priming and 24-Epibrassinolide (24-EBL) treatment to improve the seed quality for export. 40, 50 and 60% seed moisture content (SMC) of hydrated seeds were incubated for 16 and 24 h in a container with a relative humidity of 99% at 26 rpm for a modified drum priming treatment. The treated seeds were sown at 20°C and 30°C (12/12h, light/dark) with four replications of 25 seeds on pleated paper. The seeds were hydrated with water or 24-EBL solutions of  $10^{-7}$ ,  $10^{-8}$  and  $10^{-9}$ M, respectively. The germination of the modified drum primed seeds (24 h incubation after 60% SMC hydration) improved to 1.6 days mean germination time (MGT) and  $46\% \cdot \text{day}^{-1}$  germination rate (GR), while the untreated seeds showed 2.1 days MGT and  $28\% \cdot \text{day}^{-1}$  GR. The modified drum priming (60% SMC and 24 h incubation with  $10^{-9}$ M 24-EBL) showed improved results in MGT (1.8 days) and GR (55%) at 20°C, whereas untreated seeds showed 2.3 days MGT and 44% GR. Under 30°C, germination of modified drum primed seeds was significantly improved in GP (80%), GR ( $31\% \cdot \text{day}^{-1}$ ), HS (55%) and MGT (3.3 days), however, untreated seeds showed decreased GP (27%), GR ( $22\% \cdot \text{day}^{-1}$ ), HS (55%) and MGT (4.8 days). This study showed that the germination of lettuce seeds is enhanced by 24 h drum incubation with 24-EBL and this method can be used effectively to achieve the benefits of early germination and uniform seedling development. In addition, these treatments circumvent thermo-dormancy of lettuce seed and have a possibility of high-quality and environment-friendly seed processing.

Keyword: *Lactuca sativa* L., Priming, Hydration, Incubation, Thermo-dormancy

[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, funded by Ministry of Agriculture, Food and Rural Affairs(Grant No. 316011-05)]