

## Effects of Osmotic and Non-Osmotic Priming Methods for Enhancing Germination of Pepper Seed

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This study was conducted to investigate the effects of osmotic priming, liquid smoke (LS), sonication and modified drum priming treatments to improve the germination speed and uniformity of pepper seeds for high quality export seeds. Seeds were treated in 0.5, 1.0, 5.0, 10% LS solution only or with 100mM K<sub>2</sub>SO<sub>4</sub> solution for 6days at 15°C. Sonication treatment was performed for 5, 10, and 20 minutes at an intensity of 5.2, 10.4, 15.7, 21.0, 26.1kHz in water at 15°C. After sonication treatment, seeds were primed with water or 100mM K<sub>2</sub>SO<sub>4</sub> for 4days. 40, 50 and 60% seed moisture content (SMC) of hydrated seeds were incubated for 84, 96 and 108h in a container with a relative humidity of 99% at 26rpm for a modified drum priming treatments. 0.5% LS treatment with water or 100mM K<sub>2</sub>SO<sub>4</sub> priming showed significant effects with 71% GP (9.0days MGT) and 66% GP (7.4days MGT), respective, while untreated seeds resulted in only 61% GP and 10days MGT. The healthy seed % was increased by 24% by K<sub>2</sub>SO<sub>4</sub> priming with LS treatment compared to untreated seeds. However, sonication treatment showed less germination or no difference compared to untreated seed, regardless of intensity and treatment time. The modified drum priming treatment (108h incubation after 50% SMC hydration) significantly improved the GP (on the 4<sup>th</sup>days after sowing), germination rate (GR), and MGT to 65%, 28%·day<sup>-1</sup>, and 3.6days, whereas untreated seed resulted only 7% GP, 17%·day<sup>-1</sup> GR and 5.9days MGT. Thus, modified drum priming treatment effectively improved seed germination and is considered as an industrially promising treatment methods considering the shortening of the treatment period and environment-friendly aspects.

Keyword: *Capsicum annuum* L., Liquid smoke, Hydration, Drum Priming

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