

Development of Germinability and Desiccation Tolerance in Lettuce Seeds.

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Germinability and desiccation tolerance are important attributes that seeds acquire during their development. The timing in the expression of these characteristics is important to understand how environmental conditions affecting the mother plant influence seed quality. Lettuce plants (cv. Tango) were cultivated in the greenhouse. Seed germination, under light and darkness, was evaluated in fresh and dry seeds at 3, 5, 7, 9, 11, 13, 15, and 17 days after flowering (DAF). Desiccation was performed \approx 1 hour after harvest by placing the seeds at 25°C and \approx 53%RH. The seed moisture level after desiccation decreased from \sim 14% for 3 DAF seed to \sim 7% for 7 DAF seed, and then remained constant until the last sampling. Seeds achieved maximum dry weight (physiological maturity) at \sim 13 DAF. Germination of fresh seeds increased from 0% at 3DAF to \sim 80% at 5 DAF, reaching 100% at 7 DAF. Dry seeds did not germinate when they were 3 or 5 DAF. Seeds at 7 DAF had \sim 10% germination and at 9 DAF \sim 100%. When germinated in the dark, an increase in germination from 0% in fresh seeds at 3 DAF to 50% germination at 5 DAF was observed. However, seeds at 9 DAF had dark germination values that decreased to 0% and increased again to \sim 70% germination at 13 DAF. Dry seeds had no dark germination until 7 DAF, with variable and low germination (below 20%) until 11 DAF, then germination reached a maximum of \sim 55% 13 DAF and decreased to below 10% at 17 DAF. According to these results, lettuce seed germinability and desiccation tolerance were reached sooner than physiological maturity. In the dark, germination of fresh seeds presented a curve with two peaks suggesting that, depending on the seed developmental stage, two different physiological mechanisms restrict dark germination.