

Title: Seed priming and water potential effects on soybean (*Glycine max* (L.) Merr.) germination and emergence

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Abstract

Sub-optimal soybean crop establishment is a common occurrence on farmers' fields due to poor germination and emergence. Two experiments were undertaken to determine the possibility of increasing germination of soybean varieties through seed priming. The first experiment was aimed at determining the effects of water potentials (0, -10, -100, -200, -500, -1500 kPa), seed treatments (non-primed, primed, primed and 12-hour drying, primed and 24-hour drying) on germination of four soybean varieties (PAN 872, Safari, Buffalo and A711). The second experiment examined factors such as seed treatments (soaking for 0,1,2,4,8,12, 16, 20 and 24 hours, 12-hour soaking and 12-hour drying, 24-hour soaking and 12-hour drying) and varieties (PAN 872 and Safari). In the first experiment, a significant ($p < 0.01$) interaction between seed treatments and water potentials was detected. Un-primed seeds had the largest decrease in percent germination as water potential was lowered. In the second experiment, priming resulted in a decrease in final percent emergence compared with non-soaked seed. We concluded that priming soybean seed could be recommended where soil water potential is low enough to limit emergence.