

Investigation into the effect of multiple hot water treatment of tomato (*Solanum lycopersicum*) and pepper (*Capsicum annuum*) seeds on seed viability and seed vigour

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Abstract

Seeds of tomato (*Solanum lycopersicum*) and sweet pepper (*Capsicum annuum*) are commonly hot water treated to avoid occurrence of seed-borne diseases. Such treatment can be applied by seed-exporting companies without prior knowledge of such practice by the importing country. It may, hence, occur that seed that has been heat-treated prior to importation, unbeknown to the seed importer, receives another heat treatment on importation. Therefore, it was investigated if multiple hot water treatments affect seed viability and seed vigour of tomato and pepper seed. All seeds were either heat-treated once or twice at 50.1°C for 25 min at 100% RH. Seed viability and vigour were evaluated using the blotting paper test, the emergence test and the accelerated aging test (72h/41°C/100% RH). Vigour index and germination index were determined, as well as the appearance of the seedling characterized. Furthermore, germination speed and percentage were evaluated. Multiple hot water treatments slightly increased seed vigour of tomato seed without affecting seed viability and aspects of germination. In pepper seed, however, a significant decrease in seed viability following multiple hot water treatment was observed, with no significant effect on seed vigour. It is, therefore, essential to determine, if pepper seed have been hot water treated by the exporting country to avoid a reduction in seed viability; however, in tomato seed no reduction in performance of the seed is expected due to multiple heat treatments.