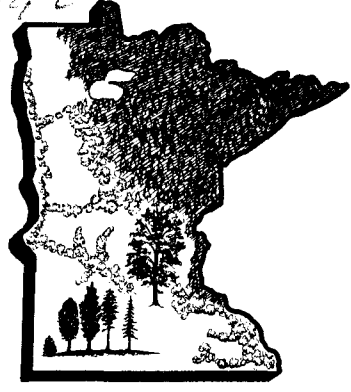
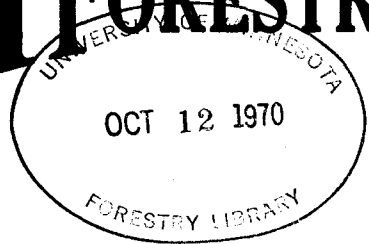


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VARIATION IN GERMINATION OF SEED COLLECTED FROM INDIVIDUAL BASSWOOD TREES

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In 1961 and 1962 American basswood (Tilia americana L.) seed was collected from a number of individual trees with the objective of detecting possible tree to tree variation in seed germination.

The initial individual tree collections were made in October of 1961. Fruits were dried at room temperature and the seeds extracted using nitric acid to soften the pericarp. Two-hundred apparently sound seeds from each of 38 trees were scarified with sulfuric acid, stratified at 2-5° C. for 167 days and placed at room temperature for 20 days. This treatment, developed by Spaeth ^{2/}, resulted in an average of 5 percent germination of seed with the germination of collections from individual trees ranging from 0 to 22 percent.

Additional seed collections were made from some of the same trees in the fall of 1962 but different techniques were used to germinate the seeds. Fruits were collected from 5 trees whose seed had given relatively high germination (Trees 6-10, Table) in tests with seed from the 1961 crop and from 5 trees whose fruit had given low germination (Trees 1-5, Table) in those tests. Immediately following collection two lots of 50 fruits from each tree were placed in flats containing moist sand and two lots of 50 fruits from each tree were soaked in tap water and sealed in polyethylene bags. The flats and bags were kept in a cold room (41° F.) until March, 1963, when the flats were moved to a greenhouse and fruits in the bags were planted in soil in the greenhouse.

Twenty days after the seeds had been placed in the greenhouse, germination counts were made. Cutting tests performed on samples of 20 fruits from each tree at the time of collection permitted germination percentages to be based on the number of filled seeds. Many of the seeds stratified in polyethylene bags had obviously germinated and decayed before removal from the bags. Such seeds were classified as germinated. Germination of seed stratified by the two techniques was approximately equal. While seed was collected on five dates during the fall of 1962, only collections made on

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^{2/} Spaeth, J. N. 1932. Jour. For. 30:925-28.

September 20 gave an appreciable amount of germination and only the germination of the 200 seeds collected and stratified from each tree on that date is used for the comparisons made. Germination of stratified seed collected on September 20, 1962 averaged 9 percent with a range of 0-27 percent for collections from individual trees.

Mean germination of seeds from the 10 trees collected in the two years is given in the Table. As indicated, seed from all trees except 6 and 9 consistently gave either high or low germination. The inconsistent response of these two trees may reflect differences in the response of seed from individual trees to the two treatments, differences in the seed produced in the two years, or sensitivity to time of collection.

The germination of seed of the 1962 crop from trees whose seed had been classified as giving high germination and as giving low germination, on the basis of seed of the 1961 crop, was 15 and 2 percent respectively. This difference indicates that the selection of trees on the basis of seed germination may help to increase basswood seed germination.

Tests to identify trees whose seed give high germination may be of practical usefulness to forest-tree nurserymen.

Table. Germination of seeds from individual trees collected in 1961 and 1962 expressed in percent of filled seeds.

Year of	Tree Number									
Collection:	1	2	3	4	5	6	7	8	9	10
1961	0	0	1	1	0	22	14	18	9	11
1962	0	2	0	2	6	4	15	27	3	27