

STORAGE OF AFTERRIPENED SEED OF EASTERN REDCEDAR

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Seed of eastern redcedar is extremely variable in its response to stratification. Some seeds complete the afterripening process in 2 or 3 weeks and others in the same lot may require 3 months of stratification.¹ When such seed is sowed, losses are liable to result from damage to radicles of germinated seed and from seed not ready to germinate.

At the forest nursery at Stillwater, Okla., tests were conducted to determine whether germination of afterripened eastern redcedar seed could be arrested without impairing viability. Seed samples included in the tests were from several localities and of several ages, as follows: Lot No. N-47, 1947 crop from Nebraska; Lot No. N-48, 1948 crop from Nebraska; and Lot No. OK-49, collected in 1949 in the vicinity of Stillwater, Okla. The seeds were stratified for 84 days (average period needed to afterripen seeds in all lots), beginning October 6, much earlier than usual. After 84 days of stratification, peat moss was removed from the seeds. Some of the seeds were dried for 1 hour, to remove the surface moisture, and then stored at freezing temperatures of +20° F. Others were placed in water immediately after stratification and then stored at +20° F. As a check for this experiment, some seeds were stratified for 84 days but were not subjected to freezing. Results of these tests were as follows:

	<u>Germination</u> <u>(Percent)</u>
Lot No. N-47:	
Dried and stored at +20° F. for 28 days	4
Dried and stored at +20° F. for 113 days	1
Check	9
Lot No. N-48:	
Stored in ice block at +20° F. for 28 days	23
Stored in ice block at +20° F. for 65 days	25
Stored in ice block at +20° F. for 100 days	34
Check	29

^{1/} Afanasiev, M., and Cress, M. Producing Seedlings of Eastern Red Cedar (Juniperus virginiana L.) Okla. Agr. Expt. Sta. Bul. B-256, 21 pp. 1942.

Germination
(Percent)

Lot No. OK-49:

Stored in ice block at + 20° F. for 28 days	1/78
Stored in ice block at + 20° F. for 65 days	75
Check	66

1/ Includes germination of 18 percent during stratification, prior to freezing.

Following this test, seed samples containing the highest percent of viable seed from Lot No. OK-49 were stored at various temperatures, after a stratification period of 97 days. Many of the seeds had begun to germinate. Seeds stratified for 97 days but not frozen were used as a check. Results of this test were as follows:

Germination
(Percent)

Stored in ice block at -12° F. for 30 days.	0
Dried for 1 hour & stored at -20° F. for 30 days	3
Dried for 1 hour & stored at + 4° F. for 30 days.	3
Stored in ice block at + 20° F. for 30 days	19
Check	74

From the results obtained in these tests it appears that storage of After-ripened redcedar seed in ice at + 20° F. for as long as 3 months does not impair the viability of the seed if germination does not occur in storage. Seeds with radicles protruding through the endosperm showed injury in the form of darkened tips and failed to resume growth after storage at +20 ° F. Storage at + 4° F. and lower killed, most of the seed.

To obtain additional information on the effects of cold storage (at +15° to 20°F.) on germination of redcedar seed following stratification for various periods, another test was made the following year. Seed from Lot No. OK-49 was tested. Stratification began on July 29. Results *were* as follows:

	<u>Germination</u> <u>in</u> <u>storage</u> <u>(Percent)</u>	<u>Germination</u> <u>3 weeks following</u> <u>setting</u> <u>(Percent)</u>
Stratification for 77 days, followed by--		
Cold storage for 12 days	0	65
Cold storage for 24 days	0	68
Cold storage for 49 days	0	67
Cold storage for 91 days	0	73
No cold storage	0	65
Stratification for 94 days, followed by--		
No cold storage	2	60
Stratification for 126 days, followed by--		
No cold storage	29	58
Stratification for 168 days, followed by--		
No cold storage	79	82

From the results obtained in these tests it is concluded that afterripening and germination can be arrested by storing afterripened (but ungerminated) seed at + 15° to + 20° F. However, germinating seed is injured by subfreezing temperature and does not resume growth later.