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Enhancing soybean sprout food safety through seed disinfection treatments

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Soybean sprouts, a traditional vegetable in Asia, are gaining popularity in the U.S. Sprout consumption has been associated with numerous outbreaks of foodborne illness and, in most cases the pathogens are known to be seed-borne, hence sprouting conditions could favor their propagation. The limited information about seed-borne pathogen incidence on soybean seeds for sprout industry in Virginia lead to the objective of this study that was to identify seed-borne pathogens and evaluate different decontamination technologies for soybean sprout seeds before sprouting. To develop this study, MFS-561 seeds were used from three soybean commercial production regions Eastern Virginia in 2015, and Southern Virginia and Northeastern North Carolina in 2015 and 2016. The internal transcribed spacer (ITS) DNA sequences of the fungi isolated from MFS-561 seeds were used for species identification. Seven disinfection treatments and their effectiveness on reducing sprout pathogens and impact on sprout characteristics were evaluated. A total of 11 species were identified from soybean sprout seeds where *Alternaria alternata* was the most frequent specie across the three growing regions that together with *Fusarium proliferatum*, *Fusarium chlamydosporum* and *Fusarium equiseti* are well known mycotoxin producers. Therefore, it is relevant to evaluate the toxicological risk of these species in the soybean crop and determine important prevention strategies, in this study we identified that 2% calcium hypochlorite for 10 minutes and 5% acetic acid for 2 minutes are promising seed disinfection treatments as they significantly reduced fungi incidence without any negative effects on sprout quality traits compared with the control of seeds washed using sterile water for 1 minute.