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The germination characteristics of *Scrophularia marilandica* L. (Scrophulariaceae) seeds

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Abstract Investigations on seeds of *Scrophularia marilandica* L. were undertaken to determine their germination requirements. Seeds were collected from three naturally occurring sites and one greenhouse-grown population in London, Ontario in September and October of 1997. Some were set to germinate immediately after collection; others were stored in or on soil outside and/or under controlled laboratory conditions before testing. Germination was assessed under two light/temperature regimes (35°C 14 h light, 20°C 10 h dark and 25°C 14 h light, 10°C 10 h dark), in continuous darkness, and in the presence of two germination-promoting chemicals (GA₃ and KNO₃). Fresh seeds germinated best at 35/20°C, while stored seeds germinated best at 25/10°C. No differences in percent germination were found among three seed-maturity stages. All chemical treatments, except 0.01 M KNO₃, increased percent germination. Significant differences were found both among and within sites for most chemical treatments, but exposure to 3×10^{-4} M GA₃ caused almost every

seed to germinate. When compared to the control, both the gibberellic acid and the soil-storage treatments contributed to faster germination. Exposure of seeds to naturally prevailing conditions on the soil surface followed by testing under the 25/10°C regime produced the highest percent germination. No seeds germinated in the dark. In summary, seeds of *S. marilandica* exhibit physiological dormancy, which can be alleviated by exposure to light, after-ripening and/or cold stratification. It is probable that the differences in germination response among sites can be attributed to differences in environmental conditions during seed production. These experiments indicate that the seeds of *S. marilandica* must be buried shortly after dispersal in order to form a persistent seed bank.

Keywords Gibberellic acid · GA₃ · Non-deep physiological dormancy · Potassium nitrate · KNO₃ · Maryland figwort

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Introduction

In scientific literature, information on plants that are non-invasive, or have no medicinal uses, is often lacking. *Scrophularia marilandica* L. (Maryland figwort, carpenter's square) is one example. It is a polycarpic perennial of ruderal areas and open woodlands from Quebec to Manitoba, and south through Minnesota, to South Carolina and Georgia