



# Seed dormancy and germination of a critically endangered plant, *Elaeagnus mollis*, on the Loess Plateau of China

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Received: 1 June 2019 / Revised: 28 June 2020 / Accepted: 2 December 2020 / Published online: 3 January 2021  
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## Abstract

*Elaeagnus mollis* is an endangered species narrowly distributed on the south-eastern Loess Plateau of China. Natural regeneration of populations is highly restricted by low seed germination. The aim of this study was to explore why germination is low and how to enhance germination of the species. Field and laboratory experiments were carried out to examine the effects of temperature, light, drought and NaCl on seed germination and the effects of the seed coat, GA<sub>3</sub>, cold and warm stratification and after-ripening on dormancy release. Our results showed that (1) fruits (0.65 g/fruit) and seeds (0.14 g/seed) were relatively large, the embryo was surrounded by a hard and permeable seed coat and a lignified calyx tube, and more than half of the fresh seeds were not viable; (2) fresh, intact seeds did not germinate, but germination of scarified seeds was highest at 5/15 °C in continuous darkness; (3) dormancy was not released by GA<sub>3</sub> and cold stratification (5 °C), but significantly released by variable temperature stratification and field burial, indicating that seeds had deep physiological dormancy; and (4) germination was significantly enhanced by median drought (−0.6 MPa) and NaCl (0.34 M), and decay was inhibited beyond −0.4 MPa osmotic potential and 0.225 M NaCl. Our results suggested that, with habitat loss and cli-