

## **Novel Methods for Improved Propagation of *Cypripedium reginae***

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*Cypripedium reginae* is critically endangered in much of northern New England, especially in New Hampshire where it has little suitable habitat. Our laboratory has been conducting a restoration program to save this orchid from extinction in our region of New England. We conducted three investigations that support the overall restoration program that included: improving germination procedures, refining methods of transplantation into outdoor environments, and analysis of the plant's reproductive and vegetative tissues. To refine and improve our germination procedures, we exposed showy lady's slipper seeds to electromagnetic fields (EMF's). Cultures containing newly inoculated seeds were placed in chambers that held rare earth magnets as an EMF exposure method. Control cultures were placed in chambers under similar conditions that did not contain magnets. In addition to monitoring germination rates, we assessed maturation rates using our staging system for seedling development *in vitro*. Although seeds exposed to EMF's had similar germination rates to controls, they showed more rapid maturation to seedlings with primordial roots and shoots. Transplantation to outdoors involved creating two artificial fens in New Hampshire. One fen, with 17 healthy seedlings, had a survival rate of 36% in the first year. The other, with 12 healthy seedlings, had a survival rate of 34%. In order to support future attempts at cloning a *Cypripedium* species we are currently conducting a histological analysis of over 50 tissue samples of *Cypripedium reginae*.