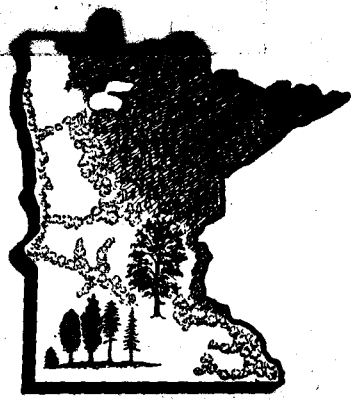
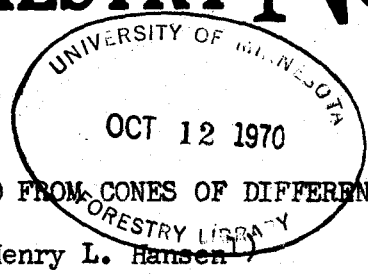


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# MINNESOTA FORESTRY NOTES



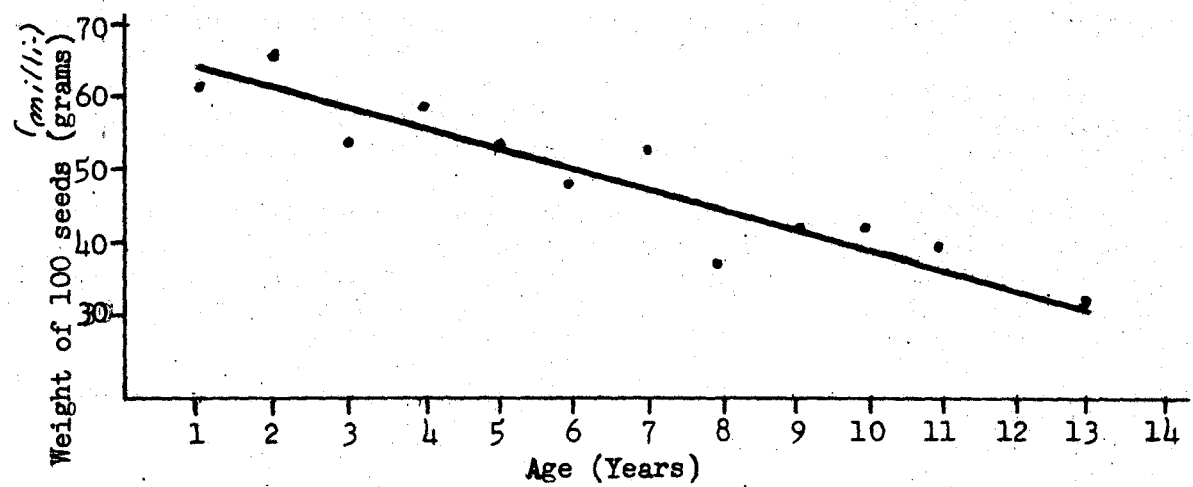
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July 15, 1952

