

## COLD SOAKING REDUCES THE STRATIFICATION REQUIREMENT OF SUGAR MAPLE SEEDS

**Carol A. Janerette**

Plant Physiologist, Forest Service,  
U.S. Department of Agriculture,  
Beltsville, Maryland

Under current laboratory procedures sugar maple seeds are soaked in water overnight and then stratified (stored under cold, moist conditions) for 90 days. Germination is spread throughout the stratification period with initial germination beginning after about 35 days and maximal germination taking place during the period (55 days) between 35 and 90 days of stratification.

Webb and Dumbroff (3) showed that most of the stratification period is required for an adequate uptake of water.

This study was conducted to see if soaking sugar maple seeds in water for extended periods would reduce their stratification requirement.

### Methods

Sugar maple seeds were taken from a collection held in storage for 1 year. Filled fruits were separated from empty ones by floatation in pentane (2), and stored with 10 percent moisture at  $-10^{\circ}\text{C}$  before use. (All references to seeds refer to those enclosed in the fruit.)

Each treatment consisted of five replicates of 50 seeds each. Each replicate was soaked in distilled water for 1 (control), 8, 10, 14, 18, 22, and 28 days at  $2^{\circ}$  to  $3^{\circ}\text{C}$ . The water was not changed during the soaking period because earlier trials had shown that this was not beneficial. The seeds were then transferred to germination boxes (1) and stratified at  $2^{\circ}$  to  $3^{\circ}\text{C}$ . They were observed weekly for 90 days, and those that had germinated were counted at each observation. The emergence of the radicle through the

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pericarp was taken to indicate germination.

### Results and Conclusions

The time required for germination to reach 96 percent varied greatly. An analysis of variance showed the differences among treatments to be highly significant. The length of stratification required for germination to exceed 90 percent was greatly influenced by the length of the soaking period up to 14 days; soaking beyond 14 days had no additional effect.

This study showed that soaking sugar maple seeds in water at low temperatures for 14 days significantly reduced their stratification requirements. Germination of the seeds soaked for 14 days was 96 percent complete on the forty-third day of chilling after soaking. In this treatment, germination began on the twenty-ninth day of stratification. Thus, germination reached 96 percent within 14 days after it began, as opposed to 35 days or longer under our present standard procedure.

### Literature Cited

1. Carl, C., and H. W. Yawney. 1966. Four stratification media equally effective in conditioning sugar maple seeds for germination. *Tree Planters' Notes* 77: 24-28.
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3. Webb, D. P., and E. B. Dumbroff. 1969. Factors influencing the stratification process in seeds of *Acer saccharum*. *Can. J. Bot.* 47: 1555-1563.