SOMMAIRE

Dans un peuplement d'épinette noire détruit par le feu, la chute des graines de semence sur le sol a été plus abondante au cours des premiers dix jours qui ont suivi le feu; la viabilité de la semence a diminué au fur et à mesure à partir du moment où le feu a eu lieu.

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LOW TEMPERATURE GERMINATION OF SOME EASTERN CANADIAN TREE SEED¹ J. D. MacArthur² and J. W. Fraser³

Irmack (1961), Olsen *et al* (1959) and Stone (1958) among others have commented on the phenomenon of coniferous tree seed germinating at low temperatures during, or following prolonged stratification (moist cold storage). Allen (1960, 1962) showed that extended stratification lowered the temperature requirements of Douglas-fir, grand and noble fir (*Pseudotsuga menziesii* (Mirb.) Franco, *Abies grandis* (Dougl.) Forb. and *A. nobilis* Lind.). He concluded that the phenomenon might be common with conifers and indicated its usefulness in controlling germination in forest nurseries.

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Recent observations of germination of several coniferous and deciduous species at low temperatures following prolonged stratification are reported here.

Seeds of black spruce (*Picea mariana* (Mill.) BSP. and white spruce *P. glauca* (Moench) Voss) germinated in cold storage at 35° F and 40° F respectively following continuous stratification for one year or longer. White spruce produced radicles up to 6 cm in length in the cold room. Chlorophyll developed in these germinates when they were exposed to light and they were normally phototropic as they continued to elongate.

Some seed lots of mountain, silver, and sugar maple, basswood and beech (*Acer spicatum* Lam., *A. saccharinum* L., *A. saccharum* Marsh., *Tilia americana* L., and *Fagus grandifolia* Ehrh.) stored fresh (immediately following collection) germinated a year later in sealed containers in a 35-degree F cold room. Others were destroyed by mould. Seed of the same species air-dried before storage did not germinate. Presumably moisture content at the time of storage is a critical factor. Normally, silver maple is non-dormant, but mountain, and sugar maple, and beech require 60-120 days stratification to break embryo dormancy (U.S. Forest Service 1948) and basswood may remain naturally dormant for as long as four years owing to its impermeable seed coat.

Northern red oak (*Quercus rubra* L.) and beech did not germinate satisfactorily after recommended pre-treatment (30-35 days at 32-38° F and 90 days at 41° F respectively) but following prolonged stratification in moist sand 35° F they both germinated in the cold room and, when planted promptly, the germinates developed normally.

These observations indicate that coniferous and broadleaved species respond similarly to prolonged stratification and that treatment overrides any differences in dormancy and normal pre-treatment requirements. The behaviour of basswood seed is particularly striking considering its reputation for persistent dormancy. Further investigation of pre-treatment of seed might be rewarding because it might enhance chances of success both in the nursery and in reforestation by direct seeding.

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