## CHARACTERISTICS OF BLACK SPRUCE SEED FROM CONES OF DIFFERENT AGES

Tsan Sing Chai and Henry L. Hansen

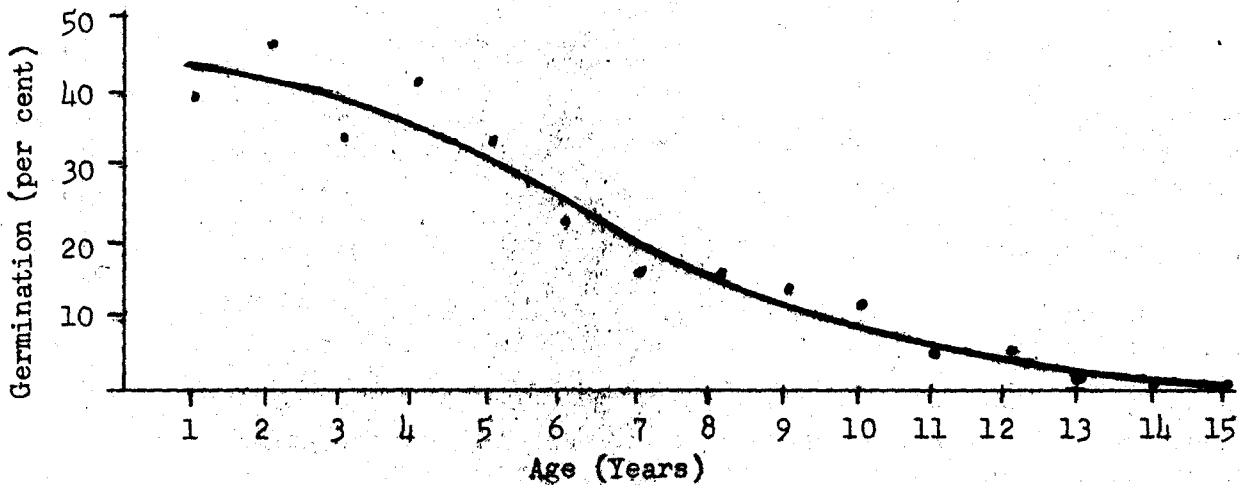
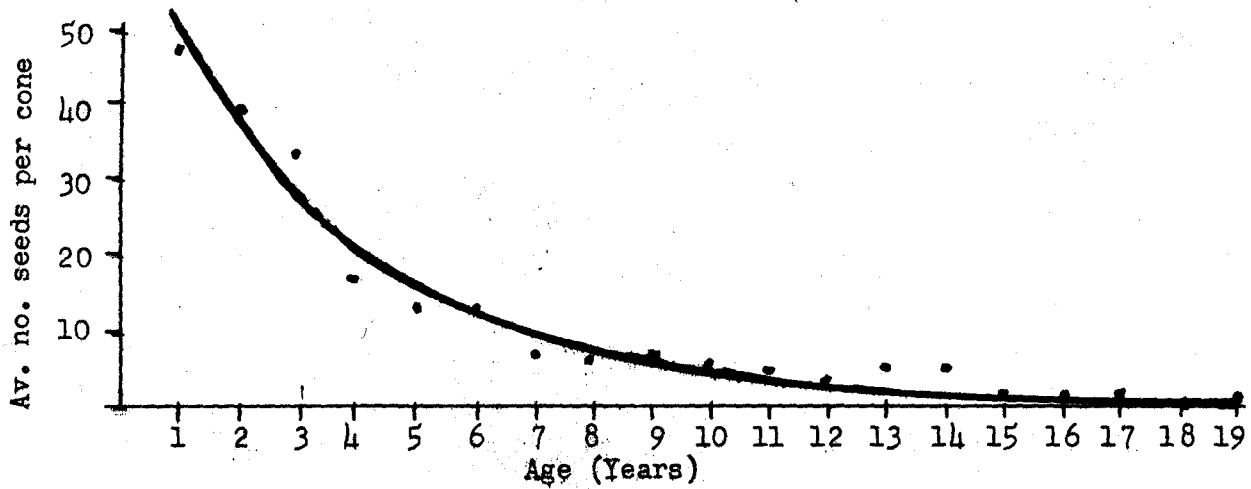
It is well known that black spruce, an important pulpwood and Christmas tree species in Minnesota, retains its cones on the tree for many years. Seed trap records from Ely<sup>2)</sup> indicate that seeds are disseminated throughout almost the entire year but that usually half or more of the viable seeds still remain in the cones one year after ripening. However, little information is available relating to the amount and viability of seeds in cones of different ages. Data of this type have a bearing on seed supply following partial cutting and upon cone collection for seed.

The seeds used in this study were derived from cones collected from twenty randomly selected, merchantable trees between 100 and 120 years old. Ten trees were taken from each of two swamps, one on the Cloquet Experimental Forest and the other near Ely, Minnesota. The age of each cone was determined and all the seeds were extracted from ten randomly selected cones in each of the cone age classes from the two sources. Those seeds which by inspection were found to be abortive or defective were separated from the rest. The remaining seeds were classed as "apparently sound" and were used as the basis for determining seed weight, number of seeds per cone, and viability. The following figures summarize this information.



1) Graduate student and Associate Professor, respectively, School of Forestry, University of Minnesota. Data presented are derived from an unpublished Master of Science thesis by the senior author.

2) Leeson, R. K. 1948. Silvicultural management of black spruce in Minnesota. U.S. Agr. Circ. 791.



Conclusions: 1. Seeds from cones which have been on the tree for many years are significantly lighter in weight than seeds from cones which have been on the tree for only a few years. This may be a result of (a) the heavier seeds being released earlier, (b) a loss in weight due to respiration, or (c) a combination of these two.

2. The percent of black spruce seeds which germinate from cones of different ages decreases gradually with increasing age of cones. After six years on the tree, however, germination was still over half as good as that from one year cones.

3. The average number of seeds per cone decreases with age since black spruce cones release their seeds intermittently over a period of many years. Six year old cones were found to have about one-fourth as many seeds per cone as did one year cones. A few seeds were found even in the nineteen year old cones, the oldest examined.