

Daphne mezereum emerges the second spring after dispersal in cold temperate climate, but not because of seed dormancy

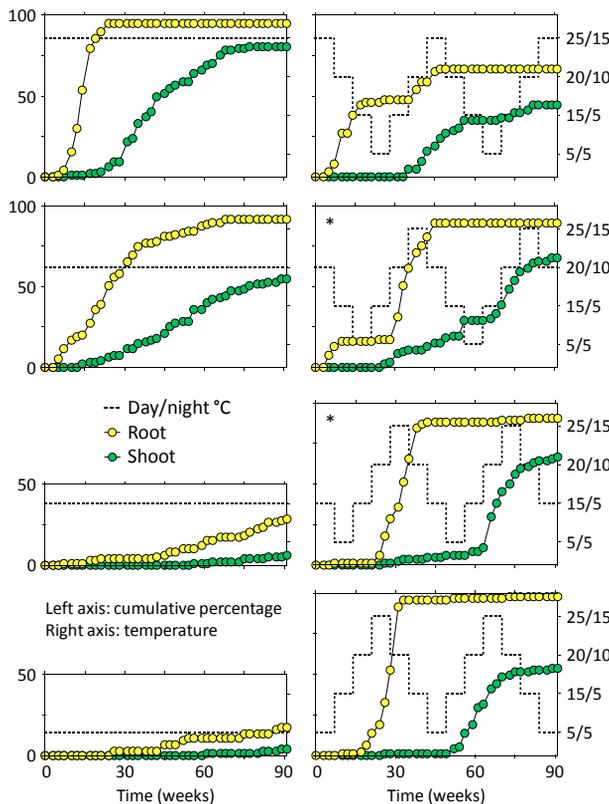
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1) BACKGROUND & AIM *Daphne mezereum* is a deciduous scrub that occurs in climates with large temperature differences between seasons. It flowers early in spring with seed dispersal in late summer. The fruits are attractive to birds and are usually removed soon after ripening, leading to strong competition between birds and seed scientists. The aim of this study was to reveal in what way seed dormancy and/or germination requirements schedule germination and emergence timing.

2) METHOD Ripe seeds were collected in Sweden, un-pulped, dried for one week and then subjected to 25/15, 20/10, 15/5 and 5/5 (day/night °C). In addition, seasonal changes and different dispersal times were included.



3) Root protrusion and shoot emergence were recorded. Further, seeds were subjected to treatments that may alleviate seed dormancy (dry storage, warm and cold stratification and gibberellic acid).

4) RESULTS Neither stratification nor GA had effect on germination (root protrusion) rate. The development from seed to emerged seedling was a slow process: e.g. ca 45 weeks for 50% at 25/15°C. Roots protruded 3-15 weeks after onset, shoot after average additional 28 weeks; the root grew during this time.

Root protrusion and shoot emergence of *Daphne mezereum* when subjected to continuous temperature regimes or to yearly changing seasons. *Natural dispersal time.

5) When subjected to annual changing seasons, root protrusion and shoot emergence rate were enhanced during warm seasons and reduced during colder. The process lead to emergence mostly during spring the second year after dispersal, for those treatments that resemble the natural time of dispersal.

6) CONCLUSIONS For naturally dispersed seeds (end of summer or autumn) there is little time for root protrusion before winter. Instead, root protrusion occurs the first spring and summer after dispersal, root growth during summer and autumn, and shoot emergence the second spring.

7) The pattern with shoot emergence the second spring after dispersal resembles that involving “epicotyl dormancy”. In contrast to such species, *D. mezereum* has fully developed embryos, and it does not respond to stratification as expected for that kind of dormancy. Instead, the slow (albeit not temperature-independent) and continuous development process is itself the explanation to the emergence pattern.

