UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
CALIFORNIA FOREST & RANGE EXPERIMENT STATION

ADDRESS REPLY TO
DIRECTOR
AND REFER TO

UNIVERSITY OF CALIFORNIA
331 GIANNINI HALL
BERKELEY, CALIFORNIA

RR
ARTIFICIAL REVEGETATION
Bitterbrush

July 3, 1943

MEMORANDUM FOR EASTSIDE NATIONAL FORESTS

Many of the Eastside Forests are interested in planting bitterbrush this fall and next spring. Seed is ripening rapidly in the field and it is not too early therefore to make preparation for collecting a supply.

The Soil Conservation Service in the Pacific Northwest has had considerable experience in collecting bitterbrush "seed". (It is really the fruit that is collected. The seeds are enclosed in the fruit.) In response to a request they sent me the following description of how they collected the "seeds".

"The collecting had been handled with some homemade contraptions which seemed to perform quite satisfactorily. It will no ddubt be possible to add certain refinements at a later date.

"After trying several methods we finally settled on a canvas (cradle) about 4 feet wide and 5 feet long with 2-inch square poles running the long way. (See photograph.)

"By slightly puckering the free ends of the canvas it was possible to hold the seed in greater quantity and without loss. We used a two-man crew, one handling the cradle by the poles and inserting under the part of the bush to be beaten. The second person pulled the branches over the cradle

and beat out the ripe seed with a flat, heavy club. When the amount of seed became heavy and cumbersome to handle, the cradle was folded by putting the two poles together and slightly rolling. One end was then inserted in a bag, and by slightly unrolling, the seed could be dumped out. In brief this is the method we employed last year in collecting a little over 3,000 pounds of seed. A picture showing these operations is enclosed."

It will be necessary to watch the ripening of the seed very closely and to start collecting them at the time they are ready to fall from the bushes. The seeds are hard and fully rounded out when ripe. In many localities seed is not forming this year because of adverse weather and heavy tent caterpillar infestations. It would seem advisable for those rangers who have a good seed crop on their districts to collect enough to meet the needs of others who may not be able to find a good crop. The seed can be stored for several years, if kept in tins in a cool place, so a surplus may be collected for future needs.

For your information, I am attaching a preliminary summary of the germination of bitterbrush fruits that were planted last fall and stratified bitterbrush seeds that were planted this spring in the Eastside region.

Very truly yours,

A. L. HORMAY
Associate Forest Ecologist

Attachment

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ARTIFICIAL RESEEDING
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July 3, 1943

Preliminary Summary of Germination of Spring Planted, Stratified Bitterbrush Seed

Area	Date of planting	Spots planted	Average depth of planting	Germination of spots	Probable causes of germination failures: Deep planting, and unfavorable weather and soil moisture	Probable causes of germination failures: Seed spots dug up by rodents before germination
	1943	Number	Inches	Percent	Percent	Percent
No.1, Wildason burn Inyo N. F.	May 5	100	1	60	40	0
No.2, Robinson Creek Mono N. F.	May 7	100	2	14	86	0
No.3, Clear Creek Summit, Mono N. F.	May 8	100	1½	50	50	0
No.4, Dog Valley Mono N. F.	May 9	100	1¼	76	24	0
No.5, Airport burn Tahoe N. F.	May 10	50	2	54	46	0
No.6, Truckee Airport Tahoe N.F.	May 10	50	1½	60	40	0
No.7, Dry Lake Lassen N. F.	May 11	50	1½	36	64	No record
No.8, Bunchgrass Valley, Lassen N. F.	May 12	50	1½	32 1/	No record	No record
No.9, Bear Wallow Mtn. Lassen N. F.	May 12	25	1½	No record	No record	No record
No.10, Blue Mtn. Modoc N. F.	May 13	50	1½	20 1/	No record	No record
No.11, Smith Sale burn Modoc N. F.	May 13	50	1½	60	34	6
No.12, Dry Lake Modoc N. F.	May 14	100	1½	84	16	0
No.13, Lava Beds Mnt. Modoc N. F.	May 14	25	1½	88	4	8
No.14, Mt. Hebron Shasta N. F.	May 15	50	1½	70	28	2

1/ Incomplete record.

Remarks. There was considerable variation in the depth of planting from spot to spot in the same area. In many instances the planting was so deep that the seedlings failed to emerge. In others the cotyledons just pushed above the soil surface. Apparently the most important factors preventing germination, that is emergence from the soil, of the bitterbrush seeds were:

1. Too deep planting.
2. Unfavorable weather and soil moisture.
3. Poor seed.
4. Destruction of seeds by rodents or other agencies.

Recommendations. 1. Plant seed between $\frac{1}{4}$ and $1\frac{1}{4}$ inch deep in soil.
2. Plant in soil that is not dried out to a depth of more than $\frac{1}{4}$ inch.
3. Plant early in the spring just as the leaves of the bitterbrush plant start to break out of the buds. If sowings are made later, plant in mild weather.

Summary of Germination of Fall Planted Bitterbrush Seed

Area	Date of planting	Spots planted	Average depth of planting	Germination of spots	Probable causes of germination failures: Deep planting, and unfavorable weather and soil moisture	Probable causes of germination failures: Seed spots dug up by rodents before germination
	1942	Number	Inches	Percent	Percent	Percent
No. 1, Delleker Plumas N. F.	Sept. 30	40	$\frac{1}{2}$ to $1\frac{1}{2}$	60	No record	No record
No. 2, Dry Lake Lassen N. F.	Oct. 2	25	"	68	" "	" "
No. 3, Blue Mtn. Modoc N. F.	Oct. 6	100	"	16	" "	" "

Remarks. Some of the planted fruits were dug up by rodents. Others were not planted deep enough nor covered properly and were heaved out of the ground.

Recommendation. Plant fruits $\frac{1}{4}$ to $1\frac{1}{4}$ inch below soil surface. Be sure that they are well covered with soil.

The causes of mortality of the seedlings that germinated in both spring and fall plantings will be summarized at the end of the season.

A. L. Hormay

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Associate Forest Ecologist