Abstract

Title: Germination of three Proteaceae species along a moisture gradient in a Mediterranean ecosystem under drought conditions

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I. Abstract Body

In Mediterranean ecosystems, such as the Cape Floristic Region (CFR), temperature and the recording of rainfall is essential for effective establishment of seedlings and also the surviving of the first year's summer drought is important for population continuity. Climate change is changing the environmental signals that seeds receive causing compromised seedling emergence. Here, we examined how temperature and moisture will affect germination in three Proteaceae species. An altitudinal gradient of temperature and moisture was used to simulate climate change effects. Climate change niches were constructed along the gradient and seeds of three Proteaceae species collected from the study site were planted in soil from the study site. Germination of the three species was also tested in a greenhouse. Under present climate change conditions germinations of the three species did not occur at the lowest altitude (545 m) because of higher temperature and low soil moisture. Germination of the three species occurred 227 days after sowing in the field and germination occurred after 74 days in the greenhouse. The highest germination percentages were found at the two closest stations (933m and 744 m) along the gradient. *Protea repens* had the highest germination percentage at both of the sites. Germination of the three species occurred at a temperature of between 6.7 ^{o}C to 10.4 ^{o}C. Temperature and moisture play an essential role in the germination process of Proteaceae. The results of this study suggest that under higher temperatures and low moisture Proteaceae in the Fynbos Biome may be at risk.

II. Image



III. Reference

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IV. Biography:

Dr. Judith L. Arnolds has completed her PhD (Botany) in 2016 and PhD (Environmental Health) in 2017 from the University of North West (South Africa) and the Cape Peninsula University of Technology (South Africa). I am a senior scientist, in the Climate change and bio-adaptation division, at the South African National Biodiversity Institute (SANBI).

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