COLD SOAKING REDUCES THE
STRATIFICATION REQUIREMENT OF
SUGAR MAPLE SEEDS

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Soaking sugar maple seeds in water at low
temperatures for 14 days before they were stratified
significantly reduced the time required to surpass 90
percent germination.

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°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° to 3° 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° to 3° 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
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

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