

Maturation and desiccation sensitivity in developing seeds of lettuce (*Lactuca sativa* L.)

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Abstract

Seed development of orthodox species undergoes maturation drying which is the terminal event of seed development. Because of this character that it has been suggested that desiccation of orthodox seeds plays an important role in the transition from developmental program to a germinative mode. In this study, onsets of germination and desiccation tolerance in developing seeds were determined in greenhouse-grown lettuce plants. Lettuce cv. 'Tango' were planted and maintained in the greenhouse throughout its growing period. Flowers were sampled every day starting at 4 days after flowering (DAF). Seeds were manually extracted from the collected flowers and standard germination was done. Moisture content (MC) determination was done on the freshly harvested seeds. Sample seeds from the freshly harvested flowers were also dried for 2 days in an activated desiccant (fast drying) and over salt solution (slow drying, 54% RH) at 25°C to determine desiccation tolerance of the developing seeds at different stages of development. During drying, most water was lost (91-100% of the final seed moisture content) at first day of drying both in fast and slow-dried seeds. The MC of seeds at different stages of development when fast dried ranged between 2.2 – 6.9% wet basis. The seeds achieved equilibrium in the second day of slow drying. The MC of seeds after 2 d slow drying ranged between 5.7- 13.9%. Seed maturity in lettuce was achieved 14 DAF but germination of freshly harvested was observed as early as 4 DAF (45%). Maturation drying was observed at 9 DAF as indicated by the onset of loss of moisture content in the seeds. The physiological maturity was achieved at 10 DAF. Tolerance to desiccation was observed only starting at 6 DAF for slow-dried seeds (3% germination of normal seedlings) and 7 DAF in fast-dried seeds (13% germination). Slow drying of seeds has improved the vigor of seeds however; fast drying has resulted to decrease in vigor. This study showed that premature drying did not influence germinability of developing lettuce seeds.