

Development of germinability and desiccation tolerance in lettuce seeds.

R. Rabara¹, S. Contreras¹, D. Tay², M. A. Bennett¹, and M. B. McDonald¹

¹*Department of Horticulture and Crop Science, Ohio State University, Columbus OH 43210-1086, USA*

²*Ornamental Plant Germplasm Center, Ohio State University, Columbus OH 43210-1086, USA*

Germinability and desiccation tolerance are important attributes that seeds acquire during their development. The timing of these characteristics is important to better understand how different 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 after harvest by placing the seeds at 25°C and ~53%RH. Seeds achieved maximum dry weight (physiological maturity) ~13 DAF. Germination of fresh seeds increased from 0% 3DAF to ~80% 5 DAF, reaching maximum germination 7 DAF. Dry seeds did not germinate when they were 3 or 5 DAF. However, seeds at 7 and 9 DAF had 10 and 100% germination, respectively. 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 ~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 ~55% 13 DAF and decreased to a minimum below 10% 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 mechanisms restrict dark germination.