

# JUNIPER GERMINATION SIMPLIFIED

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Unpredictable and erratic germination of juniper seeds often results in production quota shortages. Bessey Nursery personnel have developed a method that is used regularly to provide satisfactory germination of two species of juniper (Juniperus virginiana and J. scopulorum) used extensively in windbreak or shelterbelt planting in the Plains States.

Seeds of both species possess impermeable seedcoats and embryos with varying dormancy. The afterripening needed to break the dormancy can occur only after the seedcoat is made permeable and moisture has entered the seed. To make the seedcoat permeable, it is stratified in a moist medium at room temperature, 68°-86° F.; this procedure provides better results than former methods of scarification by abrasion or soaking in sulfuric acid.

However, sowing dates are uncertain. Because seedcoat hardness and the percentage of embryo dormancy varies, the duration (up to 6 months) and temperature of the stratification periods cannot be constant. Further, since seeds of both species germinate at rather low temperature, 50° F. or lower, and since germination may cease abruptly if temperatures go above 60° and remain there, the usual timing and duration of stratification periods are sometimes nullified by abnormal spring temperatures or other conditions.

The seed should be sown as soon as possible after cream-colored radicles appear at the pointed ends of the stratified juniper seed. If sowing is delayed because poor weather has prevented bed preparation or for some reason, each day's delay will result in a lower emergence percentage.

We sow juniper seed in July or August, when other nursery activities consist mostly of routine spraying, weeding, and irrigation. An ordinary manure sprayer is used to lightly cover the drilled beds with pine straw, and then a heavier layer of mulch is applied.

Many mulches can be used, but we prefer Sudan hay. When put on green it settles in a tight layer not readily disturbed by ordinary winds. Regardless of the mulch used, it should be free of all seeds.

A fairly heavy mulch is essential for maintaining moisture at a seed level that will meet stratification requirements. The mulched beds are thoroughly watered. Once stratification has begun, the seed should not be permitted to dry again. If the seed is kept moist in the soil from summer through winter, complete germination is fairly certain.

We would be interested to know how far south this method might work. Southern nurseries wanting to try it may be guided by a formula established from tests which indicates that Juniperus virginiana requires 3 months of stratification, or afterripening at 41° F. (1).

In the spring the heavier mulch should be removed when emergence is 50 percent or more. The mulch can be stacked for reuse on the next sowing. The light pine straw, which was applied before the mulch covering, is left on the bed. The seedlings emerge through it easily, and this light covering helps eliminate sand splash and conserves moisture at the surface. It also protects the seedlings from sunscald in our light-textured and lightcolored soil.

In years when the cedar seed on hand is insufficient for a 3- or 4-million seedling production, we substitute the following method to meet the production quota. The cedar berries are collected as soon as they turn from pea green to the blue of maturity, usually about the last week of September. The seed is depulped at once and prepared for sowing with a minimum of drying. Within a week after collection, we can put the seed in the ground. The sowing and mulching procedures are the same as for summer sowing. Germination and emergence t h e following

spring has been very good from such fall sowing of "fresh" seed. But stored seed from previous years' collections sowed in the fall usually fails to germinate in the spring. Apparently, fresh seed requires less time in warm stratification than held-over seed; the author believes that the difference results from the greatest permeability of fresh seed that is sown without prolonged drying or curing.

Impermeability of juniper seed may well result from or be increased by seed drying or curing in the berry. This theory was partly

substantiated when a lot of seed was fall-sown in 1962. This seed has been held frozen in the

macerated pulp since 1959. The seed was washed from the pulp after thawing and sown in October, and germination and emergence were excellent the following spring.

### Literature Cited

- (1) Barton, Lela V. 1951. Germination of seeds of Juniperus virginiana L. 16(8): 387-393.